Cell 1 Regional Coastal Monitoring Programme
Walkover Inspection Surveys 2018

Northumberland County Council

October 2018

Northumberland County Council

Walkover Inspection Surveys 2018

Contents Amendment Record

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Appendices

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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.

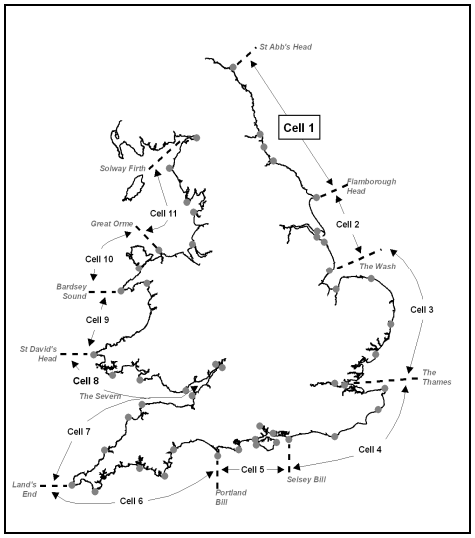


Figure 0-1 - Sediment Cells in England and Wales

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 is 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 Northumberland 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

Northumberland County Council's coastal frontage is approximately 100km in length extending from Scottish Border in the north to Hartley in the South as shown in **Figure 1-1**. In accordance with previous coastal inspection surveys, this frontage is sub-divided into approximately 146 built asset lengths and 203 natural asset lengths (349 total assets). Detailed maps showing the location of each of these assets are presented in **Appendix A**.

Figure 1-1: Northumberland County Council study area

1.2 Methodology

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

The walkover inspection surveys for the Northumberland County Council frontage were undertaken on various dates between late May and September 2018. The weather experienced during the inspections was generally clear and fine with no access or visibility problems caused by adverse weather, although the section between the Scottish Border and Needles Eye was impaired by a sudden sea fret which affected visibility.

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 Northumbrian Coastal Group MS Access database previously used for Northumberland coastal defence inspections from 2002 to 2010 has been imported to the SANDS database and a new asset data display form "Northumberland Sea Defence" has been created in SANDS to allow easy viewing of the data.

2. Overview

The following significant findings were observed during the 2018 inspections:

- **Dodd's Well to Sharpers' Head** – The cliffs have suffered a rock fall near the access steps to the bay from the caravan park, leaving a rock overhang. The hand railing down the access steps requires replacement and the concrete pavilion and sewage treatment works outfall pipe have both deteriorated.

- **Green's Haven** (also known as Fisherman's Haven) – The breakwater remains in poor condition but there has been no significant further deterioration since the previous survey. The cliffs show fairly frequent activity in terms of slippages and there have also been occasional rock falls. Signs are erected warning holiday makers at the caravan park of unstable cliffs. The various lengths of concrete apron and concrete/brick walls are in poor condition and the whole bay would benefit from targeted maintenance.

- **Magdalene Fields** - The cliffs continue to be susceptible to local and occasional slumping in the upper soft material. Previous slumps have cut the cliff top back to the footpath in places at the Golf Course, with the path being relocated away from the edge.

- **Berwick and the River Tweed** - The Berwick Pier underwent substantial refurbishment during 2012/13, including repair of a significant void midway along the leeward face and replacement of the concrete deck. These repairs are holding well. The masonry seawall along Pier Road remains in fair condition overall, but as previously reported there is outflanking and localised collapse of the wall at its western end. The historic masonry wall of Fisher's Fort remains in relatively good condition although some local areas would benefit from re-pointing.

- **South bank of the Tweed** - The Reno mattresses on the south bank of the Tweed remain in poor condition. Before substantial repairs are made to this structure it would be recommended that the need for defence here is reviewed.

- **Beal** – There has been a failure in the flood embankment between the new sluice and the main Beal Sluice. This was highlighted in 2016 but no repair has been made at the time of the 2018 inspection.

- **Waren Mill** – At the time of the 2018 inspection there were works ongoing to develop the area behind the wall in poor condition.

- **Budle Bay** – The jetty at Heather Cottages might be considered a public safety hazard, but has not significantly altered in condition since the 2016 inspection. There has been a change in patterns of accretion and erosion linked to the entrance to the Bay, with continued erosion of the dunes to the south of the jetty and accretion to the north.

- **Holy Island** – The repairs made to the highway and the harbour pier returned both to good condition in 2016. The repairs remain effective and in good condition to the present day.

- **Seahouses Harbour** – There have been a number of ad-hoc repairs since the 2016 inspection, including repairs to a large void in the roundhead of the north pier. Whilst repairs are generally effective, several notable defects remain and some of these have deteriorated further in the past 2 years. Some previous repairs have now failed, such as the encasement works along the inner face of the north pier. Scour holes and undermining of the head of Seahouses main pier were visible during the 2018 survey. These have been reported previously, although there does not appear to have been any change since 2016. Proposed capital works are strongly recommended.

- **Beadnell** – The sea wall (Nacker's Hole) and stone-filled mattresses (Lady's Hole) at Beadnell North have both deteriorated since the previous inspections and capital works are recommended. It was noted that a length of gabion baskets has been replaced with the repairs in good condition. The condition of the harbour is poor in places, with abrasion, undermining and scour evident. In places,

this has led to the loss of blockwork from the structures. The access steps and grouted stone revetment to the north of the harbour is severely undermined and at risk of collapse.

- **Newton Point** – The localised erosion in the coastal slope at Newton Point headland noted during the 2016 inspection was found to have stabilised. Although some additional areas of increased activity were noted, particularly at the seaward end of the headland. The National Trust have fenced off a small area adjacent to the fence line.

- **Boulmer** – The rock revetment constructed in 2016 has improved the condition of the defences at Boulmer village.

- **River Aln** – The wall to the riverbank footpath, between the B1338 and the spit of land) has undergone substantial repair work and is not in good condition.

- **Church Hill, Alnmouth** – The low masonry wall around the foot of Church Hill had collapsed along a length of approximately 10m prior to the 2016 inspection. Concerningly the collapsed section has not been repaired and adjacent sections of wall remain in very poor condition. Work should be undertaken to avoid a larger scale collapse that potentially could lead to slumping of Church Hill. Further around Church Hill (into the estuary) another short section of lower wall has collapsed. The whole end-section of the wall needs rebuilding.

- **Warkworth Harbour** – North Pier remains in a collapsed section at its seaward end as was reported in 2016. It is understood that this crack and rotation occurred in the end of the structure soon after its construction. Although not formally defined as a coastal defence asset, the North Jetty is in a largely dilapidated condition.

- **Amble** - The low vegetated bank that was eroding at the intersection of South Jetty and Little Shore Wave Basin had previously been protected, to a degree, by rock armour and tipped construction waste. Recently the area has been improved with the construction of some beach huts and the provision of more formalised defence in the form of gabion baskets and fronting rock armour. The area looks in good condition and is now much improved, however it was noted in 2018 that some of the gabion baskets were being outflanked.

- **Amble** - The South Jetty remains in similar condition to 2016. The Jetty is heavily abraded, most notably along the base, at the access steps to the lighthouse and at the junction with the South Pier. The poor condition of the concrete seawall along Bay View road within Little Shore Wave Basin continues to worsen, with horizontal cold joints and vertical cracking, toe undermining, missing sections of coping, corroded hand railing and voids in the access ramp. Safety issues should be addressed urgently and capital improvement works should follow when funding is secured. Repairs have been made in 2018 to the junction between the South Pier and South Jetty, these comprised of mass concrete and concrete bagwork infilling of voids and an encasement of the north-eastern face of the pier.

- **Hauxley** - The outfall of Hauxley Nature Reserve, at the northern end of Druridge Bay, has previously been reported as being in poor condition, with concrete blocks placed to the north of the outfall to shelter the structure also showing signs of movement and cracking. Since the previous inspections, the Northumberland Wildlife Trust has 'daylighted' the majority of the drainage channel (although seaward parts of the structure and the adjacent concrete blocks remain on the beach), creating a more natural aesthetic in line with the recommendations of the *Druridge Bay Adaptation Study*. The drainage from the reserve now occurs along a natural open channel and then alongside the remnant outfall structure, across gravel, cobbles and boulders. It is understood that ultimately the remnant structural sections will be removed. The channel remains in similar condition to 2016 with the remnant outfall structure still in situ.

- **Druridge Bay** – There is ongoing erosion immediately south of the terminal end of the rock revetment adjacent to the outfall of Ladyburn Lake. There is also one section of collapsed outfall pipe in the bay.

- **Cresswell** - The cliffs fronting the Golden Sands Holiday Park, just north of Snab Point, have previously been subject to slippage, cutting the cliff top right back to the coast road. At this location, the gabions at the cliff toe are now almost entirely obsolete. It is likely that further recession at this point will occur, thus affecting the coast road.

- **Blyth South Beach** – The whole frontage suffered notable storm damage in the March 2018 storms resulting in draw-down of beach sand, lowering beach levels and causing dune face erosion in the central bay. However, there are already signs of recovery throughout the bay in terms of accreting upper beach levels and this is most prevalent in the south of the bay, where a notably steep sand berm has accumulated, forming a very distinct break of slope. This is also apparent in the central bay, but the berm is much lower and narrower at present. However, the low beach levels remain along the mid and lower beach sections, with considerable lag deposits of cobbles and boulders and in places concrete rubble or anti-tank blocks that usually are fully or substantially buried. The failing gabions to the north of Beachway require replacement.

- **Seaton Sluice** – A large sand bar has formed at the mouth of the harbour and requires clearing. The failed seaward section of the slipway within the inner harbour remains unrepaired.

3. Condition Assessment

3.1 Scottish Border to Berwick-on-Tweed Pier (MU 1)

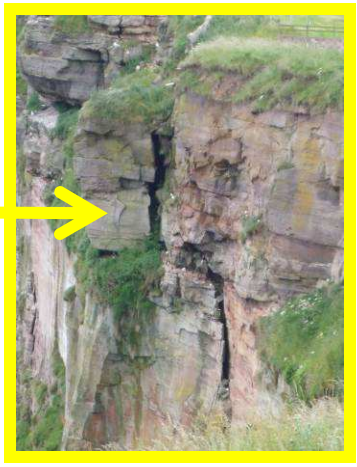
This management unit is approximately 7km in length and extends from the Scottish Border in the north to the north side of the Tweed Estuary at Berwick-on-Tweed.

This frontage includes approximately 19 assets, comprising mostly natural assets being steep and high exposed rock cliffs with occasional man-made defences.

Inspection the frontage between the Scottish Border and Marshall Meadows Point is limited because the face of the cliff cannot easily be viewed. However, the cliffs along this length appear stable.

The cliffs at Marshall Meadows Bay are fractured in places adjacent to the caravan park but have been in this condition for some time. Indeed, fulmars were nesting in the cliffs above one heavily fractured area, indicating it remains stable. At the time of the inspections, no recent movement was observed in terms of either rock falls in the harder rock base or slumping in the overlying softer material, although both processes remain the characteristic behaviour of these cliffs.

Fractured cliffs at Marshall Meadows Bay (/0601C02) - photo from 2016 due to sea fret in 2018



Fractured cliffs at Marshall Meadows Bay (/0601C02)) - photo from 2016 due to sea fret in 2018

The cliffs along St John's Haven continue to appear highly stable as they are fronted by a wide rock platform. This rock platform narrows to the south and the occurrence of caves and arches increases. The arch of Needle's Eye remains a prominent feature along this stretch. The East Coast Main Line runs between Berwick and Edinburgh, close to the cliff top along this section.

Stable cliffs at St. John's Haven (/0601C04) - photo from 2016 due to sea fret in 2018

Needle's Eye (/0601C05) - photo from 2016 due to sea fret in 2018

The cliffs at the northern section of Magdalene Fields (along the agricultural land north of the golf course) have been affected by a local rock fall since the previous survey. There is cracking along a measurable section of footpath at the cliff top indicating a slump in the overlying softer material may occur in the future as a consequence of the rock fall. Elsewhere along this section, the cliffs continue to be susceptible to local and occasional slumping in the upper soft material, which was particularly observed at Brotherston's Hole, although these slips do not appear to have worsened since the last survey. Previous slumps have cut the cliff top back to the footpath in places at the Golf Course. In the harder rock base, there are numerous caves, fissures and rock overhangs.

Localised slumping at Brotherston's Hole (/0701C01)

Caves at base of cliffs (/0701C01)

Between Burgess' Cove and Sharpers' Head the hard rock base is highly fissured and areas of partial slumping have occurred in the overlying softer cliff material, cutting the cliff top back to the fence line in some locations. Adjacent to the access steps, there was evidence of a recent rock fall which has left a large overhanging section of cliff face that will ultimately fail. There is a concrete pavilion and access steps located at the centre of the bay which are in generally in poor condition with signs of abrasion around the waterline. It appears that some fronting brickwork has been lost since the last survey and that there is some undercutting of the Northumbrian Water sewage treatment works outfall pipe across the foreshore. Also, the handrailing on the access steps is corroded and the final support post has broken, making the railing loose.

Rock fall and residual overhang (/0701C02)

Concrete pavilion structure in fair/poor condition, missing brickwork from fronting wall (/0701C02)

South of Shapers' Head the cliffs continue to be characterised by large vertical fissures, caves along the base and local slumps in the overlaying softer material.

Green's Haven (also known as Fisherman's Haven) Breakwater remains in poor condition but there has been no significant further deterioration since the previous survey. The structure continues to show signs of heavy abrasion along most of its length with loss of the upper section of crest at two locations. During the inspections one adult with two children were observed walking along the breakwater crest, including across both heavily damaged sections. Ongoing horizontal cracking and spalling along much of the rest of its length is likely to lead to further damage of the crest. Whilst the structure is well founded on rock, this is being undercut. Although the structure is in poor condition it is still performing the function of retaining sand within the bay. There was even embryo dune vegetation growing in one area on the accumulated sand.

Green's Haven Breakwater remains in poor condition but still retains beach sand (/0701C04)

Adult and two children on breakwater crest in damaged section (/0701C04)

The steel, timber and concrete access steps at the root of the breakwater are generally in good condition. Despite there being two deep caves in the cliffs at the base of the steps, these appear to be stable with no change observed since the last inspection.

The cliffs around Green's Haven show fairly frequent activity in terms of slippages and there have also been occasional rock falls. Signs are erected warning holiday makers at the caravan park of unstable cliffs. One slippage, just to the north of the southern access steps, has left a length of fencing suspended in mid-air (unchanged since 2016), whilst the backing land has been fenced off to ensure that visitors stay well away from the cliff edge.

Past rock fall in cliffs at Green's Haven (/0701C05)

Slumping in cliffs at Greens' Haven (/0701C08)

Public warning signs on cliff top in Greens Bay

Various lengths of concrete apron and walls extending around the centre of the bay remain in poor condition and provide limited protection to the soft cliffs behind. One short section of wall in particular has outflanking due to slope slippages and the toe apron is actively breaking-up. Concrete access steps at the centre of the bay and the concrete steps at the south end of the bay remain in fair condition but the adjacent ramp at the southern steps is in poor condition and a void has been filled with rock and rubble, but requires further work.

The cliffs along the southern part of Magdalene Fields are actively slumping and the fence and footpath have been moved away from the edge in response.

Slumping cliffs along Magdalene Fields Golf Course (/0701C12)

Relocation of fencing and footpath due to slumping cliffs along Magdalene Fields (/0701C12)

At Meadow Haven, just north of the Berwick Pier, there is a wide foreshore known as Little Beach, backed by wide, stable and well vegetated dunes.

Sand dunes along Little Beach (/0701C13)

3.2 Berwick-on-Tweed Pier to Spittal (MU 2)

This management unit is approximately 5.5km in length and extends from the breakwater on the north side of the Tweed estuary to the southern extent of Spittal.

This frontage includes approximately 20 coastal defence assets, comprising mostly of man-made defences including sea walls, breakwaters and revetments along the foreshore of Berwick-on-Tweed and Spittal town.

The Berwick Pier underwent substantial refurbishment during 2012/13, including repair of a significant void midway along the leeward face and replacement of the concrete deck.

Berwick Pier in good overall condition following refurbishment in 2012/13 (/0701C14 & C15)

The new repairs remain in good condition, but some minor cracking, which does not seem to have worsened since the previous inspections, is evident in the older (inland section) deck. Vegetation growth is occurring in some of these cracks. In addition, some of the concrete render on the crest of the outer wave wall is spalling along the seaward sections and the older, inner section of this wave wall is heavily abraded on its landward face.

Older (inland) sections of cracked deck and abraded wave wall on Berwick Pier (/0701C14)

Repairs to deck and southern face of Berwick Pier (/0701C15)

There is an accumulation of gravel and cobbles at the root of Berwick Pier, which has become vegetated and indicates stability.

The masonry seawall along Pier Road remains in fair condition overall, with occasional minor cracking and frequent spalling of the concrete coping. However, as previously reported, there is outflanking and localised collapse of the wall at its western end, although this does not appear to have worsened since the previous inspection and appears to have changed little since first reported in 2004. An old cobble slipway which crosses an outfall pipe midway along the wall continues to deteriorate with blocks continuing to be displaced across the foreshore. The nearshore section of the outfall is encased in concrete which has cracked notably. A particularly large volume of seaweed was noted on the foreshore fronting Pier Road.

Local failed section of river slope revetment/wall (/0801C07)

Local failed section of slipway over foreshore outfall (/0801C07)

The historic masonry wall of Fisher's Fort remains in relatively good condition although some local areas would benefit from re-pointing. Previous repairs have been made at the junction of the wall and the roundhead. Where the wall has a toe apron several of the blocks in the apron are heavily abraded. There is one location where two stones have become recessed. The tidal flap valve in the wall is operational.

Berwick's historic town walls in good overall condition (/0801C06)

Abrasion to toe apron where present (/0801C06)

The short sections of masonry seawall (with concrete deck) fronting the properties at Gardo's Battery are in fair condition and where fronted by a rock revetment this remains in good condition with armour well packed. The timber slipway at this location is obsolete.

Rock revetment in good overall condition (/0801C04)

Wall in fair overall condition (/0801C05)

The Berwick quayside consist mostly of sheet piled walls, with a short masonry wall extending around the dock area. The steel piles, concrete capping beam, ladders and timber fenders are all in good condition. The masonry wall in the small dock is in fair condition with some blocks broken and abraded and a number of open joints evident that would benefit from re-pointing. There is one crack to the coping near The Chandlery and voids are appearing at the blockwork access steps to the small dock.

Steel sheet piled quay walls in good overall condition (/0801C03)

Masonry quay walls in dock area in fair overall condition with some open joints, cracks and abrasion (/0801C03)

Defence length 121AA901A0901/ C04 runs from the southern jetty at the entrance of the Berwick Dock through to the area of the Pier and IRB Station at Carr Rock. The defence comprises two sections, the first being a masonry revetment protecting land formerly occupied by sheds (removed between 2006 and 2008). This section has undergone previous repairs and is generally in fair condition.

The main section of defence, protecting the open grass area in front of Dock Road, comprises gabion (Reno- mattress) defence. Much of the exposed original square mess baskets have failed along the toe. A new upper layer of mattress was constructed by 2006. At the southern end of defence 901/ C04 a different type of mesh has been used (constructed by 2006), using a wrapped wire basket as opposed to a square welded mesh. This change in baskets has survived 10 years without major failure but is now showing local corrosion of the wire.

This continues to deteriorate. This defence seems unlikely to suffer catastrophic failure. However, the SMP2, calls into question the benefits associated with continued defence of this area. Before investing further repairs, the need for which in areas are becoming urgent, as a safety issue, the need for defence needs to be reviewed.

Masonry revetment 901c04 at northern end -2016.

No deterioration2018

901c04 severe damage 2018.

General view of 901c04 -2018.

Defence lengths 121AA901A0901/ C05, and C06 comprise a section of masonry / concrete wall linking through to the Spital Pier. Previous reports highlight the main risk being the condition of the masonry and gaps between masonry. These are old structures and can only really be assessed in term of change rather than in terms of immediate condition.

In both cases there has been little change and while both structures show significant gaps and cracking, neither structure appears to have deteriorated further.

901c05/06 in 2008 showing toe level and condition of masonry.

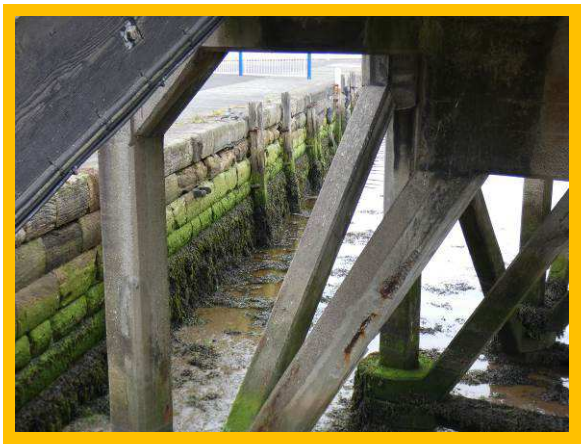
901c05/06 in 2018 showing some possible erosion but little overall change from 2008.

901c06 in 2016.

901c06 - 2016. Little change since 2008

The open piled timber jetty remains in a dilapidated condition. The section behind the RNLI section is in fair condition. There appears to be some spalling of the concrete support structure to the RNLI Station and this possibly need further investigation.

901c07 - 2016 spalling and repairs to RNLI .



901c07 – further spalling 2018.

The beach level to the eastern end of the main jetty section has reduced but only to the same extent as in 2008. The change along this section has been linked to behaviour of Sandstell Point (discussed later).

It has only been possible to provide a superficial inspection under the structure. This needs to be reviewed depending on the use of the area above.

901c07 high sand levels 2016.

901c07 – reduced beach levels 2018, exposing support to structure.

Beach levels continue to remain high to the face of the dunes through to Sandstell Point, with some repair of the erosion seen in 2016 over the central section. The northern end of the frontage remains healthy but has changed since 2016. The following images show the variation both by position and over time. These changes are linked to the change in the Sandstell Point bank across the mouth of the estuary and the associated movement of the channel. A comparison of this change based on 2015 and 2017 Lidar is shown following the images of the frontage. The SMP recommends that a buffer zone is recognised to allow for change.

901c08 - erosion in 2012.

901c08 – continued accretion 2018

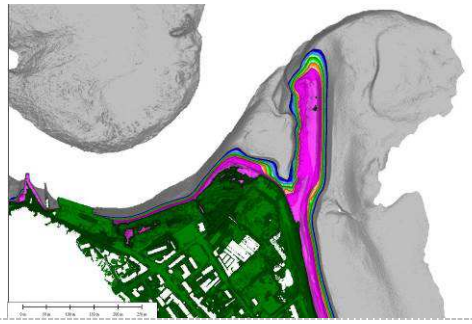
901c08 – cliffing and erosion 2016.

901c08 – regrowth 2018.

901c08 – fully developed front dune 2016.

901c08 – change but still healthy in 2018.

Change in Sandstell Point 2015 (lidar)



Change in Sandstell Point 2017 (lidar)

The changes in the Point influence changes across the head of Spittal Point as discussed below.

The beach levels around defence lengths 121AA901A0901/ C09 and C10 remain high and both defences remain in good condition.

901c09 – high beach levels 2018.

901c10 – high beach levels 2018.

Beach levels along the northern section of the open coast 121AA901A1001/ C01 are high and bury the groynes.

1001 c01 – Northern end, showing cliffing of beach around headland 2016.

1001 c01 – showing high beach levels 2018

1001 c01 – 2016 showing defence in advance of natural beach alignment.

1001 c01 – 2018 showing increased beach width with groynes buried.

Beach levels and hence the pressure on this frontage was identified in the SMP as being closely associated with the position and shape of the sand bar and channels at Sandstell Point. The monitoring certainly seems to confirm this. This suggests that the frontage (and the area to the south) is dependent on broader scale change rather than purely on-going trends of beach loss.

Beach levels remain relatively high over defence length 121AA901A1001/ C02 with no deterioration in the defence. Associated with changes further to the north the beach crest has realigned.

1001 c02 – high beach levels with good crest width 2016.

1001 c02 – some reduction in beach levels with realignment of beach shape 2018.

Beach levels to 121AA901A1001/ C03 remain relatively high but lower than in 2016. The crack or failed repair identified in 2014 remains in the same condition (this crack has remained the same since 2010). There is still loss of joint sealant but this does not appear to be detrimental to the performance of the wall.

1001 c03 – relatively high beach levels2016.

1001 c03 – slight reduction in beach levels at northern end 2018.

The beach levels in front of the rock revetment 121AA901A1001/ C04 are slightly less than 2016 but not as low as recorded in 2006

1001 c04/ 05 – low foreshore levels in 2006.

1001 c04/ 05 – higher beach levels2018.

There has been some additional slippage to the coastal slope at the southern end of the frontage. This, however, appears to be of the lower soils resting above the sloping rock and does not appear to affect the upper slope. There is no obvious deterioration of the retaining wall above the slippage area.

1001 c05 – coastal slope 2016.

1001 c05 – slight slippage 2018.

3.3 Spittal to Cheswick Sands (MU 3)

This management unit is approximately 6.5km in length and extends from the south extend of Spittal seawall in the north to Cheswick Sands in the south. This frontage includes approximately 8 coastal defence assets, comprising mostly high natural coastal cliffs through to the dune system at Cocklawburn / Salt Pan Rocks. The frontage, even down towards the Salt Pan Rocks dunes, is strongly controlled by a wide and high rock platform. Locally at Salt Pan the dunes are backed by boulder clay cliffs.

Between Spittal and Sea House farm (Scremerston) the high cliffs continue to exhibit slow erosion but with no assets at risk. Beach levels appear not to have changed and there is a small area of embryo dunes (shown on image) that has changed very little since 2016. Beach levels and coastal slope have changed little over 121AA901A1101/ C02 and C03. The old lime kiln in C02 continues to deteriorate slowly.

1101/c01 general view of cliffs and beach to north of Sea House 2016.

1101/c01 general view of cliffs and beach to north of Sea House 2018.

1101/c02 coastal slope and historic structure.

1101/c03 coastal slope

Sea House Farm is possibly founded to the underlying rock rather than being reliant on the eroding vegetated surface cover. However, the adjacent section to the north of the house is protected by a concrete wall, which is cracked at its base and shows evidence of water weeping through the crack. The land owner should be made aware of the risks.

There is no obvious deterioration in the coastal slope.

1101/c04 Outfall and concrete slope protection, cracked and weeping water 2016.

1101/c04 Outfall and concrete slope protection, cracked and weeping water 2018.

Further south of Sea House Farm, the shoreline reverts to a generally hard rock basal cliff with varying thickness of surface deposits. Some sections continue erode but where the road comes down to the Cocklawburn beach the cliff remain relatively stable.

1101/c05 Critical section of frontage closest to road 2016

1101/c05 Critical section of frontage closest to road 2018.

There is little evidence of significant erosion along the dune frontages 121AA901A1201 / C01, C02 and C03 since 2016. There is continued evidence of long term erosion. Beach levels tend to be slightly lower (2018) but in areas there appears to be new dune growth the toe of the dunes.

1202/c01 northern end 2016

1202/c01 northern end 2018

1201/c01 south of Far Skerr. 2008

1201/c01 south of Far Skerr 2018.

1201/C02 Cheswick Rocks 2008

1201/C02 Cheswick Rocks 2016

3.4 Cheswick Sands to Bamburgh Moor (MU 4)

This management unit is approximately 29.5km in length and extends from Cheswick Sands in the north to Bamburgh Moor on the northern outskirts of Bamburgh town in the south and encompasses the Lindisfarne National Nature Reserve. The unit is broken down into four different frontages.

Cheswick and Goswick to Beal Point

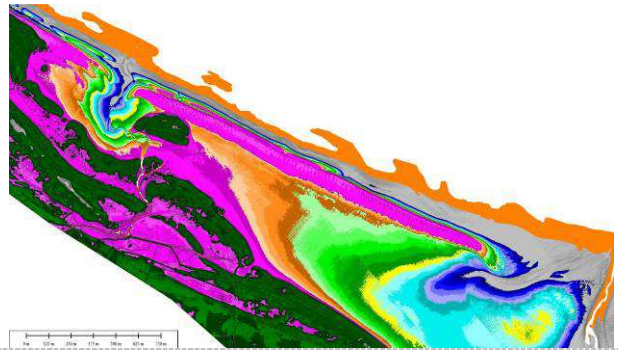
This frontage includes the major dune system running as a series of dune ridges through to the northern section of the sand/mud flats lying behind Holy Island.

To the northern end of this area the dunes continue erode slowly, cutting back to crest of dune ridge but maintain slope and vegetation.

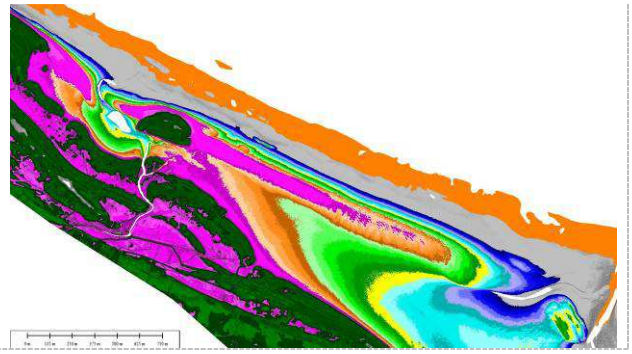
1201/ C02, C03 – 2006 showing erosion but dune system further forward than present day

1201/ C02, C03 – 2018 showing set back of frontage but some re-vegetation.

The inspection in 2014 highlighted some erosion over the central area of this frontage (around the entrance channel to the North Low and further south around the Beachcomber access point). It is recognised that it is quite difficult to directly compare sections over this relatively featureless zone of the shoreline and a comparison has been made of Lidar 2015 and 2017.



1301/C01 – 2015



1301/ C01, 2017

While there are major changes in the position of the lower shore bar (tending to have been pushed back in line with the small island there tends to be some narrowing of the outlet of the North Low, with sediment feeding down from the north.

Overall, the indications appear to be one of accretion with the development of a higher beach and dune vegetation between the island dune and the main dune face of the North Low. Uncertainty over future development of this area in response to beach levels was highlighted in the SMP.

1301/C01 – general continued development of embryo dunes.

1301/ C01, development of low dunes south of the island

1301/C01 – North Low channel cutting through dune.

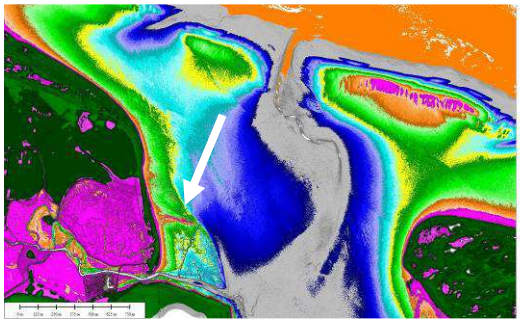
1301/ C01, North Low sluice

1301/C01 – 2018 at Beachcomber access showing continued dune development.

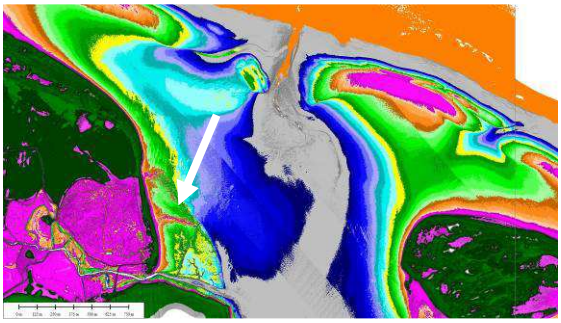
1301/ C01, 2018 at Beachcomber access looking south.

To the south of the Beachcomber access the dunes continued to develop with little evidence of erosion. As the shoreline swings, around towards the South Low channel the area to the north of the channel continues to convert to saltmarsh. This seems strongly influenced by the changes around low water, typically 1 km seaward. This is shown in the comparison between the 2009 and 2017 Lidar for the area.

The Lidar also picks a distinct cross shore ridge (arrowed below). In this year's inspection, this ridge has become far more noticeable, tending to develop as a dune. To the south of this ridge the salt marsh has been developing and the vegetation has changed such that the area is now low scrub, cut through by deep creeks.



1401/C31 – 2009 lidar



1401/ C31, 2017 lidar

1401/C31 – grass flats with ridge in background.

1401/ C31, saltmarsh development

1401/C31 – channel development to South Low 2018.

1401/ C31, Bank failure to area of South Low.

The area behind the new sluice, constructed as part of the Northumberland 4shores project shows little change. Between the new sluice and the main Beal Sluice (121AA901A1401C01) there has been a bank failure. This was previously highlighted and poses a threat to the area beyond the main Beal Sluice. The bank needs to be reinstated.

There is minor damage / undercutting to edge bank protection either side of main Beal Sluice.

1401/C01 – undermining of edge protection.

1401/ C01, general view of entrance channel. .

The frontage between Beal Sluice and the Holy Island causeway remains generally healthy with good vegetation growth.

Beal to Elwick

From the landfall of the Holy Island causeway, near Beal, south to Fenham Burn, the shoreline is characterised by a good fronting width of saltmarsh and mud and sand flats. The marsh becomes narrower and patchier towards Fenham Mill, and again along the section between Lowmoor point and Tealhole Point, at the outfall of Fenham Burn. During the 2018 inspection it was noted that a small sandstone cliff north of Lowmoor Point showed signs of ongoing erosion activity. A number of small mudslips were noted and the toe of the cliff was observed to be undercut in several locations.

1401/C23 – wide vegetation looking from causeway.

1401/ C23, sparsely vegetated rocky foreshore looking north towards Fenham Mill.

1401/C23 – relatively wide vegetation around Lowmoor.

1401/ C23 Actively eroding sandstone escarpment along Common Slap

Generally, the marsh fronts a low earth bank to rising land behind and overall is in fair condition. Around Fenham Mill there are several localised defences including a timber retaining wall and an ad-hoc stone revetment fronting the Fenham Mill Cottages. Both defences are in poor condition and mostly covered with dense vegetation. The slipway which lies slightly to the south of the Mill Cottages remains in a poor condition with extensive cracking and spalling of concrete visible. The low masonry wall adjoining the Mill property is in good condition.

Towards Tealhole Pont there is some minor ongoing erosion and local piling up of rock has been undertaken to mitigate this.

1401/C23 – dense vegetation covering the local timber defence.

1401/ C23, Slipway in poor condition.

1401/C23 – local defence north of slipway.

1401/ C23, vegetation covering localised rock defence

Beyond the Fenham Burn the width of saltmarsh tends to reduce. There has been minor erosion in places and again, possibly some local piling of rocks to mitigate this.

1401/ C24 narrowing of marshland around Whitelee Letch

Elwick to Budle Bay

East of the bird hide at Elwick there is a flood embankment fronted by salt marsh. The embankment is protected by an asphalt and stone revetment which remains in in a good general condition despite being largely overgrown. As noted in previous inspections, locally there are some areas of the embankment in poor condition, due to the presence of voids and loose or missing stones. Despite this, the structure appears to continue to be effective in preventing sea flooding to a local low-lying bank of farmland across Ross. However, a few areas would benefit from routine maintenance by the local landowner to infill gaps in the stones.

1401C98 – generally fair but locally poor stone-revetted embankment.

1401C98 – Densely vegetated embankment.

Further along the frontage is a bracken-covered coastal slope leading to the Ross Point dunes. This remains mostly stable with some signs of erosion at the toe and historic blow-outs.

The dunes at Old Law remain in good condition following the 2018 inspection. The shallower landward side of the dunes is well vegetated, stable and fronted by a wide cobble berm. Two navigation beacons are present at Guile Point, one directly on the foreshore and the other on the dunes. Along the seaward face of the spit the dunes rise steeply from the beach, particularly around the northern tip, some evidence of localised erosional activity was observed during the 2018 inspection. An unvegetated embryo dune appears to have formed slightly to the north of Wide Open and this appears to be offering some protection to the dunes at their southern extent.

1401C99 – Some evidence of erosion to dune toe

1401C99 – Embryo dune fronting southern end

The dunes along Ross Back Sands appear very stable with continued signs of accretion and embryo dune growth. The fronting foreshore is wide and healthy. The dunes at Ross Links extend towards Budle Bay where a wide, sporadically vegetated intertidal plateau has developed. This transitions into saltmarsh and mudflats in the north of Budle Bay.

1401C06 – Wide healthy beach fronting well vegetated dunes

1401C06 – Embryo dunes exist among much of the asset length.

Various walls and grouted stone revetments, rip-rap and concrete retaining walls extend around Links End towards the sluice at Ross Low channel. Generally, the assets remain in fair to good condition with some notable areas of concern being the extensive cracking and lifting to the grouted stone revetments and localised cracking to concrete retaining walls.

1401C29 – Extensive damage to western end of revetment.

1401C14 – Concrete wall in fair condition. Timber toe erosion protection in poor condition.

The sluice at Ross Low channel continues to be in a good state of repair with capping beams, hand-railings and ladders also in good condition. The steel sheet pile walls on either side of the structure show some signs of corrosion, due to the difficulty in accessing the sheet piles it is recommended that a more detailed inspection is undertaken and the level of corrosion monitored. It may be necessary to retreat the piles as was done in 2008.

1401C14 – Concrete block revetment and outfall in good condition

1401C16 – Good condition sluice at Ross Low channel

Along the Chesterhill Slakes in Budle Bay the salt marsh remains generally in a healthy condition, with salt pans evident in several locations, with little change evident since the previous inspection. Whilst marsh edge erosion was reported in the 2012 inspections, it has not been evident since then with a healthy marsh edge. In some places, there is Chord Grass (*Spartina*) growth on the foreshore.

1401C21 – Heavily overgrown embankment to rear of saltmarsh

1401C21 – Salt marsh in healthy condition in Budle Bay

Budle Bay to Bamburgh Moor

At Waren Mill, the wall fronting the private land at the head of the bay is still in poor condition. However, the area is now being developed. The revetment fronting the B1342 appears in fair condition although somewhat overgrown and in need of repointing.

1501/C02 – poor condition of masonry wall but development occurring behind.

1501/C04 – gaps and local movement of stone to revetment.

The old Jetty at Heather Cottages within section 121AA901A1501C06 remains in poor condition but has not significantly deteriorated.

There appears to have been a shift in the general alignment of the channel within Budle Bay, linked to changes at the entrance. The Old Jetty still seems to fix the position of the channel on the southern side of the bay.

To the south of the Jetty, the dunes continue to cut back, but without putting properties at risk. To the north of the Jetty, the beach has built forward.

1501/C06 – Partial collapse of northern wall to jetty

1501/C06 – south face and core of jetty

1501/C06 – 2008 major area of dune to south of jetty

1501/C06 – 2018 major area of erosion to south of jetty

1501/C06 – 2018 accretion north of Jetty

1501/C06 – 2018 entrance to Budle Bay.

There continues to be growth of the dune head to the north of Budle Point. The dunes between Budle Point and Harkness Point continue to show areas of erosion and more general accretion, with development of embryo dunes in some places. There has been a significant land slip at the crest of the coastal slope close to the lookout point and golf club. This continues but slowly. There is no evidence of erosion at the toe of the slope and the slip is considered to be due to ground water and slope instability.

1501/C07 – areas of erosion and accretion

1501/C07 – slow continued slippage at crest of coastal slope.

3.5 Holy Island (MU 5)

This management unit is approximately 15.5km in length and extends around the entire shoreline of Holy Island. This frontage includes approximately 25 coastal defence assets, comprising mostly low natural cliffs and sand dunes. The inspection proceeded anti-clockwise around the island, commencing from Chare Ends adjacent to the informal car park, where the road turns and rises up onto the main island.

The damage to the causeway road at Chare Ends reported during the 2012 and 2014 inspections was repaired and resurfaced prior to the 2016 inspections. The repairs are holding well.

Localised erosion damage to road at Chare Ends in 2014 (4901c01)

Repaired road surface and kerb at Chare Ends in 2016 (4901c01)

Repaired road surface and kerb at Chare Ends in 2016 (4901c01)

The dunes extending south from the causeway road towards The Basin are well vegetated and remain stable. There is evidence of small-scale sand accretion and embryo vegetation growth at their toe. Where salt marsh fronts the dunes, it is in healthy condition.

At The Basin, the dunes make way to gentle coastal slopes and then low cliffs which are fronted by a gravel and cobble ridge. The low cliffs are locally active with several lengths bare of vegetation and occasional sumps. However, this does not appear to have worsened since the previous inspections.

Stable dunes approaching The Basin (/4901c03).

Low cliffs at The Basin (/4901c02).

South of The Basin the cliffs increase in height and whilst mostly stable are eroding in places. At the small bay sheltered by St Cuthbert's Isle, the narrow sandy beach is backed by a cobble berm. No noticeable change is apparent to the beach which appears stable since the 2008 inspection, and erosion of the low grass bank which was evident in some previous inspections was not apparent at the time of the 2016 or 2018 inspections.

Eroding section of higher cliff (/4901c03).

Beach in shelter of St. Cuthbert's Isle (/4901c04).

Following a short section of hard rock cliff, there is a shingle beach at the boat houses west of the pedestrian footpath to Heugh headland. This beach appears stable and previously reported problems in 2010 and 2012 regarding poor condition at the toe of the low masonry wall which extends to the south were not observed.

The highly fissured hard rock outcrop of Steel End provides natural sheltering to the harbour and bay to the north. Following successive inspections from 2008 onwards which reported several defects with the harbour pier, a major repair of the structure was undertaken prior to the 2016 inspections, with concrete encasement of upper sections. This has improved the condition of the pier to good and the repairs remain effective. There is, however, one very small area of spalling towards the landward end of the outer-facing wall. Problems previously noted, associated with undermining were not observed due to high beach levels at the toe.

Improvement works to harbour pier (/4901c09)

Improvement works to harbour pier (/4901c09)

Within the harbour bay (The Ouse), the sand and gravel beach appears stable with little change evident over a number of recent inspections. Previously reported erosion and cliffing of the soft earth embankment around the north side of the bay adjacent to the path out to Lindisfarne Castle was barely noticeable.

Beach within Harbour bay (The Ouse) remains sable (4901c10).

Slopes around the north side of the bay (4901c11).

At Lindisfarne Castle, damage to the hexagonal netting and stone fill placed to stabilise the soft material covering the harder rock base below the castle does appear to have worsened, with some totally empty hexagons. However, there does not appear to have been any further notable slumping in the soft earth slopes.

Hexagonal erosion control matting below castle in fair condition but locally with absent rocks (/4901c12).

Cliff below castle east of erosion matting (/4901c12).

The shingle ness at Castle Point remains in a healthy condition over almost all if its extent, but there is minor erosion and cliffing of the grassed low cliffs on the north face where it nears the path.

Shingle ness at Castle Point remains in a healthy condition (/4901c014)

Erosion and undermining of grassed shingle on north side of ness (4901c14).

The low coastal slopes between Castle Point and Emmanuel Head are fronted by wide and high shingle berms and are relatively stable and in good condition. There is some evidence of shingle 'washover' during storms in the form of washover fans deposited above the crest. North of Brides Hole, cliffs become higher and these continue to show ongoing intermittent erosion and slumps. The cliff toe is mostly protected by a cobble berm, with some sections fronted by low rock platform.

Relatively stable shingle bay near Sheldrake Pool with washover fans (/5001c03)

Erosion of soft cliffs remains an ongoing process (/5001c04).

In Sandham Bay, west of Emmanuel Head, the dunes to the west and east are stable where they are protected by the cobble spit and rocky reefs of Castle Head Rocks. However, active erosion to the seaward face of higher dunes in the centre of the bay continues.

View of Sandham Bay from Emanuel Head (/5001c06).

Eroding dunes in centre of Sandham Bay (/5001c06).

There is continued evidence of local rockfalls along with erosion and cliffing of the softer material in the cliffs at Nessend. However, this is localised and does not represent significant concern.

Locally active cliffs at Nessend (/5001c07).

Locally active cliffs at Nessend (/5001c07).

The dunes at The Links, in the shelter of Back Skerrs rocks appear very stable, with minimal change since the walk over inspections began in 2004. The dunes between Back Skerrs and the causeway road to the mainland are well vegetated with only localised evidence of erosion from previous storms. The very wide and flat sandy beach appears stable or accreting. Between where the causeway meets the island and Chare End where the road bends away towards the main tourist car park, the road is protected by a width of salt marsh and wide sand flats to the south and the dunes and wide beach to the north.

Well vegetated dunes at Snook Point (/5001c10).

Causeway road and salt marsh (/5001c011).

3.6 Bamburgh Moor to Seahouses (MU 6)

This management unit is approximately 8km in length and extends from Bamburgh Moor on the northern outskirts of Bamburgh town to the southern extent of Seahouses in the south. This frontage includes approximately 25 coastal defence assets, comprising mostly low coastal slopes and sand dunes in the north and the man-made defences and Harbour at Seahouses.

Despite relatively low foreshore levels, evidenced by exposure of the rock platform, there has been little evidence of significant erosion of the dune /coastal slope north of Bamburgh compared to 2016.

General view showing exposed rock platform north of Bamburgh 2018.

Embryo dune growth evident just north of castle and along main dune frontage 1601/ C05. 2018

Along much of the frontage down to Islestone Rocks (121AA901A1601C05) there has been recent embryo dune growth. There is slight cliffing of the dune local to Islestone Rocks.

"The Dice" provide a useful reference point for this frontage and as shown below highlight: the steep cliffing in 2006, the slight growth of the dune immediately to the Dice in 2008, slight improvement generally to the dunes in 2010 and the significant growth of embryo dunes behind and to the south of the Dice in 2016. This has continued in 2018.

View of the dune at "the Dice" 2006

View of the dunes at "the Dice" 2008

View at “the Dice” 2010.

View at “the Dice” 2016, 1601/ C05

View at “the Dice” 2018.

Beyond Islestone Rocks, the dune systems remain relatively healthy with no assets at risk part from at Monks House 121AA901A1601/ CO3.

continued improvement in dune toe 1601/ C02.

Sand to upper rock platform and embryo dune growth between rock outcrop areas 1601/ C03

Some minor erosion around Monk's House but not significant risk 1601/C03

Locale erosion south of Monks house 1601/ C03

recent cliffing to St Aidan's dunes and subsequent of the upper beach growth 1601/C04. 2016

Continued minor erosion 1601/C04. 2018

The sea wall to the south of St Aidan's dunes along Seafield Road remains in good condition. As identified in the 2014 and 2016 inspections there is general separation of the coping and the upper section of the wall. However, there is no loss of coping nor displacement. While there is some outflanking to the northern end of the wall this has not significantly worsened since 2006. The slight erosion of the bank at the southern end has not significantly worsened.

Outflanking of northern end of wall 1701/C54 - 2006

Outflanking of northern end of wall 1701/C54 - 2018

The defences immediately to the north of Seahouses harbour (121AA901A1701C02 to C04) remain in fair condition. The northernmost of the Seahouses harbour walls (1701C02) has a section of its lower coping stone missing. This has been noted following previous inspections and it is recommended that it is repaired the prevent further damage to the wall. Other defects throughout this section include the ongoing loss of mortar from the masonry wall (1701C03) and spalling of the concrete blockwork beneath the outfall pipe protruding from the north end of 1701C04.

1701/C02 to 04 - 2006

Damage of lower coping 2018 (1701/C02)

1701/C03, requires repointing.

No significant damage (170104)

There has been no significant deterioration to the two concrete walls to the storage yard and outer parking area. There are, however significant cracks to wall 121AA901A1701C06, however these do not appear to have worsened significantly. Due to the risk of vehicle impact destabilising the damage sections this area should be monitored.

Harbour wall in good condition 1701/C05.

Old crack not noticeably worse 1701C06

There has possibly been some further flattening of the wave reduction rock feature. The need for any improvement should be reviewed against whether the structure still reduces wave impact.

Rock armour wave reduction 1701/C06 – C07

Old crack not noticeably worse 1701/C07

The outer the main north Pier does not appear to have worsened, except in one location towards low water. Here there has been further abrasion of an old developing hole.

Developing abrasion hole 1701/C07 2010

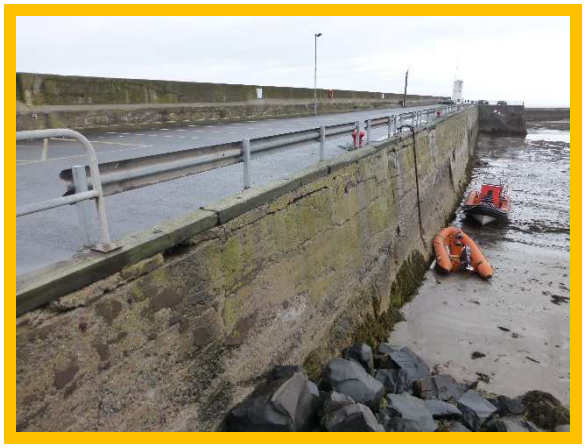
Increased depth of abrasion hole 1701/C07 2016

The 2014 report identified reports of undermining to the south-east corner of the stub to the north breakwater. This was noted as having worsened in 2016. During the 2018 inspection it was not clear whether or not the undermining had been repaired, scour holes were visible in some areas, however extensive marine vegetation growth around the pier head obstructed a clear view of the base of the structure. It is recommended that given the condition of the rest of the pier, an underwater dive survey is undertaken to further assess the condition of the wall.

Pier head 1701/C08 (taken 2016)

Extensive abrasion to inner face of North Breakwater. 1701/C09

South East corner to stub 1701/C09



Damage to coping at western end of pier 1701/C09

It was noted during the 2018 inspection that there was extensive abrasion along the inner face of the North Breakwater, along with further damage to the coping stone, particularly at the western end.

The rock armour revetment which lies along the inner face of the Inner Pier remains in good condition. The smaller stones which have been placed along the crest of the revetment remain in position, however some movement was evidenced by a slight drop in the crest level.

Inner face of the Inner Pier 1701/C10

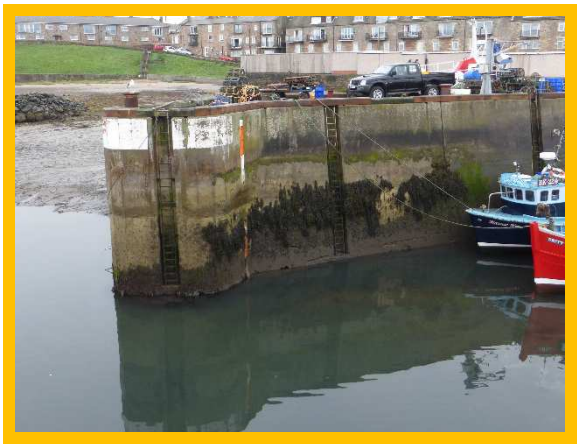
Inner face to North Pier 1701/C11

No signs of deterioration 1701/C12

Undercutting of slipway 1701/C12

The masonry wall (1701C02) to the west of the inner pier remains in fair condition, with some open joints, loss of mortar and some localised damage to blockwork. Although marine vegetation and silt obscures much of the lower reaches of the wall, undercutting of the end of the slipway was noted during the 2018 inspection.

It was reported in 2014 that there might be some undermining to the head of the Main Pier, although no sign of movement was observed in 2016. During the 2018 inspection several scour holes were visible around the base of the roundhead and inner face. It is recommended that a dive survey is undertaken to establish the extent of these voids, particularly as marine vegetation may obscure further damage. The outer face of the Main Pier comprises of a historic masonry wall with adjoining slipway. It was not possible to inspect the full length of the outer face due to the presence of several large fishing vessels, however the wall was noted as having localised areas of missing mortar and one full height (toe to deck) open joint / crack. It is recommended that this is monitored as it may indicate some lateral movement of the wall.



Scour holes and possible undermining around low water mark 1701/C14

Scour hole visible along inner face 1701/C14

Possible signs of undermining around nose 1701/C14

Full height cracking and loss of mortar to outer face 1701/C14

As reported in 2016 there was little or no significant change to the walls to the south of the main harbour area during the 2018 inspection and the walls remain in good condition. It was worth noting that the seaward facing corner of the concrete access steps to the north end of 1701C16 was undercut.

1701/C15 Good condition

1701/C16 Low beach levels have exposed toe of steps, wall remains in good condition,

1701/C17 Good condition

1701/C18 Wall and slope in good condition

The concrete walls and slope fronting Crewe Street remain in good condition with no obvious signs of cracking or deterioration. The slope remains well vegetated and stable. Joint sealant which has been recently replaced on these assets remains in good condition.

1701/C19 minor erosion above rock

1701/C19 ridge to back of harbour.

To the south of the concrete recurve wall lies a tipped rubble slope with a vegetated upper slope to its rear. During the 2018 inspection the upper slope was noted as being locally active, particularly at its northern end, in order to improve the effectiveness of the defence it is recommended that the tipped rubble slope is reprofiled in order to better defend the properties and caravan site to its rear.

The Outer Breakwater was reinforced and encased in 2008. This structure has suffered no significant damage and remains in good condition. It was not possible to access the seaward end of the breakwater (1701C21) due to a security gate and warning sign. A general assessment of the condition of the inner face could be made from across the harbour, however due to the distance, tide and extensive marine vegetation growth it was not possible to examine the toe of the structure.

1701/C20 No signs of damage

1701/C21 Good condition, some cracking and loss of mortar in original deck - no significant damage.

3.7 Seahouses to Beadnell (MU 7)

This management unit is approximately 2km in length and extends from the southern extent of Seahouses in the north to the northern extent of Beadnell town in the south. This frontage includes approximately 2 coastal defence assets, comprising low coastal slopes and sand dunes.

To the south of Seahouses 120AA901A1701C22 the continued erosion to the crest of the access ramp was noted as in previous inspections. Although this does not pose a significant risk at present, it is recommended that this is monitored and the possibility of a more formal defence explored. Further along the frontage there is the ongoing development of embryo dunes giving way to the slowly eroding cliffs around North Sunderland Point. Despite this, there does not seems to be an immediate significant risk.

Erosion to access ramp 1701/ C22

Embryo dunes within bay with slow erosion to cliffs to the south 1701/ C22

Beyond North Sunderland Point erosion continues to the thin bounder clay ridge, running along the sea ward face of the golf course to the Annstead Burn. Access along the ridge has been closed off and the ridge is no longer passible, with the eastern most of the gold club ponds at being at risk of tidal encroachment. There is an ongoing erosion and recovery cycle around the north bank of Annstead Burn. This poses no significant risk to the road or bridge.

1701/C23 Narrowing and retreat of ridge

1701/C23 limited erosion to golf course

Minor areas of erosion and some areas of toe dune development to Annstaed Burn.

1701/C23 Stable fully vegetated dunes to the south of Annstead Burn.

Further south along the main Annstead Dunes, there is some evidence of ongoing recent erosion but this has recovered to a degree with dune accretion and vegetation to the toe of the dunes. Areas of dunes most affected by erosion appear to be the access points and these should be monitored to ensure dunes remain healthy in these areas.

1701/C23 localised evidence of erosion at beach access points.

3.8 Beadnell to Links House Farm (MU 8)

This management unit is approximately 6.5km in length and extends from the Beadnell town in the north to Links House Farm in the south. This frontage includes approximately 32 coastal defence assets, comprising man-made defences and a harbour at Beadnell and a wide natural dune system to the south.

At Beadnell Haven there are private defences, consisting of dumped rock and rock armour revetments, which remain largely intact but do not provide a robust defence and would need improvement to adequately protect the properties immediately behind. In one area, a property frontage appears to have no defence, and the retreat of the small slope is now at risk of outflanking the defences on either side of it.

Recently placed rock armour fronting properties at Beadnell Haven. (/1701C24)

Retreat of slope, risk of out-flanking adjacent defences. (/1701C24)

The masonry and concrete seawalls to the north of Dell Point (Red Brae) are generally in fair condition with some cracks and loss of mortar evident, but the outflanking issues warrant a poor overall classification. The masonry blockwork wall is now being outflanked at both ends and at the southern end a large void has been exposed behind the wall and the small cliff to its rear. The soft earth cliffs around Dell Point (Red Brae) appear to be experiencing a consistent ongoing retreat, with the soft upper slope retreating at a faster rate, particularly at the most easterly point of the headland. The concrete seawall fronting the property at the north end of the main Beadnell North bay remains in good condition with only minor signs of cracking and rust staining. However, it should be noted that the wall is being outflanked particularly at its southern end, this should be monitored due to the proximity of the road in this location.

Masonry blockwork wall in poor condition. (/1701C25)

Fair classification of wall north of Dell Point, minor outflanking at southern end (/1701C27)

Ongoing erosion of cliffs around Dell Point (/1701C28)

Cracking of seawall at transition with undefended frontage (/1701C31)

The various masonry seawalls at Nacker's Hole remain generally in poor condition with significant abrasion and gaps between blocks. In one area, missing blocks has resulted in a sizable void. Undermining and voids are prevalent along much of the length, particularly beneath the concrete toe as shown below. There appears no overtopping damage since the previous repairs c2011. It is recommended that the improvement works proposed in the Beadnell North PAR (also covering Lady's Hole) be implemented as soon as funding becomes available to prevent failure of this seawall.

Undermining of seawall at Beadnell North (Nacker's Hole) (/1701C36)

Loss of mortar and damage to blockwork of seawall at Beadnell North (Nacker's Hole) (/1701C36)

Further south at Lady's Hole, the rock-filled mattresses remain in poor condition and in need of repair with burst baskets along the toe, with the worst of the damage occurring around the access points. As was recommended following the 2016 inspection, the improvement works proposed in the Beadnell North PAR (also covering Nacker's Hole) should be implemented as soon as funding becomes available to prevent failure of this seawall.

Failing mattresses at Beadnell North (Lady's Hole) (/1701C39)

Damage to gabion basket wall at (Lady's Hole) gabion wall (/1701C40)

New gabion basket wall in good condition. (/1701C41)

Concrete revetment in good condition, evidence of grout repairs at southern end (/1701C42)

Further south there are smaller rock-filled gabion baskets protecting several properties at the southern end of Lady's Hole. In past inspections, these have been observed to be splitting in places, although not to the same extent as the larger mattresses further north. During 2016 inspection a build-up of beach material (large cobbles) particularly towards the rear of the beach, largely buried the gabions meaning it was not possible to observe the damage previously noted. During the 2018 inspection the northernmost section of gabion baskets was largely buried, however at least one of the visible baskets appears to have split. The more southerly section of baskets appears to have been replaced since the last inspection and as such are in good condition.

The seawall fronting the southern property in Lady's Hole remains in good condition, with evidence of previous grout repairs being effective and the wall having a consistent profile with none of the concrete blocks visibly lifted.

The headland of Beadnell Point (Ebb's Nook) remains in a stable condition, however the ongoing retreat of the small cliffs fronting the properties on Harbour Road now poses the risk of encroachment. A stone retaining wall near the Lime Kilns appears stable however the ongoing loss of blocks and stability of the slope to its rear should be monitored. The rock revetment at the intersection of the coastline and the harbour also appears to be effective and stable with a consistent profile throughout.

Ongoing erosion to slopes fronting properties (/1701C44)

Damage to retaining wall adjacent lime kiln. Possible slumping of slope to rear (/1701C44)

Abrasion and undermining of Beadnell Harbour wall (outer face of eastern wall) (1701C47)

Open joints between blocks on Beadnell Harbour wall (inner face of eastern wall) (1701C51)

The structures at Beadnell Harbour are generally in fair to poor condition with masonry walls and concrete coping showing signs of abrasion and cracking. As was reported in 2016 there is ongoing evidence of toe undermining and several open joints and missing blockwork on both the outer and inner face of several of the structures. It is highly recommended that the undermining is monitored closely and a more detailed structural inspection is undertaken, possibly including a dive survey. Particularly as a recent breach required emergency repair works. The repairs to the deck appear to be effective, however further cracking of the deckslab and splash wall were noted during the 2018 inspection.

Undermining of Beadnell Harbour wall (inner face of southern wall) (1701C51)

Damage to splash wall (1701C51)

Missing block at toe of Beadnell Harbour wall (inner face of northern wall) (/1701C52)

Undermining of Beadnell Harbour wall (inner face of northern wall) (/1701C52)

At the northern end of Beadnell Bay, adjacent to the harbour, the poured concrete revetment protecting the access steps is in poor condition, is undercut and partially collapsed in places. Elsewhere within Beadnell Bay, the dunes appear to be suffering ongoing erosion, particularly around beach access points. Due to the high volume of visitors who visit this beach throughout the summer months it is recommended that the condition of the dunes is monitored over the coming winter to ensure healthy recovery.

Undermining and partial collapse of grouted stone revetment adjacent access steps. (/1701C53)

Sand accretion and embryonic vegetation growth at toe of dunes in Beadnell Bay (/1701C53)

Coastal asset 121AA901A1801C01 lies to the north of Brunton Burn / Long Nanny outfall and is comprised of a small steep cliff fronting a wide vegetated plateau. To the south of the watercourse outlet itself a shallow well vegetated marshland area is developing. The southern section Beadnell Bay is covered by 121AA901A1901C01 and comprises of large vegetated dunes fronted by a wide sandy beach. There are signs of ongoing erosion, seemingly exacerbated by public access, however generally dunes remain healthy and well vegetated with beach levels remaining reasonably high along the toe of the dunes. The rock headland to the south of the asset (Snook Point) appears to be stable with no signs of erosion and a reasonable accumulation of large beach material along its northern flank.

Ongoing erosion of the dunes to the north of Brunton Burn / Long Nanny (1801C01)

Larger dunes to the south of Brunton Burn / Long Nanny (1901C01)

3.9 Newton Link House to Dunstanburgh Castle (MU 9)

This management unit is approximately 6km in length and extends from Newton Links House in the north to Dunstanburgh Castle in the south. This frontage includes 6 coastal defence assets, comprising mostly natural dunes.

The vegetated dunes in Football Hole remain in good condition, with only very small areas of localised slumping and generally good sand accretion and embryonic vegetation growth at the toe. Around the headlands at either end of Football Hole larger beach material has accumulated offering some protection to the dunes and headland in this area.

Following the 2016 inspection it was reported that there had been some localised erosion of the coastal slope at Newton Point headland with the National Trust having to reposition the adjacent fenceline accordingly. In 2018 the slope appeared generally more stable and well vegetated throughout its entire length. However, several more active areas were visible, particularly at the seaward end. These should be monitored to ensure the footpath remains safe and passable.

Stable dunes in Football Hole (/1901C02)

Vegetated slopes to the south west of Newton Point headland (/2001C01)

The dunes within Newton Haven have been subject to quite severe erosion in the past. However, since 2014 the dunes have recovered with accreting sand levels and embryonic vegetation growth at the toe identified in 2016. This recovery has continued This means they are currently in fair condition once again, although remain susceptible to winter storm damage and the long-term sustainability of some of the bungalows must be questioned. The most vulnerable section is at the intersection of Newton Haven and Embleton Bay where the shore protrudes seawards in the lee of Embleton Out Carr rocks and where bungalows are close to the dune crest.

Previous dune damage followed by recovery at Newton Haven (/2001C03) 2016

Continued improvement at Newton Haven (/2001C03) 2018

There has been general if minor erosion around much of the dunes within Embleton Bay since 2016.

General erosion of dunes (/2001C03) 2018

Intermittent erosion and dune growth (/2001C03) 2018 (note change in position of Embleton Burn entrance).

The outflow of the Embleton Burn, as recorded in 2016, has changed its route to the sea yet again tending to flow out more directly to the sea. The dunes to the southern end of the bay are relatively stable and in good condition where protected by a beach composed of large cobbles.

The hard rock cliffs at Dunstanburgh Castle are highly stable, and there is no further significant rockfall.

Localised rock fall at Castle Point (/2001C05) 2016

Localised rock fall at Castle Point (/2001C05) 2018

3.10 Dunstanburgh Castle to Boulmer (MU 10)

This management unit is approximately 9.5km in length and extends from Dunstanburgh Castle in the north to Boulmer in the south. This frontage includes approximately 23 coastal defence assets, comprising a mix of man-made defences and a Harbour at Craster and natural defences.

The gentle coastal slopes from Dustanburgh Castle to Craster Harbour are well protected by a shingle/ boulder foreshore and are generally in good condition.

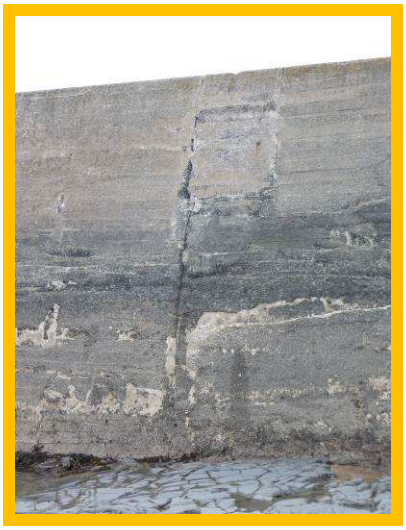
The low wall just north to the north of the harbor remains in fair condition, although there has been minor erosion around the outfall manhole.

Slight erosion around outfall (/2201C02)

Wall and start of Pier (/2201C02 / C03)

At Craster Harbour there has been relatively local change since the last inspection with all structures remaining in a fair condition. The landward and seaward faces of both north and south harbour arms show noticeable signs of heavy abrasion and spalling along the crest wall. This is not unexpected for a structure which was built in 1906.

There is some indication of worsening of a crack towards the end of the Northern Pier. This may only be spalling around existing repairs but should be recorded in future inspections.



Crack in north pier (/2201C03)

Inside face (crest wall) at crack (/2201C03)

Within the Harbour, there has been a new blockwork wall to the outfall by the slipway, creating a new boat storage area.

Slipway with slight voiding at toe (/2201/C06

New blockwork wall (/2201C06)

Previous concrete repairs in the south pier deck and renders to the inner facing wall are starting to break-up in places. This appears to be a continuing problem. The outer face of the South Pier has minor undermining at its toe but this is not considered serious. Not change to the head of the pier.

Continued spalling of repairs (/2201/C11)

Front face of Pier (/2201C11)

There is little indication of change to the frontages south of the Harbour, with not significant erosion since the 2016 survey. Localised slumping still occurs in places in the till, but this does not threaten the footpath or properties. There is no sign of change along the frontage covering the southern end of the village.

Inactive slopes with rock revetment at toe (/2201C13)

Slight cliffing within (/2201C14) but well vegetated slope to (/2201 C15)

The coastline south of Craster to Howick consists largely of hard rock slabs with vegetated upper slopes which are generally stable and in mostly good condition. There continues to be slow undercutting of the

cliffs south of Cullernose Point, where the road comes close to the cliff line. At present, there does not appear to be a major issue at this point.

The high masonry wall around The Bathing House near Howick is in good condition with no signs of undermining, abrasion or loss of mortar.

Slow undercutting (/2401C01)

Masonry wall at The Bathing House in good condition (/2401C02)

South of Rumbling Kern, at Howick Haven, there are several short sections of old masonry wall. These are slowly deteriorating but do not appear critical in terms of risk, apart from locally to the path.

Poor condition retaining wall (/2501C01) 2016

Poor condition retaining wall (/2501C01) 2018

The footbridge just to the north of Iron Scars has various defects associated with its piers and toe protection to the piers. While not apparently in immediate risk of failure the structure is in need of some maintenance. Beach levels within the area are lower than 2016.

Undermining and voiding in concrete at southern bridge abutment (/2501C01). Low beach levels

Detached toe beam at northern bridge abutment (/2501C01). Low beach levels

The bays of Sugar Sands and Howdiemont Sands remain relatively healthy sandy beaches backed by stable dunes, with mature and embryonic vegetation. There appears little change since 2016.

An outfall pipe extends across the rocky shore platform at Longhoughton Steel. The shore platform and hard rock cliffs at Longhoughton Steel and Boulmer Steel mean that the coastline is very stable.

3.11 Boulmer to Seaton Point (MU 11)

This management unit is approximately 2.5km in length and extends from Boulmer in the north to Seaton Point in the south. This frontage includes approximately 7 coastal defence assets, comprising mostly natural vegetated coastal slopes and rock revetment at Boulmer village.

At Boulmer village, a capital coast protection scheme was undertaken between April and May 2016 to address the problems of erosion identified in previous reports. Initially, the defences comprised two separate sections of stacked concrete blocks, one to the north of the village and one to the south.

Previous attempts to provide some defence in the central section were made on an *ad hoc* basis by local residents by tipping small boulders and reprofiling beach sand. However, in December 2013 the North Sea storm surge caused erosion of the frontage, threatening properties at both the northern and southern ends where the concrete blocks became outflanked.

In response to this, Northumberland Estates (in liaison with Northumberland County Council) received approval to place rock armourstone from nearby Howick Quarry as an emergency defence scheme to prevent loss of properties.

A scheme involving the placement of more rock armourstone as a defence toe to the coastal slope and backfilling and reprofiling with beach sand above the rock toe was constructed in May 2016. Since 2016 there has been little change in the defences.

Rock revetment toe to locally protect isolated property (/2601C01) – constructed May 2016, now vegetated above.

Stacked concrete blocks (original scheme) with rock revetment (2013 (emergency scheme) (/2601C02)

New rock revetment toe now well vegetated (/2601C03) – constructed May 2016

Stacked concrete blocks (original scheme) and rock revetment (emergency scheme) at southern end of Boulmer village (/2601C05)

To the south of the village is a length of low natural dunes. These remain in fair condition with some evidence of embryo dune development to the southern end.

Stable dunes around Boulmer Haven (/2601C06)

Local slumping to dunes around Seaton Point (/2601C07)

3.12 Seaton Point to Foxton Hall (MU 12)

This management unit is approximately 2km in length and extends from Seaton Point in the north to Marden Rocks near Foxton Hall in the south. This frontage includes 7 coastal defence assets, comprising a mix of man-made defences and natural coastal slopes. There are various bungalows to the cliffs to the northern end of the bay and the golf course and properties to the central and southern sections.

Where there is a rock platform around the northern part of the bay there are dunes and coastal slopes suffering moderate erosion, locally protected. There have been further cliff failures particularly at the northern end where the cliff is higher. There is little change since 2016 in the area running through to the concrete access steps.

Front face dune failure (/2601C07)

Local defence at toe of eroding cliffs (/2601C08)

The access steps to Foxton Bay are protected by rock armour. Erosion of the cliffs either side continues as noted in 2016 and previously. The beach levels have fallen marginally since 2016 exposing the last steps of the access. It appears that these steps were added at some time, suggesting that there has in the past been erosion which is continuing.

Just to the south of the access steps, the eroding cliffs are largely bare of vegetation on their face and sand martins are nesting in the upper sections of cliff. The ongoing erosion has caused the fence to become lost in places.

Rock armour around access steps in north of Foxton Bay (/2601C09)

Lower beach levels exposing additional toe. (/2601C09)

Over the main cliff frontage to the south of the access point, erosion continues. This has been a long-term problem, investigated in the past by the Golf Club. AS noted in 2016, erosion is now cutting back to the fencing.

Eroding cliff to golf course(/2701C01)

Cliff failure affecting a long section of fencing (/2701C01)

Beyond the small stream and valley running through the cliff the coastal slope remains well vegetated and the beach levels are marginally higher than in 2016.

At Foxton Hall, the eroding cliffs reduce to stable and well vegetated earth slopes that are protected by a shingle and cobble berm. In front of the properties there is localised timber breastwork. Remnants of an earlier concrete structure remain on the shore.

Stable and well vegetated slopes near Foxton Hall (/2701C02)

Timber breastwork fronting property (/2701C02)

The slight rise in beach levels since 2016 at the footpath access to the beach, provides some protection to the small 'breakwater' wall coming around the headland and extending seaward. The landward section is concrete and in fair condition. There has been no obvious deterioration.

3.13 Foxton Hall to Birling Carrs (MU 13)

This management unit is approximately 9.5km in length and extends from Marden Rock near Foxton Hall to Birling Carrs rocks in the south. This frontage includes 18 coastal defence assets, comprising a number of man-made defences at Alnmouth and other natural coastal slopes and dunes.

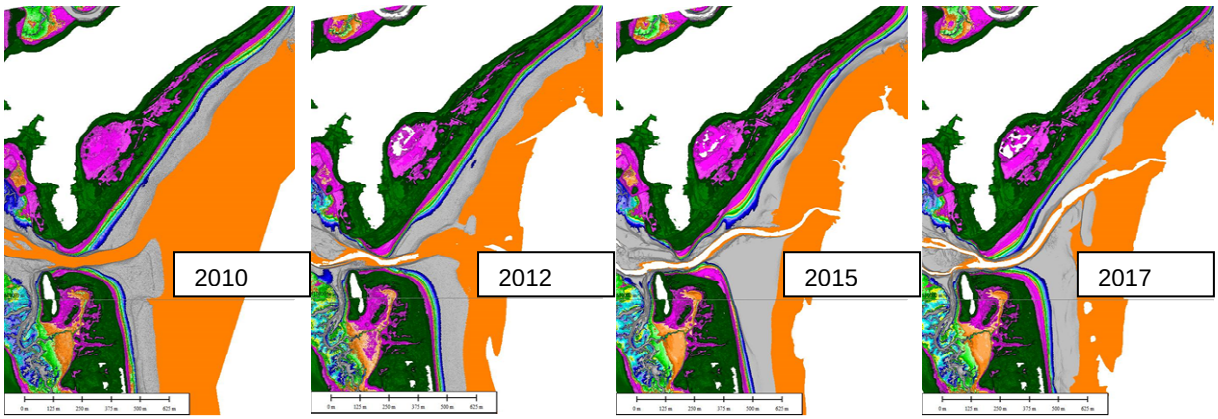
South of Foxton Hall, the backing slopes are well protected by foreshore boulders and rocky shore platform, although slumping has occurred locally, in general there is little evidence of on-going erosion. Further around the headland is an isolated, short and mostly buried timber groyne in fair condition, with a very short section of remnant timber from another groyne structure slightly further south.

Generally stable slope protected by rocky shore platform (/2701C04)

Isolated timber groyne (/2701C04)

Further around the Marden Rocks headland into the northern part of Alnmouth Bay a set of five further timber groynes is present. These groynes are at time exposed, while in other years they can be fully buried as noted in 2016. There are many gaps in the groynes and as noted previously some of the timbers are rotten. Overall the groyne field is in poor condition. There is, as in the past evidence of erosion around the heads of individual groynes.

In general, and related to the whole open coast frontage, there is known to be large changes in the movement of sediment influenced by and influencing the entrance to the Aln. This can be seen form a quick review of Lidar (2010, 2012, 2015 and 2017) shown below. This is critical in reviewing the condition and performance of individual sections of defences and reference is made to this subsequently.



Change in beach shape over the whole frontage.

Specifically, in relation to defence unit *2701C05 and 2701C06*, it may be seen beach width decreased between 2015 and 2017. During the inspection, there was evidence that the back face between groynes had suffered erosion but that there was some slight indication of recovery locally. There is a question

over the effectiveness of the groynes and, given the larger scale changes at work, this should be examined before any improvements to the groynes are made.

General exposure of timber groynes (/2701C05)

General erosion of back face with some evidence of local rebuilding by time of inspection 2018 (/2701C05)

Immediately south of the last groyne, concrete blocks placed at the toe of the low dunes has helped stabilise them initially, minor erosion was noted in 2016 and this generally continues through to 2018.

Relatively stable dunes but with some erosion. (/2701C06)

Slight recovery over the southern end of (/2701C06)

Further towards the mouth of the River Aln there has been substantial erosion in front of the car park *2701C07*, becoming progressively worse to the south and further south along *2701C08.*

Exposure and erosion to two rows of tank blocks (/2701C07)

Severe erosion extending beyond two rows of tank blocks (/2701C08)

Linked to the erosion to the north and to the general change in the behaviour of the frontage there has been a significant accretion at the mouth of the estuary. This appears to have resulted in deepening the entrance channel and has impacted on the northern end of the dunes further to the south across the estuary.

Growth at the estuary mouth (/2801C01)

Deepening of the estuary channel and impact to the south (/2901C01)

Moving beyond this area of beach growth, a masonry wall extends along the north face of the estuary. This appears to be in fair condition with no further signs of movement raised as a concern in 2016. The low masonry stone wall at the River Aln Boat Club which extends along Peases Park was built within the last decade. There is evidence that sections of the wall have been repointed but that there is still some evidence of loss or deterioration. Given the age of this wall this is potentially a concern.

Masonry wall with concrete and cobble toe apron (/2801C02)

Masonry wall at Boat Club with some signs of loss of pointing. (/2801C03)

The footpath along the estuary extends away from Peases Park and is protected by an older low masonry wall which has benefited from repointing and local rebuilding of a collapsed section (reported during the 2014 inspections). The wall is still missing some blocks and further repointing may be required. Salt marsh in front of this wall is in fair condition, although generally low and muddy in front of wall.

Masonry wall fronted by salt marsh (/2801C06)

Salt marsh (/2801C06)

A small spit of land comprised of natural ground extends into the estuary. This may exist over harder sediments as it causes the channel to meander around it. Along its northern face there is significant erosion.

Eroding face of raised area (/2801C09)

Eroding face of raised area (/2801C09

Between the spit of land and the B1338 road bridge over the River Aln, the wall to the riverbank footpath has undergone substantial repair. There are still areas where further pointing may be required in the future but this is not considered to have any urgency.

Footpath repaired wall (/2801C10)

Area of realignment (/2801C11)

On the south bank of the river, downstream of the B1338 road bridge, the flood embankment has been deliberately breached in one area as part of the Northumberland 4Shores project to create new inter-tidal habitat.

On the south bank of the river, downstream of the B1338 road bridge, the flood embankment has been deliberately breached in one area as part of the Northumberland 4Shores project to create new inter-tidal habitat. Saltmarsh and tidal flats in the estuary are in very healthy condition.

The low masonry wall around the bottom of Church Hill has collapsed along a length of approximately 10m with erosion of the land behind now occurring since the 2016 inspection. It appears that this situation is known, since the eroded area has now been fenced-off to prevent public access. It remains concerning that adjacent sections are also in very poor condition and work should be undertaken to avoid a larger scale collapse that potentially could lead to slumping of Church Hill. Further around Church Hill another short section of lower wall has collapsed. The whole end-section of the wall needs rebuilding. The channel of the River Aln adopts a central alignment, well away from either shore, at the present time.

Collapsed section of wall at Church Hill now with erosion of the land behind (/2801C13)

Defective section of masonry wall adjacent to collapsed section (/2801C13)

The high dunes along the south bank of the River Aln and further south towards Birling Carrs are in variable condition. There is slumping along dunes at the channel edge of the Aln estuary but some stable or accreting dunes further south as they extend round to the main coastal frontage. In contrast to the 2016 inspections, the dunes between the mouth of the Aln and Birling Carrs are relatively stable.

Eroding dunes at northern end of Birling Carrs frontage (/2901C01)

Recovering dunes (2901C01)

3.14 Northfield to Warkworth Harbour (MU 14)

This management unit is approximately 3km in length and extends from the caravan site at Northfield to the North Pier at Warkworth Harbour. This frontage includes only 1 coastal defence asset, comprising a natural defence of partially vegetated dunes.

The dunes immediately north of the rocky outcrop of Birling Carrs are currently relatively stable Previous rockfalls in the ledge and around the headland remain present. One small void in the cliff has been boarded-off with a warning sign to prohibit access.

In the northern section of the Warkworth Dunes, the dunes were generally stable with just one short length exhibiting slight cliffing at the toe. Further south of the access point from Warkworth Dunes car park, there is slumping evident on the face of the dunes along almost the entire length until around 0.5km from Warkworth North Pier, where they are stable and the beach is wide and healthy.

Along the whole section between the Aln and Warkworth Harbour, the upper beach has high levels, with steep profile and soft sand suggesting deposition is part of the post storm (March 2018) recovery. The lower beach remains at a low level, with flat profile and numerous sand ripples.

3.15 Warkworth Harbour and Amble (MU 15)

This management unit is approximately 3km in length and extends from the North Pier at Warkworth Harbour to Pan Point at Amble. This frontage includes 14 coastal defence assets, comprising mostly of the man-made structures at Warkworth Harbour.

The large armourstones along the exposed north face of the North Pier continue to appear in fair condition. The masonry blockwork at the seaward end is also in fair condition with no obvious gaps or cracks. The revetment on the south face of the Pier is also in fair condition as is the concrete deck. However, the seaward end of the North Pier remains in very poor condition with extensive abrasion of the concrete and a missing section of deck. The large crack (~1m wide) and rotation of the tip of the pier identified during the previous inspections is still a cause of concern although no further movement appears to have occurred. It is understood that this crack and rotation occurred in the end of the structure soon after its construction. Although not formally defined as a coastal defence asset, the North Jetty is in a largely dilapidated condition. Sand appears to have been placed and profiled over the revetment that extends between the landward ends of the North Pier and North Jetty.

Rock armourstones on north face of North Pier (/3001C01)

Rock armourstones on south face of North Pier (/3001C03)

Seaward end of North Pier in very poor condition (/3001C02)

Dilapidated North Jetty (no asset reference)

The concrete quay wall at the western end of Amble quayside (/3001C05) is generally in good condition with only minor localised cracks visible in the concrete deck. The masonry walls in the small dock basin (/3001C05 & C06) are generally in fair condition, but have several open joints between blocks which would benefit from repointing and one area of concrete spalling. At the eastern end of Amble quayside, the previously repaired Broomhill Quay (/3001C05) appears in good condition with no cracking or settlement of the deck or obvious defects in the face of the wall.

At the east end of Broomhill Quay the timber linkspan bridge erected 2008/09 is still in very good condition. Previously the low vegetated bank that was eroding at the intersection of South Jetty and Little Shore Wave Basin (/3001C07) had been protected, to a degree, by rock armour and tipped construction waste. In around 2015, the area was improved with the construction of some beach huts and the provision of more formalised defence in the form of gabion baskets and fronting rock armour. Although the area looks in good condition and is now much improved. There appears to be erosion around some of the gabions. The low masonry wall along the back of the enclosed bay is generally in good condition although one or two missing stones were noted. This wall is protected by a well vegetated area of healthy dunes/links (/3001C08 &09).

Quay wall in good overall condition (/3001C05)

New gabions and beach huts (/3001C07)

The poor condition of the concrete seawall along Bay View road (/3001C10) is similar to that recorded in 2016, with horizontal cold joints and vertical cracking, toe undermining, missing sections of coping, corroded hand railing and voids in the access ramp. Safety issues should be addressed urgently and capital improvement works should follow when funding is secured.

Sea wall along Bay View in poor overall condition (/3001C10)

Access ramp to Little Shore Wave Basin in poor condition (/3001C10)

The South Jetty is in good condition along the length enclosing the Little Shore Wave Basin (/3001C11), with no gaps in the timber decks, all hand railing intact and the steel sheet piling forming the half-tide barrier remaining effective. However, the seaward end, extending to the lighthouse (/3101C01), is very heavily abraded, most notably along the base, at the access steps to the lighthouse and at the junction with the South Pier.

South Jetty in good overall condition (/3001C11)

Poor condition at junction of South Pier and South Jetty (seaward face) (/3101C01)

The condition of the inner face of the South Pier (/3101C02) does not appear to have changed significantly since the last inspection and remains in fair condition along most of its length, although there is abrasion and cracking at the junction with the Bay View road seawall. It is known that there was significant damage at the junction between South Pier and South Jetty on the seaward face over the winter of 2017/18 and repairs were made earlier in 2018 by Balfour Beatty to Royal HaskoningDHV's design. The seaward face of the South Pier (/3101C02 & C03) is generally in fair condition with frequent horizontal cracking at the south end. The access steps at the south end of the Pier (/3101C03) are highly abraded and, as these provided the only access to the beach, present a public safety hazard. Although the concrete stub groyne is also highly abraded it still serves its current function to retain the rock armour on the north side.

There is no noticeable change in the condition of the concrete wall protecting Cliff House and Pan Point (/3101C04). This structure continues to show numerous cracks and cold joints throughout. Some cracks expose corroded and broken reinforcement bars, and toe undermining is still observed at the westerly end. [It was noted that at the time of the inspections Cliff House was undergoing extensive renovation works].

Heavily abraded access steps to foreshore (/3101C02)

Cracks in private seawall around Pan Point (/3101C04)

3.16 Amble to Beacon Hill (MU 16)

This management unit is approximately 2.5km in length and extends from Pan Point at Amble to Beacon Hill at High Hauxley in the south. This frontage includes 11 coastal defence assets, comprising a number of seawalls and low vegetated natural cliffs.

The seawall fronting Paddler's Park children's play area (/3101C05) to the south of Pan Point is generally in good to fair condition, despite being heavily stained. It shows no signs of undermining or movement. Some minor abrasion, localised cracks and spalling to the wave return wall and setback wall were noted. The previously damaged bitumen surfacing was replaced with a concrete decking a few years ago and this remains in very good condition with all joints well sealed.

Seawall in good condition despite rust-staining (/3101C05)

Promenade deck remains in very good condition following previous repairs (/3101C05)

The earth slopes and dunes along Amble Links (/3101C06) have previously been reported as showing signs of erosion, with cliffing along much of the frontage. However, at the time of the present inspections the earth slopes and dunes appeared generally stable with only local areas of very minor slumping (as in 2016). Rock armourstone has been placed at the centre of the embayment and adjacent to the seawall at the south end.

The concrete seawall at Island View headland (/3101C07; constructed in 2003) at the south end of the dunes is substantial and remains in good condition. Previous evidence of the onset of outflanking at both ends has been addressed by concrete tie-in structures.

Dunes and low slopes above rock ledge (/3101C06)

Substantial seawall in overall good condition (/3101C07)

The low vegetated cliffs and dunes north of Wellhaugh Point (/3101C08 & C09) were reported to be subject to erosion on some previous inspections but were stable at the time of the present inspection (as in 2016). The outfall structure remains in a dilapidated condition and previous recommendations for either removal or repair remain valid, although much of the structure was buried below high beach levels.

The rocky cliffed headland around Wellhaugh Point (/3101C11) is stable and protected by a wide rock shore platform. As the cliffs blend into low dunes, a rock ledge is present at the base and the frontage remains relatively stable. In one location, a set of timber steps has been provided to enable access to the foreshore through the low dunes. Only occasional and small-scale falls of friable rock are noted from the ledge. There is one short blockwork wall with rock armour, both in good condition.

Further to the south, the dunes (/3101C12) are generally stable initially except for a few discrete areas suffering from localised slumping in the face. In one of these areas the concrete rubble noted in the 2016 inspections on the dune crest appears to have fallen to the foreshore, where it now resides. With progression, south a cobble berm is notable at the upper beach, overlaying sand. This helps to stabilise these dunes further, although some local slumping in the front face continues and nearer towards the Beacon Hill headland the erosion worsens and peat layers and petrified tree stumps are visible due to low beach levels.

Cliffed headland around Wellhaugh Point (/3101C11)

Exposed peat layer at base of dunes (/3101C12)

At one location within these dunes is a rust-stained outfall with concrete encasement and rock armour side protection. At another location is a set of access steps with gabion protection and rock armour. However, because the rock is small and too light to remain stable on the upper beach it has become scattered around.

3.17 Beacon Hill to Cresswell (MU 17)

This management unit is approximately 11km in length and extends from Beacon Hill at High Hauxley in the north to Cresswell in the south. This frontage includes 23 coastal defence assets, comprising mostly of vegetated dunes and cliffs with occasional man-made defences.

Around Beacon Hill, the dunes are formed on top of a rock ledge base and initially are stable. However, where the rock base ends, south of Beacon Hill, the dunes become less stable and there is a section of informally dumped rock armour aimed at reducing risks to properties near the cliff top at Low Hauxley. This armour is loosely packed but appears in fair condition, although slippages remain ongoing in the cliffs behind.

There is a short length of low, undefended dune which has informal access routes through to backing properties. South of here (down to and beyond the beach access ramp) the coastal margin is protected by rock revetment in front of further properties. This is in good condition and towards its southern end forms an overlap to the subsequent concrete block revetment which extends further south. This has a number of large gaps between the blocks, with some rotational displacement apparent at the southern end. Erosion and cliffing of the low earth bank above the blocks continues, with ongoing dumping of construction waste.

Wide rock revetment in good condition (/3201C03)

Rotational displacement at southern end of concrete block revetment (/3201C04)

Immediately south of this revetment is an outfall in poor (but draining) condition. It is clearly evident that terminal erosion extends around 100m south of the end of the defended section, cutting the dunes back. The dunes merge into low cliffs sitting on top of a lower exposed peat layer. The peat has been subject to erosion, with toe slumping and formation of mini 'clifflets' in the face of the peat. Numerous sections reveal petrified timbers in the peat or on the foreshore, exposed by the March 2018 storms. Despite this, the upper beach is now healthy and the dunes/low cliffs are relatively stable. The telegraph pole which makes a distinctive marker at the crest of the low cliffs is now undercut around its concrete foundation base and will ultimately be lost to erosion. The slumping in the face of the dunes increases to the south, nearer the outfall of Hauxley Nature Reserve. This outfall was 'daylighted' by Northumberland Wildlife Trust (although seaward parts of the structure and the adjacent concrete blocks remain on the beach), creating a more natural aesthetic in line with the recommendations of the *Druridge Bay Adaptation Study*. The drainage from the reserve now occurs along a natural open channel and then alongside the remnant outfall structure, across gravel, cobbles and boulders. It is understood that ultimately the remnant structural sections will be removed. At the present time, the drainage is working well, and exposed geotextile seen in 2016 has been covered.

Landward view of newly 'daylighted' open channel section of outfall from Hauxley Nature Reserve (/3201C09)

Drainage occurring alongside of remnant outfall structure through gravel, cobbles and boulders (/3201C09)

The dunes along Togston Links continue to erode with partial cliffing of the exposed basal peat layer and slumping evident along most of the frontage. Sand martins are nesting in the upper sections and in places the erosion comes quite close to the Country Park's road.

The large structure at the outfall to Ladyburn Lake remains in good condition. The adjacent slipway belonging to the Hadston Scaurs Boat Club remains in fair condition, as does its protective rock revetment. However, the revetment continues to be actively outflanked at the northern end resulting in unravelling of the structure with some rocks displaced across the foreshore and severe cut-back terminal erosion of the low vegetated earth cliffs to the south. These cliffs are in poor condition with recent erosion impinging on the flanks of the road carriageway. In one location south of the outfall, a cylindrical concrete shaft is now visible at the cliff top due to erosion.

Erosion of low cliffs (/3201C14) at terminal end of rock revetment

Erosion of low cliffs exposing carriageway of access road (/3201C14)

Around 100m south of the rock revetment, the wide vegetated dunes become less active and are protected by a cobble berm along the toe. Where the berm ends the protection is provide instead by concrete blocks. Generally, throughout Druridge Bay, the dunes were stable and healthy at the time of the inspections and upper beach levels were notably high and wide. Towards the south of the beach two previously collapsed outfalls have been repaired. It is notable that several of the natural discharge outlets were running dry at the time of the inspections. At two outlet locations, dunes along the southern channel edge had minor cliffing at the toe. Along the northern channel edge at both locations the dunes were accreting.

Healthy dunes in Druridge Bay (/3201C15 & C16)

Previous dune toe erosion now recovering Druridge Bay (/3201C16)

Closer to Cresswell, sandstone emerges at the base of the dunes and at the shore platform, with the dunes remaining very stable and healthy. Immediately north of Cresswell the foreshore builds seaward in the form of a tombolo in the lee of The Scars outcrop. This frontage is protected initially by scattered concrete blocks (largely buried at the time of the inspections) and then by rock revetment. These structures are in fair condition. The revetment itself is fairly loosely packed and some stones have scattered, but it appears to remain effective.

3.18 Cresswell to Snab Point (MU 18)

This management unit is approximately 1km in length and extends from Cresswell in the north to Snab Point in the south. This frontage includes 5 coastal defence assets, comprising mostly low rock cliffs and vegetated slopes.

The revetment in the lee of the Scars blends into a low concrete wall built at the back of the rocky foreshore with rock armour continuing behind the wall to protect the vegetated earth cliffs. The wall is generally well founded on the rock foreshore and in fair condition with minor cracking and staining. However, there are local areas of more significant defects such as undermining, crest abrasion and break-up of some of the numerous previous patch repairs. The earth face along the upper slope continues to show signs of ongoing slumping.

To the south of Cresswell the low concrete wall and interlocking concrete unit revetment is largely in good condition and the area of apparent settlement towards its southern end has not worsened since it was first observed.

Low concrete wall and rock revetment at Cresswell (/3201C18)

Low concrete wall and interlocking concrete unit revetment at Cresswell (/3201C19)

The low earth cliffs backing Stank Letch Rocks continue to show evidence of slumping along much of their length although this does not appear to be recent. There has been previous loss of fencing and timber access steps at this location. There was a surprising quantity of sand over the rock platform in front of the rock 'ledge'.

In the sandy bay, south of Stank Letch Rocks, the earth cliffs/dunes are mostly stable and there is one outfall in poor condition, but still functioning. At the time of the inspections beach levels were quite high. There is a haul road access towards the north of the bay and both steps and an access slope converging at another point on the foreshore slightly further south. At these locations, a wide cobble berm provides protection at the toe of the cliffs/dunes.

Further south still, fronting the Golden Sands Holiday Park just north of Snab Point, the cliffs become more active once again, where the cobble berm at the toe is sparser. There is one area where a slippage has previously occurred, cutting the cliff top right back to the coast road. At this location, the gabions are now almost entirely obsolete. The entire slope was saturated at the time of the inspections, suggesting a lot of groundwater build up in the failed cliff section. It is likely that further recession at this point will occur, thus affecting the coast road. Immediately south of this former landslip area, the cliffs are composed of harder rock, but there have been several local rocks falls/topples and other areas look vulnerable.

Failed section of cliff adjacent to coast road (/3201C22)

Failed section of gabion (/3201C22)

There are private defences north of Snab Point comprising timber breastwork retaining walls. These were initially built around 2008 but have been further developed over time and remain in good condition. Indeed, during the inspections, the owner was seen reinforcing one of the timber retaining walls with rock sourced from the fronting foreshore. Generally, further south around Snab Point, there are now frequent (rather than occasional, as in 2016) local rock falls in the underlying rock ledge and occasional local slumps/ cliffing of the upper softer material.

3.19 Snab Point to Beacon Point (MU 19)

This management unit is approximately 2.5km in length and extends from Snab Point in the north to Beacon Point in the south. This frontage includes 8 coastal defence assets, comprising a mix of vegetated soft cliffs and man-made defences around the Lynemouth Power Station.

The northern section of Lynemouth Bay comprises a low rock cliff overlain with softer material. There is evidence of numerous local rock falls in the basal layer and slumping in the softer material, despite the presence of much vegetation on the cliff face. Further south, the protection afforded by the wide spoil beach means that the low cliffs are much more stable, adopting a shallow profile with considerable vegetation cover.

However, the shoreline fronting Lynn Hill, at the centre of Lynemouth Bay, is less well protected by the spoil beach. Where the spoil beach tapers out the slopes continue to be actively eroding, resulting in ongoing cliffing along the toe. Where there is no spoil beach present, the backing spoil cliffs are actively eroding, releasing debris to the foreshore.

'Dormant' section of cliff protected by spoil beach (/3401C01)

Actively eroding spoil cliff (/3401C05)

The large rock armour revetment constructed in front of the Power Station in 1995 and subsequently extended around the coal stocking yard in 2005 remains in good condition. Rock armour is angular and well packed with no displaced stones or movement at the toe. Minor erosion was observed behind the crest. At the southern end, erosion of the spoil beach continues where the revetment 'tapers out' and the cliff line is undefended. This is now starting to pose a significant risk of outflanking the defence and the situation should be now be actively addressed whilst some residual cliff remains.

Between the Power Station and Beacon Point the shoreline again comprises colliery spoil with erosion of the high spoil cliff in the north continuing. The central and southern sections of this bay become more stable with lower cliffs tapering to a low cobble and boulder berm fronting colliery spoil and wide backing dunes.

Eroding colliery spoil in southern Lynemouth Bay

3.20 Beacon Point to Spittal Point (MU 20)

This management unit is approximately 4km in length and extends from Beacon Point in the north to Spital Point at the south of Newbiggin Bay. This frontage includes 15 coastal defence assets, comprising a mix of low cliffs and the seawalls of Newbiggin-by-the-Sea.

The cliffs leading around the headland to Beacon Point comprise of a hard rock base 'ledge' and a thin overlying layer of softer material. The typical tendency is for small-scale rock falls and occasional local slumps in the soft material but, which were both noted at the time of the inspections. Further around Beacon Point the previous slumps in the upper cliff have cut the cliff top back to the footpath which is now designated as part of the England Coast Path. In one area timber boarding has been used to stabilise the path's edge. The cliffs here are fronted by an extensive rock ledge and therefore the recession rates are low and the events are highly localised.

At Newbiggin Moor, within the shallow bay fronting the golf course, the cliffs are unprotected by rock platform and have no rock base. There is one short section in the north where basal peat has been exposed, otherwise the toe is covered by high beach levels.

Currently relatively stable cliffs around Beacon Point (/3501C03)

Eroding cliffs/dunes at Newbiggin Moor golf course (/3501C04)

The cliffs fronting Newbiggin Caravan Park comprise three distinct sections.

1. The northern section is unprotected by coastal defences or rock platforms and is in poor condition with active erosion continuing through a series of regular local slumps. There is also peat/clay exposed at the toe, likely following winter storms. The Caravan Park has previously erected warning signs along the cliff top footpath and realigned short lengths of its boundary fencing.

2. The central section is protected by concrete blocks and remains in fair condition. Despite some localised slumps having continued, this section of cliff is considerably less active than the undefended section to the north.

3. The southern section is protected by a rock ledge but, despite this, frequent local slumps remain evident. Two pill boxes are located on the rock ledge and erosion of the surrounding soft cliff material has left these structures perched precariously. However, this erosion has not worsened since the previous inspection.

In both the central and southern sections, rubble has been tipped down the cliff face.

Active slumping at northern section fronting caravan park (/3501C05)

More stable central section fronting caravan park (/3501C06)

Extending between Newbiggin Point and Church Point is a continuation of the rock ledge, with overlaying softer material, interspersed with a series of ad-hoc defences to 'patch' local areas. At Beacon End a short length of concrete seawall is present which appears in fair condition on the seaward face. However, abrasion and initial undermining of the toe was observed as well as undermining of the south return wall, reducing its overall condition to poor. Active erosion, cliffing and slumping of the soft cliff material behind the structure has continued since the previous inspection.

The second length of concrete wall is further south around Newbiggin Point and remains in very poor condition. The tie-in sections are actively breaking-up. Although the damage at the northern tie-in looks recent, this situation was first noted in 2008. Erosion of the soft earth cliffs behind the structure continues.

Seawall with undermining and outflanking (/3501C08)

Seawall actively breaking-up since at least 2008 (/3501C10)

Between Newbiggin Point and the church the cliffs are composed of a continuation of the low irregular rock ledges with overlaying soft material which remains actively slumping locally. The soil netting and gravel used in an attempt to stabilise the low earth cliffs continues to unravel. Where the rock ledge has become locally eroded, short sections concrete and masonry walls have been built to infill crevices in a number of areas. All of these structures are experiencing undermining and toe abrasion, although this is particularly problematic in the five most northerly short wall sections. The second wall (from the north) also now has voids in the sloping crest. Several other walls have cracking in the deck or voids opening between the concrete and the rock and all would benefit from some local maintenance.

Voiding at crest of small wall

Undermining at toe of small wall

The vertical concrete seawall at Church Point remains in overall fair condition. However, there is a reasonable amount of abrasion at the toe and crest as well as signs of local undermining between the toe and rock slab. There is also erosion of the slope behind the crest and the hand railing is still showing signs of corrosion.

Church Point seawall in fair overall condition (/3601C12)

Local crest damage to Church Point seawall (/3601C12)

The recurved section of seawall to the west of Church Point is well founded on the rock foreshore and generally in good condition. Slight undermining of the concrete apron nearer its western end remains although this is unlikely to affect the stability of the structure.

The start of Newbiggin Bay is marked by a rock armour breakwater, built along the edge of Hully Rocks and extending from just offshore of Church Point. This structure is in good condition though there are some smaller rocks displaced across the foreshore on the seaward side. The profile and crest level along the structure appears stable with no signs of displaced rock, toe erosion or settlement.

The offshore breakwater in the centre of the bay was constructed in 2007 and comprises inter-locking concrete armour units. Although this structure could only be inspected from the beach it appears in very good condition with a uniform crest and no signs of displaced units or settlement.

North breakwater in Newbiggin Bay in overall good condition (/3601C13)

Detached breakwater in central Newbiggin Bay remains in very good condition with salient/tombolo developed in lee (/3601C13)

In Newbiggin Bay the Maritime Centre at the north end of the bay was opened in 2012. The sea walls along Newbiggin Bay are well protected by very healthy beach levels following replenishment operations in 2007 and subsequent net accretion of sand in the lee of the detached breakwater. This has led to windblown sand on the promenade which at the time of the inspection had been swept clear, although 'dunes' were forming in areas of backing car park and play areas. At the centre of the bay the salient / tombolo in the lee of the breakwater is well established.

The high recurved seawall and promenade at the centre of the bay are in good condition. High beach levels mean the lower stepped seawall and piled toe which was previously identified as being vulnerable to erosion and undermining was completely buried up to the first step. Access steps and handrails were also substantially buried. All joints appear well sealed.

At the south end of the bay the vertical section of seawall is protected by a rock revetment. This revetment is part of the defences that were in poor condition prior to the 2007 scheme, but is now almost completely buried by high beach levels. Where visible, this rock revetment continues to appear in good condition. High beach levels have also resulted in windblown sand on the promenade.

At the south end of Newbiggin Bay the soft earth slopes are largely stable and protected by a wide beach with new dune vegetation growth evident on the foreshore.

At Spital Point the there is no evidence of new rock falls or slips in the overlaying softer material since the previous inspection, but the path along the thin ridge has been fenced off.

High beach levels and wind-blown sand to rear of promenade in northern sections of Newbiggin Bay (/3601C15)

High beach levels and well-sealed joints in central sections of Newbiggin Bay (/3601C07)

High beach levels fronting rock revetment (/3601C08)

High beach levels and embryo dune vegetation growth at southern end of Newbiggin Bay (/3601C09)

3.21 Spital Point to Blyth Harbour (MU 21)

This management unit is approximately 6.5km in length and extends from Spital Point to the East Pier of Blyth Harbour. This frontage includes 19 coastal defence assets, comprising a mix of low vegetated cliffs and man-made revetments and seawalls at Cambois and North Blyth.

On the south side of Spital Point, the Newbiggin-by-the-Sea storm outfall and slipway remains very well protected by rock armour and the concrete headwalls appear in good condition.

South of the outfall, there is a short section of cliffs fronting Links Quarry which are in poor condition, with significant erosion and cliffing along most of the length. Large quantities of rubble and quarry waste have been tipped down its seaward face. However, slumping in the soft material continues, releasing waste and debris onto the foreshore.

Hawks Cliff is known to typically experience gradual, local erosion caused by slumping in the upper soft material and occasional rock falls in the harder rock base. The latter is caused by preferential erosion along a mudstone layer leading to undercutting and collapse of the overlying sandstone. Previously, over the severe winter of 2009/10, the whole length of these cliffs had been active. A number of local rock falls, fractures, overhangs, slump in some of the overburdening till and a noticeable section of partially collapse cliff was evident. The footpath along this section of cliffs has been closed in the interest of public safety due to previous severe erosion episodes. The England Coast Path has been implemented since the previous inspections and new signage has been erected, advising walkers to keep to the path which is well away from the cliff edge. Despite this one person was seen lying on the cliff top in a perilous location looking down to the beach below.

England Coast Path sign

Visitor to cliff top (/3701C02)

The cliffs directly fronting the northern section of Sandy Bay Caravan Park are relatively well protected by a sandstone boulder berm at their toe and here the seaward face of the slopes are well vegetated. However, further south the slopes and cliffs become more unstable and are actively eroding. In places, recession of the cliff top has occurred to within a few meters of the caravans. There are three near-shore rock breakwaters which have helped stabilise the cliffs immediately in their lee, but erosion recommences immediately to the south. Attempts to slow this using tipped rubble are ineffective and unsightly. Erosion continues from the end of the last rock revetment to the mouth of the River Wansbeck.

Slopes stabilised due to protection by sandstone boulder berm at toe (/3701C02)

Erosion recommences to immediate south of rock berms (/3701C03)

As the coastline turns west at the mouth of the River Wansbeck, there is a sandstone cobble berm which has helped stabilise the dunes on the northern bank. Within the estuary itself there are healthy dunes, sandflats and salt marsh.

The undefended section of cliff within the estuary mouth is very stable with no visible signs of erosion or slippage and with the face being densely vegetated. There is a considerable deposit of sand, which due to its softness appears recent, at the mouth on the north bank, which has pushed the channel of the River Wansbeck away from the cliffs. A set of access steps down the cliff face has been installed since the last inspections.

Failed section of Wansbeck Boat Club retaining wall (/3801C02)

Relatively stable cliffs on inner estuary (/3801C01)

Progressing from the sheltered estuarine frontage with its stable cliffs to the more active open coastline of Cambois Bay there is a transitional section of cliff fronting Cambois House. These cliffs are in poor condition with slips along the entire frontage and more significant erosion and cliffing of the upper slope further south. Whilst episodes of erosion have happened historically, there does not seem to be significant worsening since the last inspection and, perhaps surprisingly given the significant storms of March 2018, there is no obvious erosion at the cliff toe.

Eroding cliffs south of Cambois House (/3901C01)

Eroding cliffs south of Cambois House (/3901C01)

The section of cliff and beach from just north of the beach access slipway and car park to part way along the rock revetment which runs to the south was closed-off to the public due to construction of the landfall of the North Sea Link Interconnector. The site compound of the Contractor, Prysmian Group, was located on Cambois Links Car Park and construction commenced in April 2018. At the time of inspection, a jack-up barge was present on site and cable trenching into part of the foreshore was being undertaken. The public information board noted that the slipway will be fully re-instated upon completion of the works. It is recommended that a post-completion inspection is undertaken by Northumberland County Council planners/engineers to examine the re-instatement because it has previously been observed that outflanking of the slipway was occurring and this was (partially) addressed by depositing concrete rubble. It is expected that the re-instated slipway should improve the outflanking situation in a more formal manner.

Cable landfall works for North Sea Interconnection (/3901C05)

The rock revetment to the south of the slipway (the northern part of which was out of public access due to the construction works at the time of inspection) was constructed by private industry to protect the former foundry. This structure remains largely in good condition although displacement of some rocks along the toe was noted. The well vegetated slope behind is generally stable with no signs of erosion, although it is somewhat hummocky in profile. There remains a failed and disused outfall pipe across the beach at the southern end of the revetment. After this point, the low earth cliffs to the south of the revetment are experiencing terminal erosion along a length of approximately 100m and are actively slumping along most of their length.

Rock revetment protecting former foundry site (/3901C05)

Failed section of outfall pipe (/3901C05)

Erosion of cliffs at terminal end of rock revetment (/3901C03)

Erosion of cliffs at terminal end of rock revetment (/3901C03)

Further south of the zone of terminal erosion, the cliffs continue to be actively slumping. Here the upper beach levels appear high and the sediment is soft, indicating recent deposition, but the mid and lower beach levels are low, with considerable lag deposits of cobbles and boulders at distinct breaks of slope, left behind as sand has been eroded. A set of timber access steps constructed in 2012 adjacent to the southern car park remains in good condition, but netting and matting in the adjacent 'cut' cliff has become exposed due to erosion.

Erosion of cliffs near recently-installed access steps (/3901C03)

Erosion of cliffs near recently-installed access steps (/3901C03)

The soft, slumping cliffs merge almost imperceptivity into vegetated dunes. Whereas in 2016 these seemed to be experiencing accretion and embryo dune formation, they have more recently been eroding and slumping, despite a notable cobble/boulder berm at their toe.

Immediately south of the outfall, the dunes become more active, with slumping on their face despite the protection afforded by a cobble berm which extends high up the face. There were two areas of construction works adjacent to the disused outfall along this section, both being undertaken by South Bay Civils (from a shared-projects compound).

1. RWE was in the preparatory processes of works to repair and protect the remaining buried cooling water culvert of the former Blyth A and B power stations. It is understood that as part of this, 5 tonne rock armour will be placed along the existing structure. The work will run from April to August 2018. (Note: South Bay Civils were noted undertaking repairs to the outfall during the 2016 inspections).

2. EDF is undertaking works connected with the Blyth Offshore Demonstrator Windfarm (BODF). Previously, in Quarter 4 2017, the dunes were excavated to enable landfall of the 66 kV cable and in particular the connection of the submarine and onshore cables within a Transition Joint Bay. Although the dunes were re-instated in November 2017, they suffered damage from the storms of March 2018 and the planned works, running from April to July 2018 will involve placement of sand-filled geotextile bags and replanting of marram grass turves.

Dune stabilisation works at landfall of Blyth Offshore Demonstrator Windfarm export cable *(/3901C04)*

There is a temporary haul road and access ramp from the site compound through the dunes to the beach, which will be re-instated upon completion of the works.

The North Blyth frontage is protected entirely by man-made defences. At the northern end, this comprises a substantial rock revetment with rock-filled gabions along the crest. Despite some displaced stones along the toe and areas of slight settlement of the profile, this structure remains in good condition. At the north end of this revetment there has been cut-back erosion in the soft cliffs. Efforts appear to have been made to address this by tipping smaller rock armour which has provided some protection to the structure but moved the erosion to the north.

To the south, the revetment changes to a composite structure with large rock armourstone at the base separated from the smaller upper armourstone by steel breastwork. This breastwork is largely in a poor condition with extensive corrosion and numerous failed members. Some erosion and slumps are apparent in the cliffs behind the revetment crest with dumped construction waste and smaller tipped rocks at the crest in an attempt to protect these sections.

Rock revetment and gabion baskets (/4001C01)

Composite defence with timber breastwork (/4001C02)

Fronting the Alcan aluminium and coke processing plants at the Blyth Ship Unloading Facility is another composite structure comprising timber breastwork with an upper slope of tipped rubble. This sits on a concrete apron with rock armour at the toe. The structure is highly unsightly and remains in a poor condition with considerable damage to the timber breastwork, including broken vertical timber boards and rotten horizontal wailings. There is significant erosion to the upper slopes exposing the timber tie-backs. Whereas no movement or undermining was observed there is a risk that without further maintenance the breastwork may fail, resulting in partial collapse of the access roadway above.

Composite defence with timber breastwork (/4001C03)

Composite defence with timber breastwork (/4001C03)

To the south of the timber breastwork a large concrete seawall extends to Blyth East Pier. This structure is generally in fair structural condition with no visible evidence of undermining or movement. However, along the seaward face there is noticeable abrasion of the toe apron, vertical cracks, gaps in vertical joints between some adjacent sections and occasional horizontal cracks. These are most prevalent at access points through the wall's crest. Of more concern, however, is the significant but localised damage to the crest wall at its more landward end, with failure of one section due to horizontal cracking and movement. Continuous horizontal cracking and a large area of spalling is also evident in the adjacent four sections. There are also numerous defects in the deck. The damage to this section of wall was first noted in the 2010 report and has deteriorated progressively since. The crest remains in urgent need of repair. A series of concrete groynes on the foreshore in front of the wall remain very heavily abraded. There is a large crack in the wall at its southern end, near the interface with the main pier section.

Landward section of Blyth East Pier (/4001C04)

Damaged wall crest to landward section of Blyth East Pier (/4001C04)

Access to the deck of the southern section of Blyth East Pier was not possible at the time of the visit so this structure was inspected solely from the foreshore as far as the tides allowed. The structure is generally in fair condition with no noticeable signs of undermining at the toe or movement in the sub structure or superstructure. However, significant corrosion was occurring to the majority of the trestle legs with concrete spalling and staining apparent. The timber decking was worn with the onset of rot around fixings of some boards and a number of boards missing. The timber edge beam was missing in one location causing collapse of one section of hand railing.

Generally fair condition of main Blyth East Pier substructure (although superstructure in poorer condition) (/4001C05)

3.22 Blyth Harbour River Mouth (MU 22)

No coastal defence assets are located within Blyth Harbour estuary frontage.

3.23 Blyth Harbour to Seaton Sluice (MU 23)

This management unit is approximately 5.5km in length and extends from the West Pier of Blyth Harbour in the north to Seaton Sluice in the south. This frontage includes 21 coastal defence assets, comprising a mix of vegetated dunes and manmade defences and harbour structures at Seaton Sluice.

The northern section of Blyth South Beach comprises a wide sandy beach backed by narrow vegetated dunes. At the rear of the dunes is a masonry boundary wall to the Royal Northumberland Yacht Club and Port of Blyth. Beach levels at the spending beach area between the West Pier and the South Pier have on all previous surveys been very healthy, but currently are drawn-down, resulting in storm-damage to the dune face. Given the history of accretion at this site, it is expected that both the dunes and beach will recover.

Storm damage to usually stable dunes (/4201C10)

Masonry wall to rear of dunes (/4201C10)

The dunes immediately south of the jetty are well vegetated and stable with no signs of erosion. The masonry boundary wall is generally in fair condition with some vertical cracking in the brickwork and occasional loss of mortar at joints in the concrete coping. A slightly seaward rotation in the wall was noted at the south end. Although no recent signs of movement were apparent, this should continue to be monitored for further change.

Further south, the boundary wall changes to a concrete post and plank construction. This wall generally remains in a fair condition, occasional cracked concrete planks. The dunes remain wide and well vegetated for the majority of their length, narrowing at the far south end.

Further south towards the outfalls that cross the foreshore, the dune width narrows considerably and the seaward face of the dunes is cliffing through erosion. As noted in previous reports, this section of dunes needs careful consideration by the Port of Blyth as there is a risk of breaching through the haulage road to the port. The beach levels along this section were particularly low and some cobble-filled gabions were exposed at the dune toe (these are usually buried along this section and have not previously been noted on previous inspections). A notable cobble berm was present at the toe of the dunes and this might be material spilled from broken gabions.

Cobble berm at toe of dunes with concrete plank wall to rear (/4201C11)

Cobble lag on mid beach by outfall (/4201C11)

Along the southern-most section of the port boundary wall, the dunes are protected along the seaward face and toe by cobble-filled gabions. These continue to deteriorate at both ends of this length with broken gabions spilling cobbles onto the foreshore. At the north end, the gabions have been outflanked and erosion of the dune has started to expose the foundations of the concrete wall. Replacement of broken gabions in conjunction with consideration of management options for the undefended dunes further north therefore remains urgent to prevent loss of the dune and collapse of this wall.

South of the gabions at Blyth South Beach is a short section of sea wall that protects fairly recently constructed backing properties. The wall is generally in fair condition although the poured concrete apron at the southern end is undermined and due to the failed gabions at the northern end there is danger of outflanking. Works to the seawall and immediately adjacent gabions is known to be required as part of a condition for retrospective planning permission for the adjacent property and these works need to be completed as soon as possible to prevent further worsening.

Failing gabions protecting very narrow strip of dunes (/4201C03)

Existing sea wall protecting new properties (/4201C04)

South of the beach access slipway, the short section of sea wall is in fair condition but with abrasion and cracks, especially to the access steps. Previous repairs have been made to this structure and it will need to be maintained into the future.

South of a short section of fair condition dune, the seawall is in a slightly worse condition with numerous cracks and notable abrasion and staining at its northern end which could usefully be addressed through maintenance. Some damage has previously been addressed, especially at the access steps and coping. Overall the wall is structurally fair but aesthetically poor.

The wall merges seamlessly into the main promenade and setback amenity area towards the north of Blyth South Beach which underwent notable regeneration in 2009/10. The new promenade decking, is faring well. The sea wall fronting the promenade usually is largely buried by high beach levels, but at the time of the inspection was more exposed than usual, although no issues were noted with the structure. It was noted, however, that the usually sandy beach has a lot of lag cobble/boulder, left behind as the beach sand has been eroded away during March 2018 storms. Indeed, at one access ramp from the promenade, the beach levels were so low that there was a considerable drop-off to the beach, with a timber board simply placed to ease access and a brickwork section at the ramp's end visible for the first recorded time. The visible parts of the wall remained largely in good condition with some minor cracks and gaps at construction joints as well as a few areas of abrasion leading to exposed and corroded reinforcement bars.

At the southern end of the sea wall, the sheet piles protecting the return section of seawall remain in a highly corroded but overall fair condition with no apparent signs of movement. Usually the majority of the structure is buried by high beach levels, but like the adjacent seawall more was visible on the present inspection due to low beach levels.

Low beach levels at ramp new end of promenade (/4201C07)

Steel sheet pile end to promenade (/4201C08)

The three timber groynes remain in poor condition, with missing timber planks, arson damage and many sizeable gaps. Beach levels are relatively low in the lower and middle beach with accretion of windblown sand in the upper beach along the toe of the dunes.

- The most northerly groyne, located towards the southern end of the promenade, has no visible boards on the last 24 timber piles and has substantial boards missing from five areas along its length. It also has no marker beacon at the seaward end.

- The central groyne has no visible boards on the last 18 timber piles and has substantial boards missing from five areas along its length. It is, however, the only groyne still with a marker beacon intact.

- The most southerly groyne has failed and collapsed at its southern end, with lilting of the structure over a further ~20 m.

Missing boards from northern groyne (/4301C01)

Missing boards from central groyne (/4301C01)

Failed seaward end of southern groyne (/4301C01)

The central and northern groynes terminate at their landward end at the dunes and, with no formal access steps/ramp across them, people are continuing to walk up the dune to bypass the groyne, causing localised trampling damage to the dunes as they do so.

All three groynes show generally only marginal differences in beach level either side, with slight accretion to the northern side in each instance, except for along the upper beach where the differential is more marked.

[Note: The loss of one groyne marker beacon was pointed out to Northumberland County Council in August 2016].

The dune stabilisation works in 2015 continue to be effective, with the sand-filled geotextile bags placed at the toe of the dunes along the south flank of Meggie's Burn largely remaining covered (or having been re-covered) with emplaced beach sand. It is know from previous visits to the site that the course of the burn did come close to the toe of these dunes and expose some of the geotextile bags, so it is likely that some intervention has been undertaken. There is, however, one area at the point where the dune line turns sharply inland where the bags are slightly exposed. It is known that in 2016 some rock armourstones were placed in attempt to train the course of the burn and keep it away from the toe of the dunes and this appears to have been very effective. Christmas trees have been placed just to the south of the area benefiting from the previous works in further attempt to help stabilise this section. The particularly low beach levels have revealed remnants of an outfall and its timber support structure (presumably an earlier outfall of the burn) which are usually buried by beach sand.

Exposure of sand bags on dunes near Meggie's Burn (/4301C01)

Rock armourstone placed in 2016 to train course of Meggie's Burn away from dune toe (/4301C01)

Further south at the centre of the bay, the beach shows modest post-storm accretion on the upper beach, but low remaining mid and lower beach levels. Indeed, there are several areas where concrete rubble or anti-tank blocks that are usually buried have become exposed. In one location, near an outfall, some blocks are exposed at mid beach level. One of these is sitting on a concrete platform founded on five timber piles. Usually, only the top of this block is visible, indicating a substantial drop in mid beach levels has occurred. At the two areas in the centre of South Beach where sand-filled geotextile bags were used to stabilise the dune toe there were no visible signs of dune erosion.

Exposure of anti-tank block in central South Bay (/4301C02)

Due erosion in central South Bay (/4301C02)

At the south end, towards Seaton Sluice the dunes remain highly stable with notable embryonic vegetation growth. The two sections of low masonry wall at Sandy Island, immediately north of Seaton

Sluice harbour are usually fully or partially covered by beach sand, but both were exposed and in good condition.

High sand berm at toe of dunes in south of South Beach (/4301C02)

Stable dunes and good condition low wall at Sandy Island (/4401C01)

The general feeling with respect to the dunes and beaches within Blyth South Beach is that the whole frontage suffered notable storm damage in the March 2018 storms (the 'Beast from the East' and the subsequent 'Mini Beast'). This resulted in draw-down of beach sand, lowering beach levels and causing dune face erosion in the central bay. However, there are already signs of recovery throughout the bay in terms of accreting upper beach levels and this is most prevalent in the south of the bay, where a notably steep sand berm has accumulated, forming a very distinct break of slope. This is also apparent in the central bay, but the berm is much lower and narrower at present. However, the low beach levels remain along the mid and lower beach sections, with considerable lag deposits of cobbles and boulders and in places concrete rubble or anti-tank blocks that usually are fully or substantially buried.

The timber groyne at the mouth of Seaton Burn remains in poor condition showing signs of timber damage and missing planks where it retains rock armour. The area of retained land behind the groyne has received further infill of debris to prevent undermining of the concrete deck.

There was a large deposit of sand in the entrance to Seaton Sluice harbour which is likely to require clearance. It would be prudent to place any dredged sand from the harbour into central South Bay since the beach levels are currently low and this would aid recovery.

The western bank of the Seaton Sluice harbour is a masonry wall extending around the east side of the entrance. This wall is largely in fair condition, possibly owing to the fact that the original wall is believed to have been re-constructed as a concrete structure faced with masonry blocks. However, there are some open joints that would benefit from filling. The adjacent length of masonry wall within the entrance no longer has sand accumulation on the crest. Some loss of mortar and gaps between blocks was also observed.

The wall along the inner north bank of the harbour includes a boat ramp. This ramp remains in poor condition with missing blocks on the outer side and some movement apparent. There are also large gaps in the joints at the top and bottom of the ramp suggesting that some settlement may be occurring and there is undermining on the inner face at the toe. However, this has not worsened since the previous inspections.

Undermining at toe on inner face of boat ramp (/4401C05)

Collapsed wall on outer face of boat ramp (/4401C05)

The rest of the masonry quay wall along the inner north bank of the harbour is generally in fair condition with little change since the previous inspection. Some slight bulging of the wall was apparent as well as missing mortar and gaps between blocks.

Along the south bank of Seaton Sluice harbour, the west end of the masonry quay wall is generally in fair condition with no movement apparent. There is however some noticeable loss of mortar and gaps between blocks at the west end of the wall. At the east end, the concrete coping is highly abraded and cracked with a number of large gaps and some missing blocks along the bottom of the wall. However, this has not worsened since the previous inspection.

The deep man-made cutting separating Rocky Island from the main land provides a secondary channel to Seaton Sluice harbour. This channel has high vertical rock faces topped with masonry walls retaining the overlying soft material. These walls remain in a fair to poor condition.

The masonry quay wall along the east bank of Seaton Sluice harbour is generally in fair condition with local areas of abrasion and settlement, some missing mortar and gaps between blocks as noted in previous inspections. These should be repaired through routine maintenance.

At the western end of Rocky Island is a large concrete pier build in 1995 with a shallow grouted stone revetment extending along its leeward face. This revetment and pier remains generally in a good condition with no signs of movement and only minor cracking and loss of joint sealant. The sealant should be replaced.

Extending eastwards from the pier, along the northern side of Rocky Island, is a length of masonry sea wall fronted by a rock platform. There is missing mortar and gaps between blocks along much of its length. In one or two areas, there are missing blocks and in many locations, there are abraded blocks. On the landward side of the wall the poured concrete slurry continues to break up and soil erosion of the land is continuing.

Pier wall (/4401C10)

High masonry wall (/4401C11)

The remainder of the northern face of Rocky Island is undefended hard rock cliff mantled with softer material. There continues to be no noticeable change to the cliff since the previous inspection with fractures to the hard rock structure, occasional rock overhangs and local rock falls. However, one section of low timber fencing used to prevent public access to the cliff edge has its bar missing from a length of several metres and this should be replaced in the interests of public safety.

Cliffs at Rocky Island – note missing low fencing (/4401C12)

3.24 Seaton Sluice to Hartley (MU 24)

This management unit extends from Seaton Sluice harbour in the north to Hartley. The Northumberland portion of this unit is approximately 1.5km in length and includes 10 coastal defence assets, comprising a mix of medium/ high cliffs and man-made seawalls.

Extending south from the channel separating Rocky Island from the mainland, the undefended cliffs continue to appear less fractured than those along Rocky Island and, other than occasional local rock falls, appear relatively stable.

Collywell Bay comprises several different seawall types. At the north end, the near vertical concrete wall continues to remain generally in good condition with some minor cracks and staining with more significant spalling along the upper protruding section.

To the south, the adjacent section of wall is of similar construction but includes a sloping brickwork revetment supporting the upper part of the cliff. The concrete section of the wall is in generally good condition despite loss of mortar at the recurve along most of the wall and noticeable abrasion along the base above the stepped toe. At the centre of the upper masonry wall the full height crack in the brickwork identified during the 2012 inspection does not appear to have worsened.

Near-vertical seawall (/4401C14)

Seawall with upper brickwork retaining wall (/4401C15)

The wall further south remains in good overall structural condition. The toe should continue to be monitored for any signs of undermining that could lead to failure. Immediately south of this wall, there a short brickwork/ concrete wall end supporting the access ramp. The brick section of wall is generally in a fair condition although there are several missing bricks along the base. The concrete section has a large horizontal crack along the base and appears to have rotated seaward slightly. The toe of the ramp is abraded.

The high vertical concrete sea wall at the centre of Collywell Bay is generally in fair condition, tending to poor in local areas of defects. Maintenance work to fill three notable vertical cracks is still required, however no movement was apparent at these locations and they do not appear to have worsened since the previous inspection. The toe apron and access steps remain highly abraded and cracked in places.

The concrete seawall at the south end of Collywell Bay is generally in good condition but above the wall slips in the vegetated earth slopes remain apparent, but only appear partially active with no material visible on the foreshore.

At the south end of Collywell Bay gabions protect the toe of the coastal slope above the beach access ramp. The relatively new replacements for previously failed gabions were noted to already be splitting in 2016 and this continues. The access ramp itself has some undermining where it joins the rocky shore platform, although this has not worsened since the previous inspection. There is also some undermining and onset of outflanking where the ramp joins the undefended cliffs at its other end.

One of three notable vertical cracks in the sea wall *(/4401C17)*

Break-up of gabion baskets (/4401C19)

The coastal slope adjacent to the ramp does not present any concerns at present.

The harder rock cliffs extending from Crag Point to the southern boundary of Northumberland County Council's frontage, part-way along Hartley Cove, have some fracturing to the rock structure. As a result of this fracturing, several rock falls have occurred leaving numerous overhangs and in places caves have formed at the base of the cliffs. However, no change was evident since the previous inspection. A wide crack was also noticed a few meters from the cliff edge close to the fence line although this does not appear to be recent. The footpath runs very close to the cliff edge in this area and so may need realignment if slips/ rock falls continue.

4. Comparison with Previous Assessment

The previous formal assessment across the whole study frontage was undertaken in summer 2016. Since that time, it is notable that several areas have benefited from maintenance, repairs or capital schemes but, some sections of defence have suffered from further deterioration since the 2016 inspections, most notably:

- Beal flood embankment
- Seahouses harbour
- Beadnell seawall and stone-filled mattresses
- Beadnell harbour
- Newton Point
- Church Hill, Alnmouth
- Cresswell
- Blyth South Beach (loss of a groyne marker beacon and collapse of the seaward end of a groyne)

Also, the most major changes along the natural frontages since 2016 exist along undefended dunes and the foreshore beaches, which generally suffered measurable erosion during winter storms in 2017/18 and in some (but not all) places are starting to recover.

5. Problems Encountered and Uncertainty in Analysis

All assets were inspected at suitable stages of the tide and in good weather conditions. Therefore, there were no major problems encountered during the inspections.

Some harbour structures were only viewed from a distance (e.g. seaward end of Blyth East Pier) or from the deck. In these cases, vessel-based or underwater inspections are recommended to inform future maintenance and capital works programmes.

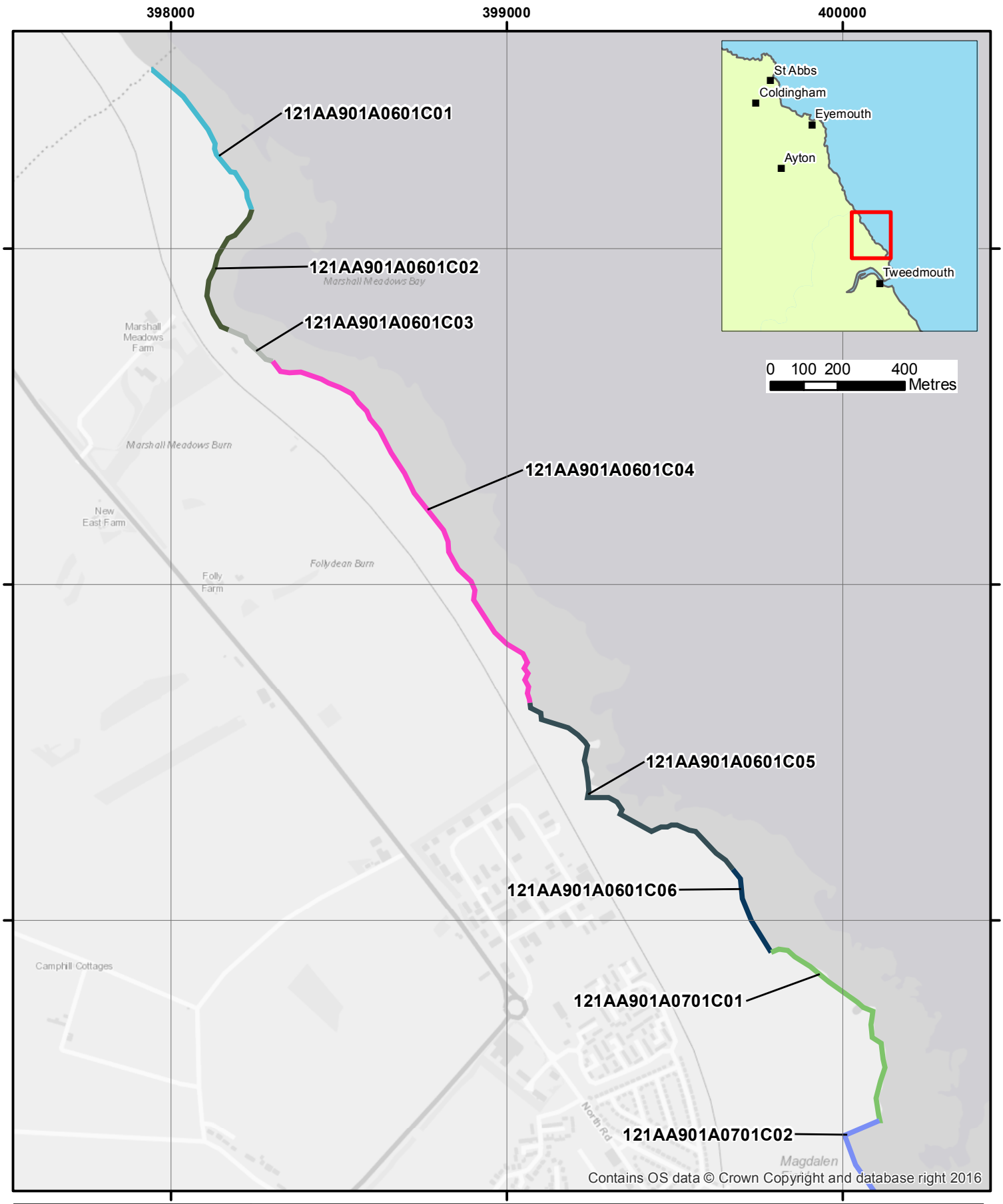
6. Conclusions and Recommended Actions

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

In lieu of a decision for a suitable replacement a replacement for the NFCDD database, all condition assessment data and selected photographs have been uploaded to a SANDS (Shoreline And Nearshore Database System). This includes all data and photographs from the previous inspections since 2002 that were previously held on four separate MS Access Databases that had become obsolete. In order to facilitate easy comparison of new inspections to previous data for each asset a new asset data display form “Northumberland Sea Defence” has been created in SANDS.

Appendices

Appendix A
Asset Location Maps



Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 1

Northumberland 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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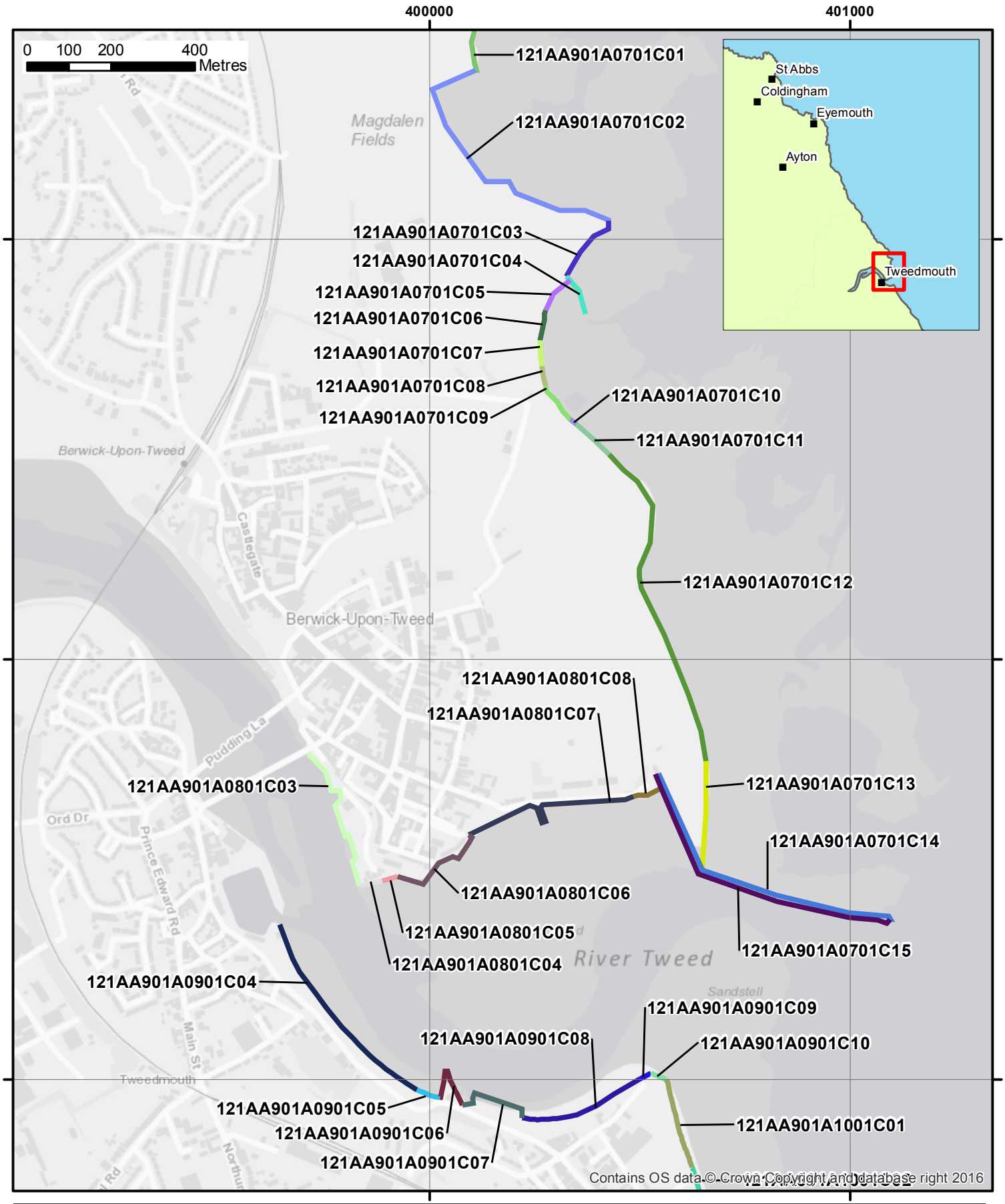

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Asset location

NFCDD Asset Number

Figure 1 - Map 2

Northumberland County Council Frontage

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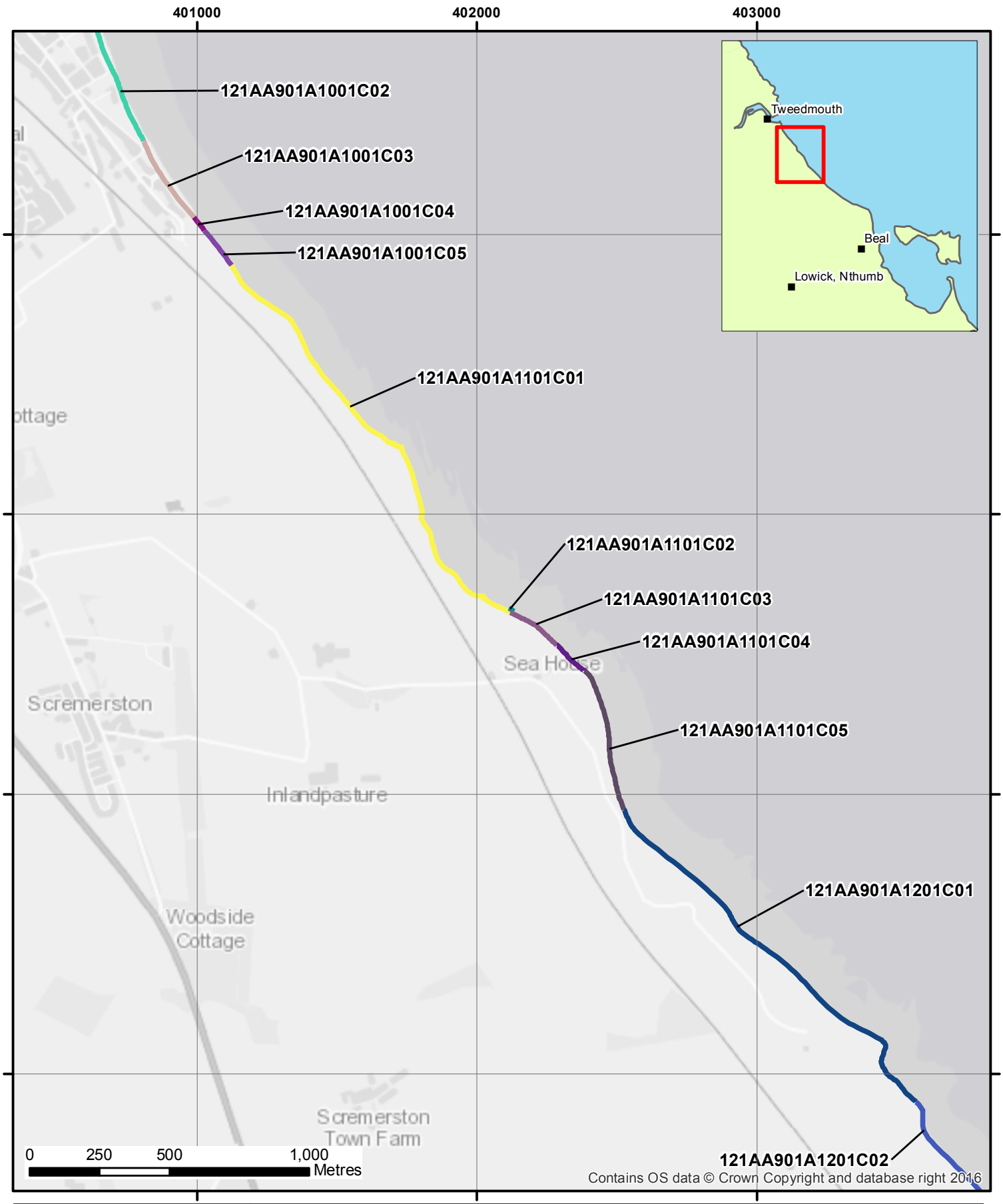

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Asset location

NFCDD Asset Number

Figure 1 - Map 3

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:18,000 at A4

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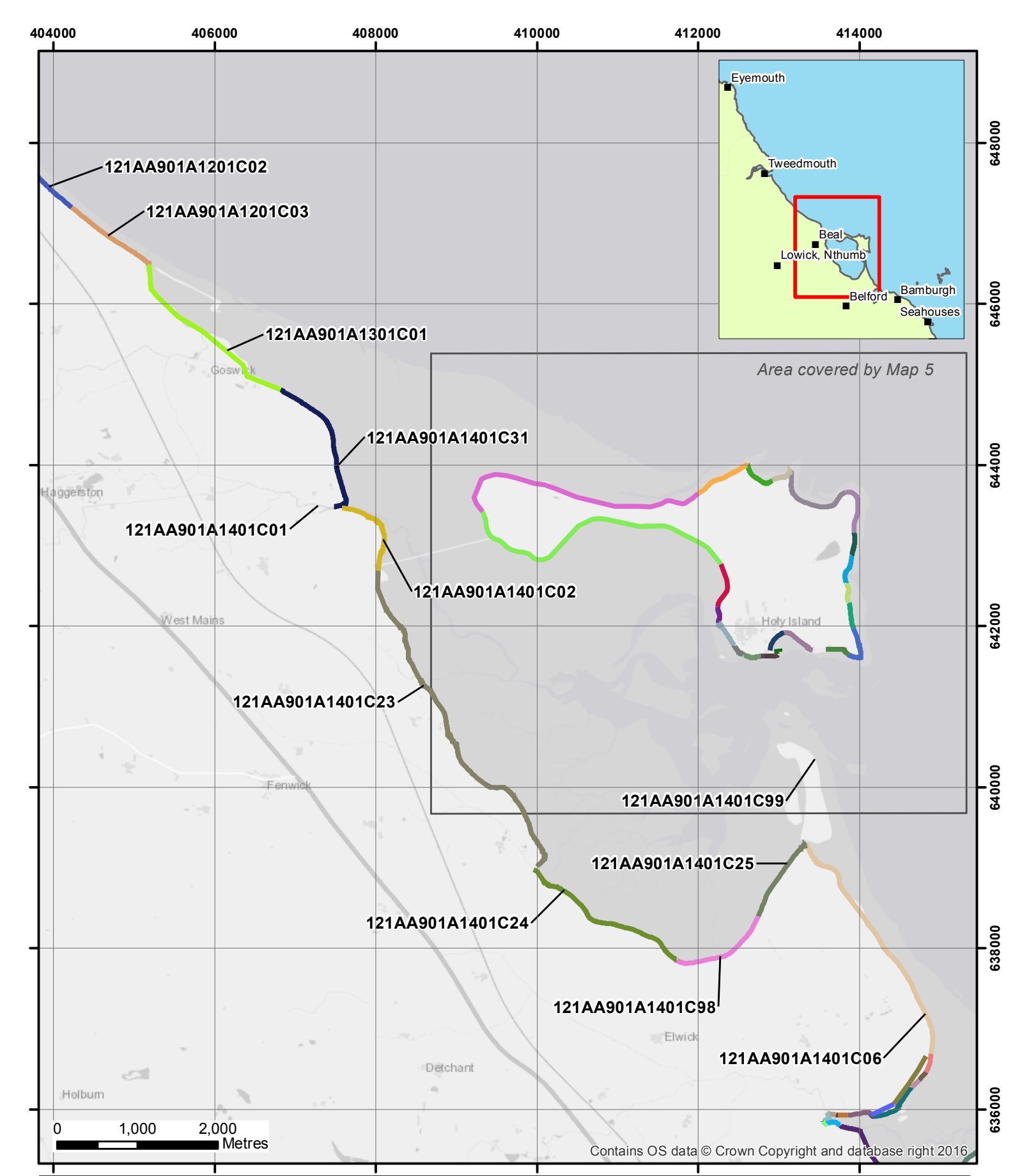

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Asset location

NFCDD Asset Number

Figure 1 - Map 4

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:60,000 at A4

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North East Coastal Group

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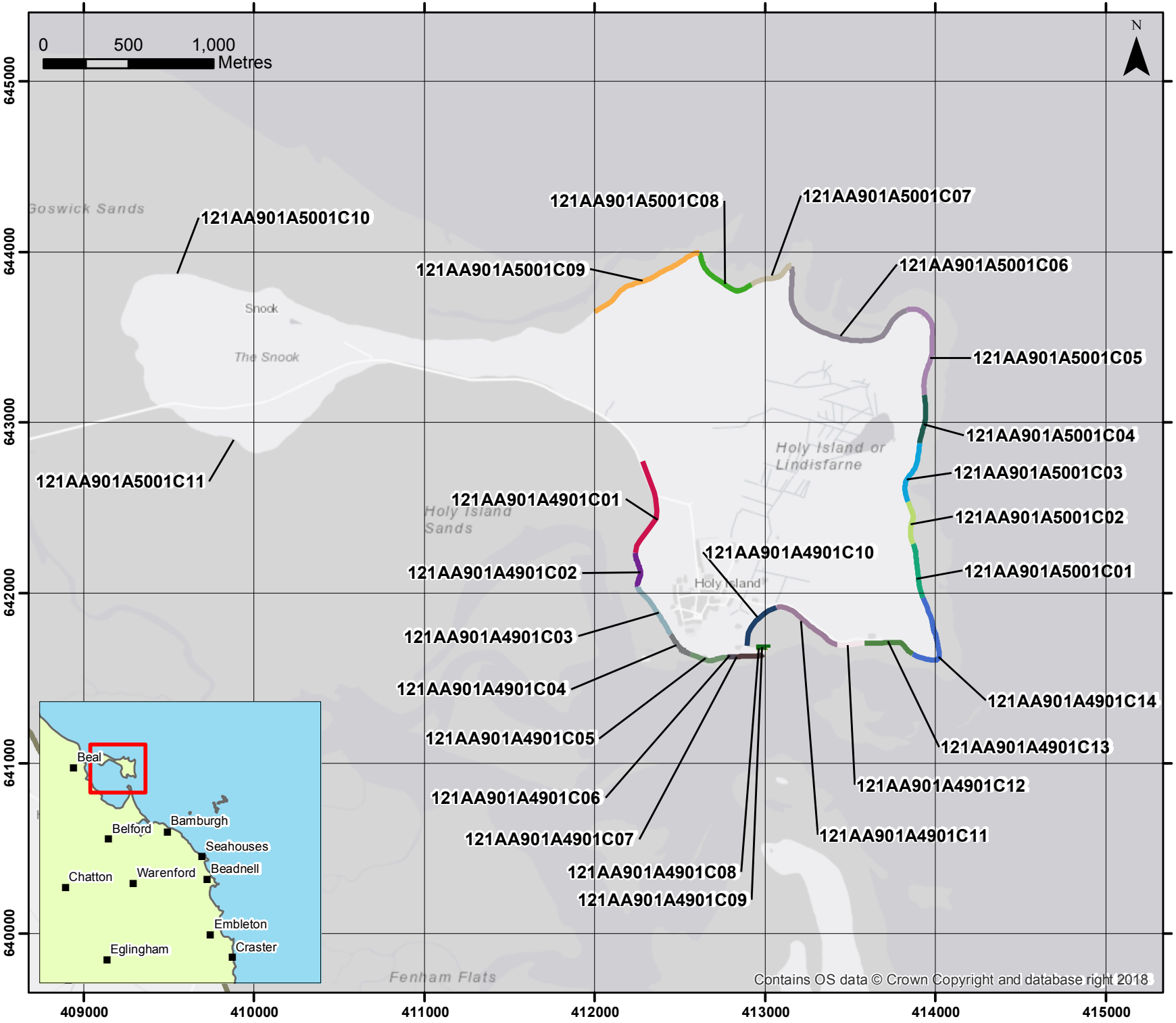

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Asset location

NFCDD Asset Number

Client: North East Coastal Group

Project: Cell 1 Regional Coastal Monitoring Programme

Figure 1 - Map 5

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:30,000 at A4

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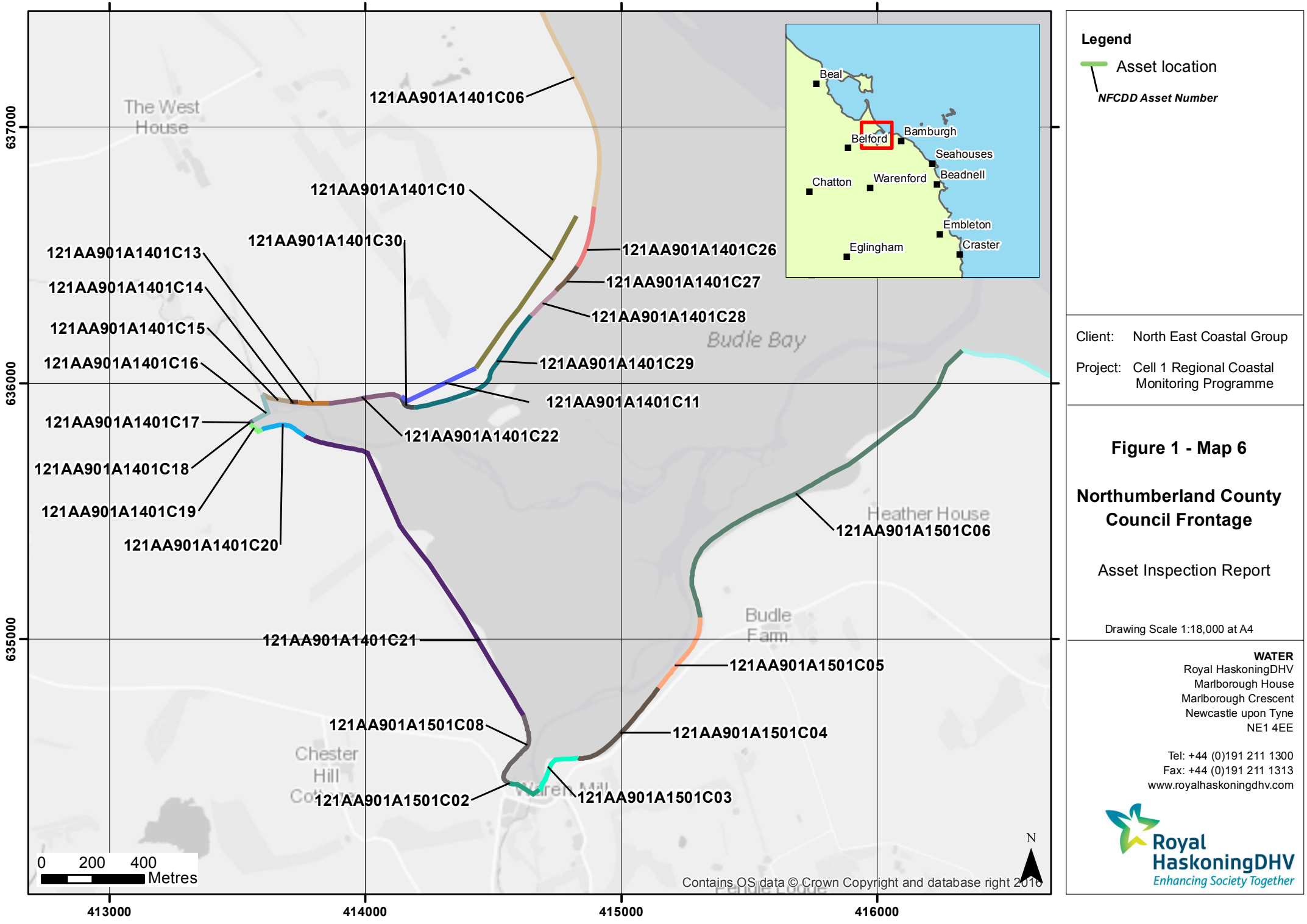

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Asset location

NFCDD Asset Number

Client: North East Coastal Group

Project: Cell 1 Regional Coastal Monitoring Programme

Figure 1 - Map 6

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:18,000 at A4

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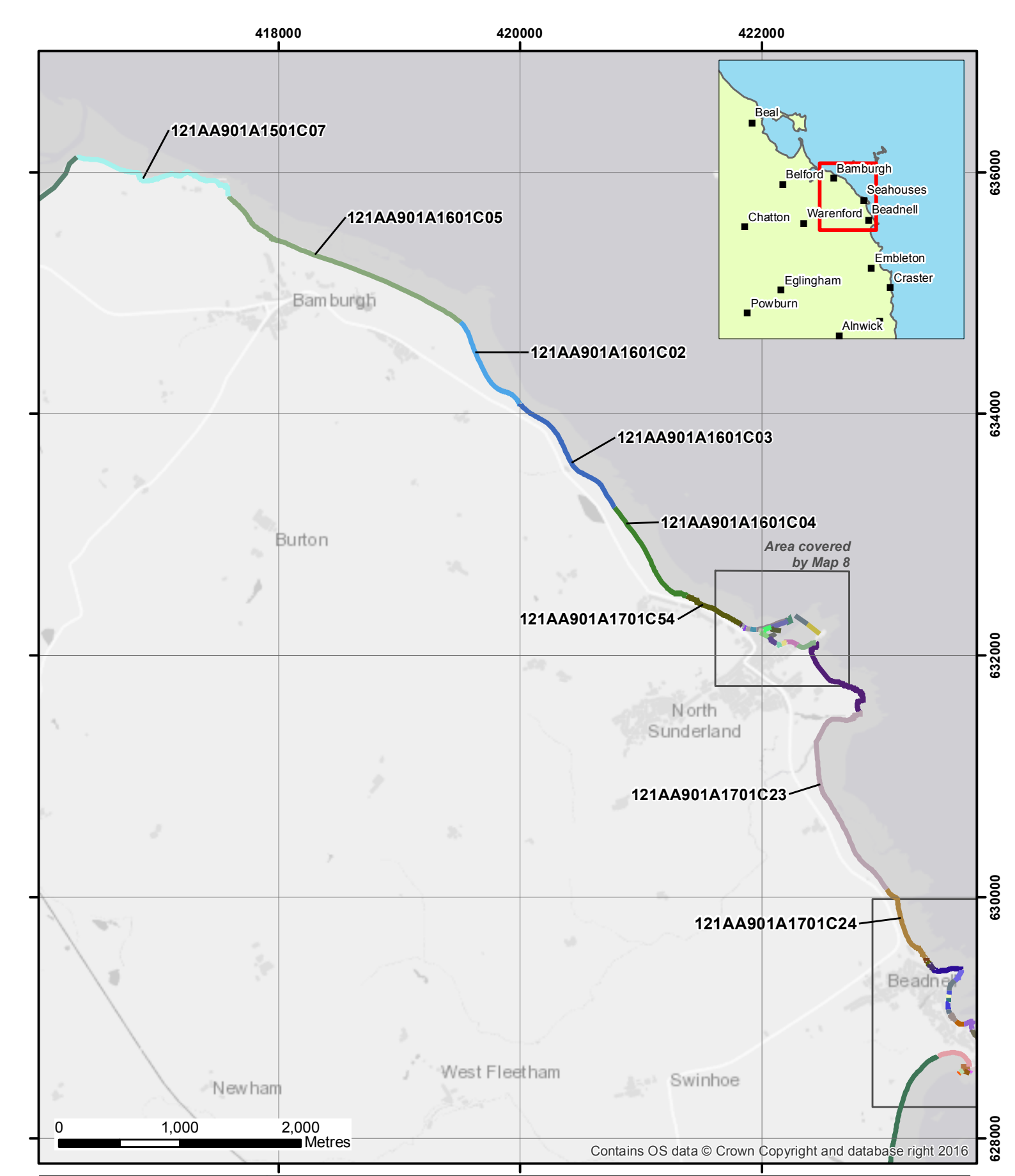

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Asset location

NFCDD Asset Number

Figure 1 - Map 7

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:40,000 at A4

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North East Coastal Group

Project:
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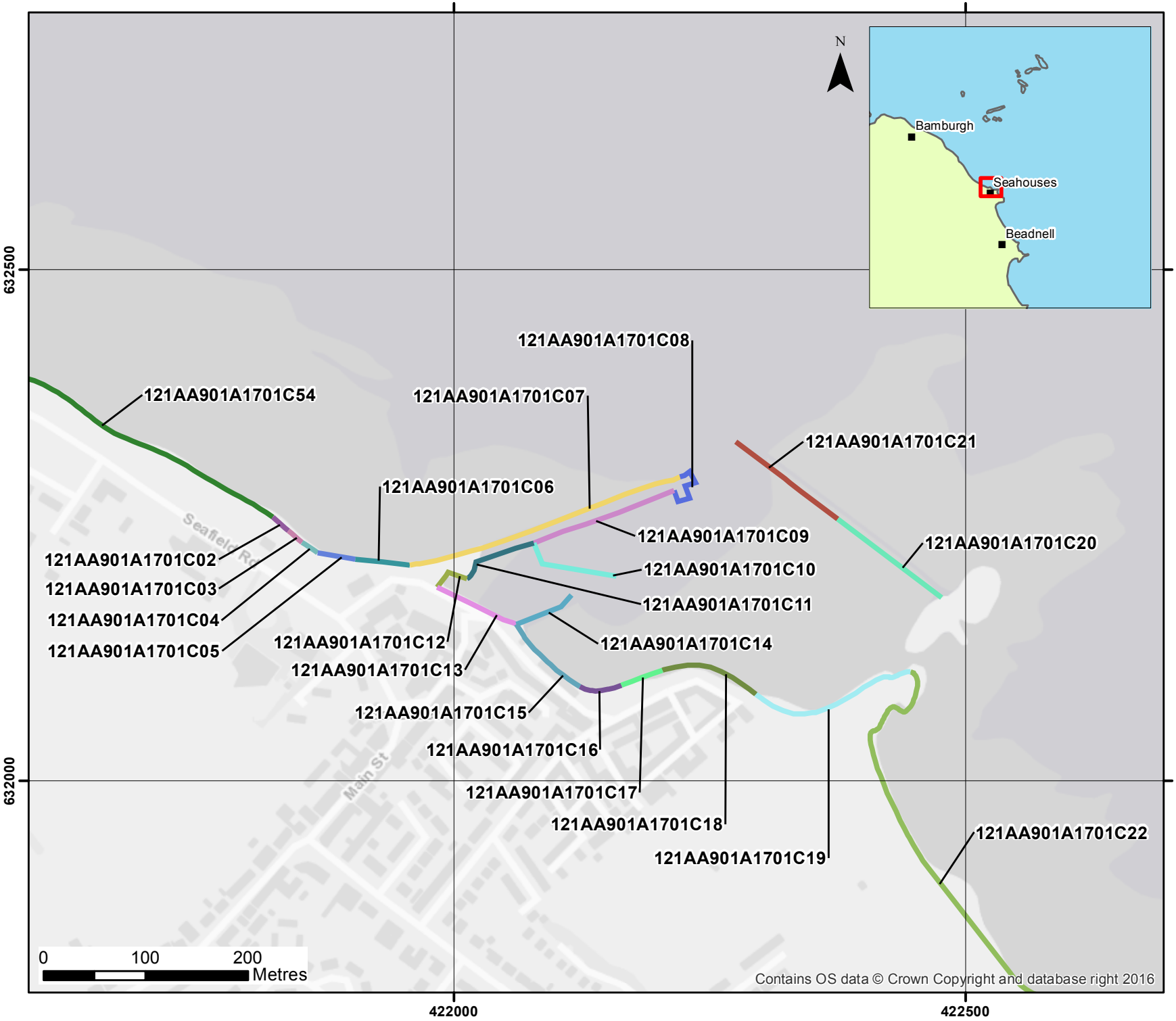

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Asset location

NFCDD Asset Number

Client: North East Coastal Group

Project: Cell 1 Regional Coastal Monitoring Programme

Figure 1 - Map 8

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:5,000 at A4

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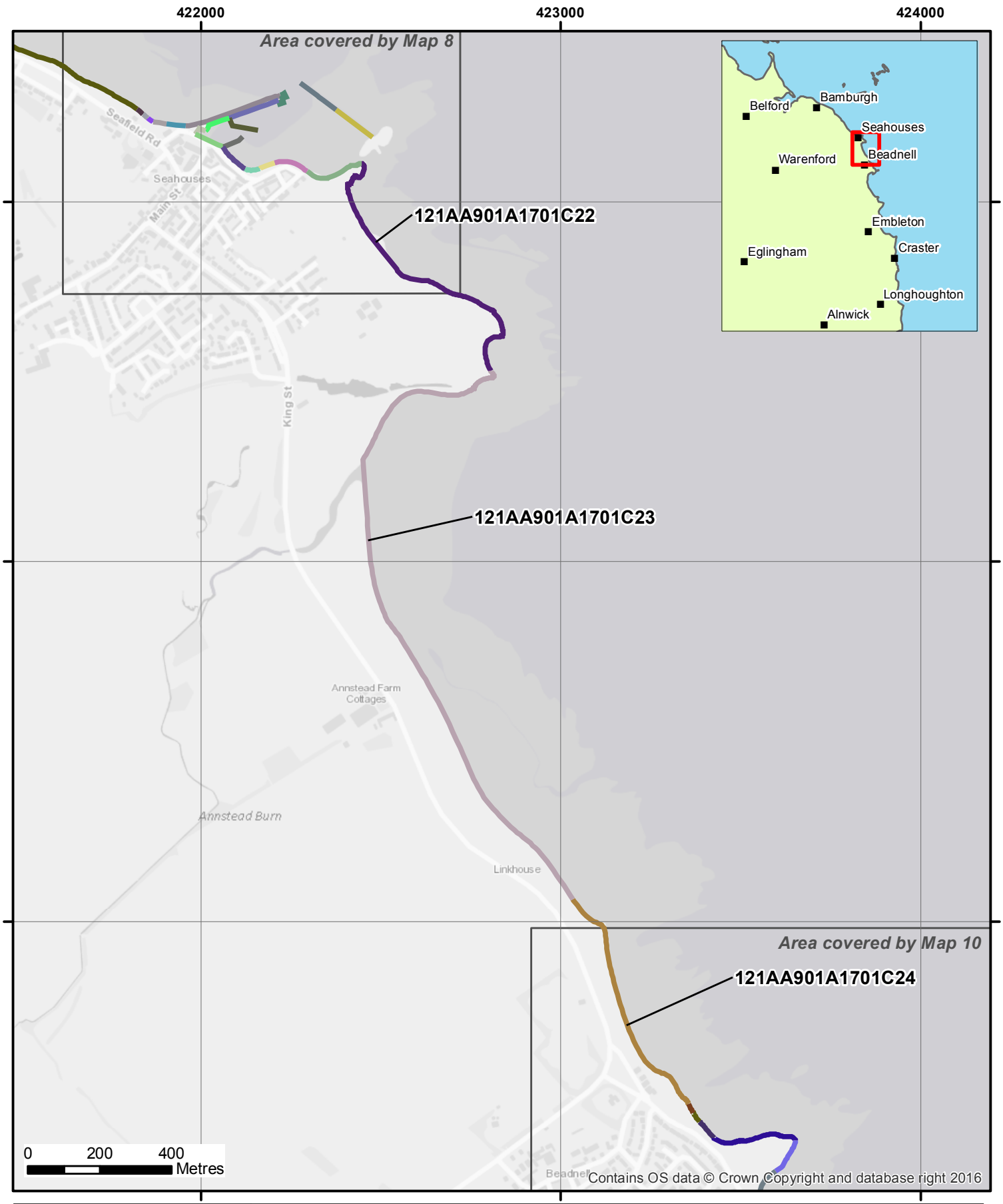

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Asset location

NFCDD Asset Number

Figure 1 - Map 9

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:14,000 at A4

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North East Coastal Group

Project:
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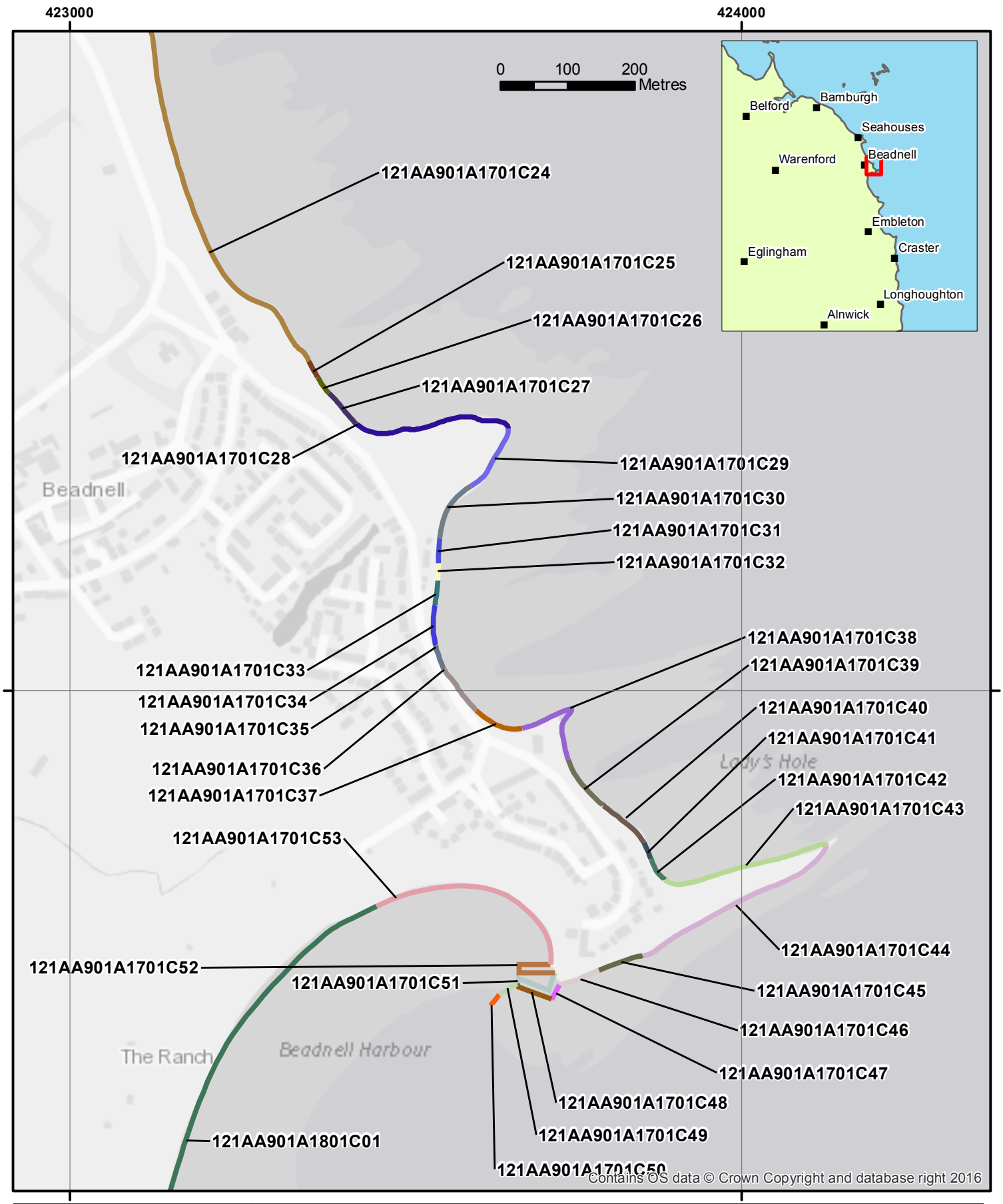

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Asset location

NFCDD Asset Number

Figure 1 - Map 10

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:7,500 at A4

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North East Coastal Group

Project:
Cell 1 Regional Coastal Monitoring Programme

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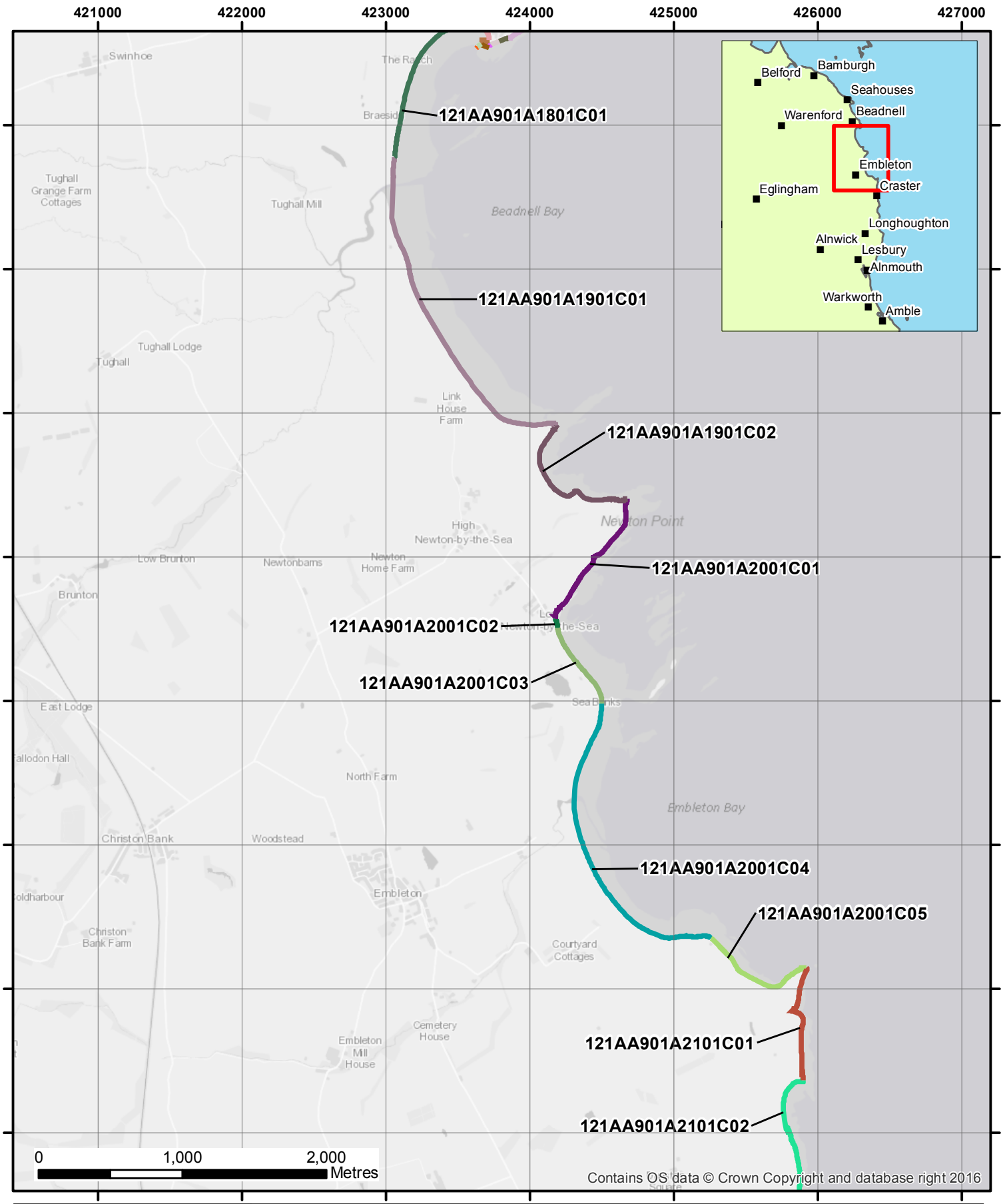

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Asset location

NFCDD Asset Number

Figure 1 - Map 11

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:35,000 at A4

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North East Coastal Group

Project:
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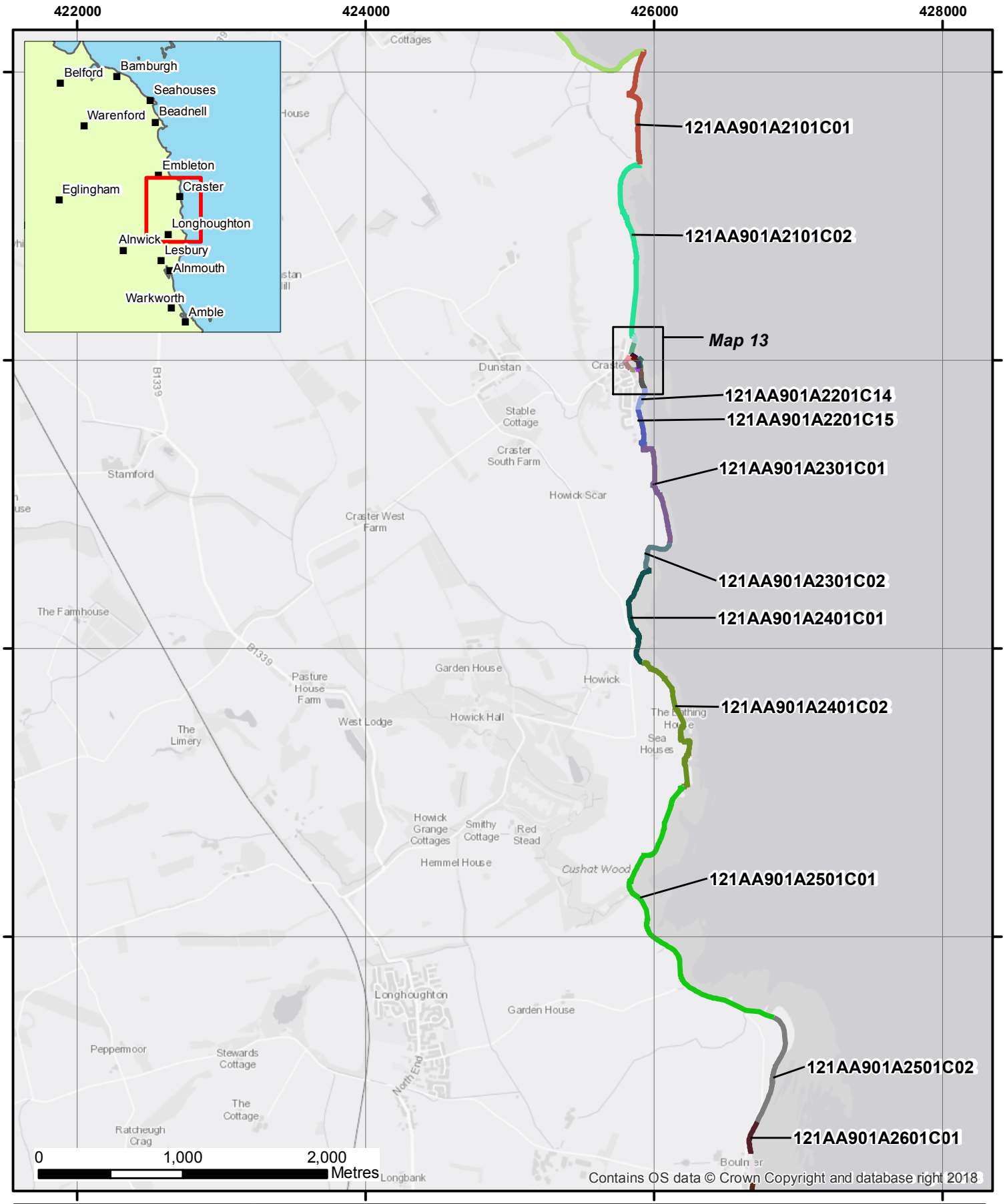

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 12

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:35,000 at A4

Client:
North East Coastal Group

Project:
Cell 1 Regional Coastal Monitoring Programme

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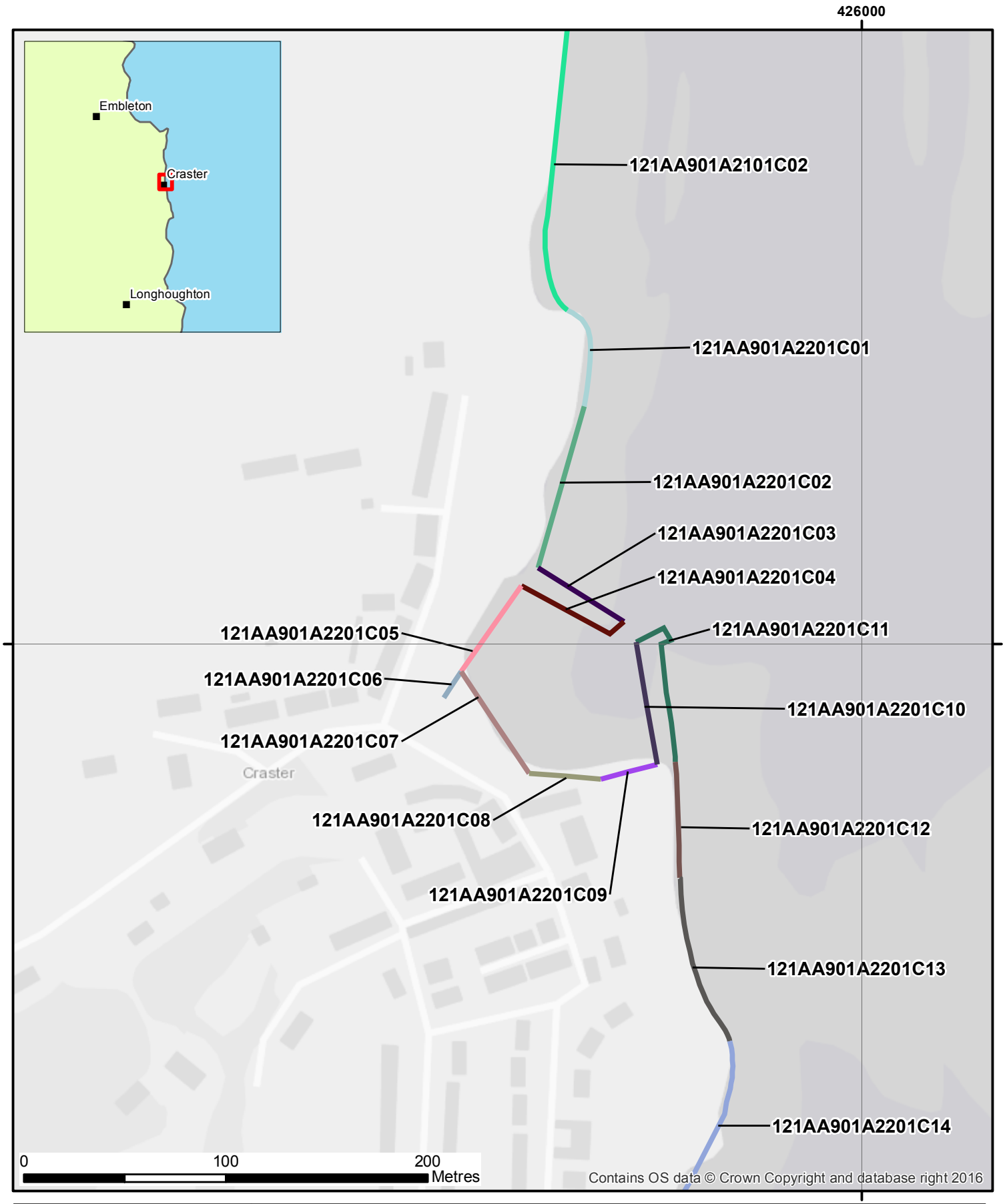

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 13

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:2,500 at A4

Client:
North East Coastal Group

Project:
Cell 1 Regional Coastal Monitoring Programme

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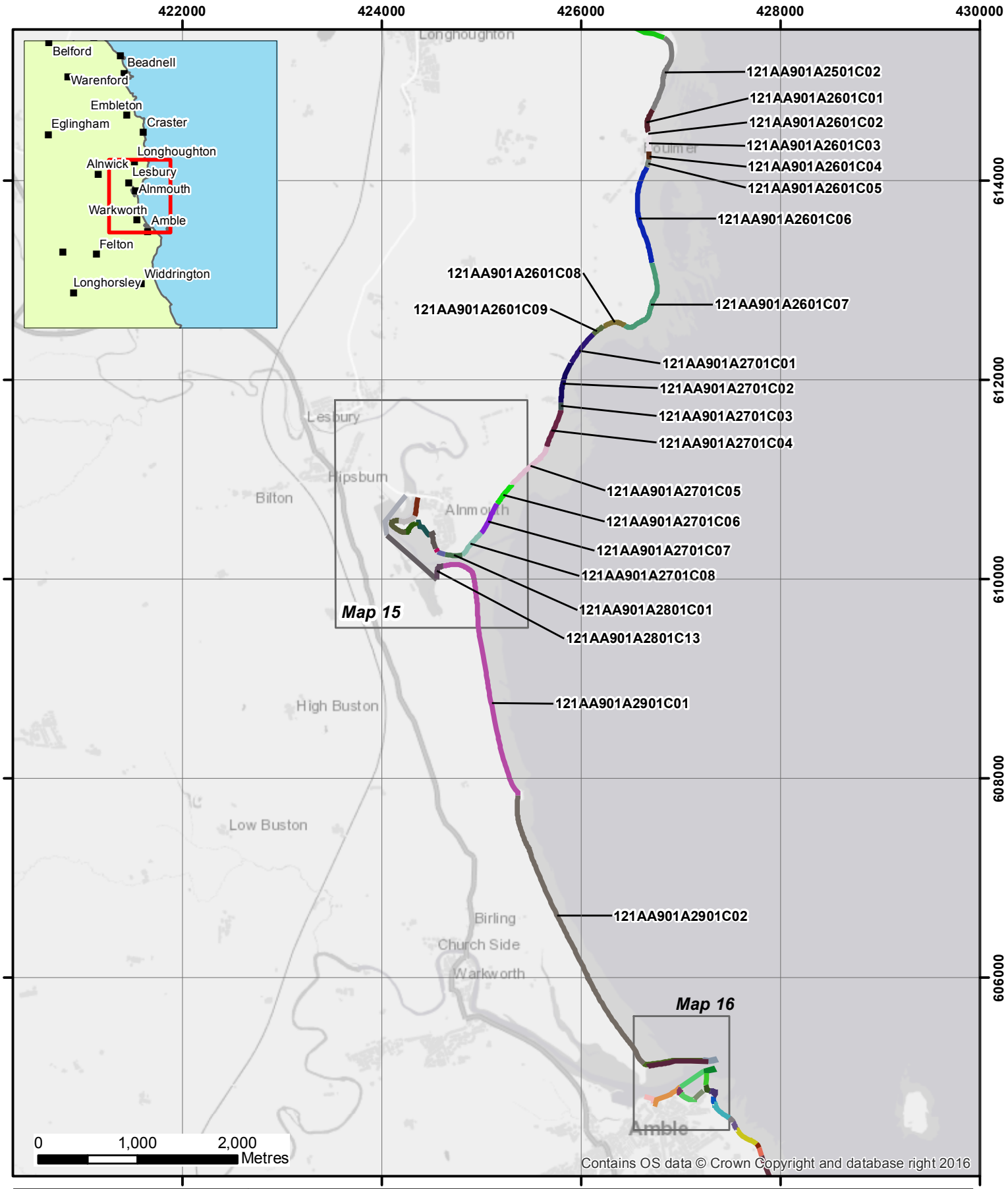

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 14

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:50,000 at A4

Client:
North East Coastal Group

Project:
Cell 1 Regional Coastal Monitoring Programme

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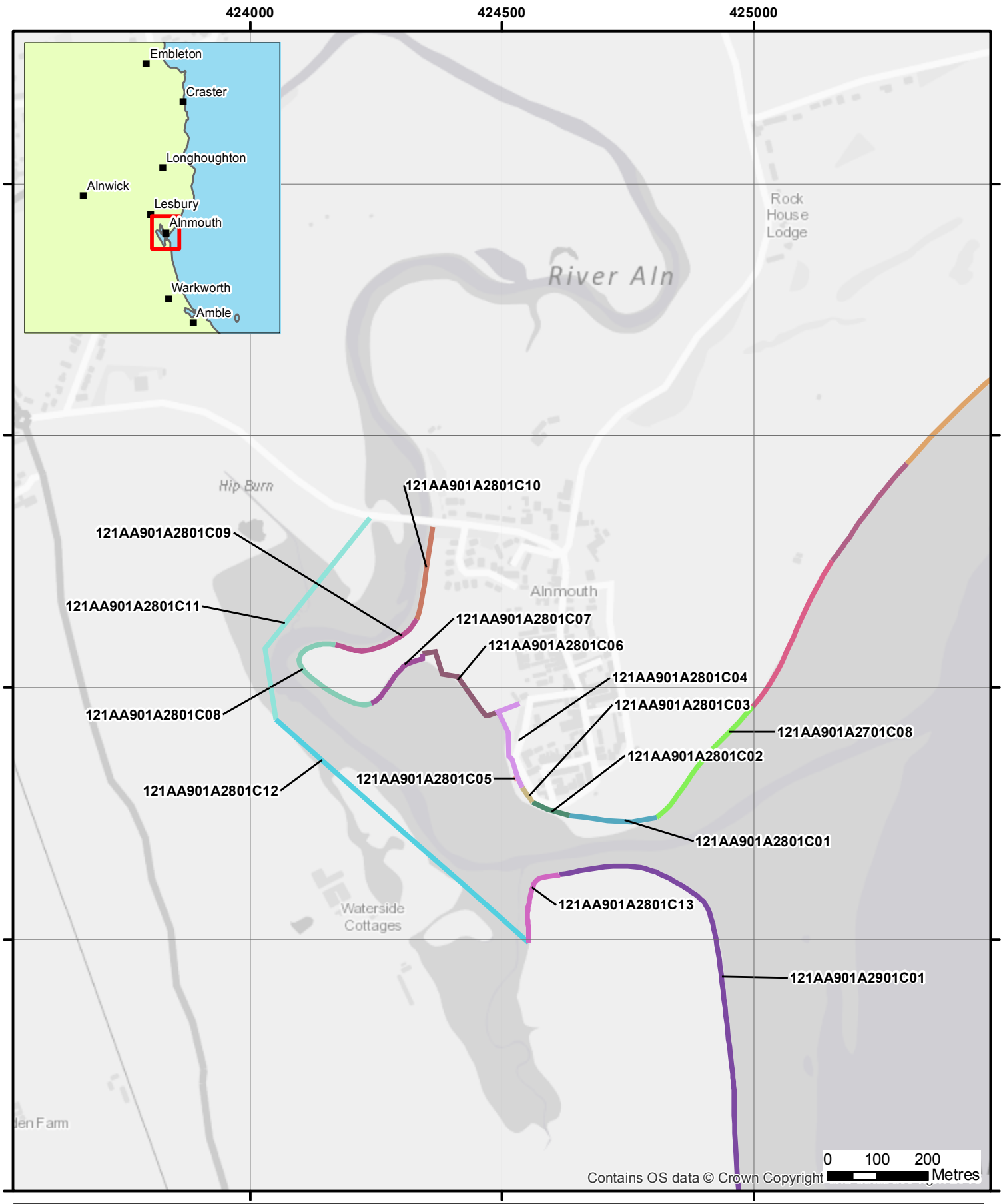

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 15

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:10,000 at A4

Client:
North East Coastal Group

Project:
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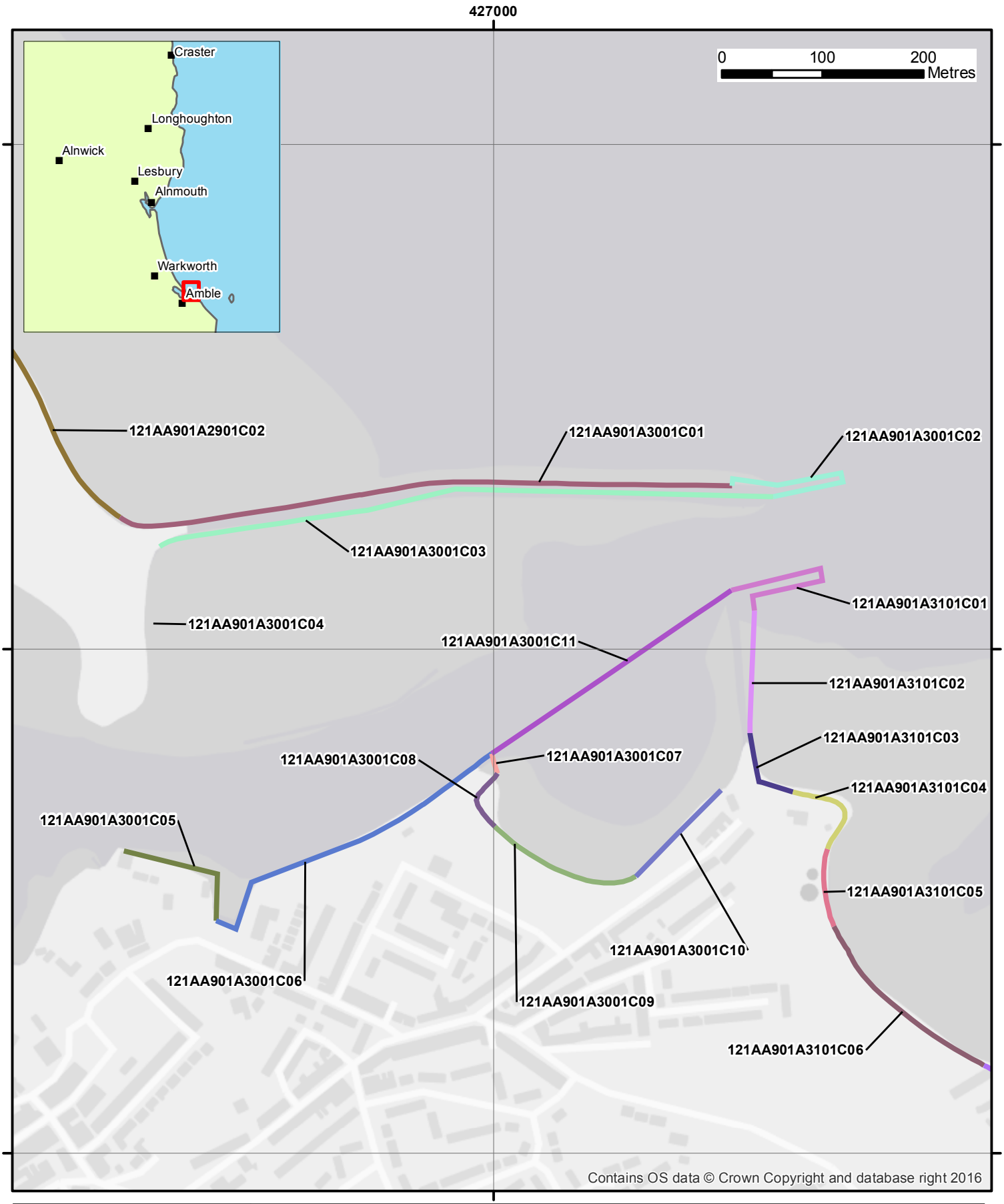

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 16

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:5,000 at A4

Client:
North East Coastal Group

Project:
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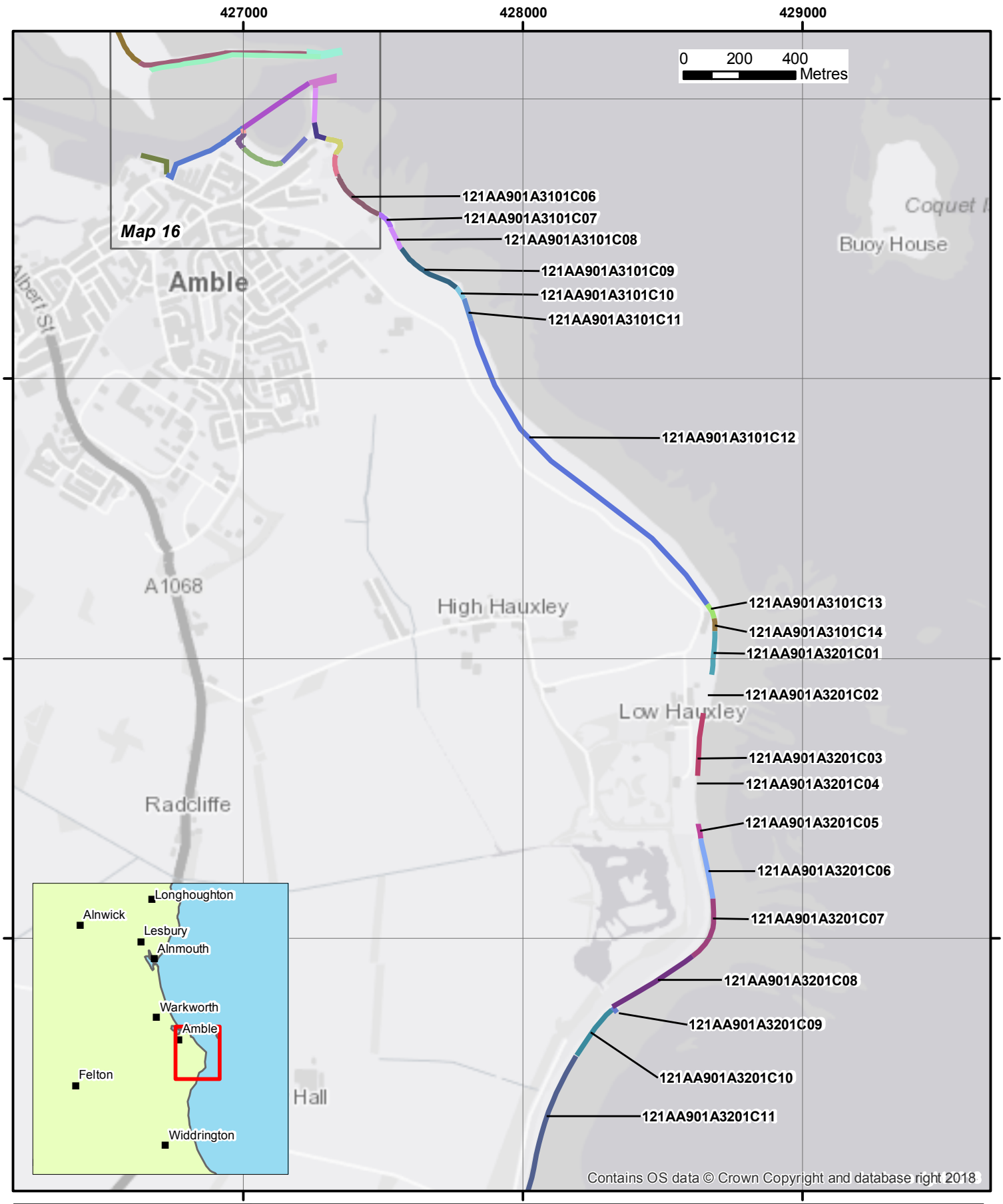

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 17

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:18,000 at A4

Client:
North East Coastal Group

Project:
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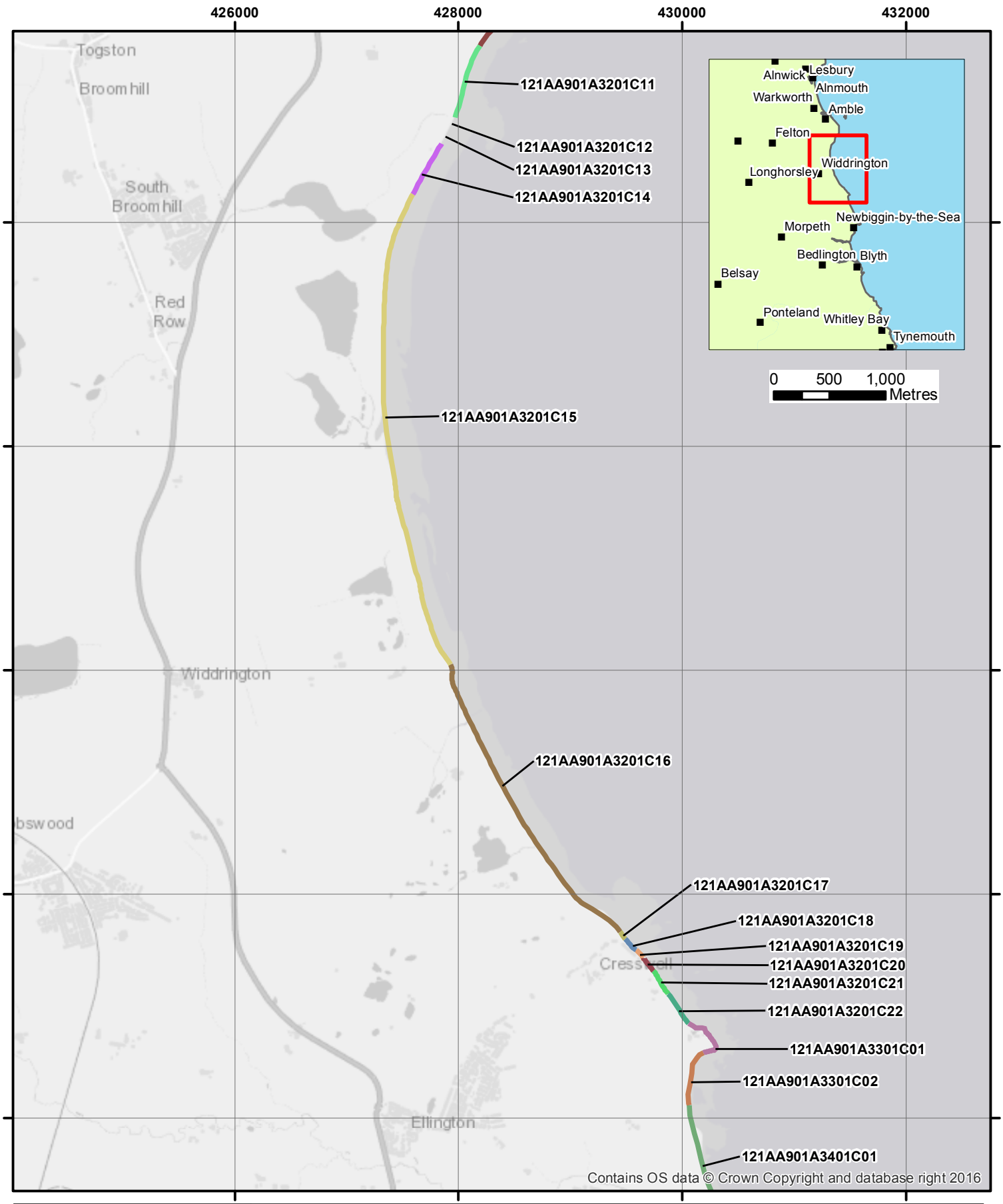

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 18

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:45,000 at A4

Client:
North East Coastal Group

Project:
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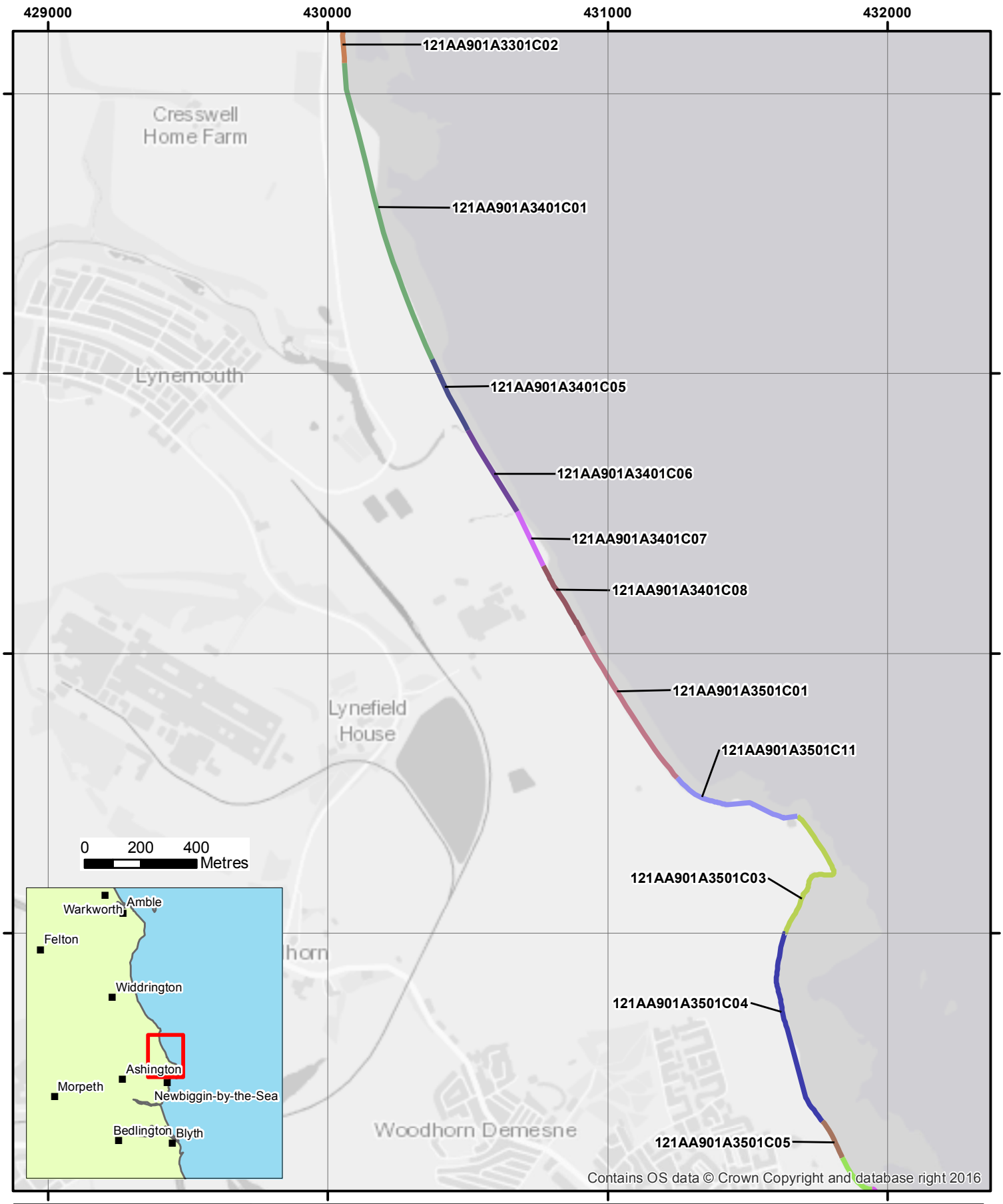

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 19

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:18,000 at A4

Client:
North East Coastal Group

Project:
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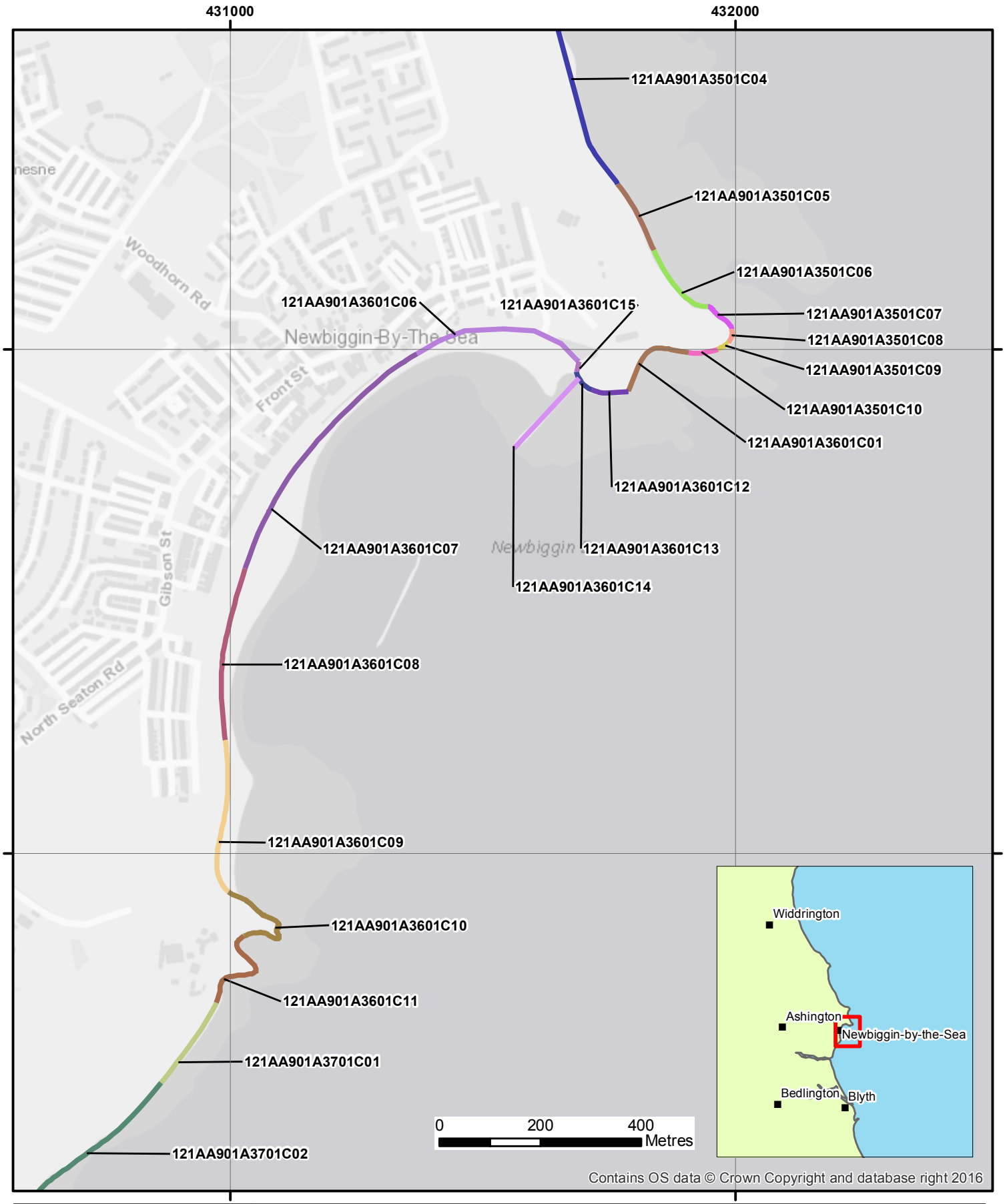

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 20

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:10,000 at A4

Client:
North East Coastal Group

Project:
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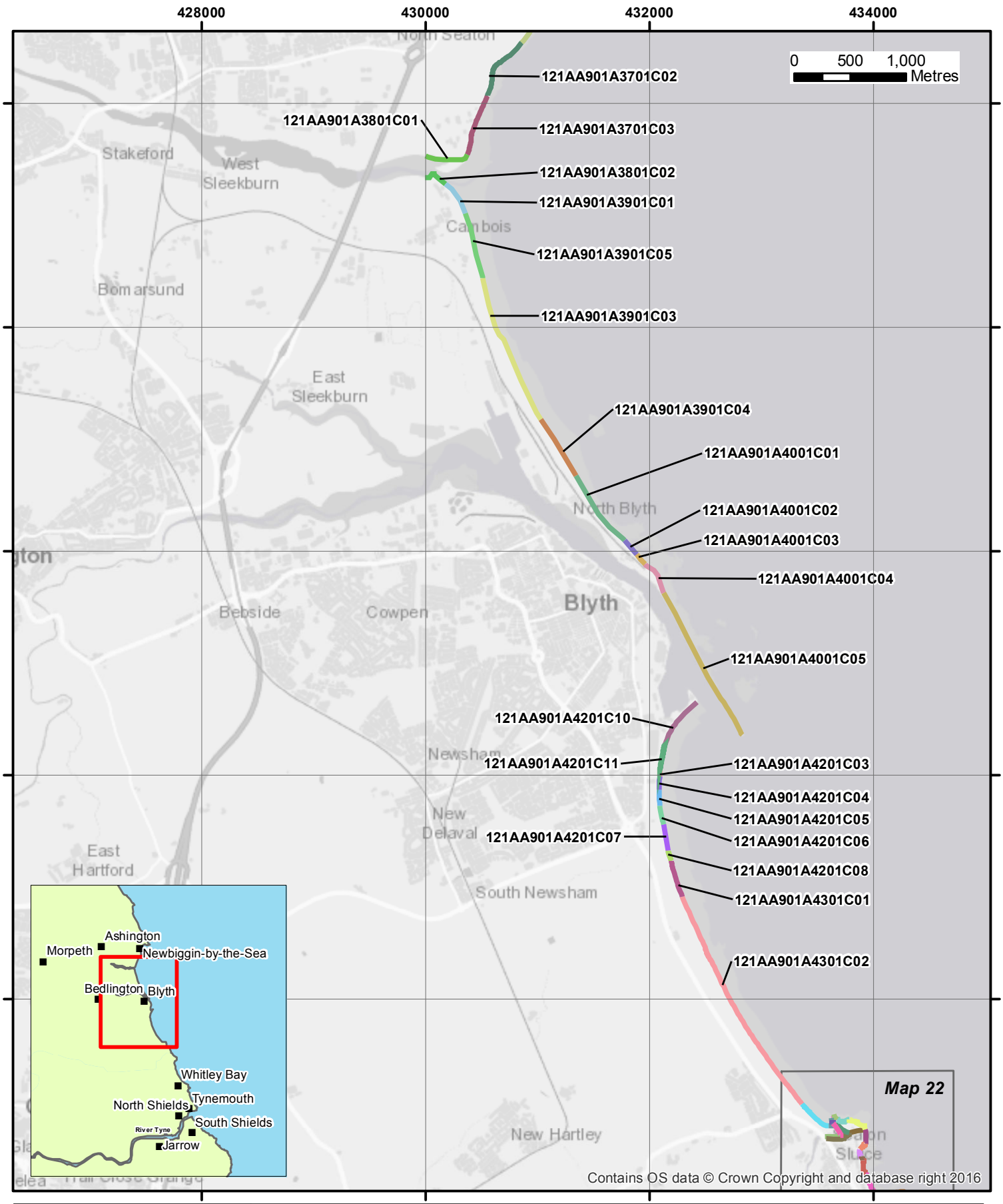

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 21

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:45,000 at A4

Client:
North East Coastal Group

Project:
Cell 1 Regional Coastal Monitoring Programme

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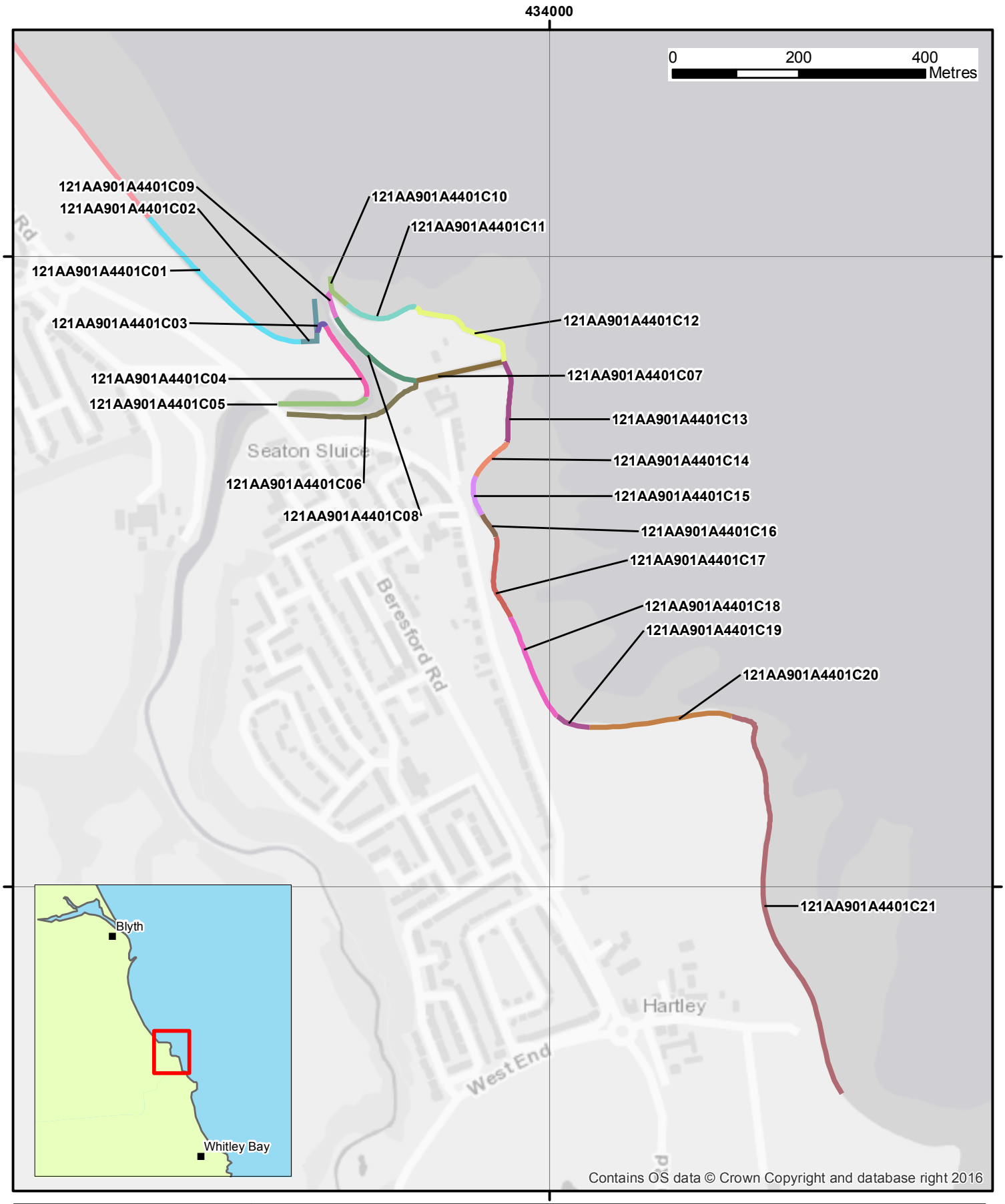

Legend

Asset location

NFCDD Asset Number

Figure 1 - Map 22

Northumberland County Council Frontage

Asset Inspection Report

Drawing Scale 1:8,000 at A4

Client:
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Project:
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Appendix B
Asset Condition & Recommendations

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A0601C01	Slumped cliff to scree slope.	Cliff - Marshall Meadows Point	531.4	30/05/2018	Royal HaskoningDHV	No change evident from last survey. Relatively stable. Short sections of masonry wall along cliff edge close to collapsing over edge. New footpath, post and wire fencing in very good condition.	2	>20	None.	no repairs
121AA901A0601C02	Steep cliff within bay.	Cliff - Marshall Meadows Point	425.2	30/05/2018	Royal HaskoningDHV	No change evident since last survey, Local slumps in softer upper cliff have cut cliff top back close to footpath in small number of areas. Post and wire fencing along footpath in good condition.	3	>20	None.	no repairs
121AA901A0601C03	Slumped cliff with rocky foreshore.	Cliff - Marshall Meadows Point	167.7	30/05/2018	Royal HaskoningDHV	No change evident since last survey. Visible signs of rock fracturing in hard cliff in front of brick building. Future rock falls anticipated. A number of static caravans very close to cliff edge.	3	>20	Monitor cliff falls and alert caravan park as required.	no repairs
121AA901A0601C04	Steep exposed cliff to rocky foreshore.	Cliff - St Johns Haven	1374	30/05/2018	Royal HaskoningDHV	No change evident since last survey. Stable cliffs protected by wide shore platform.	2	>20	None.	no repairs
121AA901A0601C05	Steep hard cliff with rocky foreshore.	Cliff - Needles Eye	925.1	30/05/2018	Royal HaskoningDHV	Rock fall, with cracking along footpath at cliff top in softer material.	3	>20	None.	no repairs
121AA901A0601C06	Slumped cliff with narrow beach and rocky foreshore.	Cliff - East Hope Bay	278.5	30/05/2018	Royal HaskoningDHV	No significant change since last survey.	3	>20	None	no repairs
121AA901A0701C01	Steep hard cliff with rocky foreshore.	Cliff - Brotherston's Bay	708.2	30/05/2018	Royal HaskoningDHV	Minor slumping at Brotherston's Hole, but this does not seem to have worsened since previous survey. A local rock fall and areas of slumping in upper soft material were observed in 2010. Hard rock has caves, fissures and overhangs present. An outfall present at south end. Erosion has caused loss of footpath in places.	3	>20	Some realignment of footpath in land may be required.	routine
121AA901A0701C02	Steep cliff above hard base with narrow beach above a rocky foreshore.	Cliff - Sharper's Head	689.4	30/05/2018	Royal HaskoningDHV	Deterioration since last survey. A rock fall at south end was noted, leaving a rock overhang. Dodd's Well discharges down cliff face towards northern end of frontage. Concrete pavillion structure in poor condition. Static caravans within 20m of cliff edge. Hand rails donw access steps in very poor condition and should be replaced.	4	>20	Monitor erosion (especially overhangs) and inform holiday park as required.	routine
121AA901A0701C03	Steep hard cliff fronting Caravan Park with a rocky foreshore.	Cliff - Green's Haven	176	30/05/2018	Royal HaskoningDHV	No significant change apparent since last survey. Very local rockfall at Sharper's Head. Vertical fissures and caves in hard rock. Occasional local slumps in overlaying softer material. Static caravans within 20m of cliff edge.	3	>20	Monitor cliff erosion and notify holiday park as required.	no repairs
121AA901A0701C04	Concrete breakwater with stepped inner face, founded to rock.	Breakwater - Green's Haven	103.4	30/05/2018	Royal HaskoningDHV	No significant change evident since last survey. Damage to crest (holes and cracks are present) and abrasion to all sections, especially seaward end. High beach levels on inner face. Undercutting of rock apparent.	4	1 - 5	Repairs required at various locations along crest, face and toe.	urgent
121AA901A0701C05	Steep hard cliff with steps giving access to beach.	Steps	93.6	30/05/2018	Royal HaskoningDHV	No significant change since previous survey. Upper concrete steps, lower timber steps and hand railing in fair condition. Masonry retaining walls in good/fair condition, some repairs evident. Deep cave (1m x 2m x 5m deep) formed at base of cliff.	3	11 - 20	Erosion protection to prevent enlarging of cave and potential collapse.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A0701C06	Shale and mudstone cliff with sandy beach foreshore. Upper slope is vegetated.	Cliff - Green's Haven	72.8	30/05/2018	Royal HaskoningDHV	Rockfall leading to collapse of softer material.	4	>20	Monitor erosion and advise holiday park as required.	no repairs
121AA901A0701C07		Apron - Fisherman's Haven	61.9	30/05/2018	Royal HaskoningDHV	Masonry and concrete retaining walls in poor condition. Decrease in beach levels, concrete apron mostly exposed. Strandline at toe of steps.	4	11 - 20	Monitor beach levels.	routine
121AA901A0701C08	Steep cliff	Cliff - Fisherman's Haven	47.4	30/05/2018	Royal HaskoningDHV	Slumps in cliff have affected fenceline and land use of backing common park.	4	>20	None.	no repairs
121AA901A0701C09	Concrete wall fronting steep cliff.	Sea Wall - Fisherman's Haven	100.3	30/05/2018	Royal HaskoningDHV	No change since previous survey. Concrete wall in poor condition, abrasion and spalling of toe.	4	>20	Monitor beach levels.	no repairs
121AA901A0701C10		Wall/Apon/Bank - Fisherman's Haven	20.1	30/05/2018	Royal HaskoningDHV	Abrasion and spalling of concrete apron. Ongoing erosion and slumping of soft upper vegetated cliff. Cut back to within a few metres of fence and access road at crest.	4	>20	Monitor erosion and stability of access road.	no repairs
121AA901A0701C11	Steep cliff with step access to beach.	Steps - Fisherman's Haven	105.4	30/05/2018	Royal HaskoningDHV	No change since previous survey. Concrete steps and hand railing in fair condition, some abrasion and undermining at ramp now partially filled with rock and rubble. Ad-hoc rock armour, narrow beach.	3	11 - 20	Monitor undermining at access ramp.	no repairs
121AA901A0701C12	Steep hard cliff with narrow sandy beach and rocky foreshore.	Cliff - Colly Skerr	804.4	30/05/2018	Royal HaskoningDHV	Cliffs actively slumping. Fenceline and footpath moved away from cliff edge in response. Public warning notice of cliff erosion and footpath re-location.	4	>20	Repairs to fencing along foot path	no repairs
121AA901A0701C13	Well vegetated dune with sandy beach in front. Concrete and masonry wall behind.	Dunes - Meadow Haven	257.6	30/05/2018	Royal HaskoningDHV	Wide, healthy and well vegetated dunes. New vegetation growth at dune edge. Wide sandy foreshore.	2	>20	None.	no repairs
121AA901A0701C14	Concrete and masonry breakwater with stepped crest - North face.	Breakwater - Meadow Haven	718.2	30/05/2018	Royal HaskoningDHV	No significant change since last survey. Refurbishment works undertaken to deck and south face in 2012/13. Seaward face of breakwater generally in good condition. No inspection of below water elements.	2	>20	Inspection of below water elements.	no repairs
121AA901A0701C15	Concrete and masonry breakwater with stepped crest - South face.	Breakwater - Berwick	733.6	30/05/2018	Royal HaskoningDHV	Refurbishment works undertaken in 2012/13. New concrete deck and repointing of joints along outer section and new blockwork face at mid-length. All holding well.	2	>20	Inspection of below water elements.	no repairs
121AA901A0801C08	Grass embankment fronted by rocky foreshore with shingle beach.	Bund - Berwick City Walls	70.3	30/05/2018	Royal HaskoningDHV	No change since previous survey. Narrow but stable steep shingle beach, well vegetated at crest.	2	>20	None.	no repairs
121AA901A0801C07	Concrete wall.	Sea Wall - Berwick City Walls	484.8	30/05/2018	Royal HaskoningDHV	No change since previous survey. Concrete faced masonry wall in fair condition, some cracks/ spalling along cope. Localised undermining and loss of concrete facing/ crest apron at west tie-in (unrepaired since 2004). Slipway over outfall pipe continues to deteriorate with loss of cobbles.	3	11 - 20	Localised repairs to concrete cope and masonry slipway.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A0801C06	High masonry wall around the Fisher's Fort.	Sea Wall - Berwick City Walls	247.8	30/05/2018	Royal HaskoningDHV	No change evident since last survey. Heavy abrasion of masonry toe but no undermining apparent. Previous repairs to stonework and mortar jointing in good condition. Localised evidence of historic cracking.	2	>20	None.	no repairs
121AA901A0801C05	Masonry wall with concrete cope fronted by sandy beach.	Sea Wall - Berwick City Walls	37.8	30/05/2018	Royal HaskoningDHV	No apparent change since last survey. Some signs of abrasion to masonry wall but wall and concrete capping slab generally in good condition. Wall protected by steep, narrow sand/ single beach with ad-hoc rock/ concrete on foreshore.	3	>20	None.	no repairs
121AA901A0801C04	Short section of rock revetment.	Revetment - Berwick City Walls	54.5	30/05/2018	Royal HaskoningDHV	Rock revetment in good condition, armour stones stable with no signs of erosion or movement at the toe. High beach levels burying toe. Structure extended east to slipway c2010. Timber slipway is obsolete.	2	>20	None.	no repairs
121AA901A0801C03	Steel sheet piles with concrete cope including short sections of masonry sea wall and a small dock area.	Other - Berwick City Wall	388.7	30/05/2018	Royal HaskoningDHV	Sheet piles in good condition, some minor corrosion. Minor cracks and spalling along cope and surfacing. Ladders and timber fenders in good. Masonry wall in fair condition, some cracks and movement evident, corrosion to hand railings.	2	>20	Monitor movement in masonry wall. Repair cracks. Replace corroded hand rails.	routine
121AA901A0901C04	Gabions with sloping grassy bank behind. Concrete and masonry revetment slope upstream of the gabions.	Bank and Revetment - Davies Batt	519.9	06/06/2018	Royal HaskoningDHV	Continued deterioration of many gabions along toe. Localised corrosion of lower baskets and loss of stone causing settlement/ slumping of crest. Newer circular mesh starting to be damaged.	4	1 - 5	The defence is unlikely to fail catastrophically. Re-assess benefits of maintaining defence.	urgent
121AA901A0901C05	Concrete and masonry quay wall.	Sea Wall - South Bank	58.5	06/06/2018	Royal HaskoningDHV	No apparent change since last survey. Concrete facing to part of masonry wall in fair condition. Localised loss of mortar resulting in large gaps between masonry blocks near flap valve.	3	10	Replace mortar between masonry blocks.	routine
121AA901A0901C06	Masonry Pier protecting the small dock where the RNLI Lifeboats launch ramp is located and tipped rock revetment protecting the root of the pier.	Pier - Spittal Quay	158.6	06/06/2018	Royal HaskoningDHV	No significant deterioration, similar to last survey. Resurfacing undertaken. Localised cracks to concrete capping and exposed reinforcement. Deck and ladders in fair condition. Movement in rock armour at slipway.	3	20	Maintenance	routine
121AA901A0901C07	Vertical timber retaining wall with large masonry toe.	Wall - South Bank	191.4	06/06/2018	Royal HaskoningDHV	No substantive change in defence. Timber retaining wall in fair condition, some loss of fill at repaired section. Ongoing deterioration of timber jetty and loss of deck boards. Beach levels lower at eastern end. Spalling of repairs to RNLI concrete structure.	4	15	Secure access, replace missing boards. Detailed inspection beneath structure.	routine
121AA901A0901C08	Well vegetated dune with narrow beach to front.	Dunes - Spittal	305.2	06/06/2018	Royal HaskoningDHV	Wide, well vegetated dunes. New dune growth in areas of erosion noted in last inspection. Narrower beach at western end.	1	>20	Control pedestrian erosion. Review behaviour based on geomorphological review.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A0901C09	Concrete wall and rock apron.	Sea Wall - Spittal Point	28.7	06/06/2018	Royal HaskoningDHV	The concrete wall in fair condition, gaps in construction joints at east end. Wall covered by dune.	2	20	Review behaviour based on geomorphological review.	no repairs
121AA901A0901C10	Concrete revetment with rock armour.	Revetment - Spittal Point	40.2	06/06/2018	Royal HaskoningDHV	No change to rock armour fronting carpark, remains in good condition. Beach levels slightly lower than 2016.	2	>20	Review behaviour based on geomorphological review.	no repairs
121AA901A1001C01	Gabions fronted by rock armour.	Wall and rock armour - Spittal Point	217.6	06/06/2018	Royal HaskoningDHV	Rock revetment in good condition. Beach levels up to 2m higher than 2016 (groynes not visible). Groynes largely ineffective. No further damage to crest gabions.	3	20	Potential to remove groynes.	routine
121AA901A1001C02	Concrete wave wall with handrails. Stepped access to the promenade.	Sea wall - Spittal Promenade	493.4	06/06/2018	Royal HaskoningDHV				Requires consideration in review of geomorphology.	
121AA901A1001C03	Concrete wave wall with handrails. Stepped access to the promenade.	Sea Wall - Spittal Promenade	328	06/06/2018	Royal HaskoningDHV	Concrete seawall, hand railings, flap valves, joint sealant and blockwork promenade in good condition. Beach levels are approximate 1m lower than 2016 but this is not seen as being critical.	1	>20	None	no repairs
121AA901A1001C04	Rock revetment to end of seawall (Defence Code 10b/09/3).	Revetment - Spittal Promenade	60.1	06/06/2018	Royal HaskoningDHV	Higher concrete seawall, hand railing and block work promenade in good condition. Localised area of joint sealant missing. Beach levels about 1m lower than in 2016 at northern end, 0.2m at the southern end.	2	>20	Replace joint sealant.	routine
121AA901A1001C05	Vegetated cliffs fronted by rock foreshore/platform.	Cliff - Spittal Promenade	158.2	06/06/2018	Royal HaskoningDHV	No significant change since last survey. Rock armour in good condition, some localised flattening/ displacement of toe rocks fronting seawall. Beach levels have dropped by around 0.2m compared to 2016.	2	>20	None	no repairs
121AA901A1101C01	Vegetated cliff with rock platform foreshore, with railway behind.	Cliff - East of Scremeston	1666	06/06/2018	Royal HaskoningDHV	No substantive change. Local beach levels appear higher, increase in embryo dune.	3	>20	None	no repairs
121AA901A1101C02	Brick structure forming promontory in vegetated cliffs.	Other - Scremerston	19.9	06/06/2018	Royal HaskoningDHV	Slow deterioration of relic lime kiln and undermining and collapse of rock foundation. No significant change since 2016.	4	06-Oct	Monitor and consider repair or removal if considered unsafe.	no repairs
121AA901A1101C03	Vegetated cliff with rock platform with railway behind.	Cliff - Scremerston	204.8	06/06/2018	Royal HaskoningDHV	Some localised rock falls apparent, large rocks on foreshore. Undercutting and slips of vegetation. No significant change.	3	>20	None	no repairs
121AA901A1101C04	Vegetated cliffs fronted by brick structure and outfall.	Other - Scremerston	134.9	06/06/2018	Royal HaskoningDHV	No visible change in relic masonry lime kiln or concrete outfall structure fronting Sea House. little change in beach of coastal slope.	2	20	Investigate water seepage for general voiding. Confirm ownership/responsib ility.	no repairs
121AA901A1101C05	Vegetated cliffs fronted by rock platform and narrow shingle beach.	Cliff - Scremerston	524.3	06/06/2018	Royal HaskoningDHV	Slow continued erosion.	2	>20	None	no repairs

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A1201C01	Vegetated cliffs fronted by rock outcrops and sandy beach.	Dunes - The Skerrs	1526	06/06/2018	Royal HaskoningDHV	Beach levels slightly down on 2016 in some areas but no significant erosion of the dunes over the wider area.	2	20	Monitor erosion of dunes/ soft cliffs and safety of relic fort structure.	no repairs
121AA901A1201C02	Wide beach with rock outcrops with vegetated dunes behind.	Dunes - Cheswick Black Rocks	979.1	06/06/2018	Royal HaskoningDHV	No significant erosion of dunes and minor embryo dunes growth since 2016.	2	>20	None	no repairs
121AA901A1201C03	Vegetated dunes fronted by sandy beach.	Cliff/Dune - Cheswick	1193	06/06/2018	Royal HaskoningDHV	Well vegetated wide dune system with generally bear faced forward dune face but not obvious erosion.	3	20	None	no repairs
121AA901A1301C01	Vegetated dunes fronted by a wide sandy beach.	Dune - Cheswick Sands	2388	21/06/2018	Royal HaskoningDHV	Wide flat foreshore with well vegetation wide dune system behind. Some embryo dune growth apparent. Minor changes at the North Low channel but generally accretion.	2	>20	None	no repairs
121AA901A1401C31			1896	21/06/2018	Royal HaskoningDHV	Areas of minor erosion but mainly development of low embryo dune over open coast section. Apparent progressive change in vegetation over area around South Low entrance indicating accretion. Damage to embankment just north of South Low Sluice.	2	>20	Repair local low section of embankment	Urgent
121AA901A1401C01	Sluice with local stone protection to sides.	Sluice - Goswick Sands	21.1	21/06/2018	Royal HaskoningDHV	Sluice in good condition. Minor damage to stone pitching.	2	>20	Minor repairs to local stone pitching protection.	routine
121AA901A1401C02	Low natural coastal slope fronted by a sandy beach located just north of the Lindisfarne Causeway.	Slope - Goswick Sands	1123	21/06/2018	Royal HaskoningDHV	Wide well vegetated foreshore with vegetated embankment behind. No significant change.	2	>20	Review tidal access at Beal Point.	no repairs
121AA901A4901C01	Low vegetated dunes fronted by rocky foreshore.	Dune - Holy Island	586.7	28/09/2018	Royal HaskoningDHV	Wide silty foreshore with road and low well vegetated dunes behind.	2	>20	None.	no repairs
121AA901A4901C02	Low vegetated cliff with rocky foreshore.	Dune - Holy Island	204.2	28/09/2018	Royal HaskoningDHV	Narrow cobble beach in front of low earth cliff. Historic erosion and cliffing along most of length but not recent. Some vegetation growth on foreshore. Fence close to edge.	3	6 - 10	Monitor erosion.	no repairs
121AA901A4901C03	Sandstone cliff with rocky foreshore.	Cliff - Holy Island	341.5	28/09/2018	Royal HaskoningDHV	Cliffs relatively stable (vegetated) in parts, locally actively eroded again at southern end. Previous defects to low wall not visible.	3	11 - 20	None.	no repairs
121AA901A4901C04	Rocky foreshore going down to a shingle beach.	Foreshore - Holy Island	165.5	28/09/2018	Royal HaskoningDHV	Steep shingle foreshore fronting steep vegetated bank.	2	>20		routine
121AA901A4901C05	Steep hard cliff fronted by a rocky foreshore	Cliff - Holy Island	227.4	28/09/2018	Royal HaskoningDHV	No change. Generally good along hard rock cliff, no further rock falls but rock highly fissured. Short section of soft cliff subject to occasional slumping.	2	>20		no repairs
121AA901A4901C06	Masonry and concrete wall protecting concrete access ramp fronted by a rocky foreshore.	Wall - Holy Island	51.6	28/09/2018	Royal HaskoningDHV	Previous defects to toe of wall repaired.	2	6 - 10		routine
121AA901A4901C07	Steep hard cliff fronted by a rocky foreshore.	Cliff - Holy Island	160.7	28/09/2018	Royal HaskoningDHV	Hard rock outcrop protecting harbour stable. No evidence of rock falls.	2	>20	n/a	no repairs

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4901C08	Concrete quay with access steps. Concrete slipway.	Wall - Holy Island	69.4	28/09/2018	Royal HaskoningDHV	South side of harbour jetty in good condition. No undermining evident, some abrasion of concrete steps, boat ramp and deck in good condition. Recent repairs.	2	>20	none.	routine
121AA901A4901C09	Pier trunk leading out to quay.	Breakwater - Holy Island Pier	74.8	28/09/2018	Royal HaskoningDHV	Condition of harbour jetty improved to good following repairs since 2014 inspection.	2	>20		routine
121AA901A4901C10	Sandy beach with some shingle	Foreshore - The Harbour	302.6	28/09/2018	Royal HaskoningDHV	Beach appears stable. Low dunes behind cobble beach are healthy and well vegetated.	2	>20		routine
121AA901A4901C11	Rubble or cobble bank with a rocky foreshore.	Bank - Holy Island	429.7	28/09/2018	Royal HaskoningDHV	Strand-line high on beach. Occasional localised undercutting and erosion of earth bank back to castle access track. Stone blocks and rubble scattered on foreshore. Shoreline becomes more stable towards east end.	3	11 - 20	Erosion protection at north end.	routine
121AA901A4901C12	Masonry wall fronted by a rocky foreshore.	Wall - Holy Island	161.7	28/09/2018	Royal HaskoningDHV	Ongoing erosion of earth bank in front of south end of dry stone wall causing undercutting of foundation. Some missing stones along crest and breakup of concrete coping.	3	11 - 20	Infill void under wall, replace missing stones, repair concrete coping.	routine
121AA901A4901C13	Steep hard cliff fronting Lindisfarne Castle with a rocky foreshore. Soft cliffs overlying rock at eastern end.	Cliff - Holy Island	308.6	28/09/2018	Royal HaskoningDHV	Hard rock sections generally stable. Some erosion in soft cliffs. Stones spilled out of rock-filled netting in upper cliff. Continued erosion of soft upper cliff at east end.	3	6 - 10	Maintain netting, extend netting at east end.	routine
121AA901A4901C14	Cobble and pebble bund fronted by a rocky foreshore.	Bund - Holy Island	532.6	28/09/2018	Royal HaskoningDHV	Shingle beaches healthy. Partial erosion, undercutting and collapse of low earth bank along local section on east side.	3	11 - 20	Repair collapsed wall. Realign fencing.	routine
121AA901A5001C01	Soft vegetated cliff fronted by a rocky foreshore.	Cliff - Holy Island	321.7	28/09/2018	Royal HaskoningDHV	Low earth cliffs shows ongoing erosion, cliffing and collapse along most of its length. Higher cliff has slumping along its length but this presents no immediate issues. At north end erosion exposing large quantity of pebbles in bank.	3	11 - 20	Continue to monitor.	no repairs
121AA901A5001C02	Cobble and pebble bund fronted by a rocky foreshore.	Bund - Holy Island	259.3	28/09/2018	Royal HaskoningDHV	Steep shingle foreshore and noticeable shingle ridge along crest. Shingle encroaching on low lying vegetated hinterland, possibly due to storm wave run-up.	2	>20	Continue to monitor.	no repairs
121AA901A5001C03	Low vegetated cliff with a rocky foreshore.	Cliff - Holy Island	365.1	28/09/2018	Royal HaskoningDHV	Steep shingle foreshore and well vegetated low lying hinterland behind. Localised erosion and cliffing of low earth bank at back of beach and some shingle encroaching on grass area.	2	>20	Continue to monitor.	no repairs
121AA901A5001C04	Steep shingle beach and well vegetated low earth bank behind.	Shingle Beach - Holy Island	284.5	28/09/2018	Royal HaskoningDHV	Historic erosion along much of earth bank exposing pebbles in bank but some regrowth of vegetation evident.	2	>20	None.	no repairs
121AA901A5001C05	Steep vegetated cliff with a rocky foreshore.	Cliff - Holy Island	610.8	28/09/2018	Royal HaskoningDHV	Ongoing erosion of high earth cliff along most of the frontage. Narrow shingle foreshore. Post and wire stock fencing erected in worst-affected areas remains intact. Rate of erosion appears to have slowed.	3	6 - 10	Monitor erosion, repair fencing.	no repairs

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A5001C06	Vegetated dunes fronted by a narrow sandy beach and a rock outcrop.	Dunes - Holy Island	1047	28/09/2018	Royal HaskoningDHV	Healthy width beach backed by high well vegetated dunes. Ongoing erosion and cliffing along much of the dunes face but some vegetation regrowth evident. Dunes to north and south ends protected by headlands and stable.	3	11 - 20	None.	no repairs
121AA901A5001C07	Steep rock cliff fronted by a rocky foreshore with vegetated dunes behind.	Cliff - Holy Island	268.9	28/09/2018	Royal HaskoningDHV	Healthy width beach backed by high well vegetated dunes. Ongoing erosion and cliffing along much of the dunes face but some vegetation regrowth evident. Dunes to north and south ends protected by headlands and stable.	2	>20	None.	no repairs
121AA901A5001C08	Vegetated dunes fronted by a sandy beach.	Dunes - Holy Island	419.2	28/09/2018	Royal HaskoningDHV	Wide sandy beach backed by high but narrow vegetated dunes.	2	11 - 20	None.	no repairs
121AA901A5001C09	Steep vegetated dunes fronted by a rocky foreshore and boulderrs at dune toe.	Dune - Holy Island	712.3	28/09/2018	Royal HaskoningDHV	Well vegetated high and wide dunes to rear of rock platform with rock platform and narrow cobble beach. No signs of erosion of dunes.	2	>20	None.	no repairs
121AA901A5001C10	Vegetated dunes fronted by sandy beach.	Dune - Holy Island	3264	28/09/2018	Royal HaskoningDHV	Wide flat sandy beach with high and wide well vegetated dunes behind. Embryo vegetation growth along most of foreshore. No erosion of dunes evident.	2	>20	None.	no repairs
121AA901A5001C11	Sand flats with saltmarsh adjacent to causeway road.	Dune - Holy Island	3629	28/09/2018	Royal HaskoningDHV	Sand flats and saltmarsh protecting causeway road appear stable. Sporadic vegetation growth across wide area foreshore on north side of causeway. Previously noted damage to road surface near western end not observed.	2	>20	None.	no repairs
121AA901A1401C23	Natural coastal slope fronted by wide sand/mudflats, sheltered by Lindisfarne Causeway and Holy Island.	Slope/Bank - Fenhan Flats	4505	12/09/2018	Royal HaskoningDHV	Wide well established salt marsh backed by vegetated coastal slopes. No change evident since last survey. Patchy shingle foreshore at south end. Timber retaining wall by Fenham Mill covered by dense vegetation and appears in poor condition. Ad-hoc stone retaining wall in poor condition. Slipway in fair condition, masonry wall directly south of slipway in good condition. 500m north of Fenham-le-Moor birhide there is an actively retreating mud slope approximately 4m in height.	2	>20	Monitor timber retaining wall and stone retaining wall around Fenham Mill Cottage. Monitor erosion north of Fenham-le-Moor.	no repairs
121AA901A1401C24	Natural coastal slope fronted by wide sand/mudflats, sheltered by the Causeway and Holy Island. Located at the back of the bay, with slightly higher hinterland.	Slope/Bank - White Hall	2182	12/09/2018	Royal HaskoningDHV	Wide well established salt marsh backed by vegetated coastal slopes. No change evident since last survey.	2	>20	None.	no repairs
121AA901A1401C98	Embankment with stone and asphalt reveted toe fronting lower-lying area of Ross.	Embankment - Cockly Knowes	1270	12/09/2018	Royal HaskoningDHV	Wide and well vegetated salt marsh and backed by heavily overgrown pitched stone flood embankment. Some loss of binding resulting in gaps between stones.	3	>20	Remove vegetation, fill gaps between stones	routine

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121AA901A1401C25	Natural coastal slope fronted by wide sand/mudflats, sheltered by the causeway and Holy Island. Located eastern end of the bay, with lowered land behind	Slope/Bank - Cockly Knowes	1076	12/09/2018	Royal HaskoningDHV	Wide vegetation mudflats backed by well vegetated high dune ridge. One historic blowout at north end.	2	>20	None.	no repairs
121AA901A1401C99	Natural 'spit' of dunes, separated from Ross Point by wide opening.	Dunes - Guile Point	1543	12/09/2018	Royal HaskoningDHV	Inland-facing side of dune spit shallower, well vegetated and stable. Seaward face showing some historic erosion and slumping along some of its length, particularly towards the northern end. The dune at the tip of the spit is steeper and shows signs of ongoing erosion. Some recent regrowth of vegetation along foreshore, particualy towards south of the asset. Unvegeteted embryo dune developing along the seaward face of the asset.	2	>20	Monitor erosion of seaward face and around northern tip.	routine
121AA901A1401C06	Low natural dune coastline, forming Ross headland. Sandy beach fronting the dunes.	Dunes - Ross Back Sands	3138	12/09/2018	Royal HaskoningDHV	Wide flat foreshore backed by well vegetated low dune system. Embryo vegetation growth on foreshore continues. Wide Open used by nesting birds in June / July. Embroyo dune along much of the asset length which develops into a sporadically vegetated intetidal plateau. Localised erosion of dune crest at informal access points.	2	>20	Monitor erosion of dune crest at informal access points.	no repairs
121AA901A1401C26	Low natural coastal slope forming northern part of the bay, fronted by wide sandy beach.	Slope - Budle Bay	245.6	12/09/2018	Royal HaskoningDHV	Wide flat foreshore backed by well vegetated sand spit. No significant change since last survey.	2	>20	None.	no repairs
121AA901A1401C27	Mortared rock revetment.	Revetment - Budle Bay	125.5	12/09/2018	Royal HaskoningDHV	Wide flat foreshore backed by grouted stone revetment and well vegetated embankment. Large crack in the north end of the defence with some rotational slipping evident.	3	1 - 5	Repair damaged section of revetment.	routine
121AA901A1401C28	Low natural vegetated coastal slope fronted by mudflats.	Slope - Budle Bay	136.4	12/09/2018	Royal HaskoningDHV	Wide sandy foreshore backed by well vegetated embankment. Brea of embankment at north end. High beach levels at toe, occasional rip-rap stone visible but largely buried.	3	1 - 5	Maintenance	routine
121AA901A1401C29	Mortared rock revetment fronted by mudflats.	Revetment - Budle Bay	616.9	12/09/2018	Royal HaskoningDHV	Wide sandy foreshore backed by grouted stone revetment and vegetated embankment. Significant horizontal and vertical cracking at southern end, with localised slumping of embankment to rear. Ongoing lowering of foreshore and undermining of toe along most of the structure. Some minor horizontal cracking and localised broken sections along toe.	3	1 - 5	Repair damaged section of revetment at south end. Fill void along toe, repair cracks.	routine
121AA901A1401C30	Low natural vegetated coastal slope fronted by mudflats.	Slope - Budle Bay	72.2	12/09/2018	Royal HaskoningDHV	Wide well vegetated foreshore backed by heavily vegetated embankment.	3	>20	None.	no repairs

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121AA901A1401C10		Ross South Dunes/Sea Defence	701.6	12/09/2018	Royal HaskoningDHV	Well vegetated earth bank in good condition. North end sheltered by vegetated spit. No signs of erosion of toe. Fronted by wide healthy salt marsh, narrowing in south.	2	>20	None.	no repairs
121AA901A1401C11		Ross South Dunes/Sea Defence	271.1	12/09/2018	Royal HaskoningDHV	No significant change since last survey. Well vegetated earth slope fronted by wide healthy saltmarsh, narrowing in south with some localised erosion along toe.	3	>20	Monitor erosion at south western end.	no repairs
121AA901A1401C22	Rock revetment fronted by mudflats with a concrete toe visible for the final 50m (outfall end of area).	Revetment - Budle Bay	283.4	12/09/2018	Royal HaskoningDHV	Wide flat and well vegetated foreshore backed by grouted stone revetment. Extensive vegetation growth through revetment, several areas where the face of the revetment has lifted from the general profile, with an assosiated cracking of grout blinding and occasional localised loss of stone material.	3	6 - 10	Remove vegetation from revetment. Repair damaged sections of revetment. Monitor crest level of embankment.	routine
121AA901A1401C13	Concrete sea wall with outfall.	Seawall - Budle Bay	121.6	12/09/2018	Royal HaskoningDHV	No change since previous survey. Healthy, stable foreshore with no signs of erosion at the toe of structure. Concrete retaining wall in fair condition with some full height vertical cracking but no lateral or rotational movement evident. Outfall structure in fair condition.	3	>20	Monitor cracks in wall.	no repairs
121AA901A1401C14	Rock revetment fronted by mudflats.	Revetment - Budle Bay	32.8	12/09/2018	Royal HaskoningDHV	Wide flat and well vegetated foreshore backed by grouted stone revetment. Revetment heavily vegetated. Some erosion at west end and displacement of stones.	3	>20	Repair displaced stones along toe at east end.	routine
121AA901A1401C15	Concrete sea wall forming river bank.	Seawall - Budle Bay	110	12/09/2018	Royal HaskoningDHV	Narrow silty foreshore backed by low concrete seawall along toe of vegetated embankment. Timber toe erosion protection in very poor condition but no undermining evident. Poor quality finish of concrete. Full height vertical crack with some lateral movement apparent.	3	6 - 10	Monitor crack and lateral movement. Replace timber toe erosion protection.	no repairs
121AA901A1401C16	Rock revetment. Portions bound together with concrete mortar.	Revetment - Budle Bay	141.7	12/09/2018	Royal HaskoningDHV	Narrow silty channel bed backed by rip-rap along vegetated embankment. No undermining at toe, angular stone densely packed and in good condition. Some minor displacement of stones and vegetation along crest but no settlement observed.	3	>20	None.	routine
121AA901A1401C17	Steel sheet piles providing protection for sluice structure.	Sheet Piling - Budle Bay	17.2	12/09/2018	Royal HaskoningDHV	Sheet piles to east side of sluice remain in good condition. Some minor rusting apparent. Previous survey reported piles having been repainted in 2008.	2	11 - 20	None.	no repairs
121AA901A1401C18	Sluice regulating flow in/out of river.	Sluice Gate - Budle Bay	6.7	12/09/2018	Royal HaskoningDHV	Sluice gates in good condition. Previous survey reported that the gates were cleaned and repainted in 2008. Gates, ladders and hand railing in good condition.	3	11 - 20	None.	routine

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121AA901A1401C19	Steel sheet piles providing protection for sluice structure.	Sheet Piling - Budle Bay	59.5	12/09/2018	Royal HaskoningDHV	Sheet piles to west side of sluice remain in good condition. Some rusting apparent. Previous survey reported piles having been repainted in 2008.	2	11 - 20	None.	routine
121AA901A1401C20	Rock revetment protecting the end of sheet piles.	Revetment - Budle Bay	181.9	12/09/2018	Royal HaskoningDHV	Rip rap stone revetment along well vegetated embankment. Some displaced stones along toe. Movement at toe causing some settlement and gaps along crest, initially noted in 2008 but has not worsened.	3	>20	Monitor settlement of structure.	no repairs
121AA901A1401C21	Low vegetated coastal slope.	Slope - Budle Bay	1446	12/09/2018	Royal HaskoningDHV	Wide flat mudflats backed by salt marsh and heavily vegetated embankment. Some saltpan formation and minor erosion along edge of marsh evident. Previously noted loosely tipped rock at corner where frontage turns inland to Ross not observed.	2	>20	None.	no repairs
121AA901A1501C08	Coastal slope fronted by mudflats. Road and residential properties behind.	Slope - Waren Mill	315.5	19/06/2018	Royal HaskoningDHV	Flat silty foreshore backed by saltmarsh and well vegetated embankment. Noticeable erosion of the upper saltmarsh.	2	>20	None	no repairs
121AA901A1501C02	Mudflats backed by blockwork wall or revetment.	Wall - Waren Mill	137.5	19/06/2018	Royal HaskoningDHV	Wide flat silty foreshore backed by masonry retaining wall protecting private gardens. Wall condition deteriorating but development works being undertaken behind.	2	>20	Maintenance	routine
121AA901A1501C03	Vegetated slope fronted by mudflats.	Slope - Waren Mill	222.8	19/06/2018	Royal HaskoningDHV	Wide silty foreshore with narrow saltmarsh and well vegetated earth embankment. Continuing evidence of erosion of upper saltmarsh.	3	>20	None	no repairs
121AA901A1501C04	Reveted coastal slope with road at crest, fronted by mudflats.	Revetment - Chesterhill Slakes	429.8	19/06/2018	Royal HaskoningDHV	Wide flat foreshore with some erosion to upper saltmarsh since 2016. the saltmarsh fronts an open stone revetment and masonry wall along road embankment. The revetment is heavily vegetated with some large gaps between stones. No movement apparent. A platform has been constructed out from the revetment.	2	20	Detailed inspection and repair to the stonework.	routine
121AA901A1501C05	Coastal slope and higher banks fronted by mudflats. Road behind.	Slope - Budle	326.7	19/06/2018	Royal HaskoningDHV	Flat narrow silty foreshore with salt marsh, narrowing at north end. Evidence of on-going marsh erosion and creek development. Heavily vegetated coastal slope with minor slip. Some mature trees close to foreshore edge.	2	>20	None	no repairs
121AA901A1501C06	Vegetated dunes fronted by a sandy bay.	Slope - Newtown Hill	1581	19/06/2018	Royal HaskoningDHV	Wide sandy beach backed by high well vegetated dunes. Further erosion of dune to south of old concrete pier, although not threatening properties. Increase in beach levels to north of pier with dune development. Minor ongoing deterioration of relic concrete pier.	4	>20	Monitor dune face erosion. Control pedestrian erosion. Monitor safety of pier	routine
121AA901A1501C07	Vegetated cliff fronted by beaches of varying width and rock platforms.	Cliff - Bamburgh Moor	1449	19/06/2018	Royal HaskoningDHV	Rock ledges overlain by wide sandy beaches to high vegetated earth cliffs. Areas of accretion and of erosion compared to 2016 inspection. Minor worsening of crest slippage at golf club area (not obviously linked to toe erosion).	2	>20	None	no repairs

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121AA901A1601C05	Wide sandy bay backed by extensive vegetated dunes with a rock outcrop at either end.	Dunes - Redbarns Links	2216	19/06/2018	Royal HaskoningDHV	Wide sandy foreshore backed by wide stable well vegetated dune system. Some historic erosion of toe and face along most of frontage. Vegetation regrowth on upper beach increasing since 2016.	2	>20	None	no repairs
121AA901A1601C02	Wide sandy beach backed by extensive vegetated dunes, with a rock outcrop at each end of the frontage.	Dunes - Redbarns Links	868.5	19/06/2018	Royal HaskoningDHV	Wide sandy foreshore fronting wide well vegetated dune system. Previous erosion, cliffing and cutback along most of the dune toe. No substantive change since 2016.	2	>20	None	no repairs
121AA901A1601C03	Wide sandy beach with rocky outcrop backed by vegetated dunes.	Dunes - Greenhill Links	1192	19/06/2018	Royal HaskoningDHV	Rock outcrops protecting a wide sandy foreshore backed by wide well vegetated dune system. no obvious erosion since 2016. Local development of embryo dunes.	2	>20	Review long term approach to defence of property as highlighted in the SMP2.	routine
121AA901A1601C04	Wide sandy beach backed by vegetated dunes, with a rock outcrop at each end of the frontage.	Dunes - St Aidan Dunes	982.5	19/06/2018	Royal HaskoningDHV	Wide sandy foreshore fronting wide well vegetated dune system. Slight further erosion since 2016.	3	>20	Monitor erosion.	no repairs
121AA901A1701C54	Steep vegetated cliff with rocky/shingle foreshore with a 40m concrete wall.	Cliff/Wall - North Sunderland	515.8	19/06/2018	Royal HaskoningDHV	Very little erosion of natural cliff. No obvious deterioration in the wall. slight variation in beach levels (accretion and erosion) along the toe of the wall.	2	>20	Examine potential weakness in coping.	routine
121AA901A1701C02	Concrete blockwork wall with concrete apron.	Wall - Heela Hope	20.1	19/06/2018	Royal HaskoningDHV	High concrete blockwork retaining wall founded on rock foreshore. Structure well grounded, no undermining evident. Missing concrete lower coping along north end. No change.	3	>20	Replace coping along toe. Monitor movement in upper blocks.	routine
121AA901A1701C03	Old masonry wall with concrete apron.	Wall -Heela Hope	17.6	19/06/2018	Royal HaskoningDHV	Concrete toe well founded on rock foreshore. No undermining. Abrasion and gaps between masonry evident in main masonry wall however no obvious deterioration since 2008.	3	>20	Repoint gaps between masonry.	routine
121AA901A1701C04	Concrete blockwork wall with concrete apron.	Wall - Heela Hope	18.3	19/06/2018	Royal HaskoningDHV	High concrete blockwork retaining wall founded on rock foreshore. Structure well founded, no undermining evident. Abrasion of concrete blocks beneath toe coping. No change.	2	>20	None	routine
121AA901A1701C05	Concrete recurved wall to boathouse, Car park and RNLI.	Wall - North Pier	37	13/08/2018	Royal HaskoningDHV	Concrete seawall founded on rock foreshore. Limited inspection limited due to difficult access to foreshore and behind crest due to RNLI property. Wall appears sound with no obvious movement rcracking. Toe of wall is exposed in parts, marine vegetation growth prevented a detailed inspection of the wall toe.	3	>20	Access to RNLI property for more detailed inspection.	no repairs
121AA901A1701C06	Concrete wall with rocky foreshore, Car park, boatyard and RNLI behind.	Wall - North Pier	53.7	13/08/2018	Royal HaskoningDHV	Concrete seawall founded on rock foreshore. Significant horizontal crack/ spalling visible on both sides of wall at crest but does not appear to have worsened since 2008. Toe of wall appears well founded on rock foreshore. Remainder of wall in fair/ good condition.	3	11 - 20	Repair cracks.	routine

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121AA901A1701C07	Concrete wall / breakwater forming outer harbour arm.	Wall/Revetment - North Breakwater	277.1	13/08/2018	Royal HaskoningDHV	Main harbour pier founded on rock foreshore. Abrasion, cracks and scour holes in seaward face, largest holes repaired by harbour master. Possibly further abrasion locally. Some movement in rock armour. Crest wall in fair condition, repairs sound. No cracks in bitumen surfacing. Observed open joint at seaward end, joint being abraded and extends past roundhead repair.	3	11 - 20	Undertake proposed encasement repair.	urgent
121AA901A1701C08	Concrete head of the harbour arm. With concrete access steps with handrailing to the harbour.	Wall - North Breakwater	70.4	13/08/2018	Royal HaskoningDHV	Wall in good condition with only minor cracks, staining and spalling. Deck remains in good condition. Handrailing and ladders in fair condition. Previous repair to large scour hole/ void is in fair condition although evidence of ALWC, further smaller voids are present and require repair.	4	6 - 10	Repair voids, consideration to replacement of existing repair.	urgent
121AA901A1701C09	Inner face of the concrete breakwater.	Wall - North Breakwater	145.9	13/08/2018	Royal HaskoningDHV	The inner face is continuing to deteriorate and sections have been observed falling off. There is a large old repair that appears to be becoming detached from the pier. Heavy abrasion and cracking along full length of inner face. Some large holes visible, particularly beneath historic encasement works. Some damage may be obscured by marine vegetation. Large horizontal cracks and extensive spalling visible beneath coping. Previous concrete repairs in poor condition. Timber coping and ladders in fair condition. New hand railing at east end remain in good condition.	4	6 - 10	Undertake proposed encasement repair.	urgent
121AA901A1701C10	Concrete inner pier.	Breakwater - North Sunderland	95.1	13/08/2018	Royal HaskoningDHV	Abrasion, loss of mortar between masonry, some larger gaps. Loss of mortar beneath timber cope along most of asset length. Small cracks in concrete wall. Some minor movement in rock armour from 2016, smaller stones added at crest remain , although crest level appears lower. Timber coping and concrete surfacing in good condition. Ladders in good condition.	3	>20	Repoint joints and fill gaps between blocks.	routine
121AA901A1701C11	Concrete encased masonry wall	Wall - North Sunderland	78.3	13/08/2018	Royal HaskoningDHV	Concrete wall in good condition. Some minor vertical cracking and staining. Joint sealant, timber cope and ladders in good condition.	2	>20	None.	no repairs
121AA901A1701C12	Concrete encased masonry wall with concrete slipway to North.	Wall - North Sunderland	37.8	13/08/2018	Royal HaskoningDHV	Masonry walls in fair/good condition, minor loss of some mortar. Wall well founded on rock foreshore. Some undercutting at end of slipway. hand railing in good condition. Marine vegetation may obscure larger defects.	3	>20	Repair to mortar joints, monitor undercutting of slipway.	routine

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121AA901A1701C13		Wall - North Sunderland	85.4	13/08/2018	Royal HaskoningDHV	Masonry wall in fair/good condition. Some weathering of blocks and loss of mortar to masonry sections. Concrete section of wall in good condition. Scour hole emerging at base of wall. Timber coping, ladders and surfacing in fair/good condition.	3	>20	Undertake detailed boat or dive survey. Monitor scour hole at base.	routine
121AA901A1701C14	Concrete pier	Wall - North Sunderland	62	13/08/2018	Royal HaskoningDHV	Concrete wall in good condition, some localised undercutting at toe, particularly at seaward end where a hole was visible. Masonry wall in fair/good condition, some weathering of blocks, loss of mortar on south face. Large vertical crack visible possible indicating lateral movement of a section of the south face, adjacent to moored boats. Timber coping, ladders and surfacing in fair/good condition.	3	>20	Monitor undercutting. Undertake dive survey and detailed structural survey to monitor undercutting and movement in masonry wall.	routine
121AA901A1701C15	Old stone block wall with cabins, buildings and road above.	Wall - North Sunderland	88.2	13/08/2018	Royal HaskoningDHV	Some abrasion of masonry blocks and minor loss of mortar. Repairs to joints undertaken c2009, joints now in fair condition. Foreshore levels remain high at north end, no signs of undermining. Unidentified work ongoing during 2018 inspection. Suspected construction of new outfall from wall.	2	>20	None	no repairs
121AA901A1701C16	Masonry clad dwarf wall to steep grassy slope and steps has been replaced by concrete wall.	Wall - North Sunderland	41.5	13/08/2018	Royal HaskoningDHV	Concrete sea wall in good condition. No erosion evident in grass slope behind. Healthy beach levels along toe, some vegetation growth at east end. Slight undermining of toe of concrete steps, generally healthy beach levels.	1	>20	Monitor.	no repairs
121AA901A1701C17	Concrete wall fronting steep grassy bank with road and houses behind.	Wall - North Sunderland	43	13/08/2018	Royal HaskoningDHV	Vertical concrete seawall well founded on rock foreshore, no obvious cracking or signs of deterioration. Sealant to expansion joints replaced recently and in fair condition. No erosion evident in grass bank above wall.	2	>20	None.	no repairs
121AA901A1701C18	Concrete recurve wall with block reveted slope behind.	Wall - North Sunderland	99	13/08/2018	Royal HaskoningDHV	Recurve concrete seawall well founded on rock foreshore. Joint sealant in good condition. No signs of cracking or deterioration.	2	>20	None.	no repairs
121AA901A1701C19	Tipped rubble slope with steep vegetated slope behind. Fronted by rocky foreshore.	Revetment - North Sunderland	166.1	13/08/2018	Royal HaskoningDHV	Rock foreshore backed by rock cliffs and vegetated slope. Tipping of boulders to control erosion. No recent erosion evident.	3	11 - 20	Monitor erosion.	no repairs
121AA901A1701C20	Northeast breakwater (aka Southern Breakwater). Low level concrete breakwater founded on bed rock built in the 1930s. Concrete encasement build in 2008.	Breakwater - North Sunderland	127.1	13/08/2018	Royal HaskoningDHV	Concrete breakwater generally in good condition. Toe well founded on rock foreshore, no signs of cracks, abrasion or spalling. New security gate.	2	>20	None.	no repairs

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121AA901A1701C21	Northeast breakwater with additional splash wall (aka Northern Breakwater). Reinforced concrete caisson filled with mixed material breakwater constructed in 1930 and founded to bed rock. The breakwater has a concrete deck. Concrete encasement 2008.	Breakwater - North Sunderland	124.3	13/08/2018	Royal HaskoningDHV	Some localised abrasion, cracking and spalling along lower structure. Upper concrete crown wall in good condition, small vertical cracks. Wall well founded on rock foreshore, no signs of movement or scour.	2	>20	Repair cracks.	routine
121AA901A1701C22	Low level rock cliffs fronted by a rocky foreshore with a ramp down to the beach in front of the caravan park.	Cliff - Braidcarr Rocks	874.5	13/08/2018	Royal HaskoningDHV	Partial ongoing erosion of low vegetated upper cliffs along entire frontage. Some vegetation regrowth. Localised undermining of rock cliffs and recent localised rock falls at the south end of the frontage.	3	11 - 20	Review possible action to ramp from caravan park.	no repairs
121AA901A1701C23	Vegetated dunes with sandy beach to front. Rocky foreshore fronting the beach becoming more prominent to the south.	Dunes - Beadnell	1895	13/08/2018	Royal HaskoningDHV	Continued partial erosion of upper earth cliffs at north end. Narrow vegetated ridge adjacent to lakes liable to breach. Wide, stable and well vegetated dunes at south end, narrow cobble toe with localised erosion and cliffing, some vegetation regrowth.	3	6 - 10	None.	no repairs
121AA901A1701C24	Vegetated dunes fronted by a rocky foreshore.	Dunes - Beadnell	685.6	13/08/2018	Royal HaskoningDHV	Well vegetated and wide dune system appears stable. Narrow sandy foreshore. Historic erosion and cliffing along face appears to have stabilised with some vegetation regrowth evident.	3	>20	Monitor erosion.	routine
121AA901A1701C25	Masonry wall fronted by a sandy beach and a rocky foreshore.	Wall - Beadnell Haven	27	13/08/2018	Royal HaskoningDHV	Masonry blockwork wall well founded on rock foreshore. Heavy abrasion of blocks and some localised cracks. Mortar in good condition. Outflanking of wall at south end and some missing blocks.	4	11 - 20	Repair missing blocks at south end.	routine
121AA901A1701C26			30.2	13/08/2018	Royal HaskoningDHV	Hard rock lower cliffs, well vegetated soft upper cliffs with some historic erosion evident. Shingle foreshore levels relatively high.	3	>20	None.	no repairs
121AA901A1701C27	Concrete wall fronted by a sandy beach with a rock and residential properties behind.	Wall - Beadnell Haven	61.6	13/08/2018	Royal HaskoningDHV	Some minor vertical and horizontal cracking in concrete seawall. No erosion of vegetated bank above. Minor erosion of embankment at south end causing some outflanking. Wide cobble berm along toe.	3	>20	None.	no repairs
121AA901A1701C28	Low level cliff fronted by a rocky foreshore forming headland.	Cliff - Dell Point	238.3	13/08/2018	Royal HaskoningDHV	Rock ledges on foreshore backed soft upper cliffs with partial erosion and undercutting evident along most of the frontage.	4	6 - 10	Monitor erosion.	no repairs
121AA901A1701C29	Eroding headland, clay over fractured rock.	Bank - Dell Point	103.8	13/08/2018	Royal HaskoningDHV	Rock ledges on foreshore backed by soft cliffs showing with partial erosion along most of the frontage.	4	11 - 20	Monitor erosion.	no repairs
121AA901A1701C30	Low cliffs with rocky foreshore.	Cliff - Red Brae	95.8	13/08/2018	Royal HaskoningDHV	Rock foreshore backed by high soft cliffs with crest well vegetated. Erosion and cliffing along most of the frontage. Previous tipping of garden and building waste over garden gate not observed. No immediate risk to properties.	3	11 - 20	Monitor erosion.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A1701C31	Precast vertical concrete wall protecting private property.	Wall -Beadnell	36.9	13/08/2018	Royal HaskoningDHV	Rock foreshore with narrow shingle/ rubble ridge along toe of precast concrete retaining wall. Minor cracking, spalling and some rust staining evident at north end of wall. No signs of movement or undermining.	2	>20	None.	no repairs
121AA901A1701C32	Low coastal slope, partly vegetated with evidence of tipping of building waste and garden material. Fronting the slope is a narrow sandy beach.	Slope - Beadnell	26.1	13/08/2018	Royal HaskoningDHV	Rock foreshore with narrow shingle/ rubble ridge and low partially vegetated earth bank fronting private drive. Ongoing erosion, cliffing, undermining and cutback along most of bank. Continued informal tipping of building rubble evident. Risk to property.	4	1 - 5	Consider formal defenses to replace tipped material.	urgent
121AA901A1701C33		Wall - Beadnell	35.7	13/08/2018	Royal HaskoningDHV	Rock foreshore with narrow shingle/ rubble ridge and low vegetated earth bank fronting masonry wall. No movement or gaps in wall. Ongoing erosion and cutback of earth bank to within 1m of toe. Earth bank behind is well vegetated.	2	>20	Remove vegetation from behind wall.	no repairs
121AA901A1701C34	Concrete blockwork wall fronted by a stony foreshore with a road and houses behind.	Wall - Beadnell	60.7	13/08/2018	Royal HaskoningDHV	Narrow shingle/ rubble ridge along toe of concrete blockwork wall. Toe well buried, no apparent movement or obvious deterioration to blockwork or joints. Minor spalling beneath coping. Post and rail fence behind wall in good condition.	2	>20	None.	no repairs
121AA901A1701C35	The wall is in three sections, the top section is a masonry wall, the middle section is concrete blockwork wall and the base being a concrete apron.	Wall - Beadnell	37.1	13/08/2018	Royal HaskoningDHV	Narrow shingle/ rubble ridge fronting lower concrete and masonry wall. Abrasion, horizontal cracking, missing sections of concrete toe apron. Abrasion to masonry blocks, some mortar joints missing, mortar repairs at crest in good condition. No overtopping damage.	3	11 - 20	Repair mortar joints. Repair missing concrete along toe.	routine
121AA901A1701C36	Masonry wall with a concrete toe and a masonry splash wall. The wall is fronted by a sandy beach	Wall - Beadnell	79	13/08/2018	Royal HaskoningDHV	Low rock foreshore backed by higher masonry wall. Low shingle foreshore exposing undercutting and abrasion of concrete toe. Masonry blocks in lower wall very worn, gaps between many blocks and hole at north end. No overtopping. Outfall missing flap valve.	4	6 - 10	Repair mortar joints. Replace missing blocks. Localised underpinning of toe.	urgent
121AA901A1701C37	Masonry wall. The wall is fronted by a shingle beach.	Wall - Beadnell	76	13/08/2018	Royal HaskoningDHV	High shingle foreshore backed by lower masonry wall. Masonry blocks and joints in fair/ good condition. Some limited mortar loss. Some displaced coping stones at south end. Some vegetation growth on foreshore.	3	11 - 20	Repair mortar joints. Replace coping stones.	routine
121AA901A1701C38	Low level rocky cliff forming headland.	Cliff - Whinstone Dyke	160.3	13/08/2018	Royal HaskoningDHV	Rocks ledges on foreshore backed by low rock cliffs with vegetation along crest. Some localised erosion along soft upper cliffs.	2	>20	None.	no repairs
121AA901A1701C39	Gabion mattress.	Gabions - Laydy's Hole	87.2	13/08/2018	Royal HaskoningDHV	Steep narrow shingle foreshore with gabions, well vegetated earth bank behind. Gabions in poor condition, most lower baskets burst. Upper gabions in fair condition, gabions buried at south end. Localised erosion of earth bank at north end.	4	6 - 10	Replace lower gabions.	routine

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121AA901A1701C40	Gabion wall.	Gabions - Roan Rock	81.4	13/08/2018	Royal HaskoningDHV	Wide shingle beach backed by gabions and private gardens. Gabions mostly buried by high shingle levels. Some distortion and corrosion to seaward gabions. No erosion apparent to gardens.	2	11 - 20	Monitor condition of gabions.	no repairs
121AA901A1701C41	Gabion wall.	Gabions - North of Beadnell Point	27	13/08/2018	Royal HaskoningDHV	Narrow shingle ridge fronting gabions and private gardens. Works being undertaken to increase height of structure by adding additional row of gabions. Corrosion and distortion of gabions at south end. Toe of gabions well buried.	2	11 - 20	Replace corroded gabions.	routine
121AA901A1701C42	Concrete block revetment.	Revetment - North of Beadnell Point	38.1	13/08/2018	Royal HaskoningDHV	High shingle ridge with precast concrete block revetment and private gardens behind. No obvious deterioration to blocks, some minor vegetation growth to joints and toe. Minor mortar loss at north end. Small crack at back of steps. No erosion to gardens.	2	>20	None.	no repairs
121AA901A1701C43	Steep rock cliff with a rocky foreshore.	Cliff - Ebbe's Snook	250.4	13/08/2018	Royal HaskoningDHV	Rock ledges and boulder foreshore backed by steep rock cliffs. No significant change since last survey. Evidence of localised historic collapse.	2	>20	None.	no repairs
121AA901A1701C44	Low vegetated coastal slope.	Slope - Ebbe's Snook	322.7	13/08/2018	Royal HaskoningDHV	Inclined rock ledges backed by low well vegetated dunes. Some partial toe erosion evident along west end. Localised ad-hoc placement of boulders to prevent erosion only partially effective. Properties located 10-15m behind foreshore at risk.	3	11 - 20	Consider formal erosion defence.	no repairs
121AA901A1701C45	Masonry revetment with a stepped masonry toe.	Revetment - Beadnell	68.4	13/08/2018	Royal HaskoningDHV	Shingle foreshore backed by grouted stone wall and revetment. Some gaps between stones, vegetation growth on revetment. Some cracks along toe wall and minor undermining. Loss of short section of blocks at west end.	3	11 - 20	Remove vegetation. Repair undermined toe wall. Re-grout gaps.	routine
121AA901A1701C46	Masonry wall forming old disused lime kilns, fronted by a rock revetment.	Wall - Beadnell	62.5	13/08/2018	Royal HaskoningDHV	Shingle foreshore burying toe of rocks. Rock armour angular, well interlocked and stable. Some rocks displaced along toe. Localised deformation and corrosion to buried gabions. Masonry lime kiln structure behind crest in good condition.	2	>20	Monitor movement of toe armour.	no repairs
121AA901A1701C47	Low masonry wall with concrete copping and concrete deck forming the root of the harbour. Fronted by a stony foreshore.	Wall - Beadnell Harbour	24.2	13/08/2018	Royal HaskoningDHV	Masonry wall, concrete crest wall and concrete apron in fair/ good condition. Some minor loss of grout, one small void above toe at seaward end. Concrete repairs along crest appear good. New concrete pavement in good condition.	4	>20	Replace missing grout and toe undermining. Fill void.	urgent
121AA901A1701C48	Low masonry wall with concrete copping and concrete deck forming the Southern arm of the harbour. Fronted by a rock revetment.	Wall - Beadnell Harbour	58.2	13/08/2018	Royal HaskoningDHV	Lower masonry wall in good condition, no movement evident. New concrete crest wall (c2001) in good condition, joint sealant good, minor vertical cracks at joints. Rock armour stable, no signs of movement, boulder foreshore covering toe.	3	>20	None.	no repairs

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121AA901A1701C49	Low masonry wall with concrete deck forming the southern arm of the harbour.	Wall - Beadnell Harbour	31.2	13/08/2018	Royal HaskoningDHV	Stepped masonry outer wall in good condition. Some historic slumping of blocks, no gaps evident. Mortar repairs and new concrete decking in good condition. Low foreshore levels resulting in undercutting and deep horizontal voids along most of leeward toe.	3	11 - 20	Fill voids along toe.	routine
121AA901A1701C50	Large concrete blockwork wall with concrete deck forming southern end of the harbour arm.	Wall - Beadnell Harbour	18.7	13/08/2018	Royal HaskoningDHV	Concrete breakwater in good condition, no signs of movement. Localised undermining of toe apron at seaward end. Ladders in fair/ good condition.	3	>20	Monitor undermining.	routine
121AA901A1701C51	Masonry inner harbour wall.	Wall - Beadnell Harbour	82.7	13/08/2018	Royal HaskoningDHV	Recently rebuilt masonry quay wall (c2001) in good condition. No obvious deterioration to stone or concrete elements. Some localised undercutting at toe, believe to be due to historic maintenance dredging activities. Deck in good condition.	4	>20	Fill undercutting at toe.	routine
121AA901A1701C52	Masonry pier.	Pier - Beadnell	111.7	13/08/2018	Royal HaskoningDHV	Localised undercutting and gaps along toe of masonry wall, slight displacement of some blocks. No gaps between blocks. Spalling of concrete coping along most of length. Undercutting and partial collapse of grouted stone revetment protecting access steps.	4	>20	Fill voids along toe and replace missing blocks.	routine
121AA901A1701C53	Soft vegetated cliff fronted by a sandy beach.	Cliff - Benthall Links	329.8	13/08/2018	Royal HaskoningDHV	Wide flat foreshore backed by wide well vegetated dunes. Some localised historic erosions along dune face but vegetation regrowth evident. Erosion at east end partly controlled by tipped rock.	2	>20	Monitor erosion.	no repairs
121AA901A1801C01	Vegetated dunes fronted by a wide sandy beach.	Dunes - Beadnell Bay	1027	13/08/2018	Royal HaskoningDHV	Wide flat sandy beach with high vegetated dunes behind. Beach levels high along toe of dunes. Signs of historic erosion of face but none recent, some vegetation regrowth along toe.	2	>20	None.	no repairs
121AA901A1901C01	Vegetated dunes in front of Newton Links. Wide sandy foreshore forming south end of Beadnell Bay, with rock outcrops to south	Dunes	2416	13/08/2018	Royal HaskoningDHV	Sandy beach and boulders at south end fronting very well vegetated wide sand dunes. No sign of erosion. Historic localised erosion on dune face but some vegetation regrowth. No assets at risk.	2	>20	None.	no repairs
121AA901A1901C02	Vegetated dunes with rocky foreshore, forming small bay	Dunes - Football Hole	1061	13/08/2018	Royal HaskoningDHV	Wide sandy beach with rock slabs at headlands, backed by wide low very well vegetated sandy dunes. Strand line some distance from toe, localised historic erosion, cliffing and cutback along dune face, some new vegetation regrowth on foreshore.	2	>20	None.	no repairs
121AA901A2001C01	Natural vegetated coastal slope with sandy beach and a rocky foreshore	Coastal Slope	1012	20/06/208	Royal HaskoningDHV	Rock slabs on foreshore backed by wide well vegetated soft earth slopes coastal. Signs of minor erosion along toe. No substantive change since 2016.	2	>20	None	routine

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121AA901A2001C02	Low concrete wall in front of wide sandy beach. Backed by amenity area of Low Newton by the Sea	Sea Wall	68.6	20/06/208	Royal HaskoningDHV	Concrete wall and ramp fronted by wide sandy beach and well vegetated bank. Some cracks in wall and localised spalling at joints. No cracks evident in ramp. Toe of wall and ramp well buried by high beach levels. Significant dune growth since 2016.	3	>20	None	routine
121AA901A2001C03	Vegetated dunes at back of wide sandy beach at south end of St Mary's Haven	Dunes - St Mary's Bay	621.8	20/06/208	Royal HaskoningDHV	Wide sandy beach backed by well vegetated high sand dunes. Historic erosion and cliffing along much of dune frontage. Relic anti-tank blocks at headland largely buried. Further fore-dune growth.	3	>20	None	routine
121AA901A2001C04	Vegetated dunes with wide sandy beach forming Embleton Bay	Dunes - Embleton	2239	20/06/208	Royal HaskoningDHV	Wide sandy beach with occasional rock slabs backed by well vegetated high sand dunes. Some slight erosion generally around much of the bay since 2016.	2	>20	None	routine
121AA901A2001C05	Natural vegetated coastal slope with sandy / rocky foreshore	Coastal Slope - Embleton	843.1	20/06/208	Royal HaskoningDHV	Cobble foreshore backed by low well vegetated sand dunes. No signs of erosion, no further cliff falls.	2	>20	None	routine
121AA901A2101C01	Gentle coastal slope & foreshore	Coastal Slope - Queen Margarets Cove	852.6	20/06/208	Royal HaskoningDHV	Rocky foreshore backed by well vegetated low coastal slopes. No change.	2	>20	None	routine
121AA901A2101C02	Rocky coastal slope & foreshore	Coastal Slope - Oxberry Law	1297	20/06/208	Royal HaskoningDHV	Well vegetated stable coastal slopes protected by rocky foreshore. No change.	2	>20	None	routine
121AA901A2201C01	Earth embankment fronted by rocky foreshore	Embankment - Craster Harbour	52.5	20/06/208	Royal HaskoningDHV	Rocky foreshore backed by well vegetated low coastal. Outfall and manhole in fair/ good condition and well founded on rock. Some concrete repairs around manhole. Tipped rubble and slight erosion around manhole.	2	>20	None	routine
121AA901A2201C02	Low, near vertical masonry wall at back of rock platform foreshore.	Sea Wall - Craster Harbour	83.1	20/06/208	Royal HaskoningDHV	Concrete and masonry wall well founded on rock foreshore. No movement apparent. Some loose capping stones, missing mortar and gaps between blocks evident. Repairs to mortar in good condition.	2	>20	Repointing to masonry.	routine
121AA901A2201C03	Outer wall of northern harbour arm. Near vertical concrete encased masonry wall, extending above the deck of the arm.	Sea Wall - Craster North Harbour Arm	50.3	20/06/208	Royal HaskoningDHV	Signs of heavy abrasion on crest of wall. Slight spalling of crack towards end. Possible indication of slight movement.	3	>20	Monitor vertical crack.	routine
121AA901A2201C04	Inner wall of northern harbour arm. Vertical masonry face with concrete capping beam & deck.	Sea Wall - Craster Harbour	59.2	20/06/208	Royal HaskoningDHV	Deck damaged but not significantly. No obvious movement in cracks.	3	>20	Monitor full height vertical crack.	routine
121AA901A2201C05	Near vertical wall, seems to be masonry encased in concrete, founded on raised rock. Silty/ sandy foreshore & roadway immediately behind	Sea Wall - Craster Harbour	52.1	20/06/208	Royal HaskoningDHV	Signs of heavy abrasion on crest of wall.	3	>20	None	routine

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121AA901A2201C06	Concrete slipway over natural coastal slope in corner of harbour, with cobble foreshore.	Other - Craster Harbour	15.5	20/06/208	Royal HaskoningDHV	Slipway and edge wall in good condition, no movement evident. Minor abrasion. Slight undermining at toe. Construction of wall supporting small boat park.	3	11 - 20	None	no repairs
121AA901A2201C07	Natural cobbled slope & foreshore.	Coastal Slope - Craster Harbour	60.6	20/06/208	Royal HaskoningDHV	No significant change since last survey. Sandy beach backed by shingle ridge and well vegetated crest.	2	>20	None	routine
121AA901A2201C08	Vertical masonry seawall, founded on rock,, with cobble foreshore & road & properties immediately behind.	Sea Wall - Craster Harbour	35.5	20/06/208	Royal HaskoningDHV	Masonry wall remains in fair/good condition. No movement or loss of masonry, some large gaps between blocks along lower wall. Previous repairs to pointing along crest wall appears good.	3	11 - 20	Repoint wall	routine
121AA901A2201C09	Hard rock cliff, rising to the east, with little foreshore.	Cliff - Craster Harbour	28.7	20/06/208	Royal HaskoningDHV	Rocky foreshore with stable rock cliffs above. Well vegetated crest. Some few loose rocks on foreshore. No significant change since last survey.	1	>20	None	no repairs
121AA901A2201C10	Inner face of southern harbour arm. Near vertical concrete face & deck.	Sea Wall - Craster South Harbour Arm	61.4	20/06/208	Royal HaskoningDHV	Concrete quay wall in fair condition, no movement. Heavy abrasion/ spalling along lower wall and at joints. Some gaps between joints. Possible undermining at seaward end, not accessible. Recent repairs to cracks in desk. Timber cope in poor condition.	3	>20	Investigate undermining at seaward end. Repair abraded concrete.	routine
121AA901A2201C11	Outer face of southern harbour arm. Near vertical concrete encased masonry, with rock foreshore	Sea Wall - Craster Harbour	86.1	20/06/208	Royal HaskoningDHV	Wall well founded on rock foreshore. No signs of movement, some minor gaps along base. Some full height cracks, small void at bottom of southern crack. Damage to coping.	3	11 - 20	Repair void, monitor cracks, repair coping.	routine
121AA901A2201C12	Concrete harbour wall with rocky foreshore	Sea Wall - Muckle Carr	57.4	20/06/208	Royal HaskoningDHV	No change evident since last survey. Concrete wall well founded on rock foreshore. No signs of movement or undermining. Some minor cracks and abrasion. Various concrete repairs appear sound.	3	>20	None	no repairs
121AA901A2201C13	Rock revetment toe to steep earth bank with properties close to the crest.	Revetment - Craster Harbour	85.8	20/06/208	Royal HaskoningDHV	Wide rocky foreshore with rock armour protecting well vegetated coastal slope. Rock armour angular, well interlocked and stable. Vegetation along toe. No erosion evident in slope.	2	>20	None	routine
121AA901A2201C14	Rock revetment providing toe protection to an earth embankment. Rock foreshore. Concrete outfall down the embankment and along the foreshore.	Revetment - Muckle Carr	157.7	20/06/208	Royal HaskoningDHV	Rock foreshore stable with no significant change since last survey. Low coastal slope well vegetated with slight erosion. Concrete outfall in fair/good condition.	2	>20	None	no repairs
121AA901A2201C15	Steep vegetated coastal slope with rock revetment at the toe, fronted by rocky foreshore. Evidence of rock gabions behind the rock revetment.	Coastal Slope - Muckle Carr	266.9	19/06/2018	Royal HaskoningDHV	Numerous tipping (e.g. grass cuttings) on slope. One area of very minor slippage, but presents no threat to properties. No substantial change	2	>20	None	no repairs
121AA901A2301C01	Low gentle cliff & rocky foreshore	Cliff - Black Hole	784.8	19/06/2018	Royal HaskoningDHV	Wide sloping rock foreshore backed by well vegetated coastal slope. No signs of erosion.	2	>20	None	no repairs

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121AA901A2301C02	Sandy slope & stony / rocky foreshore.	Coastal Slope - Swine Den	314.7	19/06/2018	Royal HaskoningDHV	No significant change.	2	>20	None	no repairs
121AA901A2401C01	Low rock cliff with wide rock foreshore. Forms a slight bay between Cullernose Point and Howick village	Cliff - Swine Den	743.8	19/06/2018	Royal HaskoningDHV	No significant change since last survey. Wide rocky foreshore with boulders backed by high well vegetated coastal slopes. Continued slow undercutting of cliffs. Localised rock falls. No properties at risk.	3	>20	None	no repairs
121AA901A2401C02	Low rock cliff with wide rock foreshore. Forms a slight headland south of Howick village	Cliff - Rumbling Kern	1070	19/06/2018	Royal HaskoningDHV	Sloping rocky foreshore backed by high well vegetated coastal slopes. No signs of erosion. Masonry wall forming seawall boundary to property in good condition. Minor slumping in the softer cliff.	2	>20	None	no repairs
121AA901A2501C01	Well vegetated dune system behind beaches. Headland cliffs control bays. Foreshore is mixture of rock platforms with sandy/stony beaches within smaller bays.	Cliff - Howick Haven	2326	19/06/2018	Royal HaskoningDHV	Stable wide beach and embryonic dunes. Some areas of masonry walls in poor condition but with no deterioration. Further erosion of footing to footbridge.	3	>20	Consider repair of footbridge and steel piling and abutments.	routine
121AA901A2501C02	Low rock cliffs / slope, with wide rock foreshore forming headland	Coastal Slope - Longhoughton Steel	791.7	19/06/2018	Royal HaskoningDHV	Very stable.	3	>20	Monitor erosion.	no repairs
121AA901A2601C01	Natural vegetated coastal slope with a sandy / rocky foreshore.	Coastal Slope - Boulmer Steel	236.1	20/06/2018	Royal HaskoningDHV	Some very minor slumps. Local protection to property in 2016. No substantial change.	4	11 - 20	None.	no repairs
121AA901A2601C02	Concrete block revetment at toe of earth embankment, with wide rock/sandy foreshore. Surrounded by rock placed in Dec 2013 as 'emergency works' following erosion which threatened properties.	Revetment - Boulmer	40	20/06/2018	Royal HaskoningDHV	No obvious deterioration. Dec 2013 emergency works to southern end. No damage and little change.	2	>20	None.	No repairs
121AA901A2601C03	Low sand/earth embankment with wide sandy beach, protected by rock revetment at toe of embankment.	Embankment - Berwick Stone	160.2	20/06/2018	Royal HaskoningDHV	Scheme to prevent erosion, completed in May 2016. Vegetation developing above rock.	1	>20	None	no repairs
121AA901A2601C04	Rock revetment providing toe protection to earth embankment.	Revetment - The Torrs	81.5	20/06/2018	Royal HaskoningDHV	Improvements to original revetment made in May 2016 coast protection works. No change.	1	>20	None	no repairs
121AA901A2601C05	Large concrete blocks placed at toe of earth/sand embankment. Surrounded by rock placed following erosion of the embankment in Dec 2013 as 'emergency works'.	Revetment - The Torrs	75	20/06/2018	Royal HaskoningDHV	No obvious deterioration. Dec 2013 emergency works remain in good condition.	2	>20	None	no repairs
121AA901A2601C06	Vegetated natural coastal slope with a wide sandy beach & rock outcrops.	Coastal Slope - Boulmer Haven	1001	20/06/2018	Royal HaskoningDHV	Wide sandy beach backed by low well vegetated dunes. Slight growth of embryo dunes.	2	11 - 20	None	no repairs

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A2601C07	Low gentle rock cliff/slope with wide rock foreshore, forming a headland.	Cliff - Seaton Point	830.7	20/06/2018	Royal HaskoningDHV	Narrow sandy beach fronting high well vegetated dunes. Partial erosion and slipping of along much of toe. Static caravans within 10m of cliff edge may be coming at risk. Continuing minor slippage.	3	11 - 20	Monitor ongoing erosion, liaison with caravan park as necessary.	no repairs
121AA901A2601C08	Low vegetated embankment at northern end of embayment, with wide sandy beach & shingle at back.	Embankment - Seaton Point	228	20/06/2018	Royal HaskoningDHV	Narrow rocky foreshore backed by high well vegetated dunes. Partial erosion and slips in dune face along most of frontage. Cobble toe with some vegetation on foreshore. Strand line at toe. No substantive change.	3	11 - 20	Monitor erosion.	no repairs
121AA901A2601C09	Concrete access steps through embankment, with rock armour toes protection forming an apron. Wide sandy beach in front.	Other - Boulmer	134.9	20/06/2018	Royal HaskoningDHV	Sandy beach with concrete steps, rock armour and high vegetated slopes. Erosion and outflanking to both sides of structure. Rock armour angular, loosely packed but stable. Bottom steps exposed due to slight beach erosion.	3	11 - 20	Check condition of lower steps over next year.	no repairs
121AA901A2701C01	Relatively high clay cliffs with shingle at toe, & wide sandy beach. Cliff falling to the south. Whaw Burn discharges at south end	Cliff - Alnmouth	358.2	20/06/2018	Royal HaskoningDHV	Sandy beach backed by high vegetated slopes. Severe erosion and slippage of slope along most of frontage. Cliff top path remains closed. Golf course at risk. Beach level marginally lower compared to 2016.	4	11 - 20	Monitor ongoing erosion	no repairs
121AA901A2701C02	Vegetated slope/bank, with shingle margin at base & wide sandy beach in front. South of Whaw Burn	Coastal Slope - Foxton Hall	416.3	20/06/2018	Royal HaskoningDHV	Wide sandy foreshore with steep shingle ridge backed by high well vegetated coastal slope. Minor erosion of slope. Lower foreshore higher than 2016.	3	>20	None	no repairs
121AA901A2701C03	Natural coastal slope with extensive rock foreshore with deteriorating breakwater structure.	Coastal Slope - Marden Rocks	79.5	20/06/2018	Royal HaskoningDHV	Wide sandy beach with narrow shingle ridge backed by low coastal slopes and private gardens. No erosion evident. Vegetation re-growth on foreshore. Rock groyne disintegrating at seaward end. Beach levels higher than 2016.	4	11 - 20	None	no repairs
121AA901A2701C04	Vegetated earth bank with shingle/cobbles at toe with extensive rock foreshore & sandy beach.	Embankment - Alnmouth	397.7	20/06/2018	Royal HaskoningDHV	Rock foreshore backed by high well vegetated earth bank. Partial erosion along toe at northern end with some localised slips evident. Vegetation growth on foreshore at south end.	3	>20	None	no repairs
121AA901A2701C05	Large concrete blocks forming toe of vegetated dunes, with wide sandy beach in front. Small groyne field within beach.	Revetment - Alnmouth Bay	522.2	20/06/2018	Royal HaskoningDHV	Wide sandy beach backed by low well vegetated dunes. Ongoing but localised erosion and cliffing of dune and undermining of post and wire fence. Groynes exposed, some gaps and missing planks and rotten piles. Variation in beach levels with erosion to southern end.	4	6 - 10	Review effectiveness of defence, potentially groynes are ineffective.	routine
121AA901A2701C06	Variety of protection types for toe of earth bank including concrete blocks, rock gabions and rubble.	Embankment - Alnmouth Bay	242.7	20/06/2018	Royal HaskoningDHV	Wide sandy beach backed by concrete blocks and low well vegetated earth bank north of carpark. Erosion at northern end but continued embryo dunes further to the south. Golf course at risk.	3	11 - 20	Review behaviour of beach	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A2701C07	Vegetated dunes leading into the mouth of the Aln. Wide sandy beach divided by the outflowing river.	Dunes - Alnmouth Bay	330.7	20/06/2018	Royal HaskoningDHV	Wide sandy beach backed by concrete blocks, well vegetated earth bank and a car park. Some vegetation growth on foreshore. Erosion becoming increasingly severe progressing from the north to the south.	3	6 - 10	Review management of the frontage, avoiding pressure for emergency works.	routine
121AA901A2701C08	Low sand dunes fronted by wide sandy beach	Dunes - Alnmouth Bay	291.1	20/06/2018	Royal HaskoningDHV	Wide sandy beach backed by concrete blocks along toe of high well vegetated dunes. Continuing severe erosion over frontage, reducing progressing south.	3	11 - 20	Review management of the frontage, avoiding pressure for emergency works.	routine
121AA901A2801C01	Vegetated dunes with sandy beach	Dunes - Alnmouth Bay	173.8	20/06/2018	Royal HaskoningDHV	Wide well vegetated dunes backed by road and properties. significant accretion, tending push across the entrance to the estuary, deepening the channel.	2	>20	Review management of the frontage, avoiding pressure for emergency works.	routine
121AA901A2801C02	Masonry wall with a concrete toe fronting vegetated dunes with road and residential properties behind	Sea Wall - Alnmouth Estuary	78.5	20/06/2018	Royal HaskoningDHV	Masonry wall generally in good condition, some minor abrasion of blocks and localised loss of mortar. Vertical cracks and signs seaward rotation of central section. Toe well buried at north end, low beach levels at south end but no signs of undermining. No significant change.	3	>20	Monitor movement of central section.	no repairs
121AA901A2801C03	Low masonry wall fronting Vegetated bank with a road and residential properties behind. In front of the wall is a mixture of rubble and concrete debris.	Sea Wall - Alnmouth Estuary	34.9	20/06/2018	Royal HaskoningDHV	Masonry wall fronting boat club. Some apparent deterioration in mortar. All concrete coping slabs in good condition.	3	>20	None	no repairs
121AA901A2801C04	Low masonry wall providing protection to a children's play area	Sea Wall - Alnmouth Estuary	208.1	20/06/2018	Royal HaskoningDHV	Masonry wall fronting playground in good condition. No signs of movement. All concrete coping slabs in good condition.	2	>20	None	no repairs
121AA901A2801C05	Concrete access ramp fronting residential properties	Access Ramp - Alnmouth Estuary	8.4	20/06/2018	Royal HaskoningDHV	Concrete boat ramp in good condition, minor spalling along seaward edge. No signs of cracking or undercutting of toe.	2	>20	None	no repairs
121AA901A2801C06	Masonry wall with higher land behind fronted by saltmarsh. Walkway on top of the wall.	Sea Wall - Alnmouth Estuary	230.9	20/06/2018	Royal HaskoningDHV	Masonry wall heavily abraded with loss of mortar and large gaps between blocks along most of length. Recent collapse of upper section of wall along most of south end now repaired. Some further repointing undertaken but further areas still require work.	3	11 - 20	Routine repointing	routine
121AA901A2801C07	Low earth bank fronted by saltmarsh	Embankment - Alnmouth Estuary	148.4	20/06/2018	Royal HaskoningDHV	Wide well vegetated foreshore backed by low vegetated bank. No significant change evident since last survey. Saltmarsh in good condition, some localised erosion evident along toe.	2	>20	None	no repairs
121AA901A2801C08	Saltmarsh to slightly higher land forming control point in estuary	Embankment - Alnmouth Estuary	263.1	20/06/2018	Royal HaskoningDHV	No significant change since last survey.	2	>20	None	no repairs
121AA901A2801C09	Earth embankment	Embankment - Alnmouth Estuary	184.8	20/06/2018	Royal HaskoningDHV	Ongoing significant erosion and undercutting of low vegetated banks along entire length of frontage. Collapse of some sections of bank.	4	6 - 10	Review behaviour causing erosion.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A2801C10	Low masonry wall to edge of estuary. Walkway at the crest of the wall.	Sea Wall - Alnmouth Estuary	186	20/06/2018	Royal HaskoningDHV	Wall repaired. Local minor areas requiring pointing.	3	11 - 20	Routine repointing	routine
121AA901A2801C11	Vegetated flood plain	Flood Plain - Alnmouth Estuary	476	20/06/2018	Royal HaskoningDHV	No significant change evident since last survey.	3	>20	Review response to realignment.	no repairs
121AA901A2801C12	vegetated flood plain	Flood Plain - Alnmouth Estuary	667.9	20/06/2018	Royal HaskoningDHV	Wide healthy salt marsh. Generally, no significant change since last survey. Area where bank has been removed.	2	>20	None	no repairs
121AA901A2801C13	Low masonry wall fronting a vegetated bank that is church hill	Sea Wall - Church Hill	174	20/06/2018	Royal HaskoningDHV	Continued washout of backfill resulting in collapse of central section of wall. Partial localised settlement at south end, full height cracks through mortar joints. Some outflanking and displaced blocks south end.	5	1 - 5	Rebuild failed section of wall, replace missing blocks, repoint joints.	urgent
121AA901A2901C01	Partly vegetated dunes with wide sandy beach in front, forming central section of Alnmouth Bay.	Dunes - Buston Links	2617	31/07/2018	Royal HaskoningDHV	Wide sandy beach backed by concrete blocks and high well vegetated dunes. Dunes generally stable. Localised erosion and slumping of dunes in occasional places.	3	>20	Monitor erosion.	routine
121AA901A2901C02	Partly vegetated dunes with wide sandy beach in front, forming south section of Alnmouth Bay & running down to Amble. Concrete cubes along northern section fronting Birling Links.	Dunes - Birling Links & Warkworth Dunes	3016	31/07/2018	Royal HaskoningDHV	Dunes in the most northerly section slumping over considerable length. It is only the most southerly 0.5km (near the North Pier) where the dunes remain stable.	3	>20	Dune management.	routine
121AA901A3001C01	Harbour arm with rock armour inner & outer faces & concrete walkway on crest.	Breakwater - North Pier, Warkworth Harbour	610.5	31/07/2018	Royal HaskoningDHV	Rock armour stable with no change in profile, minor displacement of rock at toe, no major voids evident. No signs of damage to concrete blocks or masonry slope, appears stable. No signs of settlement, spalling or cracking to concrete crest	3	>20	Monitor.	no repairs
121AA901A3001C02	Concrete/masonry extension to pier, accommodating the navigation beacon	Sea Wall - North Pier (head), Warkworth Harbour	195.1	31/07/2018	Royal HaskoningDHV	Large voids in concrete face. Section of concrete deck missing. Full height crack and displacement of seaward 5m section. Full height vertical crack in south face continuing through deck with displacement evident. Safety risk to fishermen.	5	6 - 10	Repair to end section needed, but no coast protection benefit.	urgent
121AA901A3001C03	Harbour arm with rock armour inner & outer faces & concrete walkway on crest. Structure widens out at base	Breakwater - North Pier (central), Warkworth Harbour	612.9	31/07/2018	Royal HaskoningDHV	Masonry revetment in fair/good condition, repairs to gaps between block good. Some movement of small toe armour at seaward end. Large armourstone at root appears stable, no displacement or voids. Concrete deck in good condition, no settlement evident.	3	>20	Repair gaps in masonry, monitor toe armour and replace as necessary.	routine
121AA901A3001C04	Inside corner of North Pier. Sand beach with rock revetment.	North Wave Basin, Warkworth Harbour	158.6	31/07/2018	Royal HaskoningDHV	Rock revetment generally stable and in good/ fair condition. Some movement of rocks at toe and flattening of slope at south end. Sand has been placed and profiled over the revetment. Dunes well vegetated and stable, no erosion of dunes at crest evident.	3	>20	None.	no repairs

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A3001C05	Vertical wall with concrete capping beam & tarmac surfacing behind forming quayside. No foreshore.	Quay Wall - Amble	141.3	31/07/2018	Royal HaskoningDHV	Concrete quay and timber cope generally in good condition, no signs of movement or settlement. Small localised cracks in deck. Limited access.	2	>20	Monitor below water elements for scour.	routine
121AA901A3001C06	Vertical wall with concrete capping beam and tarmac surfacing behind forming quayside. No foreshore.	(Quay) Wall - Amble	341.4	31/07/2018	Royal HaskoningDHV	Masonry walls in small dock in fair condition. Stone abraded, some gaps between blocks. Brickwork and timber repair to coping on south face. Main concrete quay wall and decking in good condition. Minor cracks. Repair of collapsed section now complete for some time and holding well.	3	11 - 20	Repointing of masonry wall. Monitor below water elements for scour.	routine
121AA901A3001C07	Gabions and rock	Revetment - South Jetty (Landward)	20.3	31/07/2018	Royal HaskoningDHV	Recently constructed gabions protecting area against erosion. However end gabion falling away due to outflanking/erosion. Some rock and boulders scattered for extra protection.	2	11 - 20	Monitor effectiveness of new gabions and replace dislodge/outflanked gabion.	routine
121AA901A3001C08	Gabions	Coastal Slope - Little Shore Wave Basin	66.4	31/07/2018	Royal HaskoningDHV	Newly constructed gabions protecting area against erosion. Some rock and boulders scattered for extra protection.	2	11 - 20	Monitor effectiveness of new gabions.	routine
121AA901A3001C09	Low masonry wall at back of sheltered embayment, with partially vegetated sandy beach and dunes in front, and amenity area behind.	Dunes - Little Shore Wave Basin	156.2	31/07/2018	Royal HaskoningDHV	Wide stable dune system continues to develop along beach crest. Masonry wall well protected and generally in fair condition, some localised areas of missing blocks which require repair.	2	>20	Maintenance repairs to holes in wall.	routine
121AA901A3001C10	Low concrete seawall along side of embayment. Sandy beach to the west, exposed rock to the east. Backed by road / promenade.	Sea Wall - Little Shore Wave Basin	120.3	31/07/2018	Royal HaskoningDHV	Concrete wall in poor condition. Some vertical and horizontal cracking along entire length, spalling along sections of cope. Corrosion to hand railing. Access ramp in very poor condition, significant spalling, abrasion and voids. Worst area at junction with South Pier.	4	1 - 5	Repair cracks and voids in wall and ramp.	urgent
121AA901A3001C11	Timber jetty with walkway, forming a continuation of the quay alignment and linking up to the lighthouse. Sheltered 'lagoon' called Little Shore Wave Basin formed landward using "part-tide" barrier constructed from sheet piling.	Jetty - South Jetty	287.2	31/07/2018	Royal HaskoningDHV	Timber jetty generally in good condition. Timber piles, decking and hand railing in good condition. Half-tide barrier functioning well. Timber linkspan bridge in good condition. New lighting installed in 2012.	2	11 - 20	None.	no repairs
121AA901A3101C01	Concrete pier head, housing the lighthouse, and linking up to the South Jetty structure.	Other - South Pier Head	187.5	31/07/2018	Royal HaskoningDHV	No access to Pier Head but appears in fair condition from a distance. Previous (2016) defects at root of Pier Head and its intersection with South Pier worsened over winter 2017/18 leading to failure. Now repaired earlier in 2018.	3	>20	Fill cracks.	routine

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121AA901A3101C02	South Pier, between mainland and South Jetty. Inner face: vertical concrete face with sloping concrete apron at toe, stony foreshore. Concrete deck. Outer wall vertical concrete with rock armour protection, and rocky foreshore.	Sea Wall - Amble South Pier	121.8	31/07/2018	Royal HaskoningDHV	Inner concrete apron in fair condition. Abrasion/ spalling to inner face at South Pier. Rock armour appears stable and functional. Concrete stub groyne very abraded and undercut. Outer wall sound with local minor deterioration.	3	>20	Repointing and fill cracks. Replace missing blocks	routine
121AA901A3101C03	Vertical concrete seawall forming part of base of South Pier. Sandy/rocky beach in front, access and properties behind.	Sea Wall - Amble	83.6	31/07/2018	Royal HaskoningDHV	Heavy abrasion, cracks and spalling along most of wall, minor damage to crest and deck. Access steps highly abraded, uneven and unsafe. Holes in the deck where hand railing installed.	3	>20	Fill cracks wall face. Repair access steps.	routine
121AA901A3101C04	Rock cliffs and wide rock foreshore, forming headland. Concrete wall on the top of the rock cliff.	Cliff	98.9	31/07/2018	Royal HaskoningDHV	No significant change since last survey. Horizontal cracking and spalling along crest of wall, reinforcement steel exposed and corroding. Erosion of rock platform and some undermining at west end.	3	11 - 20	Repair cracks in wall	routine
121AA901A3101C05	Near vertical concrete seawall founded to rock. Steel handrailing provide protection for walkway.	Sea Wall - Amble	78.9	31/07/2018	Royal HaskoningDHV	No signs of movement or undermining. Localised abrasion and spalling along cope. New concrete surfacing installed 2013/14. Remains in good condition.	2	11 - 20	None	routine
121AA901A3101C06	Low vegetated cliffs with sand beach and rock foreshore. Some localised sections of rock armour protection to toe of cliffs.	Cliff - Amble	206	31/07/2018	Royal HaskoningDHV	Narrow sandy beach with rock ledges and well vegetated, wide dune system. Loosely placed armourstone at center and south end providing limited protection	3	6 - 10	Consider formal erosion protection along toe of dunes. Dune management.	routine
121AA901A3101C07	Concrete seawall around slight promontory, founded on rock outcrop.	Sea Wall - Amble	63.4	31/07/2018	Royal HaskoningDHV	Concrete wall in good condition. Well founded on rock slab, no signs of movement or undermining. Gap in toe at south end. Localised loss of joint sealant. Loosely placed armourstone at north end. Concrete tie-ins at both ends.	2	>20	Repair cracks. Replace lost sealant.	routine
121AA901A3101C08	Low vegetated soft cliffs fronted by a beach and rocky foreshore	Cliff - Amble Links	85.2	31/07/2018	Royal HaskoningDHV	Narrow sandy beach with wide and well established dunes at north end of bay. Strandline at toe, occasional erosion and cliffing of earth bank. No properties at risk.	3	11 - 20	Monitor erosion.	no repairs
121AA901A3101C09	Vegetated dunes and wide sandy beach. Old concrete outfall structure on beach.	Dunes - Amble Links	243.6	31/07/2018	Royal HaskoningDHV	Sandy beach widens towards the south end. Wide well established and vegetated dunes behind. Outfall structure in poor condition with some undermining, becoming unsafe, but currently largely buried by high beach levels.	3	>20	Repair or removal outfall.	urgent
121AA901A3101C10	Low masonry and block seawall backed by a narrow rock revetment at the toe of soft cliffs	Sea Wall - Wellhaugh Point	48.7	31/07/2018	Royal HaskoningDHV	Low masonry seawall with rock armour along crest. Wall well founded on rock foreshore, no undermining or movement, partially buried at south end. Rock armour stable. Slope well vegetated, no erosion	2	>20	None.	no repairs

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121AA901A3101C11	Vegetated cliff with rocky foreshore	Cliff - Amble	82.9	31/07/2018	Royal HaskoningDHV	Hard rock cliffs well vegetated long top. Appear to be mostly stable, some very local slumps have occurred. Caving at toe identified in three small areas in 2010 but this is not precipitating major failures. One larger cave/crevice is also present.	2	>20	None.	no repairs
121AA901A3101C12	Vegetated dunes/low cliffs fronted by beach. Oufall onto beach.	Dunes	1346	31/07/2018	Royal HaskoningDHV	Narrow shingle ridge and high well vegetated dunes. Partial erosion, cliffing and slumps in dune face along most of frontage. Outfall in poor condition, hole in concrete pipe. Initial deformation of gabions. Localised erosion of dune face at south end.	4	>20	Repair or remove outfall	routine
121AA901A3101C13	Vegetated cliff with rocky foreshore	Cliff - Beacon Hill	55.7	31/07/2018	Royal HaskoningDHV	Narrow shingle ridge with stable rock foreshore protecting well vegetated earth bank. Exposed earth on low slope but no evidence of recent erosion or slips.	2	>20	None.	no repairs
121AA901A3101C14	Concrete seawall and rock revetment at promontory with vegetated cliffs behind	Revetment - Beacon Hill	46.9	31/07/2018	Royal HaskoningDHV	Rock armour stable although informally placed. Some rubble/rock placed to counter outflanking of revetment. Cliff well vegetated and relatively stable. Sparser rock at south end with less vegetation and more erosion. No evidence of concrete seawall	3	>20	Monitor erosion	routine
121AA901A3201C01	Coastal slope fronted by narrow sandy/shingle beach	Higher Ground - Beacon Hill	156.3	31/07/2018	Royal HaskoningDHV	Wide sandy beach based by high well vegetated earth bank. Localised erosion, cliffing and some slips evident. Properties within 10m of slope.	3	>20	Monitor erosion. Consider dune management.	routine
121AA901A3201C02	Rock armour revetment in front of low soft cliff. Sandy beach.	Revetment - Hauxley Links	140.8	31/07/2018	Royal HaskoningDHV	No significant change since last survey. Wide sandy beach backed by revetment and well vegetated low earth bank. Rock loosely tipped, some locally displaced stones. Toe buried by healthy beach, beach narrows at south end. No erosion along crest evident.	3	11 - 20	None.	no repairs
121AA901A3201C03	Wide rock armour revetment at toe of earth embankment.	Revetment - Hauxley Links	225.5	31/07/2018	Royal HaskoningDHV	Narrow sandy beach backed by rock revetment and low vegetated bank. Some displaced rock along toe but structure appears stable. Evidence of dumped rubble at south end. No sign of erosion along crest.	2	>20	None.	no repairs
121AA901A3201C04	Revetment comprising large concrete cubes place in an ad-hoc straight alignment at toe of earth embankment. Sandy beach in front.	Revetment/Embankment - Hauxley Links	170.8	31/07/2018	Royal HaskoningDHV	Narrow sandy beach. Concrete blocks heavily abraded, some settlement evident but no displacement. Significant erosion of earth slopes along most of frontage, ongoing dumping of building rubble having limited effect. No properties at immediate risk.	4	6 - 10	Consider formal revetment to protect upper slope.	routine
121AA901A3201C05	Rock armour revetment/bullnose extending beyond the adjacent line of defence, with vegetated dunes behind & sandy beach in front.	Revetment - Hauxley Links	52.7	31/07/2018	Royal HaskoningDHV	Some armour stones displaced but revetment generally in fair condition. Erosion of dunes behind revetment causing outflanking. Concrete pier/outlet structure in poor condition with undermining evident on the southern side and head.	3	11 - 20	Remove/repair outfall	routine

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121AA901A3201C06	Partially vegetated dunes, with wide sandy beach	Dunes - Hauxley Nature Reserve	220.7	01/08/2018	Royal HaskoningDHV	Wide sandy beach and cobble berm backed by high, wide and well vegetated dunes. Ongoing erosion, cliffing and slumps along most of the dune face. Beach levels relatively healthy, strand line some distance from toe. No properties at risk.	4	>20	Monitor erosion.	no repairs
121AA901A3201C07	Soft sand upper cliff and clay/peat lower cliff, with sandy beach and rocky outcrops. In front of vegetated dunes	Cliff	232.4	01/08/2018	Royal HaskoningDHV	Seaward face of dunes showing signs of heavy erosion along entire length. Loss of vegetation and cliffing of upper slope. Harder peat layer at toe exposed although eroding more slowly than dunes above. No properties at risk.	4	11 - 20	Monitor erosion.	no repairs
121AA901A3201C08	Soft sand upper cliff and clay/peat lower cliff, with sandy beach & rocky outcrops. In front of vegetated dunes	Cliff - Hauxley Nature Reserve	337.4	01/08/2018	Royal HaskoningDHV	Ongoing relatively rapid erosion of lower peat and upper dune at northern end. At southern end cliffs are eroding more rapidly through ongoing slumps before becoming more stable.	3	11 - 20	Monitor erosion.	no repairs
121AA901A3201C09	Two small breakwater type structures, comprising large concrete blocks, running perpendicular for the shoreline, extending just beyond high water, protecting outfalls.	Breakwater - Togston Links	27.1	01/08/2018	Royal HaskoningDHV	Outfall 'daylighted' in 2016, with remnant outfall and concrete blocks for temporary protection.	2	>20	Replace flap valve.	routine
121AA901A3201C10	Vegetated dunes with wide sandy beach	Dune - Togston Links	205.7	01/08/2018	Royal HaskoningDHV	Narrow shingle ridge with low well vegetated dunes. Partial erosion, cliffing and slumps along most of frontage releasing boulders onto beach.	3	11 - 20	Monitor erosion	routine
121AA901A3201C11	Vegetated dunes with wide sandy beach	Dune - Togston Links	682.7	01/08/2018	Royal HaskoningDHV	Narrow sandy beach backed by high well vegetated earth bank. Partial erosion, cliffing and slumps along most of frontage. Ongoing localised erosion of rock armour at south end, outflanking to the south. Dunes stabilising at south end near outfall.	3	11 - 20	Monitor erosion near parking area.	routine
121AA901A3201C12	Reinforced concrete outfall/culvert with side walls & apron. Flows through earth bank onto mainly sandy beach. Concrete access ramp to south.	Outfall - Hadston Carrs	121.5	01/08/2018	Royal HaskoningDHV	Concrete outfall structure in good condition. Some minor cracks and staining. No signs of undermining or settlement of main structure. Slabs at base of slipway undermined and breaking up. High beach levels burying access ramp.	2	>20	Repair cracks. Monitor beach levels at access ramp for undermining.	routine
121AA901A3201C13		Revetment - Druridge Bay	140.7	01/08/2018	Royal HaskoningDHV	Some rocks displaced along toe, minor flattening of profile. No signs of erosion at crest. Significant outflanking at southern end continues causing some unravelling of rocks and risk to road	3	11 - 20	Extending revetment at south end.	urgent
121AA901A3201C14	Low soft cliffs/dunes with wide sandy beach in front forming northern section of Druridge Bay. Rounded pebbles (approx 200mm diameter) form informal toe of the dune.	Dunes - Druridge Bay	516.6	01/08/2018	Royal HaskoningDHV	Dunes actively eroding along whole frontage. Significant erosion and cliffing of crest at north end by revetment, cutback starting to cause damage to road.	4	6 - 10	Extend existing revetment at north end to protect road.	urgent

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A3201C15	High dunes/sand cliff with wide sandy beach seaward forming main length of Druridge Bay. Concrete blocks (approx 1m cubed) placed along the toe of the dune at between 2 and 3m centres buried to varying degrees by the beach.	Dunes - Chiburn Links	4340	01/08/2018	Royal HaskoningDHV	Healthy well vegetated dunes and healthy shingle beach at north, increasing in width and sandy towards south. Strand line some way from dune toe. Minor localised erosion behind concrete blocks and access steps.	2	>20	Monitor erosion	no repairs
121AA901A3201C16	Vegetated dunes with wide sandy beach. Forms southern section of Druridge Bay. Several lakes and ponds discharge across the foreshore via outfalls.	Dunes - Blakemore	2888	01/08/2018	Royal HaskoningDHV	Wide sandy beach with wide well vegetated dunes. Beach levels high up dune, no signs of erosion. Coastline embayed around each of the outfalls, caused by erosion. Most erosion near outfall channels. Concrete blocks used locally to limit erosion.	2	>20	None.	routine
121AA901A3201C17	Shallow rock armour revetment protecting lower half of vegetated dunes.	Revetment - Cresswell	76.3	01/08/2018	Royal HaskoningDHV	Rock armour loosely packed, toe well buried at north end. Dune narrow but well vegetated, movement and crest erosion at north end. Some small rocks tipped at sound end. Concrete steps and handrail good, partly buried. Property close to cliff edge.	3	11 - 20	Monitor erosion of crest	no repairs
121AA901A3201C18	Low concrete wall built at the back of a rocky foreshore. Rock armour revetment behind wall protects vegetated cliff.	Sea Wall - Cresswell	139.4	01/08/2018	Royal HaskoningDHV	Wall well founded on rock. Some localised abrasion, spalling and rust-staining. Some of the numerous previous repairs starting to break apart. Some movement and gaps in rock armour at south end. Localised erosion of upper slope along most of frontage. Tipped rubble evident.	3	>20	Repair abrasion. Place additional rock armour.	routine
121AA901A3201C19	Concrete blockwork revetment with low concrete wall at toe and rock foreshore.	Revetment - Cresswell	102.8	01/08/2018	Royal HaskoningDHV	Concrete toe beam well founded on rock, no signs of movement or undermining. Localised but minor settlement in one location on concrete revetment, loss of one interlocking block. Some vegetation growth at south end. No signs of erosion along crest	2	>20	Replace missing block. Monitor settlement.	routine
121AA901A3201C20	Natural soft cliff/ dune at the back of high rock foreshore.	Dunes - Cresswell	140.2	01/08/2018	Royal HaskoningDHV	Stable rock ledges backed by well vegetated low earth cliffs. Partial erosion and slumps in soft upper slopes along most of frontage. Boundary fence realigned landward. No assets at risk.	3	11 - 20	None.	no repairs
121AA901A3201C21	Vegetated cliff with wide sandy beach, forming a short shallow bay between outcrops of Stark Letch Rocks and Brig Head.	Dunes - Cresswell	246.4	01/08/2018	Royal HaskoningDHV	Wide sand beach narrowing at south end. Slopes well vegetated, localised erosion and cliffing at toe along most of frontage. Outfall in poor condition.	3	>20	Monitor erosion.	no repairs
121AA901A3201C22	Vegetated embankment rising out of the dunes to the north, founded on rocky/ stony foreshore.	Cliff/Embankment - Cresswell	320	01/08/2018	Royal HaskoningDHV	Narrow sandy beach backed by shallow earth slope. Erosion of toe, cliffing and large scale global slip at south end, crest 2m from road. Gabions at south end in poor and ineffective. Vehicle barrier 2013/14 already being undermined, road at risk.	5	1 - 5	Large scale erosion protection/ slope stabilisation solution required.	urgent

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A3301C01	Low earth/rock cliffs with rocky outcropping foreshore forming Snab Point.	Cliff - Snab Point	970.3	01/08/2018	Royal HaskoningDHV	Rock ledges and cliffs. Ongoing rock falls at north end. Timber retaining wall good, some undermining at toe. Collapse of masonry revetment at south end. Timber steps in fair condition. Ongoing erosion of soft upper cliffs at south end	3	11 - 20	Monitor erosion.	routine
121AA901A3301C02	Low rock cliff with rocky and sandy foreshore forming a bay which is sheltered by Snab point.	Cliff - Headagee	508.3	01/08/2018	Royal HaskoningDHV	Narrow rocky foreshore, continued active erosion in soft upper cliff at north end with undercutting and rock falls in lower hard rock cliff. Cliffs to south end appear well vegetated and stable, sandy foreshore widens at south end.	3	>20	Monitor erosion.	no repairs
121AA901A3401C01	Low vegetated soft cliff with rocky toe at back of beach comprising of colliery waste.	Cliff - Lynemouth	1108	01/08/2018	Royal HaskoningDHV	No significant change since last survey. Vegetated cliffs appear stable, some slumping in soft cliff material is observed to the south near junction with the low cliff/dune frontage. High and wide beach formed by colliery waste protects backing cliffs.	2	>20	None.	no repairs
121AA901A3401C05	Low vegetated cliff at back of beach. Beach comprised of colliery waste.	Cliff - Lynemouth	283.8	01/08/2018	Royal HaskoningDHV	Wide sandy beach with cobble berm, sloping earth bank well vegetated and stable. Localised erosion and cliffing along toe at south end.	2	>20	None.	routine
121AA901A3401C06	Embankment of tipped colliery waste. Tipping has now ceased due to due to closure of mine. Due to extension of the Power Station revetment (def. 34/00/2) the area of colliery waste embankment is now reduced to area north of the Power Station drainage outfall	Embankment	340.2	01/08/2018	Royal HaskoningDHV	Embankment replaced by revetment in 2013/14, in good condition. Angular rock armour, some displaced rocks at toe but, obvious settlement. Structure profile largely uniform. Some minor overtopping erosion to access track behind crest. Some outflanking at south end. England Coast Path now runs behind asset.	4	1 - 5	Control public access to crest. Consider environmental issues.	no repairs
121AA901A3401C07	Rock revetment. Original revetment constructed in 1995 was extended by April 2006 to encompass the coal stocking yard area adjacent to the Power Station.	Revetment - Lynemouth Power Station	216.6	01/08/2018	Royal HaskoningDHV	Rock revetment in very good condition. Angular rock armour, some displaced rocks along toe but no obvious settlement. Structure profile largely uniform. Some minor overtopping erosion to access track behind crest. England Coast Path now runs behind asset.	1	>20	None.	no repairs
121AA901A3401C08	Power Station fronted by informal pathway below a coastal slope. The seaward side of the pathway is protected by tipped rock armour. Between this rock armour and the rock revetment of Defence Code 34/00/2 there is a roadway for the trucks down to the b	Embankment - Lyne Sands	286.7	01/08/2018	Royal HaskoningDHV	Serious risk of ongoing erosion of spoil embankment causing outflanking of rock revetment. Significant 'cut-back' of coastline during winter 2017/18 storms.	4	1 - 5	Address outflanking at south end.	urgent

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A3501C01	Vegetated slope fronted by shingle and colliery waste beach with some cliffing in the beach profile	Coastal Slope - Lyne Sands	606.7	02/08/2018	Royal HaskoningDHV	Narrow sandy shingle beach widens at south end. Erosion and cliffing of vertical bank at north end resulting in outflanking of adjacent revetment. Dune damage by quadbike/motorbike.	3	11 - 20	Monitor erosion and outflanking at north end.	no repairs
121AA901A3501C11	Low soft cliff with vegetated top founded on rocky foreshore forming north side of Beacon Point headland	Cliff - Beacon Point	471.5	02/08/2018	Royal HaskoningDHV	Low rock cliffs backed by low vegetated earth slope.	3	>20	Monitor erosion.	no repairs
121AA901A3501C03	Low soft cliff with stoney foreshore forming south side of Beacon Point Headland.	Cliff - Beacon Point	554	02/08/2018	Royal HaskoningDHV	Rock foreshore and soft earth upper vegetated cliff. Minor erosion and cliffing or upper cliff. Cliff retreated close to access track at a number of locations. South side of headland more vegetated and slightly more stable. No major recent events.	3	>20	Monitor erosion.	no repairs
121AA901A3501C04	Low soft cliff/dunes with mainly sandy foreshore, forming central section of shallow bay. Large rock randomly dumped at the toe of the dunes.	Cliff - Whitehole Skears	705	02/08/2018	Royal HaskoningDHV	Continued localised erosion, cliffing and slumps in soft lower cliffs, but minor compared to previous inspections.	3	11 - 20	Monitor erosion. Re-align access as necessary.	routine
121AA901A3501C05	Low soft cliff with sandy/ stony foreshore	Cliff - Way Foot, Newbiggin Moor	149.8	02/08/2018	Royal HaskoningDHV	Sandy cobble beach backed by low earth cliff. Erosion cliffing and slumps along most of frontage. Dumped building rubble on beach. Boundary fence close to edge, realigned around failed sections. Static caravans very close to cliff edge at risk.	4	1 - 5	Consider erosion protection to caravan park or relocation of caravan park.	routine
121AA901A3501C06	Ad-Hoc Revetment comprising large concrete cubes buried at base of a soft cliff, with some boulders behind. The foreshore is a combination of rock and sandy beach.	Revetment - Dolls Carrs	163.1	02/08/2018	Royal HaskoningDHV	Rock ledges and sandy foreshore with concrete blocks and well vegetated earth back behind. No signs of recent erosion. Some dumped construction waste. Boundary fence very close to cliff edge. Caravans very close to cliff edge at risk.	4	6 - 10	Monitor erosion. Liaise with caravan park.	no repairs
121AA901A3501C07	Soft low cliff perched on outcropping hard rock, with rock strewn sandy beach at toe. Concrete rubble has been dumped on the upper slopes of the soft cliff.	Cliff - Dolls Carrs	65.8	02/08/2018	Royal HaskoningDHV	Stable rock foreshore with low earth slope behind. Cliffs well vegetated, some localised erosion/ slumping. Undermining of concrete pill boxes, risk of collapse. Ad-hoc dumping of boulders along cliff largely ineffective. Caravans very close to edge	3	11 - 20	Monitor erosion. Liaise with caravan park.	no repairs
121AA901A3501C08	Near vertical concrete seawall, founded on rock foreshore.	Sea Wall - Newbiggin Point	29	02/08/2018	Royal HaskoningDHV	Concrete wall fair condition, some cracks and undermining at north end and at toe. Continued erosion of upper soft cliff behind. Caravans within 10m of cliff top, at risk.	4	6 - 10	Repair/remove wall.	routine
121AA901A3501C09	Low earth/clay cliff on top of rock platform.	Cliff - Newbiggin Point	25.6	02/08/2018	Royal HaskoningDHV	Wide rock foreshore backed by low earth bank. Rock platform appears stable although loose rock evident along base of slope. Ongoing erosion, cliffing and slumps in soft upper cliff along majority of frontage. Caravans within 15m of cliff edge, at risk.	3	11 - 20	Erosion protection to upper slope.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A3501C10	Near vertical concrete seawall, founded on rock foreshore, with low and gentle sloping concrete revetment at crest, protecting earth behind defences	Sea Wall - Newbiggin Point	57.8	02/08/2018	Royal HaskoningDHV	Concrete wall in very poor condition, undermining and collapse of west section, abrasion on seaward face. Mass concrete crest slab undermined, missing sections. Erosion of soft upper cliff causing outflanking. Broken up rocks behind crest.	5	1 - 5	Remove or repair wall, erosion protection to upper cliff.	urgent
121AA901A3601C01	Low irregular rock cliff and rocky foreshore, with soft eroding layer on top of cliff. Localised concrete/masonry repairs where the rock cliff has eroded.	Cliff - Newbiggin Point	171	02/08/2018	Royal HaskoningDHV	Ongoing deterioration of all masonry walls through toe undermining and loss of concrete apron. Now sloping deck has voids in one wall and the flat deck of others show cracks. Erosion and cutback occurring along earth bank. Damage to netting and loss of gravel, not proving effective.	4	11 - 20	Erosion protection to upper slope. Repair masonry walls	routine
121AA901A3601C12	Vertical concrete seawall with re-curved crest and narrow promenade behind. Short lengths of concrete toe proection works at interface with rock foreshore. Low exposed earth cliff at rear of promenade.	Sea Wall - Little Bay	72.6	02/08/2018	Royal HaskoningDHV	Rock ledge, boulder and sandy foreshore. Abrasion along most of toe with localised undermining. Abrasion and cracks opening at construction joints. No movement apparent. Loss of joint sealant. Minor erosion along most of upper earth bank. Hand rail rusty.	3	>20	Repair undermining. Repair cracks. Replace joint sealant.	routine
121AA901A3601C13	Recurved concrete seawall and integrated promenade backed by low earth cliff. Founded on rock foreshore	Sea Wall - Church Point	48.6	02/08/2018	Royal HaskoningDHV	Wall well founded on rock foreshore. No settlement or cracks. Localised minor undermining/ breakup of additional toe apron. Newly replaced sealant in good condition. Some minor rusting to hand railing. No erosion to upper grass crest	3	>20	Repair cracks/undermining	routine
121AA901A3601C14	Linear rock armour breakwater	Breakwater - Hully Rocks	189.9	02/08/2018	Royal HaskoningDHV	Rocks angular, well interlocked and stable. Minor settlement along crest evident. Some minor displacements of smaller filter/ core material along southeast side.	2	>20	Monitor settlement of crest and loss of filter/core.	no repairs
121AA901A3601C15	Recurved concrete seawall with a short rock revetment at the toe. Beach replenishment and offshore breakwater completed 2007.	Revetment - Newbiggin	21	02/08/2018	Royal HaskoningDHV	Relic asset. Rock armour removed, likely at the same time as construction of Maritime Centre (2011/12).	2	>20	None.	routine
121AA901A3601C06	Recurved concrete seawall and integral promenade with all but the top of the recurved buried by the wide sandy beach. Beach replenishment and offshore breakwater completed 2007.	Sea Wall - Newbiggin Bay	352.4	02/08/2018	Royal HaskoningDHV	Seawall and promenade in fair/good condition. Beach levels very healthy, over-spilling onto promenade at south end. New offshore acropode breakwater in good condition.	2	>20	None.	no repairs

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121AA901A3601C07	Recurved concrete sea wall with concrete steps at toe, at the back of a wide sandy beach. Promenade fronted by the recurved sea wall and backed by a masonry sloped revetment protecting the residential properties behind.	Sea Wall - Newbiggin Bay	554.8	02/08/2018	Royal HaskoningDHV	Seawall and promenade in good condition, no evidence of settlement. Sealant joints new, minor spalling at south end. Hand railing good. High beach levels, sand over-spilling onto prom. No groynes/piles visible.	2	>20	None	no repairs
121AA901A3601C08	Shallow sloping rock armour revetment backed by capping beam and seafront promenade backed by masonry sloped revetment. Beach replenishment and offshore breakwaters completed 2007.	Revetment - Newbiggin Bay	346.3	02/08/2018	Royal HaskoningDHV	High beach levels over-spilling onto prom. Rock mostly buried, some vegetation growth at south end. Hand railing and surfacing in good condition.	2	>20	None	no repairs
121AA901A3601C09	Low rock outcrop forming southern end of sandy beach and coastal slope, backed by gently rising vegetated slope	Cliff - Spital Carrs	310.2	02/08/2018	Royal HaskoningDHV	Wide sandy beach backed by well vegetated coastal slope. Strand line 50m+ from toe of slopes. Large areas of new vegetated growth on foreshore.	2	>20	None.	no repairs
121AA901A3601C10	Outcrop forming low rock cliff and foreshore with vegetated slope behind	Cliff - Spital Point	223.1	02/08/2018	Royal HaskoningDHV	Rock platform backed by steep earth cliff. Some localised breakup of rocks and boulders along toe of cliff. Erosion, cliffing and slips along most of upper cliff. Access along narrow ridge prevented by fencing.	2	>20	Monitor erosion.	no repairs
121AA901A3601C11	Rock armour revetment at the back of small inlet/ strongly indented bay with concrete outfall at centre. (NWL storm outfall).	Revetment	207.5	02/08/2018	Royal HaskoningDHV	Rock armour angular and well interlocked. Concrete outfall, associated masonry and concrete structures appear to be in good condition. Evidence of outflanking of tie-in of the older concrete outfall in softer cliff material.	2	>20	None.	no repairs
121AA901A3701C01	Low soft cliffs with some debris at toe sitting on raised rock platforms/ beaches	Cliff - Links Quarry	193	02/08/2018	Royal HaskoningDHV	Rock foreshore with low earth cliffs behind. Partial erosion, cliffing and slumps in upper cliffs along most of frontage. Significant tipping of construction waste to slow erosion with some limited effect.	4	11 - 20	Consider formal erosion protection.	urgent
121AA901A3701C02	Rock cliff with scree at toe forming small bay between two areas of outcropping rock. Part of the cliff has a dipping seam of coal measures.	Cliff - North Seaton Links	593.7	02/08/2018	Royal HaskoningDHV	Boulder foreshore backed by high cliffs. Previous erosion and collapse of cliffs, localised slumps, occasional rock falls in hard rock. Whole length is active and is now precarious. Footpath along crest remains closed. No properties immediately at risk.	4	1 - 5	Monitor ongoing erosion. Realign footpath.	no repairs
121AA901A3701C03	Exposed earth cliff with rubble foreshore and regular discontinuous low rock armour breakwater.	Breakwater - North Seaton Links	561.6	02/08/2018	Royal HaskoningDHV	Continued significant erosion, cliffing and slumping of soft upper cliff along most of frontage. Boulders/ rubble along toe. Ongoing collapse of boundary walls onto foreshore. Slipway/ rock armour protection ok. Caravans close to edge	5	6 - 10	Consider formal erosion protection or landward relocation of caravans. Liaison with caravan park.	no repairs

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A3801C01	Low earth embankment/ cliff forming north bank of estuary mouth with sandy foreshore	Embankment - North Bank River Wansbeck	396.8	02/08/2018	Royal HaskoningDHV	Boulder foreshore with low well vegetated dunes. Some historic erosion along toe but generally stable. Wide spit on northern side of the estuary mouth constraining channel towards the south shore.	2	>20	None.	no repairs
121AA901A3801C02	Low earth embankment/cliff forming south bank of estuary mouth with sandy foreshore	Embankment	231.6	31/05/2018	Royal HaskoningDHV	Boulder foreshore with shallow earth embankment behind. Well vegetated. No signs of erosion at toe. Minor localised erosion of toe at south end. [Note collapsed section of private boat club wall.]	2	>20	None.	no repairs
121AA901A3901C01	Partially vegetated clay cliff with wide sandy beach	Cliff - Cambois Links	321.9	31/05/2018	Royal HaskoningDHV	Sandy beach with high earth slopes behind. Previous erosion, cliffing and slips along most of frontage, but presently stable ties within 25m of cliff top, at risk.	3	1 - 5	Monitor.	routine
121AA901A3901C05	Rock armour revetment giving toe protection to vegetated coastal slope	Revetment - Cambois Links	600.7	31/05/2018	Royal HaskoningDHV	Rock armour stable, no settlement, some displaced rocks at toe. Upper slope well vegetated, minor erosion and outflanking at north and south ends. Sheet piles at ramp exposed. Beach levels healthy. Outfall pipe causing obstruction to beach users	2	>20	Consider extending revetment at north and south ends.	routine
121AA901A3901C03	Low, vegetated clay cliff with cobbles at toe and a wide sandy beach	Cliff - Cambois Links	1373	31/05/2018	Royal HaskoningDHV	Narrow sandy beach, cobbles at south end. Low well vegetated dunes. Erosion, cliffing and collapse of dunes along most of frontage. Significant and ongoing cut back at north end by revetment. New timber access steps at north end. Strandline at toe.	4	6 - 10	Consider erosion protection.	routine
121AA901A3901C04	Low vegetated clay cliff/dunes with beach build up in lee of the Rockers outcrop	Cliff - The Rockers	592.3	31/05/2018	Royal HaskoningDHV	Wide well vegetated and dunes, occasional low areas along crest. Wide healthy beach, strandline 10m from toe. Recovering from previous erosion episode.	3	6 - 10	Monitor.	routine
121AA901A4001C01	Rock armour revetment and rock gabions protecting low soft cliff, with wide sandy beach infront.	Revetment - North Beach	727.3	31/05/2018	Royal HaskoningDHV	Rock angular and well interlocked, uniform profile. Some displacement of armour along toe. One area of minor settlement, displaced stones along edge of ramp and at base, localised erosion at crest. Crest gabions good, no erosion at crest.	2	>20	None.	no repairs
121AA901A4001C02	Rock revetment with large units on lower slope, and smaller units on upper slope separated by steel breast work. Scree on beach fronted by rock intertidal platform.	Revetment - Shinny Gripe Lug	167.9	31/05/2018	Royal HaskoningDHV	Movement of some rocks along toe. Revetment profile uneven, some settlement/ slumping evident. Steel breastwork in poor condition, corrosion and broken/missing members. Historic erosion and cliffing evident along crest. Dumped rubble at crest.	3	11 - 20	Monitor armour movement at toe.Monitor erosion at crest. Repair steel breakwater	routine
121AA901A4001C03	Composite seawall comprising timber breastwork and concrete and rock armour apron with narrow foreshore	Sea Wall - Alcan Reclaim	114.3	31/05/2018	Royal HaskoningDHV	Concrete foundation and toe armour stable, no movement. Timber breastwork in very poor condition, significant abrasion and breakage evident. Considerable wash-out and voids in fill material. Erosion along crest, ongoing tipping of rubble/ concrete	4	1 - 5	Repair timber breastwork. Erosion protection to upper slopes.	urgent

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121AA901A4001C04	Vertical concrete seawall and crestwall with concrete groynes on scree strewn rock foreshore forming part of the Blyth East Pier	Sea Wall - Crab Law	322	31/05/2018	Royal HaskoningDHV	Seawall well founded on rock foreshore, no movement or undermining evident. Heavy abrasion along toe. Significant cracks, spalling and broken concrete along crest wall and decking, movement to one section of crest wall. Groynes completely dilapidated.	4	6 - 10	Repairs to cracks. Assessment of crest wall failure.	urgent
121AA901A4001C05	Concrete breakwater with raised timber walkway on crest, founded on bedrock, forming the tip of Blyth East Pier	Breakwater - Blyth East Pier	1448	31/05/2018	Royal HaskoningDHV	No access to structure. Sub-structure appears in fair condition, well founded on rock foreshore, no settlement. Significant cracking/ spalling of trestle legs. Some missing deck boards and hand railings. All wind turbines removed from pier in 2013/14.	3	>20	Repair cracks in trestle. Repair decking/ handrailings.	no repairs
121AA901A4201C10	Vertical brick wall with capping beam and concrete footing, at the back of a wide sandy beach with a partially vegetated low dune immediately in front of the sea wall.	Sea Wall - West Pier, Blyth	485	31/05/2018	Royal HaskoningDHV	Wide sandy healthy beach, strandline 20m from toe. Dunes narrow but well vegetated. Brick wall generally in good condition, some vertical cracks, seaward rotation evident to south end.	3	11 - 20	Repair cracks, strongbacks and footings to brickwall.	routine
121AA901A4201C11	Vertical seawall comprising precast concrete planks spanning between concrete posts with a wide sandy beach and partially vegetated dune/slope in front. Level of dune/slope varies, almost burying walls in places.	Sea Wall - South Beach	230.5	31/05/2018	Royal HaskoningDHV	Wide healthy beach, strandline 20m from toe. Well vegetated but narrow dunes. Localised seaward rotation of wall at north end, occasional vertical cracking.	3	11 - 20	Replace missing planks. Monitor movement in wall.	routine
121AA901A4201C03	Sandy beach with vegetated sand dune behind and gabion revetment at base of dune.	Dunes - South Beach	55.6	31/05/2018	Royal HaskoningDHV	Dunes very narrow, cliffing and partial loss of vegetation, complete loss of dune at one location exposing wall foundation. Some gabions burst with loss of stone. No movement in wall, post and planks in fair condition, some minor cracking	4	1 - 5	Repair gabions. Extend gabions northwards. Dune management.	routine
121AA901A4201C04	Composite seawall comprising near vertical solid concrete wall with vertical concrete plank and post wall sitting on crest. Wide sandy beach at toe. Returns inland at south end to allow beach access for road.	Sea Wall - South Beach	119.1	31/05/2018	Royal HaskoningDHV	Wall in fair/ good condition, no evidence of movement or undermining, some minor cracking and loss of joint sealant. Higher beach levels burying toe. Ad-hoc tipping of precast concrete and poured concrete along south flank, now undermined.	3	>20	Monitor undermining at toe.	no repairs
121AA901A4201C05	Concrete seawall with protruding crest lip and promenade behind. Wide sandy beach in front.	Sea Wall - Beach Gardens	143.8	31/05/2018	Royal HaskoningDHV	Wide sandy beach, cobble berm, strand line 20m from toe. Wall in fair condition, no movement, some cracking and spalling at joints. Loss of joint sealant. Some cracks in surfacing, setback wall ok. South section of wall well buried by vegetated dunes	3	>20	Monitor cracks in surfacing.	no repairs

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4201C06	Near vertical concrete seawall with lip at crest in advance of adjoining defences. Wide sandy beach in front.	Sea Wall - Promenade	169.6	31/05/2018	Royal HaskoningDHV	Wall in fair condition, no signs of movement. Some undermining at access steps. Some vertical cracks and loss of mortar beneath cope. Relatively healthy sandy beach. Promenade surfacing and setback wall in good condition.	3	>20	Repair to cracks. Monitor undermining at steps.	routine
121AA901A4201C07	Near vertical concrete seawall with lip at crest, almost buried by wide sandy beach in front. An outfall consisting of steel sheet piles and concrete is partially buried.	Sea Wall - Blyth Links	237.8	31/05/2018	Royal HaskoningDHV	Wide sandy beach, strand line 15m from wall. Minor cracks in wall, localised spalling/abrasion exposing rebar. Further gaps/cracks in capping blocks at south end. Surfacing good. Beach levels just below crest. Outfall in good condition	2	>20	Repair abrasion and cracks.	routine
121AA901A4201C08	Steel sheet piling with concrete capping beam forming the southern end of the South beach promenade.	Sea Wall - Fort House	94.3	31/05/2018	Royal HaskoningDHV	High beach levels largely burying sheet piles. No deformation evident, surface corrosion and significant loss of thickness. Promenade surfacing in good condition.	3	6 - 10	Repair holes in piles.	routine
121AA901A4301C01	Vegetated dunes with timber groyne fields in the wide sandy beach in front.	Dunes - Blyth Cemetry	334.3	31/05/2018	Royal HaskoningDHV	Wide sandy beach, wide well vegetated dunes, historic cliffing and slumps along dune face. All 3 groynes in fair/poor condition, noticeable level difference, some gaps and missing boards, arson damage to one section, scour and gaps beneath boards at root of south groyne where drainage channel discharges.	4	11 - 20	Replace missing/ damaged planks on groynes.	routine
121AA901A4301C02	High sand dunes with exposed seaward face but vegetated at crest, with narrow sandy beach in front.	Dunes - Hartley Links	2147	31/05/2018	Royal HaskoningDHV	Wide well vegetated gently sloping dunes, stable. No erosion at toe. General pedestrian erosion at access points. Beach levels healthy, strand line 30m from toe. Annual reinforcement with Christmas tress effective	2	>20	Dune fencing to control pedestrian access.	routine
121AA901A4401C01	Low near vertical masonry wall providing toe protection to high vegetated slope. Sandy beach in front is partially vegetated.	Sea Wall - Sandy Island	318.3	31/05/2018	Royal HaskoningDHV	Wide healthy beach backed by high well vegetated dunes. Masonry wall almost entirely buried, dune actively advancing. Strand line 30m from toe.	2	>20	None.	no repairs
121AA901A4401C02	Composite defence structure reinforcing the western entrance to Seaton Burn. Comprises: timber groyne extending from near the root of the original masonry harbour arm and converging with it; short concrete wall connecting the end of the arm to the groyne	Sea Wall - Sandy Island	92.8	31/05/2018	Royal HaskoningDHV	Wide healthy beach, masonry section of groyne mostly buried. Timber section of groyne in poor condition, boards missing at centre, arson damage at landward end. Groyne ineffective as no retained material. Ad-hoc tipping of rocks at seaward end.	4	6 - 10	Replace missing/ damaged planks.	routine
121AA901A4401C03	Masonry harbour arm west of the western entrance to Eastern Sluice	Sea Wall - Sandy Island	24.3	31/05/2018	Royal HaskoningDHV	Masonry seawall in fair condition. No movement evident, a vertical crack at seaward end with missing block. Undermining of deck edge, localised concrete repairs appear good.	3	>20	Repair vertical crack and replace missing block. Repair undermining of deck edge	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4401C04	Vertical masonry wall forming west bank of Eastern Sluice west channel. No foreshore at high water, but mud/ shingle exposed at low tide.	Sea Wall - Seaton Burn	131.4	31/05/2018	Royal HaskoningDHV	Some gaps between blocks. No signs of movement, possibly hole at base at north end. Mortar repairs at crest still good. Accumulation of sand along crest making the path difficult and dangerous to walk along.	3	>20	Repair gaps between blocks. Clear sand from crest.	routine
121AA901A4401C05	Vertical masonry wall forming north bank of burn immediately upstream of split in channel. Foreshore only exposed at low water.	Sea Wall - Seaton Burn	142.5	31/05/2018	Royal HaskoningDHV	Some voids, loss of mortar and slight bulging in some areas. No undermining apparent but some localised but deep voids in fill behind cope. Large crack at top of ramp, settlement of bottom section, some movement in side wall. Voids in steps.	3	>20	Fill gaps between blocks. Rebuild ramp side wall. Monitor voids behind crest.	routine
121AA901A4401C06	Vertical masonry wall forming south bank of burn immediately upstream of split in channel. Crest level varies to tie in rising land behind.	Sea Wall - Seaton Burn	229.3	31/05/2018	Royal HaskoningDHV	Some displaced blocks, notably along base at east end. Localised cracks, and gaps between blocks along entire length. Localised cracking and significant spalling to concrete capping beam at east section. Ladders in fair condition.	4	11 - 20	Replace missing blocks. Repair cracks. Repair coping.	urgent
121AA901A4401C07	Channel carved out of high rock outcrop providing second outlet for Seaton Burn out to sea. Both sides comprise vertical rock faces with steep earth slopes on top.	Sea Wall - Seaton Burn	141.9	31/05/2018	Royal HaskoningDHV	Large gaps and some missing blocks throughout. South east section extremely dilapidated, exposing the earth cliff behind. Erosion is also occurring at the eastern end of the section. Rock cliff sections appears stable.	3	6 - 10	Replace missing blocks, repoint, rebuild where necessary.	routine
121AA901A4401C08	Vertical masonry wall forming east bank of Seaton Sluice west channel.	Sea Wall - Seaton Burn	166.9	31/05/2018	Royal HaskoningDHV	Some area of minor settlement evident. Some cracks, displaced blocks and loss of mortar along inner section. Reports of significant void at toe not observed due to heavy weed growth.	3	>20	Repair cracks. Vessel based survey of void at toe.	routine
121AA901A4401C09	Rock armour revetment with remains of masonry wall acting as toe protection and backed by concrete pier (Defence Code 44/12/1).	Revetment - Rocky Island	46.3	31/05/2018	Royal HaskoningDHV	No loose rocks or gaps apparent. No signs of settlement or undermining at toe of. Some displaced blocks at toe but no recent change.	2	>20	None.	no repairs
121AA901A4401C10	Concrete pier with concrete crest wall on seaward side founded on a rocky outcrop and with rock armour (Defence Code 44/11/1) at toe.	Sea Wall - Rocky Island	55.5	31/05/2018	Royal HaskoningDHV	Boulder foreshore. Seawall well founded on rock. No signs of movement or settlement. Minor abrasion to blocks/ apron. Localised undermining of toe at seaward end. Joint sealant missing. Hand railing and ladder in good condition.	2	>20	Replace sealant. Monitor undermining at toe.	no repairs
121AA901A4401C11	Vertical masonry seawall founded on rocky foreshore with sloping toe protection comprising boulders.	Sea Wall - Rocky Island	119.3	31/05/2018	Royal HaskoningDHV	Boulder foreshore. Wall well founded on rock, no undermining. Some large gaps and cracks between blocks. Missing blocks along toe, localised area of inward movement. Some erosion behind crest. Handrail, surfacing steps in fair condition.	4	6 - 10	Repair area of movement. Fill gaps/ cracks. Stabilise eroding land behind crest	urgent
121AA901A4401C12	Rock cliff with earth slope above.	Cliff - Rocky Island	181.5	31/05/2018	Royal HaskoningDHV	Erosion of cliff line previously reported but no significant activity since.	3	11 - 20	Stabilise soft upper cliffs adjacent to Watch House.	routine

Asset Name	Description	Type	Length	Inspection Date	Inspector	Comments	Overall Condition	Residual Life	Recommendations	Urgency
121AA901A4401C13	Cliff.	Cliff - Collywell Bay	130.5	31/05/2018	Royal HaskoningDHV	Rock foreshore with rock cliffs and earth slopes above. No significant change since last survey. Occasional localised rock fall but mostly stable. No erosion at crest.	2	>20	None.	no repairs
121AA901A4401C14	Near vertical seawall with profiled crest and toe details, founded on rocky foreshore and with soft cliff above.	Sea Wall - Collywell Bay	73.4	31/05/2018	Royal HaskoningDHV	Wall generally in good condition, well founded on rock foreshore, no signs of movement, slight undermining. Some minor cracks, spalling in the upper section of the wall. Ladder in good condition. Localised historic slips in upper slope but none recent.	2	>20	Repair spalling.	routine
121AA901A4401C15	Near vertical seawall with integral toe detail and steep brick work revetment protecting soft cliffs above. Founded on rocky foreshore.	Sea Wall - Collywell Bay	65.4	31/05/2018	Royal HaskoningDHV	Wall well founded on rock foreshore. No signs of movement, some minor undermining of toe apron. Significant abrasion of lower blocks, missing flap valves. Full height vertical crack in upper masonry wall. Loss of mortar beneath coping block.	3	>20	Repoint masonry and monitor further cracking. Replace flap valves.	routine
121AA901A4401C16	Near vertical sea wall with profiled crest and steeped toe detail founded on rocky foreshore.	Sea Wall - Collywell Bay	41.6	31/05/2018	Royal HaskoningDHV	Wall well founded on rock foreshore. No signs of movement, minor undermining of toe apron. Minor loss of mortar below coping. Flap valves missing, one drainage hole blocked. Some abrasion of concrete at the toe.	3	>20	Clear drainage holes. Replace flap valves.	no repairs
121AA901A4401C17	High near vertical concrete seawall with small vegetated slope above it and concrete apron along some of the toe. Foreshore mainly rocky with some sandy/shingle beach.	Sea Wall - Collywell Bay	134	31/05/2018	Royal HaskoningDHV	No noticeable change in 3 full height vertical cracks, no movement apparent. Significant abrasion and spalling along toe and at access steps. Handrail heavily corroded. Movement of wooden fencing on upper slope.	4	11 - 20	Repair cracks, monitor for movement.	routine
121AA901A4401C18	Concrete seawall with stepped toe detail and wave deflecting curve offering toe protection to high soft cliff with sandy and rocky foreshore.	Sea Wall - Collywell Sands	174.6	31/05/2018	Royal HaskoningDHV	No signs of movement, minor undermining at toe. Some abrasion and minor gaps between blocks. High beach levels south end. Ongoing active slips along majority of soft upper cliff. Escape ladder missing.	2	>20	Monitor slips in upper cliff. Replace ladder.	routine
121AA901A4401C19	Low gabion basket wall at toe of vegetated earth slope with concrete access ramp and retaining wall. Wide rock platform foreshore fronts this section.	Gabions - Collywell Bay	55.4	31/05/2018	Royal HaskoningDHV	Gabions replaced but already splitting. No erosion of vegetated slope. Ramp well founded on rock, undermining at lower end but appears stable. Some abrasion to ramp. Upper vegetated slope stable.	3	11 - 20	Repair gabions. Monitor undermining of ramp.	routine
121AA901A4401C20	Medium height earth slope above rock platform/cliff.	Cliff - Collywell Bay	226.6	31/05/2018	Royal HaskoningDHV	Rock foreshore appears stable. Some localised erosion along toe of upper earth slope and small scale slumps.	2	>20	None.	no repairs
121AA901A4401C21	Steep rock cliffs fronted by scree slope and rocky foreshore.	Cliff - Crag Point	656.6	31/05/2018	Royal HaskoningDHV	Boulder foreshore and hard rock cliffs. Cliffs fractured, several rock falls, overhangs and caves. Slips in upper earth cliff. Significant crack line along cliff top near boundary fence. Static caravans and footpath close to cliff edge	2	11 - 20	Monitor erosion. Liaison with caravan park. Consider diversion of footpath.	no repairs