



**Cell 1 Regional Coastal Monitoring Programme:
Walkover Visual Inspections of Assets**



North Tyneside Council

**South Tyneside Council
Final Report**

September 2012

South Tyneside County Council

Walkover Visual Inspection of Assets

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Preamble

The Cell 1 Regional Coastal Monitoring Programme covers approximately 300km of the north east coastline, from the Scottish Border (just south of St. Abb's Head) to Flamborough Head in East Yorkshire. This coastline is often referred to as 'Coastal Sediment Cell 1' in England and Wales (*Figure 0-1*). Within this frontage the coastal landforms vary considerably, comprising low-lying tidal flats with fringing salt marshes, hard rock cliffs that are mantled with glacial sediment to varying thicknesses, softer rock cliffs and extensive landslide complexes.

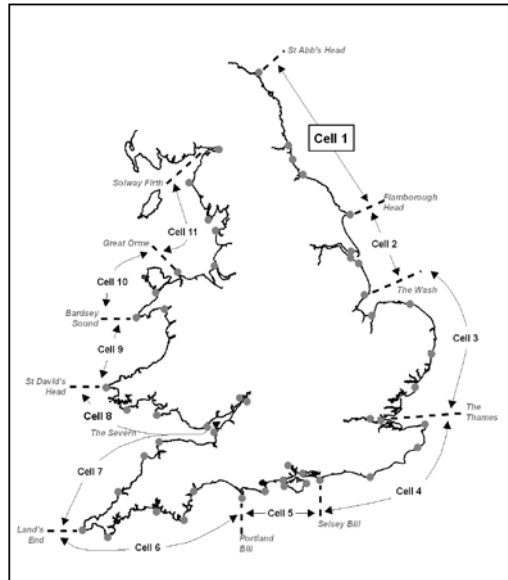


Figure 0-1: Sediment Cells in England and Wales

The work commenced with a three-year monitoring programme in September 2008 that was managed by Scarborough Borough Council on behalf of the North East Coastal Group. This initial phase has been followed by a five-year programme of work, which started in October 2011. The work is funded by the Environment Agency, working in partnership with the following organisations:



The original three year programme of work was undertaken as a partnership between Royal Haskoning, Halcrow and Academy Geomatics. For the current five year programme of work the data collection associated with beach profiles, topographic surveys and cliff top surveys is being undertaken by Academy Geomatics. The analysis and reporting for the programme is being undertaken by Halcrow.



The main elements of the Cell 1 Regional Coastal Monitoring Programme involve:

- beach profile surveys
- topographic surveys
- cliff top recession surveys
- real-time wave data collection
- bathymetric and sea bed characterisation surveys
- aerial photography
- walk-over surveys

The present report is Coastal Walk-over visual Inspections of assets 2012 and provides a summary of the main findings from the walk-over inspections of South Tyneside Council's frontage that are undertaken once every 2 years.

In addition, separate reports are produced for other elements of the programme as and when specific components are undertaken, such as beach profile, topographic and cliff top surveys, wave data collection, bathymetric and sea bed sediment data collection, and aerial photography.

1 Introduction

1.1 Study Area

North Tyneside Council's coastal frontage is approximately 14km in length extending from the River Tyne in the north to the border with the Sunderland Council at North Bents in the south, shown in **Figure 1-1**. This frontage includes approximately 27 assets (17 man-made assets and 10 natural assets). Detailed maps showing the location of each of these NFCDD assets are presented in **Appendix A**.

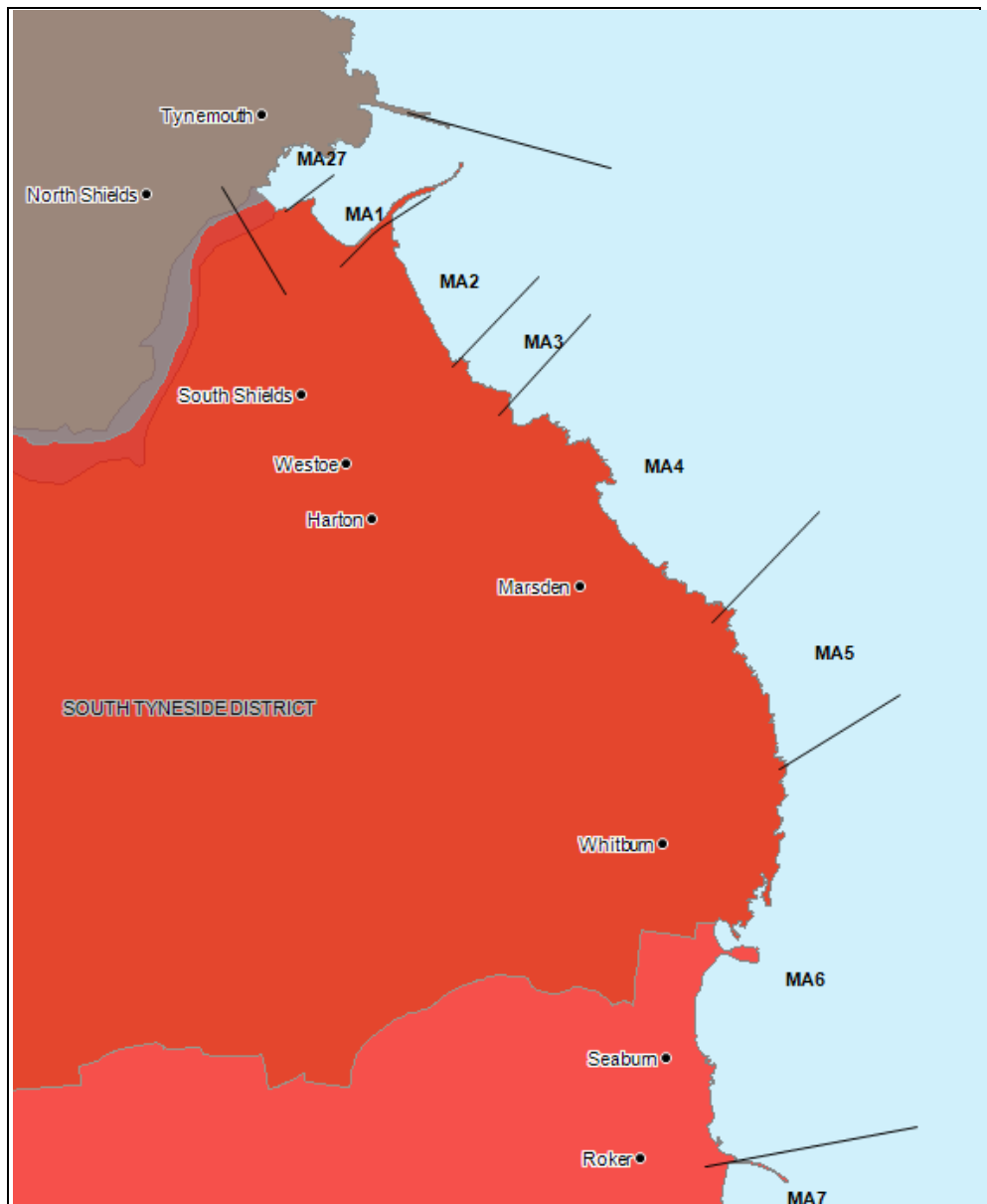


Figure 1-1: South Tyneside Council study area.

1.2 Methodology

This section presents the approach taken by the slope and asset inspectors respectively for the South Tyneside Council coastal frontage.

The visual assessment of both natural and built assets was carried out by a team of Chartered engineers in September 2012. The weather experienced during this

time was very stormy with heavy rain and strong winds and followed a period of severe flooding across the north east.

The frontage has been split into a number of 'asset lengths' as defined in the National Flood and Coastal Defence Database (NFCDD) which is maintained by the Environment Agency (EA). All maritime Local Authorities that act as Coastal Protection Authorities have a duty to report findings from walkover inspections into the NFCDD. However, at the time of writing the NFCDD is in the process of being replaced, the form of the new database has yet to be agreed.

The walk over inspections cover both built defences assets and natural defence assets such as cliffs, slopes and dunes. All assets were visually inspected, photographed, graded based on their condition and an estimate made of their residual life.

For built assets the grading classification was undertaken in accordance with the Condition Assessment Manual (EA, 2011), with estimates made of the urgency of any necessary repairs. An extract of the grading classification for built assets is presented in **Table 1-1**. For ease of reference the photos presented in this report have also been bordered with the colours key indicated below.

Grade	Rating	Description
1	Very Good	Cosmetic defects that will have no effect on performance.
2	Good	Minor defects that will not reduce the overall performance of the asset
3	Fair	Defects that could reduce performance of the asset.
4	Poor	Defects that would significantly reduce performance of the asset. Further investigation needed.
5	Very Poor	Severe defects resulting in complete performance failure

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

In addition to the above grading classification, for natural asset such as cliffs and slopes the same five point activity scale used in previous cliff activity assessments undertaken by Halcrow for Scarborough Borough Council in Cell 1 was used (Halcrow 2002, Halcrow 2005, Halcrow 2009). An extract of this grading classification is presented in **Table 1-2**. For ease of reference the photos presented in this report have also been bordered with the colours key indicated below.

Rank	Activity Class	Description
1	Dormant	Protected cliffline or landslide complex with no visible evidence of landslide activity.
2	Inactive	Relict cliffs or landslides with vegetated slopes and localised erosion of the toe or failure of the headscarp.
3	Locally	Retreating cliffline with localised small landslides or areas of erosion.
4	Partly	Retreating cliffline with very common smaller-scale landslides or areas of intense erosion.
5	Totally	Retreating cliff line almost entirely affected by large-scale landsliding or intense erosion.

Table 1-2: Condition assessment grading used for natural assets (cliffs/ slopes).

This report provides an overview of the findings from the walkover inspections, summarising each locality in general but also specifically identifying individual assets in 'poor' or 'very poor' condition. It is anticipated that this summary will help identify areas for maintenance or capital investment. Full details of the inspection of each asset is provided in **Appendix B**.

In addition to this report, full details of the inspection and a selection of appropriate photographs have been entered into the Sands database, a copy of which is provided along with this report.

2 Overview

The following significant findings were noted during the 2012 walk over inspection. Most notably, this section attempts to highlight those assets that are in a 'poor' or 'very poor' condition or where significant changes from the previous survey were noted.

- **River Tyne to Rive Tyne South Pier (MA 1)**
Little Haven seawall remains in a very poor condition and is actively failing. As identified during the previous inspection, exposed timber, cracking, abrasion and undermining are apparent. A large section of the wall adjacent to the section that failed in 2010 is extensively cracked and is likely to be the next section to fail. The horizontal nature of this crack could mean that a collapse occurs along a significant length. As recommended in 2010, an intermediary contingency plan and plan for capital investment is urgently required for this asset. It is understood that there are plans to progress a capital works scheme in this location in 2013.
- **Rive Tyne South Pier to Trow Point (MA 2)**
The dune fencing and 'pedestrian zoning' fencing are providing some recovery of the dunes along Sand Haven. The new promenade constructed c2010 is in good condition although there was much windblown sand on the promenade. The gabion toe protection to the dunes at the south end of the bay are in poor condition and there are a number of blowout sections through the dune crest resulting in windblown sand on the promenade.
- **Trow Point to Frenchman's Bay (MA 3)**
At Trow Point and Target Rock the headlands continue to experienced rock falls and erosion. In particular the outflanking of Target Point should be monitored on a quarterly basis as recommended during the previous inspection in 2010.
- **Frenchman's Bay to Lizard Point (MA 4)**
Rockfalls and slips in the upper soft material continue around the entire bay. At the north of the bay the concrete bunker near the cliff top, the wall along the toe of the disused lifeguard station and the stepped revetment remain in a very poor condition.
- **Lizard Point to Souter Point (MA 5)**
At Lizard Point the cliffs remain in an unstable condition due to the extensive cave formation, overhangs and fissures and it is recommended that the car park remains closed to help safeguard the public from further significant rock falls.

At Old Harbour Quarry the sink hole where a cave has breached the limestone cliff into the infilled former quarry has not changed significantly since 2010. Following investigations contamination risks relating to the sink hole were found to be low and a capital scheme was not justified. The cliff edge warning signs and rails have been moved back to include the sink hole since the 2010 inspection. Other sink holes may occur in future and the frontage should be monitored and appropriate action to manage risks taken.
- **Souter Point to South Bents (MA 6)**
As noted in the 2010 inspection there are several locations south of Souter Point where local cliff slumps have resulted in the cliff top eroding back to the public footpath. The worst location is a localised spot adjacent to the rifle ranges. Erection of warning signs and appropriate realignment of the footpath should be considered.

3 Condition Assessment

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

3.1 River Tyne to Rive Tyne South Pier (MA 1)

This management unit extends from the entrance to the River Tyne at the South Groyne to the South Pier. This frontage is approximately 4.9km in length (including the South Pier) and includes 7 man-made coastal defence assets, comprising revetments and seawall as well as the 2.8km long South Pier.

On the south side of the River Tyne at the southern wave basin the grouted masonry revetment extends from the boat slipway to the root of the South Groyne. This structure is the responsibility of the Port of Tyne. The revetment remains largely in fair condition with no movement in the stones or loss of mortar. However, at the south end the void identified during the 2010 inspection (and recommended for repair by the 2008 inspection) was still apparent. Some repairs do appear to have been undertaken at the north end where a section of the face has been repaired with concrete. The previous inspection identified small holes in the ground along the crest however these were not observed. The structure extends into deep water and therefore the below water portion could not be inspected. Beach levels within the wave basin appeared similar to those in 2010.



Erosion of mortar and loss of blocks at the toe of the wave basin revetment.



Concrete repair to face of revetment at north end.



Photo of same location as above taken from 2010 inspection report

The River Tyne South Groyne is generally in fair condition with minor voids and missing masonry on north (estuary) side and voids in the concrete at the root on the south (beach) side. The rock armour along the exposed north face is very loosely placed with many blocks appearing to have moved. Rock armour at the root of the south side is also loosely placed and appears to have moved. The repairs in the asphalt surfacing along the north side generally appear to be sound. However, there

are a number of cracks in the asphalt immediately behind the crest at the seaward end, although these do not appear to have change significantly since 2008. The structure extends into deep water and therefore the below water portion could not be inspected.



Repairs in asphalt surfacing to River Tyne South Groyne in good condition.



No significant change in cracks at seaward end since 2008.



Movement of loosely placed rock armour along south face.



Void in concrete and some gaps between blocks along the south face.

The dunes at Littlehaven Dunes are generally well vegetated and stable. The strandline remains a reasonable distance from the dune toe at the north end in the lee of the South Groyne as identified during the 2010 inspections. However, the beach narrows toward the south. There was no evidence of erosion at the dune toe with only minor erosion where informal access tracks have been formed.



Wide beach fronting Littlehaven Dunes



Well vegetated dunes with no sign of erosion along the toe.

The Littlehaven Seawall is generally in a poor condition with signs of undermining and overtopping damage at the south end where it is very poor. At the north end high beach levels are burying the structure and no inspection was possible. Where coping stones are missing midway along the wall the previous concrete repair remains in fair condition. However, where this repair extends south there is a notable gap between the wall and the concrete kerbing. At the south end of the

structure beach levels are very low exposing the old timber piles as identified during the 2010 inspection. Many of the other location of exposed piles identified in 2010 were not observed, possibly due to high beach levels. The section of concrete facing constructed in 2005 is showing signs of movement with a gap opening up behind although this does not appear to have worsened since 2010. Repairs to the hand railing and surfacing in this location remain in fair condition. The ongoing deterioration of this section of seawall remains a real and immediate concern. It is understood that a capital works scheme has been designed for this location and there are plans to start construction early in 2013.



Repairs to missing coping stones remains in good condition.



Cracks along concrete repairs at back of kerbing along the crest.



Repairs to surfacing due to overtopping damage still in good condition.



Gaps behind concrete facing at south end.



Failed front wall facing taken prior to storm on 24/09/12.



Post storm photo on 28/09/12 showing patch repair has no toe and exposed timber toe piles.

South of the car park at Harbour Drive the seawall returns inland along the back of a wide healthy beach. At the north end of this wall there is noticeable settlement of the promontory section (former location of a derrick crane) with significant wide cracks evident in the concrete capping beam in two locations and exposure of the reinforcement bars. Due to relatively high beach levels the exposed toe piles observed during the 2010 inspection were not apparent. The asphalt in this location has been recently replaced and remains in good condition.



Settlement of the promontory area and wide cracks in the reinforced capping beam.



Settlement of the promontory area and wide cracks in the reinforced capping beam.

The section of seawall running along the back of the embayment is fronted by a wide healthy beach. The toe of the wall was buried and therefore not inspected. The low concrete crest wall is showing general signs of minor cracking and spalling along its length as well as more significant vertical cracks at the joints and diagonal cracks through the wall. The surfacing behind the wall has recently been replaced and is in good condition.



Cracks and spalling in low concrete capping wall.

The assumed obsolete outfall that is seaward of the beach at this location is still in very poor condition and in need of removal, below right.

Access to the South Pier was restricted during the inspections. The structure is privately owned and maintained by the Port of Tyne. When visited on the 24/09/12 the gate to the seawards 2/3 was closed due to the stormy weather. When it was visited again on 28/09/12 it was closed because the Port of Tyne was undertaking maintenance inspections and repair work. The landward end remains in overall good condition, with minor repointing and replacement of missing or cracked blocks expected to be undertaken as part of routine maintenance.



South Pier



Obsolete outfall at Littlehaven

3.2 Rive Tyne South Pier to Trow Point (MA 2)

This management unit is approximately 1.7km in length and extends from the River Tyne South Pier to Trow Point in the south. This frontage includes approximately 7 assets, comprising a mix of seawalls, promenades and revetments as well as natural beaches backed by vegetated dunes.

Along the northern section of Sandhaven at Watch House the beach has a cobble berm in front of the dunes which narrows and thins toward the south. The dunes are relatively wide and well vegetated adjacent to the South Groyne with new dune fencing and pedestrian 'zoning' barriers appearing to have been constructed since the previous inspection. These are in relatively good condition. The 'donkey track' extends from the South Pier initially behind the dunes and then in front. As reported by the previous inspection in 2010, this track and concrete edge beam continues to show signs of distress at the south end where it realigns to the seaward side of the dunes.



Wide cobble berm across beach at South Groyne.



Dune fencing in good condition but 'donkey track' showing signs of distress.

South of the Lifeguard Station the dunes adjacent to the Marsden Rattler Public House are relatively wide and high but have no vegetation due to intensive recreational use. The dune fencing placed c2010 is well buried in places with some signs of new vegetation growth suggesting that this dune management is becoming effective. However, much windblown sand was still evident on the promenade. The pedestrian 'zoning' barriers suggested in the previous survey have now been constructed and appear to be effective in controlling pedestrian access across the dunes, although some areas of broken dune fencing, especially at the south end, were still apparent.



Dune fencing well buried in places with some signs of new vegetation growth.



New pedestrian zoning barriers at access points in good condition.

Further south at the Amphitheatre construction of the new promenade as part of the Sea Change Project completed c2010. Beach levels remain relatively high and

completely burying the seawall. Despite new dune fencing along this frontage there is significant windblown sand on the promenade.



Windblown sand on the new promenade at the Amphitheatre. Dune fencing along the back of beach at the Amphitheatre

To the south of the Amphitheatre opposite the Bents Recreation Ground the new promenade extends along the edge of the car park. The new render on the setback wall, promenade surfacing and lighting columns are all in good condition. As with the section to the north, beach levels are relatively high burying the seawall with windblown sand on the promenade. The protruding base areas with seating that were identified as being in poor condition in 2010 appear to have been removed. The sloping concrete revetment that extends to the south of the Lifeguard hut remains in fair condition with spalling and abrasion still apparent in places. The southerly section was previously identified as showing some minor signs of settlement due to a discontinuity in the slope. However, this was not observed during the inspection, possibly due to high beach levels. The fencing placed along the toe to control windblown sand remains in good condition.



High beach levels, windblown sand on promenade adjacent to Public House. Spalling and abrasion along the sloping concrete revetment.

The dunes at the south end of Sandhaven remain well vegetated but very narrow and generally in fair condition but with some erosion evident along the toe. There are numerous blowouts along the length causing significant windblown sand across the promenade. Cobble armouring has been placed at some of these locations to stabilise the dune crest and this appears to be effective. The buried gabions are exposed at the north and south ends are in poor condition, with corrosion and burst baskets and loss of stone evident. No rabbit holes were observed.



Some erosion along the toe of the dunes at the south end of Sandhaven



Placement of cobbles at the blowouts in the dune crest



Windblown sand on the promenade at the access ramp and blowouts.



Exposed gabions at south (and north) end in poor condition.

3.3 Trow Point to Frenchman's Bay (MA 3)

This management unit is approximately 1km in length and extends from Trow Point in the north to Frenchman's Bay in the south. This frontage includes approximately 4 assets, comprising a mix of undefended cliff headlands and rock revetments.

At Trow Point the rock falls and local slumps in the overlying softer material observed in 2010 appears to be continuing. Despite this the headland remains as a competent mass, controlling evolution of the bay to its south. Several rabbit holes were observed across the headland.



Slumps in the upper soft material at Trow Point.



Rockfalls along the south face of Trow Point.

At Graham's Sand the rock revetment and regraded earth slope remains in very good condition with no undermining of the toe of settlement apparent. The rocks appeared well interlocked and stable with the level of the shingle/ boulder foreshore at the toe being very high. There were no signs of rabbits (or rabbit holes) as noted

during the previous inspection and the new pathway behind the crest was in good condition.



Rock revetment and grass slope at Graham's Bay in very good condition.



Rock armour well interlocked with no signs of settlement or movement.

The headland at the south end of Graham's Bay (Target Rock) remains in a partially fragmented state with undercutting at lower levels and a cave forming at the base. The previous rock fall in the small rock stack was noted and although some further erosion of the loose slope is apparent the condition does not appear to have changed significantly since the previous inspection in 2010. As noted during the previous survey, further loss of rock from this headland should be monitored closely to identify potential outflanking of the defences in Grahams Sand and Southern Bay



Cave forming in base of the headland at the south end of Graham's Bay.



Ongoing erosion of loose rock slopes south of headland.

The rock revetment and earth slope at Southern Bay is also in very good condition with no signs of scour or settlement. The rocks appear well interlocked and no erosion of the upper slopes was evident.



Rock revetment in Southern Bay in good condition.



Rock armour stable and well interlocked with no erosion evident in earth slopes.

3.4 Frenchman's Bay to Lizard Point (MA 4)

This management unit is approximately 5km in length and extends from the north end of Frenchman's Bay to Lizard Point in the south, encompassing Marsden Bay. This frontage includes 6 assets, comprising largely undefended high rock cliffs with two short sections of masonry walls at access points.

To the south of Frenchman's Bay the cliffs around the entire bay continue to show signs of erosion and rock falls. At the north of the bay a number of arches were apparent at the toe of the cliff although no recent rock falls were observed. At the centre of the Bay the dramatic rock fall that occurred in 2010 along a 50m length of cliff cutting the cliff top back by 20m does not appear to have worsened although the rock debris providing protection to the toe has now been largely washed away.



Arches formed at the toe of high rock cliffs at the south of Frenchman's Bay.



Historic collapse of cliff at centre of bay has not worsened.

At the north end of Marsden Bay the cliff and arch formations at the toe continues with ongoing evidence of relatively recent rock falls and slips of the overlying soft material. The concrete bunker close to the cliff edge adjacent to Camel Island remains perilously close to the cliff edge with a corner section of the bunker overhanging.



Adjacent to Redwell Lane the disused Lifeboat Station on the foreshore is in a very poor condition. The previously repaired section of brickwork wall at the north end continues to be undermined with noticeable loss of masonry since the previous inspection in 2010. In many places along the toe the stepped revetment is heavily abraded and badly undermined with reinforcement mesh exposed in locations. This is particular evident at the south end where the concrete toe beam has failed and cracks are noted in the masonry wall above. Many other sections of this revetment are failing with debris observed on the beach. The hand railing along the crest of the wall is very corroded and broken in places causing a risk to public safety. The additional railings down to the stepped section and a temporary metal step to guide public access to the beach are in fair condition although these should continue to be

monitored. At the top of the cliff the access steps, hand railings and surfacing are in fair condition although some large vertical cracks in the retaining walls were noted.



Undermining and loss of brickwork at north end of Redwell Land Lifeboat Stn.



Undermining of stepped revetment and temporary metal access step.



Undermining and displacement of toe beam and cracking in masonry wall.



Vertical cracks in the retaining wall along the cliff top access steps.

Between the disused Lifeboat Station at Redwell Lane and the Grotto Public House the cliffs continue have small arches and caves along their base in place. However, no significant change was apparent since the previous inspection.



Small arches and caves in the base of the cliff south of the Lifeboat Stn.



Small arches and caves in the base of the cliff south of the Lifeboat Stn.

At Marsden Grotto, there was no significant change since the 2010 inspection. The masonry wall is well protected by a cobble berm on the upper beach and the rock netting constructed in 2007 at the stairwell remains in very good condition.



Masonry wall at Marsden Grotto protected by cobble berm.



Rockfall protection netting at Marsden Grotto stairs.

South of the Grotto in Marsden Bay the cliffs continue to exhibit occasional rockfalls and formation of numerous caves and arches at the base, although the higher shingle berm in this area provides some protection to the cliff toe. As noted in the 2010 inspection there are two locations where the cliff-line is close to the road and there is cracking in the cliff, indicating that rock falls, toppling and further retreat of the cliff edge should be expected in future.



Cobble beach in Marsden bay, looking south from near Grotto.



Cliff fall near south end of Marsden Bay.



Southern section of Marsden bay from near Lizard Point

3.5 Lizard Point to Souter Point (MA 5)

This management unit is approximately 2.4km in length and extends from Lizard Point in the north to Souter Point in the south, encompassing the bays of Byer's Hole and Potter's Hole. This frontage includes 3 assets, comprising undefended high rock cliffs.

As noted in the 2010 inspection report, the National Trust closed the Lizard Point Car Park following significant cliff falls in March 2010. The car park remains closed as the section of cliff fronting the car park and extending along to Concrete Pillar is highly unstable and further cliff falls are expected. The warning sign had been damaged, possibly by high winds, and needed replacing at the time of the visit. It is suggested that the car park could be relocated to a safer location or alternatively the access road should be closed off more permanently.



Closed track to Lizard Point car park, with sign missing on 24/09/2012.



Rockfall, caves and extensive fissuring of cliff face

Within Whitburn Coastal Park the cliffs protecting the former Old Harbour Quarry that is in-filled with waste material continue to show ongoing cave formation and cliff falls. The sink hole in the quarry backfill where caves have breached the limestone cliff behind the headland between Byer's Hole and Potters Hole does not appear to have changed significantly since 2010, see below right. However, the cliff edge warning rails and signs have been moved back to now include the hole. Further sink holes may occur in future where there are other caves in the limestone barrier. The frontage should therefore be regularly monitored and appropriate action to manage risks related to land instability and loss of spoil to the foreshore considered as appropriate.



Caves forming in cliff base in Whitburn Park cliffs



Caves and cliff falls



Fencing relocated at sink hole (on right mid field) View into sink hole 24.09.2012

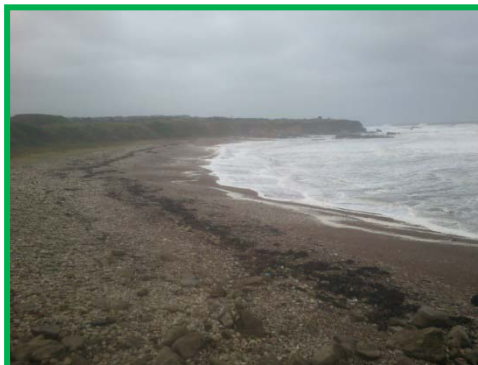
South of Potter's Hole along Whitburn Point Nature Reserve the localised erosion and cave formation continues to cut back the cliff edge towards the foot path. This should be monitored and the rails and warning signs erected by the National Trust may need to be moved back in future.



Stacks and arches at Whitburn Point nature Reserve.

Warning signs where coastal path is close to cliff edge.

The northern section of the Rifle Ranges frontage, to the north of Souter Point has a raised gravel / cobble beach that protects the cliffs, which are lower and of softer material in this area. The beach and dormant cliffs remain in good condition.



Raised beach protecting stable cliffs at northern section of Rifle Ranges.

3.6 Souter Point to South Bents (MA 6)

The South Tyneside portion of this Management Area (MA) is approximately 1.7km in length and extends from Souter Point in the north to the border with Sunderland at South Bents at the north of Whitburn Bay. This frontage includes 2 assets, comprising eroding sandstone cliffs.

The section of the rifle ranges frontage south of Souter Point continues to experience small localised slumps and slips, several of which are cutting back close to the public footpath along the cliff edge. However, changes appear relatively small as evidenced by the comparison of 2010 to 2012 photographs below.

At one location the erosion appears to have been exacerbated by discharge from a land drainage outfall from the ranges and is impinging on the footpath, which needs relocation landwards, below left. It is notable that there are no cliff edge warning signs or warning rails along this section of the coastal footpath, in contrast to the National Trust owned land to the north.



Localised erosion by land drainage outfall impinging on footpath.



Concrete blocks dumped to protect cliff toe.



Photo from 2010 inspection report



Photo from 24.09.2012 inspection shows limited change

South of the rifle ranges the eroding till cliffs are afforded some protection by the inter-tidal rocky outcrops extending from White Steel to Whitburn Steel, at the northern end of Whitburn Bay. Here there is a fairly wide grassed area at the top of the cliffs, although in places the cliff top path is close to the edge and relocation will be needed in future, below left.

Towards the south of the unit there is a storm outfall that has suffered failure of the scour protection due to erosion of the cliff toe, below right. This should be repaired to avoid the outfall discharge further exacerbating the erosion.



Coastal path adjacent to locally active cliffs at the Steels.



Failed scour apron at storm outfall in need of repair.

4 Comparison with Previous Assessments

The previous formal assessment across the whole study frontage was undertaken in summer 2010. Since that time the following changes are noted. Many other defects reported in 2010 remain unaddressed, but have not notably deteriorated further since the previous inspections.

4.1 *Man-made assets*

Improvement works

Other than completion of the new promenade along the central section of Herd Sands at South Shields no significant capital works were apparent to the man-made assets along this frontage. Minor repairs and maintenance appear to have been undertaken to a number of structure including:

- River Tyne South Groyne surfacing;
- Littlehaven Seawall path repairs to coping and surfacing;
- Sandhaven dunes with new dune fencing and 'pedestrian zoning' fencing;

Ongoing Deterioration

There is general ongoing deterioration of many of the man-made assets along the coastline including widespread abrasion and cracking to many of the seawalls. The following deterioration is noteworthy:

- Undermining, failure of front face and wave overtopping damage of the Littlehaven Seawall (it is understood that an urgent capital works scheme is planned for 2013).
- Settlement and cracking of the seawall promontory along Harbour drive.
- Gabion deterioration at Sand Haven dunes;
- Undermining and abrasion of the revetment at Redwell Lane Lifeboat Station;
- Failure of scour protection ramp to storm outfall at Whitburn, close to the border with Sunderland.

4.2 *Natural Assets*

Although a large part of the frontage at the north end is protected by man-made coastal defences there is also general ongoing deterioration of the natural assets to the south. The following areas of deterioration and recovery are noteworthy:

- Local slumps at Trow Point and Target Rock;
- Widespread erosion and rockfalls at Frenchman's Bay;
- Arch formations and rock falls in Marsden Bay;
- The sink hole at Old Harbour Quarry expanded prior to 2010, but appears to have changed little from 2010 to 2012. Relocation of warning signs and cliff edge rails has been undertaken adjacent to the sink hole.
- The cliffs near Lizard Point remain unstable and the National Trust car park remains closed with a temporary barrier, although the sign was missing on the day of the inspection. It is suggested that if the car park is to remain closed a more permanent barrier should be provided.
- South of Souter Point, particularly adjacent to the Rifle Ranges, there are a number of locations where the 2010 inspection noted that the eroding cliff is starting to impinge on the coastal footpath. There has been further erosion in this area and arrangements will need to be made with the landowner to relocate the footpath at a few localised pinch points.

5 Problems Encountered & Uncertainty in Analysis

As with the previous inspection in 2010 no significant problems were encountered during the 2012 inspections. However, the following should be noted:

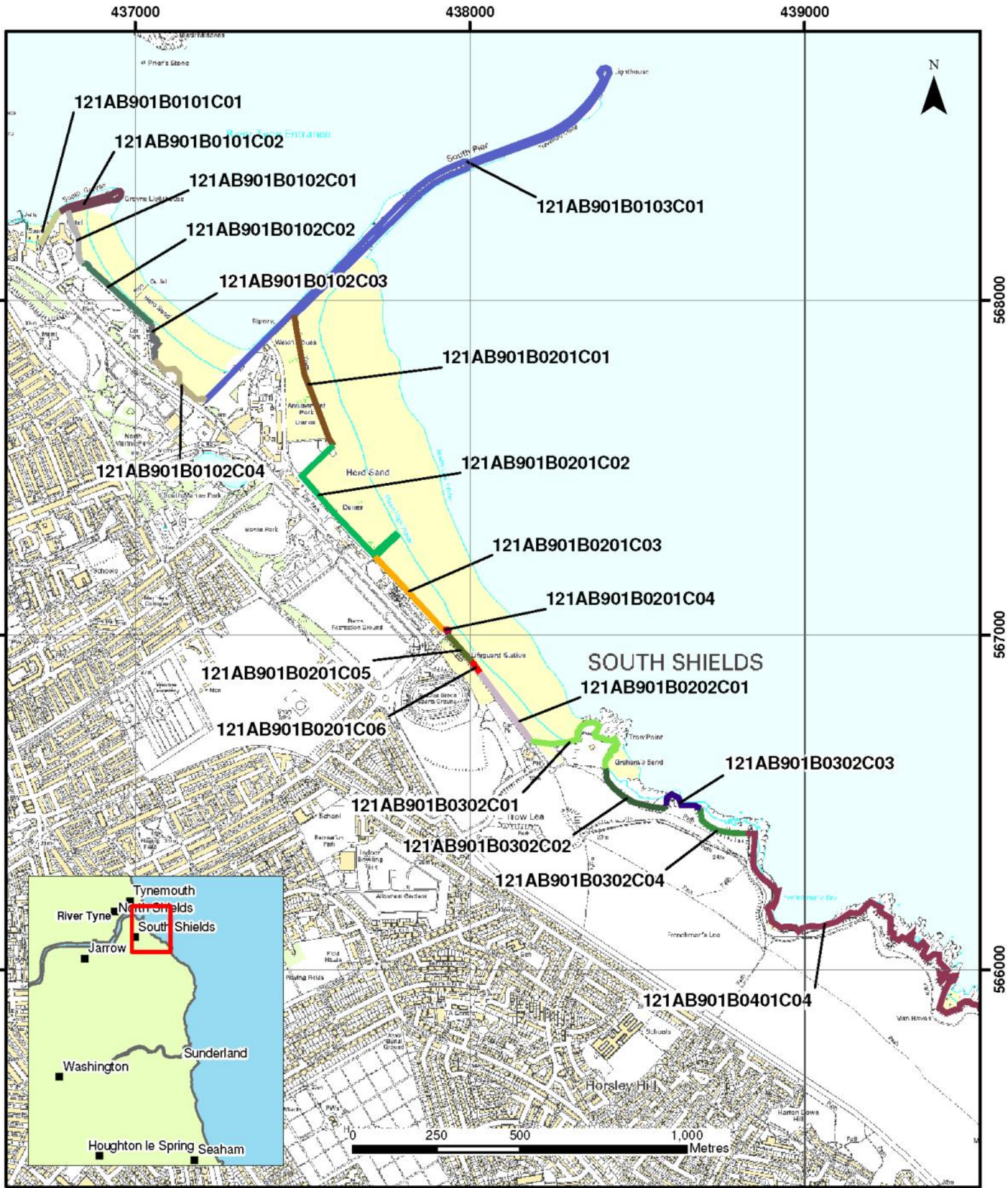
- Local tide tables were used to provide key information to plan inspection of tidal structures at low water, and where possible during spring tides, to ensure that as much of the structure as possible was visible for the inspection. Where structures fully dry out at low tide a full visual inspection was undertaken. However, where structures extend into deeper water and do not dry out at low tide no inspection was possible below the waterline. This was particularly notable at River Tyne South Groyne and South Pier.
- All assets could be accessed without problem, apart from South Pier, which is private property owned and maintained by the Port of Tyne. Although this is often open to the public it was closed on the main day of inspections on 24/09/2012 due to stormy conditions and danger from wave overtopping. When the pier was revisited on 28/09/2013 it was closed again as post storm maintenance inspections were underway and vehicles were accessing the pier.
- High beach levels in a number of locations resulted in some structures being partially buried and as such the buried portion of these structures could not be inspected. This was particularly notable at Littlehaven Seawall, where the beach levels are quite volatile and at Herd Sands Seawalls.

6 Conclusions & 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 for the NFCDD database, all condition assessment data and selected photographs have been uploaded to Shore And Neashore Database (SANDS). A copy of the SANDS database and viewer software is provided along with this report.

Appendix A – Asset Maps



Legend

- Asset location
- NFCDD Asset Number

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

Figure 1 - Map 1
South Tyneside Council
Frontage

Coastal Walkover
 Inspection Report

Drawing Scale 1:15,000 at A4

Halcrow Group Limited
 Burderop Park
 Swindon
 Wiltshire
 SN4 0QD

+44 (0)1793 812479

A CH2M HILL COMPANY

Notes:

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

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441000

442000

0 250 500 1,000 Metres

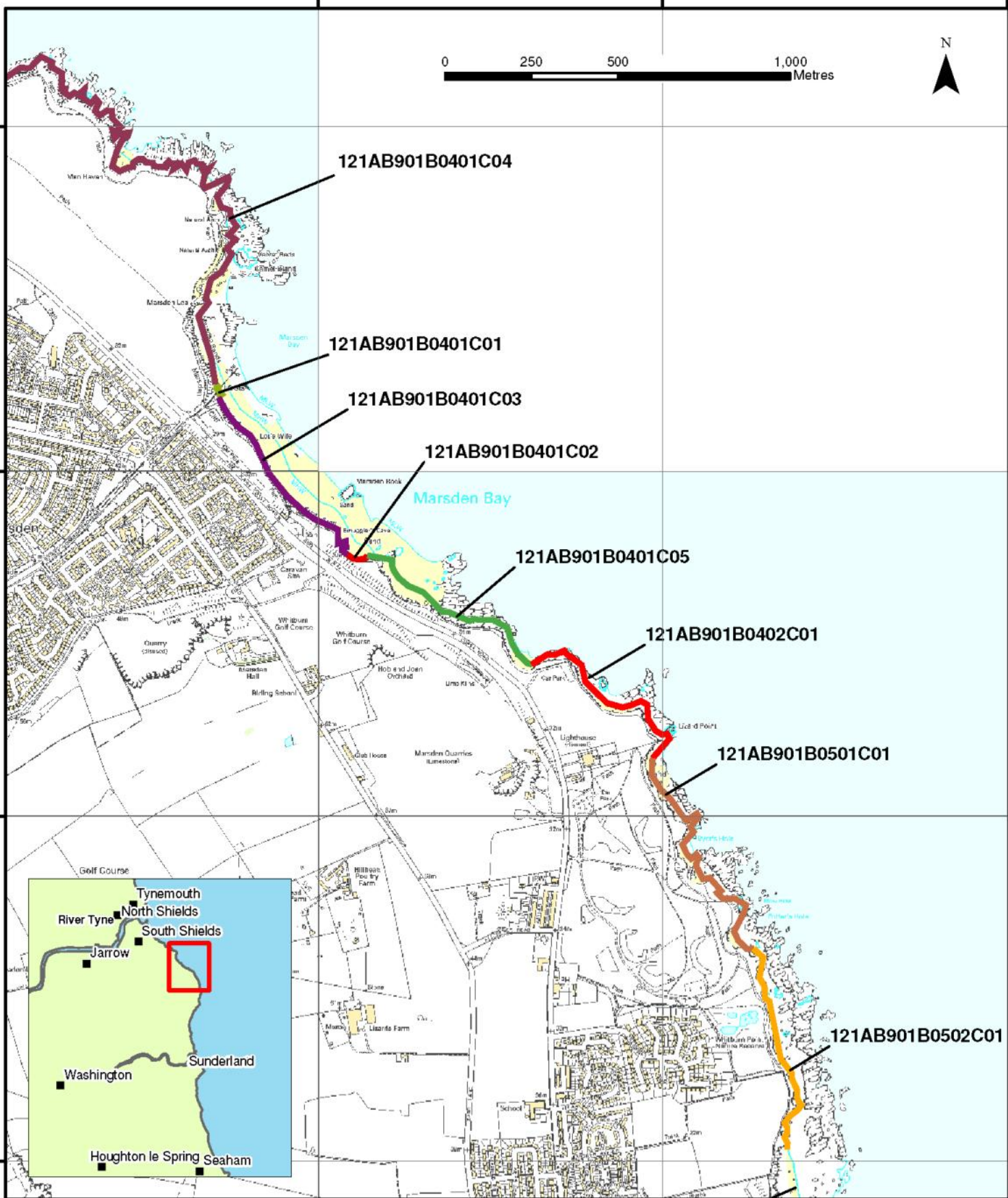


566000



565000

564000

563000



Legend

-  Asset location
-  NFCDD Asset Number

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

**Figure 1 - Map 2
 South Tyneside Council
 Frontage**

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

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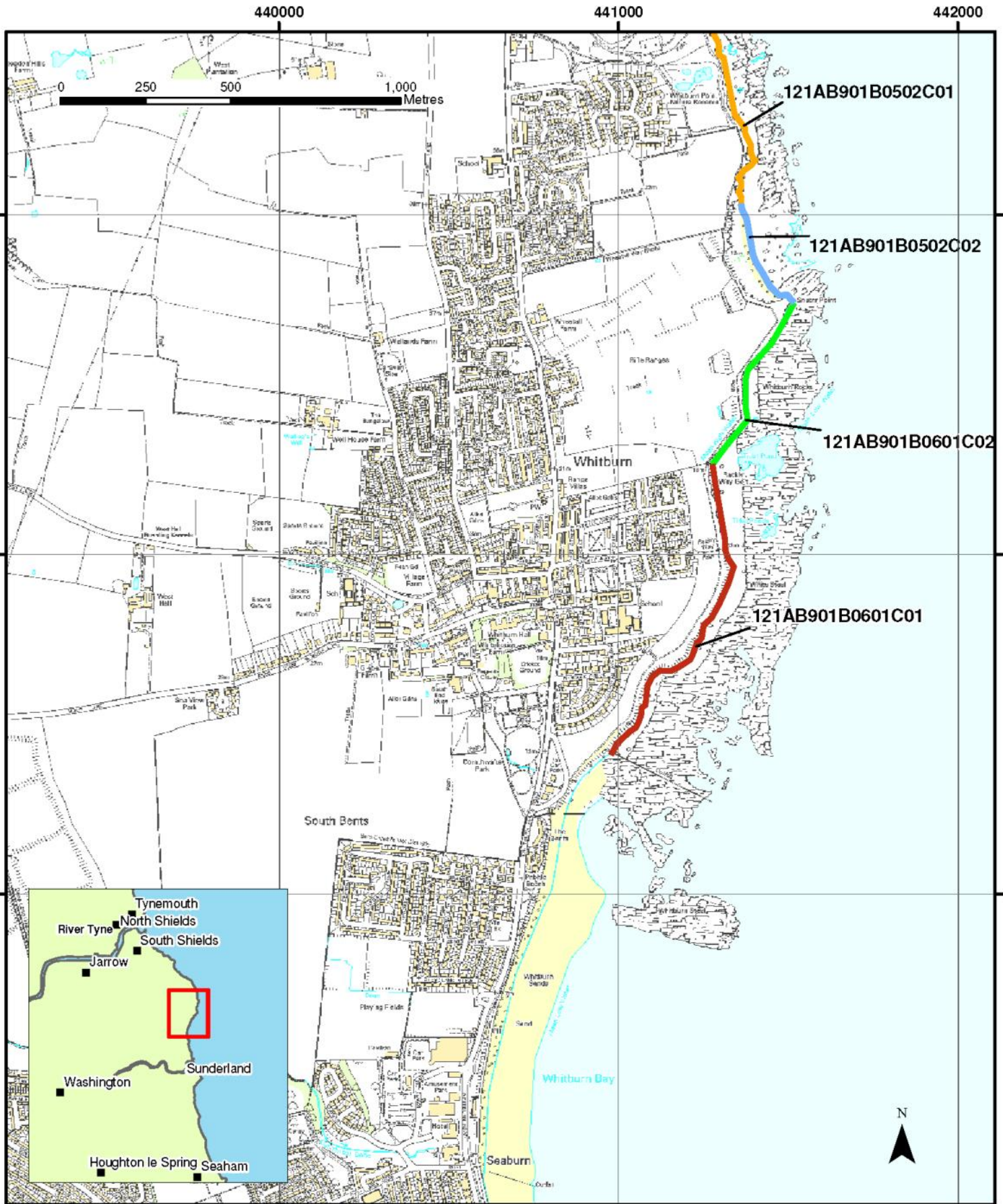
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


Notes:

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



Legend

-  Asset location
-  NFCDD Asset Number

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

**Figure 1 - Map 3
 South Tyneside Council
 Frontage**

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

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Notes:

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

Appendix B – Asset Condition & Recommendations

Name	Type	Description	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AB901B 0101C01	Revetment	700101 Grouted masonry revetment badly voided in places especially at toe. Crest wall behind	115.3	24/09/2012		Voids at toe due to erosion of mortar and missing masonry. Cracking of mortar towards crest of revetment. Does not appear to have significantly deteriorated since 2008 inspection. Gen fair to good cond, apart from voids	3	11 - 20	Infill voids - prioritise work at toe	routine
121AB901B 0101C02	Breakwater	700201 Grouted stone jetty with concrete deck. Acts to retain beach to Herd Sand.	372.1	24/09/2012		Minor voids and missing masonry (worse condition on north side) but also some concrete voiding on southern side near landward root. Large cracks in tarmac at seaward end of structure. No sig. change since last inspection.	3	>20	Infill cracks in deck. Patch repairs to missing mortar and blocks.	routine
121AB901B 0102C01	Beach Ridge	700301 Picket fencing to build dune. Splash wall behind (02).	170.8	24/09/2012		Healthy and accreting / stable frontage. storm during survey, some beach cliffing. strandline 30m from dune toe.	2	>20	continue to monitor	no repairs
121AB901B 0102C02	Wall	700401 Concrete wall to promenade and carparks. Sand levels decrease as wall advances to Sout	279.2	24/09/2012		Limited change evident since previous survey. Poor /very poor condition, with signs of undermining, overtopping, material degradtion. Large void in concrete exposes timber. Further large cracks. wave overtopping at HW survey 10:53. reinspect at lw.	4	1 - 5	Capital Scheme to realign in short-medium term.	urgent
121AB901B 0102C03	Wall	700402 Newer section of wall.	128.5	24/09/2012		No sig change since last survey, but high beach levels at time of survey. Evidence of settlement, cracking, exposed reinforcement and corroded sheet piling.	4	6 - 10	Repair cracks, reinspect when beach lower.	urgent
121AB901B 0102C04	Wall	700501 Concrete wall to root of South Pier and protecting promenade and amenity land.	222	24/09/2012		Wall in fair condition. Cracks opened at construction joints and one significant crack through full width of structure. Spalling on crest. Wide beach with high levels at wall provides protection to the structure.	3	11 - 20	Infill cracks at construction joints	routine
121AB901B 0103C01	Breakwater	700601 South Pier important to general protection both North and South.	2839.9	28/09/2012		No Change from prev inspect. Masonry pier with local rock armour protection. Landward end in Good condition seaward end not inspected due to access restrictions.	2	>20	Port owned & to continue to maintain structure	routine
121AB901B 0201C01	Embankment	700701 Stone embankment infront of dunes and fairground.	408.8	24/09/2012		Stone revetment largely covered, burying stones, but appear thin / scattered. Well established beach with dunes provide protection. Dunes behind are well established with vegetation cover.	4	>20		no repairs
121AB901B 0201C02	Cliff / Scarp	Undefended Frontage	632.9	24/09/2012		Dune repairs, fencing and recent planting since last inspection. Fencing appears to be successfully retaining sand.	3	>20	Continue to monitor and maintain sand fencing and control public access	no repairs
121AB901B 0201C03	Apron	700801 Concrete toe wall and paved apron to front of amenity building and carpark.	299.2	24/09/2012		Promenade undergoing construction activities associated with the Sea Change Project. Beach levels flush with promenade. Lots of wind-blown sand on promenade.	2	>20		no repairs
121AB901B	Cliff /	Undefended Frontage	29.3	24/09/2012		New structure as part of 2010 promenade works. High	1	>20	Control of wind	no

Name	Type	Description	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
0201C04	Scarp					beach levels causing some wind blown sand on promenade			blown sand required	repairs
121AB901B 0201C05	Revetment	700901 Concrete revetment to promenade and various buildings.	106.9	24/09/2012		Lower elements of structure not inspected due to high beach levels.	2	>20	Monitor beach levels, inspect lower elements of structure if exposed.	no repairs
121AB901B 0201C06	Revetment	701001 Concrete revetment of varying level to road and buildings. Concrete toe.	43.1	24/09/2012		Concrete generally in fair condition, minor signs of settlement not observed, no cracks. Concrete wall at seaward edge abraded. Lower elements of structure not inspected due to high beach levels.	3	>20	Monitor beach levels and inspect revetment toe if beach levels fall.	routine
121AB901B 0202C01	Gabions	701301	254.1	24/09/2012		Well vegetated but narrow dunes with numerous blown through sections, some of which have recent cobblestone armouring. Some poor and good gabions visible at northern and southern ends only. Wind blown sand on promenade.	3	6 - 10	Consider fencing to prevent public access to dunes and encourage vegetation.	routine
121AB901B 0302C01	Cliff / Scarp	Undefended Frontage	464.7	24/09/2012		Local rock falls and local slumping in soft material following severe winter in 2009/10 and more recent activity evident. Undermining of concrete slipway at root of headland not observed during this inspection.	2	>20	Monitor for safety of public access	routine
121AB901B 0302C02	Graham's Sands and Souther Bay	Rock revetment	241.1	24/09/2012		No change evident since previous survey. Rock armour toe revetment in front of regraded coastal slope. Granite rock armour ties into existing headlands. Scheme complete in Nov-08. Additional protection provided by rock outcrops on foreshore.	1	>20	None.	no repairs
121AB901B 0302C03	Cliff / Scarp Target rock	Undefended Frontage. Significant erosion of outcrop at lower levels. Voids & arches formed. Undercutting of material above has left fractured rock with overhanging material.	147.3	24/09/2012		Continued local rock falls and onset of erosion of coarse material. Caves and overhangs at base of cliffs not observed during this inspection. Sinkhole infilled in 2008, not observed during this inspection.	3	>20	Regular monitoring of erosion areas for safety to pedestrians	routine
121AB901B 0302C04	Cliff/Scarp Graham's Sand and Southern Bay	Rock Revetment	175.3	24/09/2012		No change evident since last survey. Rock armour toe revetment in front of regraded landfill embankment. Granite rock armour ties into existing headlands. Scheme completed Nov-08. Additional protection provided by rock outcrops on foreshore.	1	>20	None.	no repairs
121AB901B 0401C01	Wall	701102 Masonry faced concrete wall to access and Lifeguard Station. Buttressed by steps.	54.4	24/09/2012		No change evident since last inspection. Masonry wall in fair condition although concrete steps missing/damaged at toe. Previous repairs have been undercut and eroded to reveal reinforcement. Cracking and opening of voids evident in masonry infill.	3	6 - 10	Routine maintenance to steps and handrailing, repair cracks in masonry walls.	routine

Name	Type	Description	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AB901B 0401C02	Wall	701103 Old masonry wall to Public House at base of eroding cliff.	67.2	24/09/2012		No significant change from last inspection: Masonry wall in good condition, protected by high cobble berm. Rock netting in very good condition. Note: Mapping for this asset appears incorrect and needs revision. Netting is above steps to Marsden Grotto.	3	>20		no repairs
121AB901B 0401C03	Cliff / Scarp	701101 Eroding Sandstone cliff under National Trust. Path to crest retreated as required. Tw	655.7	24/09/2012		Sandstone cliff with numerous caves and arches at toe and stacks (Lot's Wife, Marsden Rock) on foreshore. One section near Lot's Wife severely cracked and likely to topple.	3	>20		routine
121AB901B 0401C04	Cliff / Scarp	Undefended Frontage	2613.1	24/09/2012		No significant change evident since last survey. Failure along 50m section in Mar-10 causing loss of footpath. Other areas of arches, caves, overhangs and slumps.	4	>20	Realign footpath landward. Public information/warning signs.	routine
121AB901B 0401C05	Cliff / Scarp	Undefended Frontage	691.9	24/09/2012		Cliffs locally unstable with local cliff falls. Some locally unstable sections are close to cliff edge. Photo sixty six	3	6 - 10	Move safety rails and warning back when necessary.	routine
121AB901B 0402C01	Cliff / Scarp	Undefended Frontage	408.2	24/09/2012		Cliffs regularly failing, with recent rock falls between lighthouse and Lizard Point Car Park. Remaining sections are unstable, with overhangs, caves and extensive fissures. Further cliff failures to be expected.	5	1 - 5	Warn public. keep Lizard Point CP closed. Realign fencing /warning as necessary.	urgent
121AB901B 0501C01	Cliff / Scarp	Undefended Frontage	1039.8	24/09/2012		Extensive cave, arch and stack features. Sink hole has not enlarged much since 2010, but warning signs and hand rails have been relocated.	4	1 - 5	Monitor for sink holes / collapses & relocate warning signs and railing as necessary.	urgent
121AB901B 0502C01	Cliff / Scarp	Undefended Frontage	1007.7	24/09/2012		Localised erosion and cave formation cutting back cliff top near to path.	3	>20	longer term realignment of footpath, railing and warning signs if necessary.	routine
121AB901B 0502C02	Cliff / Scarp - Rifle Ranges (North)	Coastal slope behind a wide raised beach	354	24/09/2012		Relict cliff behind healthy raised beach of coarse material	2	>20	Continue active monitoring	routine
121AB901B 0601C01	Cliff / Scarp - Whitburn	Eroding sandstone cliff.	1018.1	24/09/2012		Largely active cliff. Note failed outfall spillway scour protection near southern end. Erosion getting close to path in places	4	>20	Warning signs reqd where cliff edge close to path re-align footpath when needed.	routine

Name	Type	Description	Length	Inspection Date	Inspector	Comment	Overall Condition	Residual Life	Recommendations	Urgency
121AB901B 0601C02	Cliff / Scarp - Rifle Ranges (South)	Eroding sandstone cliff.	555.5	24/09/2012		Many areas eroding with active local slumps, some very close to footpath, localised erosion by land drainage outfall impinging on footpath.	3	11 - 20	Warning signs and re-align footpath when needed.	routine

