

Note / Memo

**HaskoningDHV UK Ltd.
Water**

To: Robin Siddle
From: Tom Ward & Nick Cooper
Date: 28 November 2022

Subject: Cell 1 Coastal Asset Condition Summary_2022

1 Introduction

The following note sets out summary statistics of the Cell 1 coastal defence data held in the SANDS (Shoreline and Nearshore Data System) database that has been established under the Cell 1 Regional Coastal Monitoring programme.

Cell 1 covers the coastline between St. Abb's Head in Scotland and Flamborough Head in East Yorkshire, covering the councils of Scottish Borders (part), Northumberland, North Tyneside, South Tyneside, Sunderland, County Durham, Hartlepool, Redcar & Cleveland, Scarborough and East Riding of Yorkshire (part).

The Cell 1 Regional Coastal Monitoring programme covers the majority of this frontage, but the short section between St. Abb's Head and the Scottish Border is covered separately by Scottish Borders Council as part of management of its wider overall frontage, and the section between Speeton and Flamborough Head is likewise covered separately by East Riding of Yorkshire Council in management of its wider overall frontage.

2 Source of data and status

The asset length, location and categorisation data summarised in this note is based on analysis of the Cell 1 coastal defence data held on a SANDS Cell 1 Regional Coastal Monitoring database.

This database holds the findings from all walkover coastal inspections undertaken to date as part of the Cell 1 Regional Coastal Monitoring programme for both defended and undefended lengths of shoreline, except for the sea cliffs of the Cleveland and North Yorkshire coasts between Saltburn and Speeton. These cliffs are considered in a different manner to the sea cliffs elsewhere within Cell 1 due to their geology and geomorphological behaviour (essentially predominantly landslip-prone cliffs), with these data being held on a separate GIS database.

The inspection data for each of the asset lengths is from the summer/autumn 2022 walkover surveys.

Note that the SANDS database also holds historical inspection data and photographs for most assets, with inspections typically having been undertaken at 2 year intervals since 2002 (Scottish Border to River Tyne) or 2008 (River Tyne to Speeton). In addition to the regular inspections, SANDS also holds data for other ad-hoc inspections such as post storm inspections for a few assets and in some cases baseline data from MAFF's Coast Protection Survey of England surveys undertaken in the 1990s.

3 Overall Summary Data

Overall lengths of frontages recorded in the database are provided in Table 1. Note that the lengths reported will not necessarily be precisely the same as the overall coastline length for each authority as some assets, such as harbour breakwaters, are dual sided and, in some locations, inner and outer faces are recorded as separate assets but in other locations both sides are defined the same asset.

Local Authority	Defended frontage length (km)	Natural shoreline length (km)	Total frontage length (km)
Northumberland County Council	31	118	149
North Tyneside BC	10	3	13
South Tyneside MBC	5	10	15
Sunderland City Council	12	4	16
Durham County Council	7	14	21
Hartlepool Council	16	5	21
Redcar and Cleveland BC	8	14	22
Scarborough Borough Council	19	81	100
Grand Total	108	249	357

Table 1 - Cell 1 asset frontage lengths by local authority area [2022]

Note: lengths are rounded to the nearest kilometre

4 Summary asset condition data by local authority area

For built assets the condition grading classification held in the database is from walk-over inspections undertaken in accordance with the Condition Assessment Manual (EA, 2011). An extract of the grading classification for built assets is presented in Table 2.

Grade	Rating	Description
0	Redundant	Redundant defence no longer required or replaced by alternative asset ref
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 2 - Condition assessment grading for man-made assets

For natural assets, such as sand dunes, sea cliffs and coastal slopes, the grading and rating system shown in Table 2 has been used in the inspections for most areas (with the description modified to reflect the fact that natural, rather than built assets are being considered), but for the predominantly landslip-prone cliffs in Cleveland and North Yorkshire the five-point activity scale shown in Table 3 has in preference been used.

Rank	Activity Class	Description
1	Dormant	Protected cliff line 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 cliff line with localised small landslides or areas of erosion.
4	Partly	Retreating cliff line 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 3 - Activity scale grading for natural coastal assets in Cleveland and North Yorkshire

The following tables provide a breakdown of the length and condition of coastal assets in each local authority area for both defended and undefended frontages based on the 2022 walkover inspections. The results of previous inspections are also retained in the tables for purposes of comparison.

Note that assets with a condition category given as blank are either redundant or have not been inspected within the Cell 1 programme, for example this includes some port breakwaters and quay walls where there was no public access.

Northumberland

Northumberland County Council												
Condition	Defended 2022		Undefended 2022		Totals 2022		Totals 2020		Totals 2018		Totals 2014	
	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets
1	1.2	5	0.3	2	1.5	7	1.8	8	1.1	5	0.3	3
2	10.5	65	72.8	72	83.4	137	86.4	141	85.2	145	79.8	135
3	12.5	84	34.8	65	47.2	149	46.2	146	47.7	139	51.8	152
4	5.8	27	9.2	21	15.0	48	12.7	45	13.2	50	15.0	52
5	1.0	4	0.5	2	1.5	6	1.3	6	1.3	5	2.0	6
(blank)	0.2	2			0.2	2	0.2	2	1.3	2	1.3	2
Grand Total	31.0	185	117.6	162	148.8	349	148.5	348	149.6	346	150.2	350

Table 4 - Summary asset data for Northumberland County Council

Data Clarifications

- 1) One new asset (121AA901A3601C16), 210m in length, has been added in 2022 to represent the Newbiggin offshore breakwater.
- 2) Two additional assets (121AA901A3401C03 & 121AA901A3401C04) totalling 0.2km in length, were added in 2020 that correspond to a buried rock revetment to the south of Lynemouth Power Station. The assets buried beneath tipped colliery spoil could not be inspected and so have been included in the "blank" column. Their inclusion is for awareness to show as the colliery spoil erodes, the Power Station will remain defended. This supersedes the two assets, with combined length of 1.3km, included in the "blank" column for previous years.
- 3) Asset 121AA901A1701C32, in Beadnell, changed from undefended to defended in 2020 due to construction of rock revetment.
- 4) Note: In the years between 2014 and 2020 some assets were changed (e.g. split or merged) and/or included or omitted from the inspections, reflecting the slight variations at times in overall totals between successive years.

Since the previous 2020 survey, there has been a minor overall drop in condition of the assets within the Northumberland County Council frontage. This is evidenced by Figure 1 below that shows whilst the vast majority of assets (93%) have held the same condition grading, a higher percentage of assets (4%) have decreased in condition compared to those that have increased (2%). This is contrary to the pattern observed in recent years that has shown a general overall improvement in the condition due primarily to recent capital schemes. The number of assets in 'very poor' or 'poor' condition fell between 2014 (58), 2016 (58), 2018 (55) and 2020 (51), but increased in 2022 to 54.

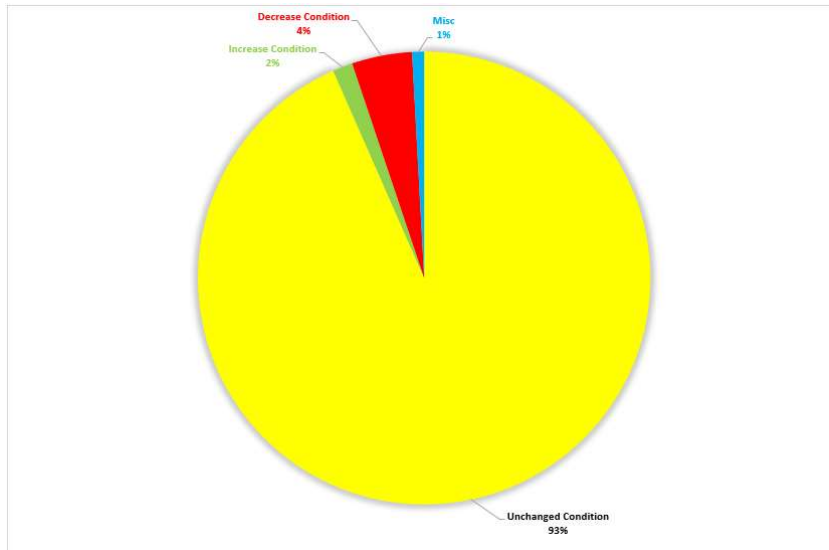


Figure 1 - Summary asset data for Northumberland County Council

Some of the areas of deterioration include Green's Haven (concrete apron), Alnmouth church Hill (masonry wall), Newbiggin Point (upper coastal slope), Cresswell (cliff), Hawks Cliff (cliff), North Blyth (gabions) and Blyth South Beach (groynes and Meggies Burn). Whilst it is understood capital schemes are planned to address some areas of concern (Beadnell wall and Creswell), it is recommended that the frontage would benefit from additional maintenance budget or further capital schemes to improve the considerable number of assets still in poor to very poor condition.

North Tyneside

North Tyneside Council												
Condition	Defended 2022		Undefended 2022		Totals 2022		Totals 2020		Totals 2018		Totals 2014	
	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets
1	0.3	2	0.0	0	0.3	2	0.3	2	0.5	3	0.2	1
2	6.4	29	1.2	5	7.6	34	7.7	35	7.2	33	5.7	31
3	2.1	19	1.8	9	4.2	28	4.3	27	4.3	28	6.4	33
4	0.9	4	0.0	0	0.9	4	0.6	3	0.4	2	0.1	1
5	0.0	0	0.0	0	0.0	0	0.0	0	0.5	1	0.5	1
(blank)												
Grand Total	9.8	54	3.0	14	12.8	68	12.8	67	12.9	67	12.8	67

Table 5 - Summary asset data for North Tyneside Council

Data Clarifications

- Asset 121AA901A4501C10 was created to represent the T-Blocks installed at the southern end of Trinity Road car park to prevent outflanking of the seawall.

Overall, the North Tyneside Council frontage has again remained stable in condition since the previous inspection with 94% (64 of 68) of the assets holding the same condition grade since 2020. Of those that have changed, 75% (3 of 4) have decreased in condition, most notably the T block wall adjacent to Trinity Road. This said, this defect was reported to North Tyneside Council upon its observation (17th May 2022) and remedial action was promptly taken. The only asset to have improved in condition since 2020 was asset 121AA901A4601C08 at Whitley Sands due to capital works to repair the coping and promenade.

The assets reported to be in the worst condition in 2020 were a rock stack near Tynemouth North Point and the southern tie-in of the Tynemouth Pool wall. These remain in poor condition in 2022 suggesting they may not have had the attention they require. The St. Mary's Island causeway also has long standing defects; however, it is understood that improvements to the causeway are planned as part of the final phase of the Whitley Bay Seafront Master Plan.

As per the previous inspections, it can be concluded that maintenance budgets in North Tyneside are generally being utilised effectively and pro-actively, as evidenced generally by the lack of deterioration in overall condition of most assets. It is however recognised that there a number of assets that may not be getting the required attention because of prioritisation elsewhere or awaiting future stages of capital works.

South Tyneside

South Tyneside Council												
Condition	Defended 2022		Undefended 2022		Totals 2022		Totals 2020		Totals 2018		Totals 2014	
	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets
1	1.0	5	0	0	1.0	5	0.9	4	0.9	4	1.1	6
2	0.5	2	0.6	2	1.1	4	1.1	5	1.3	7	4.2	6
3	4.0	8	2.4	5	6.4	13	7.4	13	6.9	12	3.5	11
4	0	0	5.6	5	5.6	5	4.6	4	3.4	3	3.9	3
5	0	0	0.9	1	0.9	1	1	2	0.9	2	0.8	1
(blank)											0.0	0
Grand Total	5.4	15	9.5	13	14.9	28	15	28	13.5	28	13.5	27

Table 6 - Summary asset data for South Tyneside Council

Data Clarifications

- 1) *In 2018 and 2016, a decision was made post analysis, to manually reduce length of grade 3 undefended by 1km and grade 4 undefended by 0.5km to be consistent with the 2014 survey (undertaken by a different consultant). However, in 2020 it was decided to reflect the total lengths recorded in the SANDS database for ease of future reporting.*

The most significant development along the South Tyneside Council frontage since the previous 2020 inspection is the completion of the timber access structure in place of the former damaged steps and derelict lifeguard station at Marsden Bay. As a result, it means there are now no defended assets within the South Tyneside frontage that have a condition rating worse than 'fair'. This suggests that the maintenance budgets in South Tyneside are generally being utilised effectively.

One ongoing concern along the frontage is the expansion of the sinkholes and caves in Whitburn Coastal Park that threaten the safety of the coastal path. In response to this risk, it is understood the Council is currently in the process of implementing the footpath rollback recommended in the Whitburn Coastal Footpath Adaptation Strategy 2022.

Sunderland

Sunderland City Council												
Condition	Defended 2022		Undefended 2022		Totals 2022		Totals 2020		Totals 2018		Totals 2014	
	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets
1	0.0	0	0.0	0	0	0	0.0	0	0	0	0.0	0
2	2.6	5	0.6	1	3.2	6	3.0	5	3.0	5	4.6	6
3	5.9	13	0.0	0	5.9	13	6.1	14	4.3	12	5.6	17
4	2.4	9	3.8	3	6.3	12	6.3	12	8.1	14	7.1	11
5	0.9	4	0.0	0	0.9	4	0.9	4	1.0	4	0.9	4
(blank)									0.0	0	0.0	0
Grand Total	11.9	31	4.5	4	16.3	35	16.3	35	16.3	35	18.3	38

Table 7 - Summary asset data for Sunderland City Council

Data Clarifications

- 1) Note: In the years between 2014 and 2020 some assets were changed (e.g. split or merged) and/or included or omitted from the inspections, reflecting the slight variations at times in overall totals between successive years.
- 2) Asset 121AB901B0804C01 extends across parts of both Sunderland and County Durham frontages. For the purpose of this summary analysis this asset has been presented in the Sunderland summary table.

The Sunderland City Council frontage has remained largely unchanged since the previous inspection with only one of the 35 assets deemed to have changed in condition in that period. This was Stonehill Wall (/B0801C03) within the port, that has been subject to ongoing maintenance and repair works including works to the crest and rear masonry wall.

Despite this recent improvement at Stonehill Wall, there remains a significant number of assets elsewhere within the port that are in poor to very poor condition. It is understood that several capital schemes are planned to address some of the issues; including extending the rock armour at the aforementioned Stonehill Wall and improving the seawall structure fronting the Hendon Sewage Treatment Works.

Whilst the overall picture indicates many assets throughout frontage would benefit from additional maintenance repairs. It is recognised that the numbers are skewed by the high number of assets within the port. When including the port, 46% of the assets are in poor to very poor condition, compared to 24% when excluding the port.

County Durham

County Durham Council												
Condition	Defended 2022		Undefended 2022		Totals 2022		Totals 2020		Totals 2018		Totals 2014	
	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets
1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.6	1
2	0.8	3	1.2	2	2.0	5	2.0	5	2.1	5	1.7	7
3	5.1	18	12.5	6	17.6	24	18.4	23	17.2	23	16.1	16
4	0.2	1	0.0	0	0.2	1	0.5	2	0.5	2	0.5	2
5	0.0	0	0.0	0	0.0	0	0.0	0	0	0	0.0	0
(blank)	0.5	3			0.5	3	0.5	3	0.5	3	1.4	7
Grand Total	6.6	25	13.6	8	20.2	33	20.3	33	20.3	33	20.2	33

Table 8 - Summary asset data for County Durham Council

Data Clarifications

- 1) Two assets (121AC901C0106C01 and 121AC901C0201C02) corresponding to colliery spoil beaches were previously analysed as defended assets (i.e. the colliery spoil was protecting the backing cliffs). These have instead been characterised as undefended in 2022 as the colliery spoil is naturally eroding away over time and does not form a 'fixed' defence.
- 2) Asset 121AB901B0804C01 extends across parts of both Sunderland and County Durham frontages. For the purpose of this summary analysis this asset has been presented in the Sunderland summary table only to prevent double-counting. However, with much of the asset's length being within County Durham, the asset is also discussed

The County Durham Council frontage remains predominantly unchanged in overall condition grading and behaviour patterns since the previous inspection, with few major problems observed. Only one of the 33 assets have changed in condition since 2020, namely Chemical Beach, (121AC901C0106C01) that has increased from poor to fair condition, indicating a period of stability.

This said, the other colliery spoil beaches along the frontage continue to erode landwards, but again do not warrant a condition downgrade at this time. At Horden Beach, erosion of the colliery spoil platform has created an approximately 2m cliff in places, cutting off access onto the foreshore. Access steps have been benched through the spoil to maintain access but will likely required additional intervention in the near future.

One area of concern remains at Seaham sea wall where the condition of the structure continues to deteriorate. The deterioration is accelerated to the south with abrasion of the seawall becoming more significant and regular, exposing reinforcement in places. The apparent lack of maintenance activity here indicates that additional investment may be beneficial.

Hartlepool

Hartlepool Borough Council												
Condition	Defended 2022		Undefended 2022		Totals 2022		Totals 2020		Totals 2018		Totals 2014	
	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets
1	2.0	6	0	0	2	6	2	6	0.7	2	1.2	4
2	4.3	6	1.2	2	5.7	8	7.3	9	7.3	9	8.0	12
3	4.4	15	3.8	2	8.2	17	6.4	16	6.1	17	8.7	26
4	1.3	4	0	1	1.3	5	2.6	7	2.1	4	2.5	5
5	1.3	2	0.1	1	1.4	3	0.1	1	0.2	2	0.1	1
(blank)	2.2	10			2.2	10	2.2	10	4.2	15	0.1	1
Grand Total	15.5	43	5.2	6	20.6	49	20.6	49	20.6	49	20.6	49

Table 9 - Summary asset data for Hartlepool Borough Council

Data Clarifications

- Asset 1221C901C0302C02 changed from defended to undefended in 2020. Formerly this was characterised by a 'wall' of brick-filled welded-mesh gabions, however this structure has since failed leaving an undefended section in its place.
- A large number of assets are blank because they are privately-owned and cannot be inspected due to access restrictions. These are mostly (9) around the Port of Hartlepool (Victoria Harbour). In 2018, five further assets could not be inspected due to ongoing construction of the Hartlepool Headland scheme. With those works completed, the assets were classified as being in 'as built' condition in 2020.

There appears to have been a slight deterioration in the overall condition of the Hartlepool Borough Council frontage since the previous 2020 inspection. This is substantiated by the number of assets in 'good' or 'very good' condition decreasing from 15 in 2020 to 14 in 2022 as well as the number of assets in 'very poor' condition increasing from 1 in 2020 to 3 in 2022. The undefended assets have largely remained the same with 5 of the 6 assets retaining the same condition grade; the remaining asset, North Sands surrounding Streetley Pier (1221C91C0502C01), has dropped in grade possibly as a result of the storms (including Storm Arwen) during winter 2021/2022.

There are still a number of assets at the point of requiring significant maintenance and/or a capital scheme (and have been for a while). This is most notable at Middleton Beach (gabion baskets and blockwork wall), Spion Kop (undefended frontage backed by new development), Hartlepool Marina gate (concrete block revetment) and the North Pier.

The ongoing deterioration of these assets indicates that there is a possible shortfall in maintenance resource or that capital schemes are planned and awaited. All assets in 'poor' and 'very poor' condition should be monitored rigorously to guarantee public safety and maintain their functionality.

Redcar & Cleveland

In Redcar & Cleveland (and also in Scarborough Borough), the cliffs are considered in a different manner to those elsewhere within Cell 1 due to their geology and geomorphological behaviour (essentially predominantly landslip-prone cliffs). This means that as well as being stored in SANDS, the cliff condition data for Redcar & Cleveland is also held within a separate GIS database focused on individual 'cliff behaviour units'.

The summary table below (Table 10) therefore only presents condition data from SANDS on the built assets along the defended frontages within the borough, with the condition of individual 'cliff behaviour units' considered separately thereafter (see Figure 1).

Built Assets (Defended Frontages)

Condition	Redcar & Cleveland Borough Council									
	Defended 2022		Defended 2020		Defended 2018		Defended 2016		Defended 2014	
	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets
1	2.8	7	2.7	6	2.7	6	2.7	6	2.7	6
2	0.6	3	1.1	4	1.1	4	1.2	5	0.7	4
3	2.4	11	2.4	11	2.4	11	2.5	12	2.4	11
4	2.3	3	1.9	3	1.9	3	1.8	2	2.3	4
5	0.0	0	0	0	0	0	0	0	0.0	0
(blank)							0	0	0	0
Grand Total	8.1	24	8.1	24	8.1	24	8.2	25	8.2	25

Table 10 - Summary asset data for Redcar & Cleveland Borough Council

Data Clarifications

- In the years between 2014 and 2020 some assets were changed (e.g. split or merged) and/or included or omitted from the inspections, reflecting the slight variations at times in overall totals between successive years.

The coastal defence assets within the Redcar & Cleveland Borough Council frontage have undergone another period of relative stability since the previous walkover inspection with 92% (22/24) of the assets recording an unchanged condition. The capital scheme surrounding Regent Cinema has now been complete, resulting in asset (/0602C05) increasing to being in an 'as built' condition. Only Skinningrove Jetty (/0201C02) was deemed to have deteriorated enough to justify a drop in condition, dropping from fair to poor condition.

The capital investment schemes along the Redcar town frontage and in the village of Skinningrove remain in good condition. Furthermore, 88% of the assets remain in a fair or better condition suggesting maintenance budgets appear well utilised.

Several assets remain in poor condition, notably South Gare Breakwater, and more recently Skinningrove Jetty and therefore additional funds may be beneficial to start improving the condition of the aforementioned assets.

Natural Assets (Undefended Frontages)

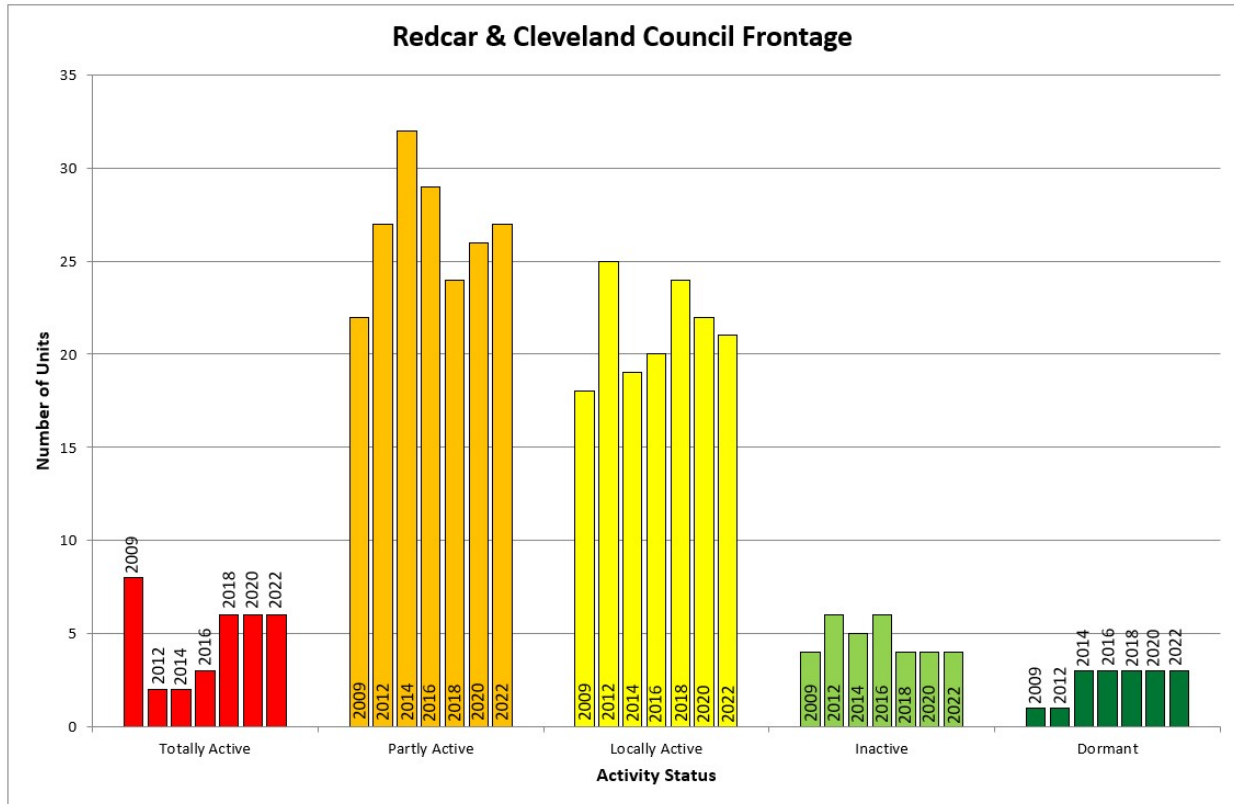


Figure 2 - Frequency of cliff activity along the Redcar & Cleveland frontage 2010 to 2022

Figure 2 shows that 95% (58/61) of the cliff units in the Redcar & Cleveland Council frontage have retained the same condition since 2020, reinforcing the consistency in the pattern of change across the frontage. The three units that have changed condition have altered between Locally and Partly Active, indicating that a slight increase (or decrease) in the magnitude of change has occurred opposed to a complete change in behaviour.

Scarborough Borough

The Scarborough Borough Council frontage is comprised of a large number of structural defence assets, generally associated with coastal towns and villages, interlinked by natural (undefended) cliff units.

In Scarborough Borough (and also in Redcar & Cleveland), the cliffs are considered in a different manner to those elsewhere within Cell 1 due to their geology and geomorphological behaviour (essentially predominantly landslip-prone cliffs). This means that the cliff condition data for Scarborough is not held within SANDS but instead it is held within a separate GIS database focused on individual 'cliff behaviour units'.

The summary table below (Table 11) therefore only presents condition data from SANDS on the built assets along the defended frontages within the borough, with the condition of individual 'cliff behaviour units' considered separately thereafter (in Figure 2).

Built Assets (Defended Frontages)

Scarborough Borough Council										
Condition	Defended 2022		Defended 2020		Defended 2018		Defended 2016		Defended 2014	
	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets	Length (km)	No. of assets
1	2.1	3	2.1	3	0.8	2	0.8	1	0.0	0
2	3.8	30	4.2	31	3.5	25	3.5	22	3.5	21
3	10.2	80	10.3	83	12.4	94	12.5	98	12.0	100
4	2.8	21	2.3	17	1.6	12	2.4	13	3.8	18
5	0.2	4	0.2	4	<1	2	0.2	4	0.2	2
(blank)			0	0	0.7	5	0.4	4	0.2	1
Grand Total	19	138	19	138	19.1	140	19.8	142	19.8	142

Table 11 - Summary asset data for Scarborough Borough Council

Data Clarifications

- *In the years between 2014 and 2020 some assets were changed (e.g. split or merged) and/or included or omitted from the inspections, reflecting the slight variations at times in overall totals between successive years.*

Overall, the defended assets within the Scarborough Borough Council frontage have remained stable in condition since the previous inspection with 97% (134 of 138) of the assets holding the same condition grade since 2020. Where there has been change, it has been a deterioration in condition (4 of 4), most notably the inner aspect of East Pier in Scarborough Harbour.

Whilst short term patterns (last 2 years) show a minor general deterioration in condition longer term patterns show a general improvement in condition. The majority of the improvements can be attributed to the implementation of capital schemes across the region. Since 2018, there have been further capital scheme completed at Flat Cliffs (time-limited works), Scarborough Spa (slope stabilisation scheme), Whitby Piers (refurbishment scheme) and Scarborough Clock Café (slope stabilisation scheme). These schemes can be added to the growing list of recent projects, including Sandsend Road coast protection and slope stabilisation scheme, the Scarborough RNLI lifeboat station and Runswick Bay coast protection scheme that have all contributed to the improvement of assets within the region. A further capital scheme in Robin Hood's Bay is expected to improve the condition of coastal defence assets in this area by the time of the next inspections in 2024.

As reported previously, there is extensive evidence of previous repairs on many structures (some of which are now in need of repeat repair), which suggests a relatively high, and ongoing, maintenance commitment.

Many of these are reactive repairs to storm damage, especially to coping walls, and a large proportion of the assets remain in only 'fair' or worse condition. Due to this it may be expected that maintenance and repair commitments will continue to be demanding simply in order to sustain the present condition of these structures, many of which are of Victorian age.

Natural Assets (Undefended Frontages)

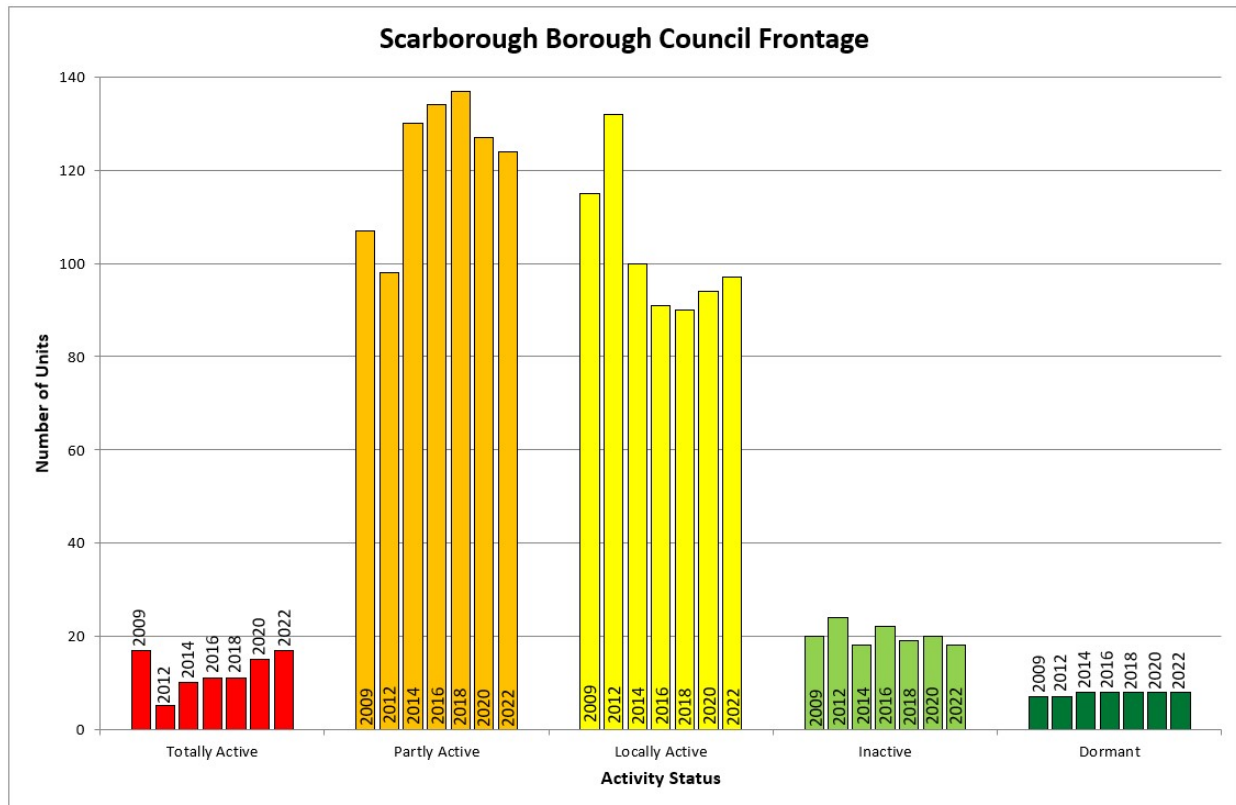


Figure 3 - Frequency of cliff activity along the Scarborough BC frontage 2009 – 2022

Figure 3 shows that ~97% (259 of 265) of the cliff behaviour units surveyed during the 2022 walkover retained the same activity status as they had in 2020. This indicates little significant change in the behaviour of the frontage. Of those units that have changed, all units have become more active since the previous inspection with none of the units becoming less active over the same period. One possible explanation for this is the significant storms (including Storm Arwen) during winter 2021/2022.

5 Conclusion

This note summarises overview findings from the Cell 1 walkover inspections that were undertaken in 2022. It is concluded that the net condition has generally remained constant, with the vast majority of assets across all the councils holding the same condition grade.

However, several large-scale capital schemes have been complete in recent years that have contributed to a positive overall picture along the Cell 1 frontage (Seahouses, Whitley Bay, Hartlepool Headland etc). Since 2020, fewer large capital schemes have been complete and therefore the recent general improvement has not been so apparent over the most recent period.

As reported previously, several assets remain in 'poor' or 'very poor' condition. Therefore, in order to ensure public health and safety, and to ensure effective management of coastal defence assets throughout the frontage, ongoing monitoring and maintenance activities remain essential in addition to planned capital schemes across the frontage.