

## Hartley Cove to the River Tyne Coastal Strategy

### Technical Report 7: Monitoring

August 2016



## Quality Management

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## Contents

1. Structure of Technical Reports	1
2. Monitoring	2
2.1 Introduction	2
2.2 Current Monitoring Programme	3
2.3 Recommendations for Future Monitoring	4
3. References	5

## Figures

Figure 2-1 NTC monitoring programme survey locations (ex. CH2MHILL, 2014)	3
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# 1. Structure of Technical Reports

- 1.1.1 The Coastal Strategy developed for the North Tyneside coastline, between Hartley Cove and the River Tyne, sets out the Council's defence management priorities for the coast.
- 1.1.2 The Strategy is presented as a series of reports, each dealing with a separate component of the plan along with a number of supporting Appendices

Technical Report No.	Title
1	Executive Summary
2	Background
3	Coastal Processes
4	Existing Defences and Historical Expenditure
5	Strategic Environmental Assessment - Environmental Report
6	Options and Economic Assessment
<b>7</b>	<b>Monitoring</b>
8	Risk Assessments
9	Public Consultation and Stakeholder Involvement
10	Glossary
Appendices	Title
Appendix A	Habitat Regulations Assessment
Appendix B	Water Framework Directive Assessment
Appendix C	Non-Technical Summary for the Strategic Environmental Assessment
Appendix D	Strategic Environmental Assessment Scoping Report

## Technical Report 7: Monitoring

- 1.1.3 This technical report provides information on:
- Current and recommended coastal monitoring to inform future strategies, studies and work schemes

## 2. Monitoring

### 2.1 Introduction

- 2.1.1 Since the publication of the original strategy the Cell 1 Regional Coastal Monitoring Programme has been introduced to collect coastal monitoring data. The area covered by Cell 1 is extensive and ranges from the Scottish Border to Flamborough Head in East Yorkshire.
- 2.1.2 The monitoring programme commenced in 2008 with an initial three-year phase managed by Scarborough Borough Council on behalf of the North East Coastal Group. That initial phase has been followed by a further five-year programme, which started in October 2011. The work is funded by the Environment Agency (EA) and undertaken as a partnership between the EA, the maritime Local Authorities, Natural England and The National Trust.
- 2.1.3 The initial three-year programme of data-gathering, analysis and reporting was undertaken as a partnership between Royal Haskoning and Halcrow consultants and Academy Geomatics. For the current five-year programme data is being collected for beach profiles, topographic surveys and cliff-top surveys by Academy Geomatics and analysis and reporting is being undertaken by CH2M HILL (formerly Halcrow) consultants.
- 2.1.4 The main data-gathering elements of the programme consist of:
- 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
- 2.1.5 The beach profile, topographic and cliff-top recession surveys are undertaken in autumn every year in what is known as a 'Full Measures' survey. A smaller set of surveys is also undertaken in spring as a 'Partial Measures' survey. Each year analytical reports are produced for each Local Authority coastline and provide detailed analysis and interpretation of the Full Measures surveys. Briefer Update Reports are prepared following the Partial Measures surveys. A Cell1 Overview Report is also prepared annually.
- 2.1.6 For the North Tyneside coastline surveys are further sub-divided into four lengths:
- Whitley Sands
  - Cullercoats Bay
  - Tynemouth Longsands
  - King Edward's Bay

## 2.2 Current Monitoring Programme

2.2.1 Along the NTC frontage the following Full Measures surveys are undertaken annually in autumn:

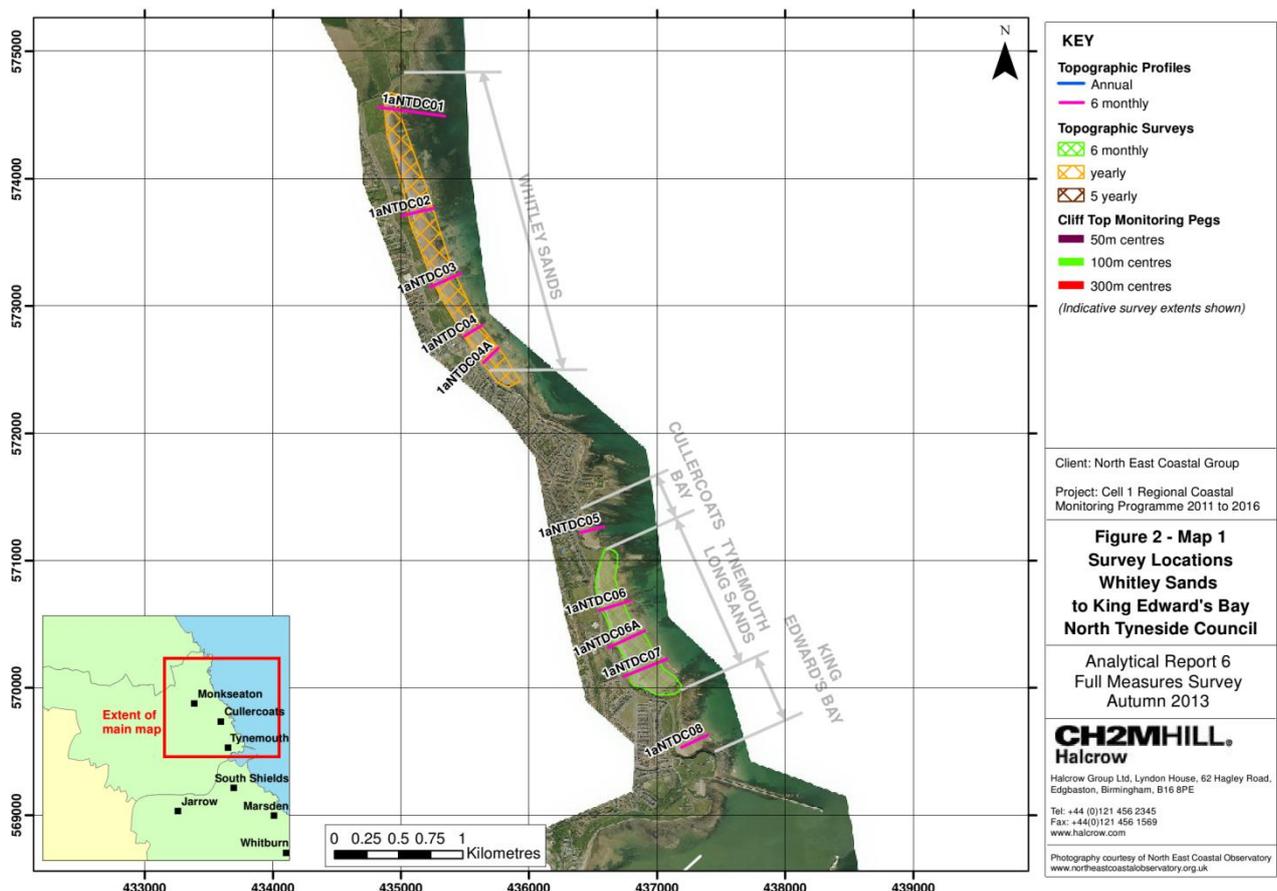
- Beach profile surveys at 10 locations (8 since 2002, plus 2 since 2010)
- Topographic survey on Whitley Sands (from 2010)
- Topographic survey on Tynemouth Longsands (from 2011)

2.2.2 The Partial Measures surveys, undertaken annually in spring comprise:

- Beach profile surveys at all locations (since 2010)

2.2.3 The locations of the surveys are shown in Figure 2-1. Data are captured to comply with the principles of the EA's National Standard Contract and Specification for Surveying Services.

**Figure 2-1 NTC monitoring programme survey locations (ex. CH2MHILL, 2014)**



- 2.2.4 Following receipt of data they are quality assured and then analysed to produce the relevant reports. These reports include:
- A description of the changes observed since the previous survey and an interpretation of the causes of those changes;
  - Documentation of any problems encountered during the survey work or uncertainties inherent in the analysis;
  - Recommendations for any changes to the programme to improve its results
  - Key conclusions and highlighting any areas of concern.
- 2.2.5 As well as the data gathered by the monitoring surveys CH2MHILL also undertake a visual walkover inspection of the NTC coastline every two years, the results of which are published in a separate report. The inspection allows a condition grading, in accordance with the EA Condition Assessment Manual, to be assigned to each of the defence structures along the coastline and also identifies any areas where maintenance works may be required. Similarly, CH2MHILL have developed a condition grading system to rate the condition and activity of the exposed cliffs along the coastline.
- 2.2.6 Additional reports are also published when specific elements of the programme are completed, such as bathymetric surveys, aerial photography and wave and water level analysis. Data and reports are available for download from the North East Coastal Observatory at [www.northeastcoastalobservatory.org.uk](http://www.northeastcoastalobservatory.org.uk).

## 2.3 Recommendations for Future Monitoring

- 2.3.1 The Cell 1 Regional Monitoring Programme is a comprehensive data-gathering, analysis and interpretation exercise that has greatly improved the range of data available since the original strategy was published. The main areas of Whitley Bay, Cullercoats Bay, Tynemouth Longsands and King Edward's Bay are appropriately monitored by the current programme. As the collection of data continues it will become increasingly useful to identify any longer term trends in beach movement and erosion along the NTC coastline.
- 2.3.2 The derived erosion rates and future projection of erosion contours in this strategy (see report TR03 Coastal Processes) are based on historic erosion of the soft cliffs in Whitley Bay, which are applied to the rest of the coastline using a scalar model described in Appendix A of the TR03 report. While this is considered to be an appropriate method for the current strategy it would be useful to confirm the erosion rates for the hard cliffs, such as Tynemouth Headland, by physical measurement, to confirm whether the model produces reasonable results. Therefore, it is recommended that a survey of the cliffs around Tynemouth Headland is added to the monitoring programme. This could be undertaken by means of laser scanning of the cliff face, which would have the added benefit of helping to identify movements in the cliff face where rock falls may occur. Due to the low erosion rate and thus low risk it is recommended that the survey be repeated on a two-yearly basis.

## 3. References

CH2MHILL, 2014, *Cell 1 Coastal Monitoring Programme Analytical Report 6: 'Full Measures' Survey 2013*

North East Coastal Observatory – [www.northeastcoastalobservatory.org.uk](http://www.northeastcoastalobservatory.org.uk)

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