Northumberland and North Tyneside Rocky Foreshore 'Coastal Squeeze' Study

Northumberland County Council

April 2010
Scoping Report
9V8728

ROYAL HASKONING
thinking in all dimensions

A COMPANY OF

ROYAL HASKONING

HASKONING UK LTD.
COASTAL & RIVERS

Marlborough House
Marlborough Crescent
Newcastle upon Tyne NE1 4EE
United Kingdom
+44 (0)191 211 1300 Telephone
0191 211 1313 Fax
info@newcastle.royalhaskoning.com E-mail
www.royalhaskoning.com Internet

Document title	Northumberland and North Tyneside Rocky Foreshore 'Coastal Squeeze' Study
Document short title	Coastal Squeeze Study
Status	Scoping Report
Date	April 2010
Project name	Rocky Foreshore 'Coastal Squeeze' Study
Project number	9V8728
Client	Northumberland County Council
Reference	9V8728/R01/Newc

Drafted by	Nick Cooper	
Checked by	Tanja Cooper	
Date/initials check	…….	…….
Approved by	Nick Cooper	
Date/initials approval	…….	…….

CONTENTS

APPENDICES

1 INTRODUCTION

1.1 Background and Links with the Shoreline Management Plan

The *Northumberland and North Tyneside Shoreline Management Plan 2* ('the SMP2') extends between the Scottish Border and the River Tyne and was undertaken by Royal Haskoning on behalf of the Local Authorities, the Environment Agency, Natural England and the Northumberland Coast AONB between September 2007 and May 2009. The SMP2 was then 'signed-off' by relevant organisations and adopted by the relevant authorities throughout the remainder of 2009.

In signing-off the SMP2, Natural England identified an issue considered to be of national significance relating to the potential impact of SMP2 policies on designated areas of inter-tidal rocky reef and foreshore, including:

- the designated 'rocky shore' within the Special Protection Areas (SPA)
- the designated 'inter-tidal reefs' within the Special Areas of Conservation (SAC)
- the designated 'inter-tidal rock' within the various Sites of Special Scientific Interest (SSSI)

This issue was particularly associated with SMP2 policies in future epochs (rather than being an immediate 'showstopper') due to ongoing concerns relating to climate change and predicted sea level rise.

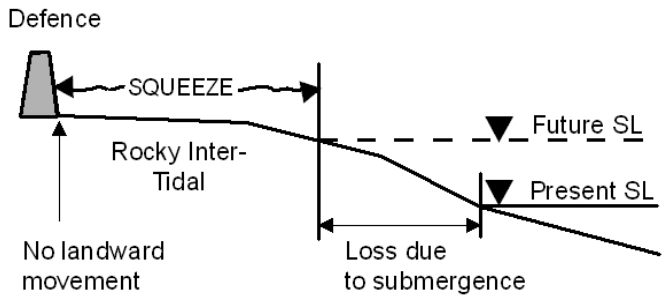
During the SMP2 development, a semi-quantitative assessment was made of the impact of SMP2 policies on environmental receptors. This identified impacts of minor and major positive or negative significance and was deemed suitable to meet the requirements of the Strategic Environmental Assessment (SEA) Directive. In addition, the implications of SMP2 policies on all designated sites (including the 'rocky shore' within the SPA, the 'inter-tidal reefs' within the SAC, and the 'inter-tidal rock' within the various SSSIs) was assessed qualitatively in terms of gain or loss in each Management Area of the SMP2.

The methodology for this assessment was developed jointly by Royal Haskoning and Natural England and its results satisfied Natural England that the SMP2 could be signed-off without recourse to the Secretary of State under the Habitats Regulations. However, this sign-off of SMP2 was conditional upon the progression of further quantitative studies of future inter-tidal rocky reef and foreshore habitat gains and losses, which is the purpose of the present study, prior to development of the future SMP3.

1.2 'Coastal Squeeze' of Rocky Reef and Foreshore

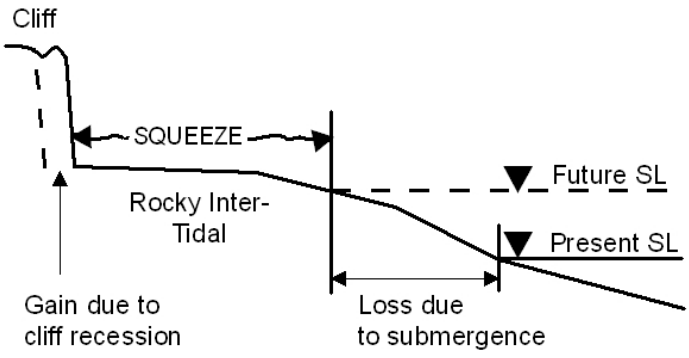
'Coastal Squeeze' occurs due to sea level rise and is a consequence of the low water mark migrating landwards while the high water mark remains static or migrates landwards more slowly, leading to a gradual loss, or 'squeeze', of the inter-tidal area. In Northumberland and North Tyneside the issue of rocky reef and foreshore loss associated with coastal squeeze can arise under two scenarios.

Scenario 1 – Defended Coast
Along managed frontages, where the foreshore is backed by coastal defences such as sea walls, the rocky inter-tidal areas will become progressively 'squeezed' between a rising low water level (due to submergence associated with sea level rise) and a static back-stop defence.



Scenario 1 – Defended Coast

Scenario 2 – Undefended Coast
Along undefended frontages, the process of submergence at the seaward end of the rocky foreshore profile will continue, but at the upper profile landward cliff recession will result in the emergence of some new underlying rock which will form part of the new upper foreshore. Due to differences in profile gradient between the lower and upper foreshores, and due to the relative resistance of the cliff geology, the rate of low water submergence of the foreshore will be greater than the rate of upper foreshore gain through cliff recession and therefore there will still be a net loss associated with 'coastal squeeze'.



Scenario 2 – Undefended Coast

1.3 Purpose of the Study

The purpose of the study is to objectively quantify the individual gains and losses of inter-tidal rocky reef and foreshore in order to calculate the net loss over the next 20, 50 and 100 years due to SMP2 policies and processes of coastal squeeze associated with sea level rise. In doing this, opportunities for habitat creation will also be identified in attempt to mitigate and/or compensate for the losses, and advice will be provided on the future monitoring and general policy and legislative implications for the future SMP3.

1.4 Methdology

The study has adopted the following methodology.

(1) Desk Top Study – Existing information and data has been collated and reviewed, including the SMP2, aerial photographs, Futurecoast, and Lidar data. In addition, the United Kingdom Climate Impacts Programme '09 (UKCP09) User Interface has been interrogated to obtain the full range of future sea level rise projections at principal locations under the 'low', 'medium' and 'high' greenhouse gas emissions scenarios for the next 20, 50 and 100 years.

(2) Consultation Plan – This was developed to enable focused consultation within a structured plan. Consultation was intended to engage with key organisations in order to: (i) raise awareness of the study; (ii) identify any relevant data sources; and (ii) establish the aspirations of key stakeholders for the future management of inter-tidal rocky reef and foreshore habitats.

(3) Scoping Report - Based on the findings of tasks 1 and 2, a Scoping Report (this document) has been prepared which presents in detail the methodology to be adopted to achieve the aims and objectives of the study, whilst taking into account specific aspirations and data availability.

(4) Analysis – The main technical stage of the study will follows approval of this Scoping Report and will focus on identifying and quantifying potential areas of Coastal Squeeze.

(5) Opportunities for Habitat Creation – Locations of opportunities for rocky shore habitat creation will be identified and quantified to determine potential habitat gains. This information will feed into the Environment Agency's Regional Habitat Creation Plan.

(6) Implications for SMP3 and Future Monitoring – Implications of the study findings will be interpreted with respect to both the future SMP3 and the future coastal monitoring.

(7) Reporting – A detailed report will be produced to present the study findings.

2 DESK TOP STUDY

2.1 Northumberland and North Tyneside Shoreline Management Plan 2

The present study is being undertaken by the authors of the *Northumberland and North Tyneside Shoreline Management Plan 2* (the 'SMP2'). Data, mapping and key findings from the SMP2 were directly used in the present study, with the necessary permissions received from Northumberland County Council (as lead authority). This has included:

- Mapping of existing coastal defences and natural shoreline features
- Mapping of future shoreline erosion under a the preferred Shoreline Management Plan policy for each Management Area to 2025, 2055 and 2105
- Mapping of preferred Shoreline Management Plan policy for each Management Area to 2025, 2055 and 2105

2.2 Digital Mapping

Ordnance Survey mapping was kindly provided by Northumberland County Council in digital format at scales of 1:10k and 1:50k for use on this study.

GIS mapping of rocky foreshore extent was provided for use on the SMP2 in digital format by the Northumberland Biodiversity Partnership who also allowed its use on the present study.

2.3 Lidar Data

Lidar data has kindly been provided for use on the study by the Environment Agency. Data coverage does not fully extend across the foreshore down to mean low water spring tides, and therefore our approach for addressing this shortfall is described in Section 4.3.

2.4 Aerial Photographs

Aerial photography has been viewed or obtained for the coastline from various sources, including Google Earth and Natural England.

2.5 Futurecoast

Futurecoast is a Defra-funded Research & Development study which was produced to inform SMP2 development around England and Wales. Information relating to cliff classifications, coastal behaviour, and future coastal evolution over the next 100 years was reviewed as part of the SMP2 and incorporated into its findings. One of the principal authors of Futurecoast is also working on the present study.

2.6 United Kingdom Climate Projections 2009 (UKCP09)

UKCP09 represents the most recent science in the UK on future climate change projections, including sea level rise. Its outputs include a web-based User Interface which has been interrogated as part of the present study to provide sea level rise projections under low, medium and high emissions scenarios to 2025, 2055 and 2105.

3 CONSULTATION

3.1 Consultation Plan

Consultation during the study will be highly focused and undertaken at two stages.

The purpose of initial consultation is to:

(i) raise awareness of the study;

(ii) identify any relevant data sources; and

(iii) establish the aspirations of key stakeholders for the future management of inter-tidal rocky reef and foreshore habitats.

This has been undertaken through the issuing of a Project Information Sheet and Questionnaire (Appendix B) to 30 specifically targeted individuals covering a range of interested organisations. These are listed in Table 4.

	Consultee	Organisation	e-mail
1	Mr D. Wood (Harbour Master)	Berwick Harbour Commissions	berwick-harbour@btconnect.com
2	Adrian Hilton	ClimateNE	adrian.hilton@northeastcouncils.gov.uk
3	Niall Benson	Durham Heritage Coast (IMCORE Project)	niall.benson@durham.gov.uk
4	Phil Welton	Environment Agency	phil.welton@environment-agency.gov.uk
5	Peter Kerr	Environment Agency	peter.kerr@environment-agency.gov.uk
6	Cliff Garside	Environment Agency	clifford.garside@environment-agency.gov.uk
7	Roger Martin	Environment Agency (Regional Habitat Creation Plan)	roger.martin@environment-agency.gov.uk
8	Dickon Howell	Marine Management Organisation	Dickon.Howell@mfa.gsi.gov.uk
9	Phil Davey	Natural England	Phil.Davey@naturalengland.org.uk
10	Giles Alcock	Natural England	Giles.Alcock@naturalengland.org.uk
11	Mike Quigley	Natural England	mike.quigley@naturalengland.org.uk
12	Kelly Rose	Natural England	Kelly.Rose@naturalengland.org.uk
13	Lydia Speakman	Natural England	lydia.speakman@naturalengland.org.uk
14	Jane Delaney	Newcastle University (Dove Marine Laboratory)	j.e.delany@newcastle.ac.uk
15	John Green	Northumberland Sea Fisheries Committee	nsfc@nsfc.org.uk
16	Capt. P. Brabban (Harbour Master)	North Sunderland (Seahouses) Harbour Commissioners	nshc@btconnect.com
17	Peter Woods	North Tyneside Council	peter.woods@northtyneside.gov.uk
18	Jackie Hunter	North Tyneside Council	jackie.hunter@northtyneside.gov.uk
19	Tom Cadwallender	Northumberland Coast AONB	tom.cadwallender@northumberland.gov.uk
20	Ruth Bendell	Northumberland County Council	rbendell@northumberland.gov.uk
21	Trevor Dixon	Northumberland County Council	trevor.dixon@northumberland.gov.uk
22	Gordon Halliday	Northumberland County Council	gordon.halliday@northumberland.gov.uk
23	Mike Pratt	Northumberland Wildlife Trust	mike.pratt@northwt.org.uk
24	Alan Todd	Port of Blyth	alan.todd@blythport.co.uk
25	Alan Hunter	Port of Tyne	Alan.Hunter@PortOfTyne.co.uk
26	Martin Kerby	RSPB	Martin.Kerby@rspb.org.uk
27	John Riby	Scarborough Borough Council (Chair of North East Coastal Group)	John.Riby@scarborough.gov.uk
28	Liz Fisher	The National Trust	Liz.Fisher@nationaltrust.org.uk
29	Nick Spurr	Warkworth Harbour Commissioners	ambleboatco@hotmail.com
30	Elaine Jaggs	Northumberland Biodiversity Partnership	elaine.jaggs@northwt.org.uk

To date 8 responses (7 completed questionnaires and 1 email – see Appendix B for all non-confidential responses) have been received from those shown in green above, and the views of the five Steering Group members (those highlighted in yellow) were discussed at the Start-up Meeting (Appendix C).

Key points arising from the initial consultation are:

- Rocky shore is an important habitat and noted feature of the SAC and European Marine Site
- There is legislation to protect and enhance such designated sites
- Recording of habitat gains and losses of SACs and SPAs feeds into national reporting
- Rocky shore is a difficult habitat to replace, but there is the potential to re-expose rocky foreshore covered by sand

- If loss is anticipated then ideally any compensatory habitat creation should occur in advance of loss occurring
- Rocky foreshores are important habitats for marine species, including some commercially important species such as lobsters, and are also important nursery area for many species
- Rocky foreshores are important habitats for birdlife and waders may be affected by coastal squeeze
- Coastal defence works can be designed to accommodate the needs of winter waders and there is the need to encourage identification, trialling and monitoring of innovative measures regarding creation of rocky shore habitat
- Rocky foreshores can provide safe anchor for fishing vessels during storms

The second phase of consultation will involve follow-up calls with the five consultees specifically requesting further dialogue.

At the end of the project, an Executive Summary will be produced and disseminated to all consultees previously expressing an interest in the study.

4 ANALYSIS METHODS

4.1 Definition of Rocky Foreshore Areas

To complement the GIS mapping of rocky foreshore areas as used in the SMP2, which was based on digital mapping provided by the Northumberland Biodiversity Partnership, a review of available aerial photography data was undertaken in order to:

- Confirm the presence of rocky foreshore in areas identified in the SMP2 mapping as a form of quality control; and
- Fill gaps in the dataset where rocky foreshore is identified in aerial photography but not included in the SMP2 mapping.

Appendix A shows the extent of previously classified rocky foreshore areas and additional rocky foreshore areas. These latter areas are primarily around the eastern-face of Holy Island, at Hadston Carrs in Druridge Bay, and along the North Tyneside frontage south of St Mary's Island.

Subject to agreement by the Project Steering Group, it is proposed to use the 'in-filled' GIS mapping in this study.

4.2 Climate Change Projections

The sea level rise actually experienced at the shoreline is a combination of absolute global sea level rise and the adjustments in the Great Britain land mass that remain ongoing since the last Ice Age. The combined result of these factors is referred to as 'relative' sea level rise.

The southern sections of the present study frontage will experience a slightly greater relative sea level rise than the northern sections because of the differential experienced in the land mass adjustments. In order to accurately reflect this in the study, it was decided to undertake a bespoke assessment of the projected sea level rise for each Policy Development Zone (or PDZ) of the SMP2.

In fact, as some PDZs cover quite extensive lengths of frontage, two (for smaller PDZs) or three (for larger PDZs) points were selected within each PDZ for this analysis.

At the present time, there is considerable uncertainty in projected sea level, because it is largely dependent upon global action to combat greenhouse gas emissions through appropriate mitigation strategies and actions. To reflect this uncertainty, UKCP09 presented sea level projections under three emissions scenarios, namely: 'low', 'medium', and 'high'.

Further uncertainty exists in the science of climate projections, and to reflect this UKCP09 presents Cumulative Distribution Functions (CDFs), which are generated to define the probability of a specified climate change being less than a given amount, rather than presenting single point values as output. For example, the climate change at the 50% probability level is that which is as likely as not to be exceeded (i.e. the median value) and is referred to by UKCP09 as the 'central estimate'. The 5% ('very unlikely to be less than') and 95% ('very unlikely to be more than') probability values are also taken from the CDF and are used to help explain the probability range.

Tables 1, 2 and 3 present the relative sea level rise projected to occur at two or three locations within each PDZ under low, medium and high emissions scenarios to 2025, 2055 and 2105 respectively. Note that UKCP09 projects values to 2100, so the five additional years to 2105 have been assumed to experience the same annual rate of sea level rise as the five preceding years.

Table 1 - Relative Sea Level Rise 2025

PDZ	UKCP09 Grid	Low			Medium			High		
		5 %ile (m)	50 %ile (m)	95 %ile (m)	5 %ile (m)	50 %ile (m)	95 %ile (m)	5 %ile (m)	50 %ile (m)	95 %ile (m)
1	13035	0.01	0.03	0.05	0.01	0.04	0.07	0.02	0.05	0.09
	13242	0.01	0.03	0.05	0.01	0.04	0.07	0.02	0.05	0.09
	13448	0.01	0.04	0.06	0.02	0.04	0.07	0.02	0.05	0.09
2	13449	0.01	0.04	0.06	0.02	0.04	0.07	0.02	0.05	0.09
	13655	0.02	0.04	0.06	0.02	0.04	0.07	0.02	0.05	0.09
	13860	0.02	0.04	0.06	0.02	0.05	0.07	0.02	0.05	0.09
3	13860	0.02	0.04	0.06	0.02	0.05	0.07	0.02	0.05	0.09
	14065	0.02	0.04	0.06	0.02	0.04	0.07	0.02	0.06	0.09
4	14065	0.02	0.04	0.06	0.02	0.04	0.07	0.02	0.06	0.09
	14270	0.02	0.04	0.06	0.02	0.05	0.07	0.02	0.05	0.09
	14271	0.02	0.04	0.06	0.02	0.05	0.07	0.02	0.06	0.09
5	14476	0.02	0.04	0.06	0.02	0.05	0.07	0.02	0.06	0.09
	14681	0.02	0.04	0.06	0.02	0.05	0.07	0.02	0.06	0.09
6	14682	0.02	0.04	0.06	0.02	0.05	0.07	0.02	0.06	0.09
	14887	0.02	0.04	0.06	0.02	0.05	0.08	0.02	0.06	0.09

Table 2 - Relative Sea Level Rise 2055

PDZ	UKCP09 Grid	Low			Medium			High		
		5 %ile (m)	50 %ile (m)	95 %ile (m)	5 %ile (m)	50 %ile (m)	95 %ile (m)	5 %ile (m)	50 %ile (m)	95 %ile (m)
1	13035	0.04	0.11	0.18	0.05	0.14	0.23	0.05	0.17	0.29
	13242	0.04	0.12	0.19	0.05	0.14	0.24	0.06	0.18	0.30
	13448	0.05	0.12	0.19	0.05	0.15	0.24	0.06	0.18	0.30
2	13449	0.05	0.12	0.19	0.05	0.15	0.24	0.06	0.18	0.30
	13655	0.05	0.12	0.19	0.06	0.15	0.24	0.07	0.18	0.30
	13860	0.05	0.12	0.19	0.06	0.15	0.25	0.07	0.19	0.31
3	13860	0.05	0.12	0.19	0.06	0.15	0.25	0.07	0.19	0.31
	14065	0.05	0.12	0.20	0.06	0.15	0.25	0.07	0.19	0.31
4	14065	0.05	0.12	0.20	0.06	0.15	0.25	0.07	0.19	0.31
	14270	0.05	0.12	0.20	0.06	0.15	0.25	0.07	0.19	0.31
	14271	0.05	0.13	0.20	0.06	0.15	0.25	0.07	0.19	0.31
5	14476	0.05	0.13	0.20	0.06	0.16	0.25	0.07	0.19	0.31
	14681	0.06	0.13	0.20	0.06	0.16	0.25	0.07	0.19	0.31
6	14682	0.06	0.13	0.20	0.06	0.16	0.25	0.07	0.19	0.31
	14887	0.06	0.13	0.20	0.06	0.16	0.25	0.07	0.19	0.31

Table 3 - Relative Sea Level Rise 2105

PDZ	UKCP09 Grid	Low			Medium			High		
		5 %ile (m)	50 %ile (m)	95 %ile (m)	5 %ile (m)	50 %ile (m)	95 %ile (m)	5 %ile (m)	50 %ile (m)	95 %ile (m)
1	13035	0.10	0.29	0.47	0.12	0.36	0.60	0.14	0.44	0.75
	13242	0.11	0.29	0.48	0.13	0.36	0.60	0.15	0.45	0.75
	13448	0.12	0.30	0.48	0.13	0.37	0.61	0.15	0.46	0.76
2	13449	0.12	0.30	0.48	0.13	0.37	0.61	0.16	0.46	0.76
	13655	0.12	0.31	0.49	0.14	0.38	0.62	0.16	0.47	0.77
	13860	0.12	0.31	0.49	0.14	0.38	0.62	0.16	0.47	0.77
3	13860	0.12	0.31	0.49	0.14	0.38	0.62	0.16	0.47	0.77
	14065	0.13	0.31	0.49	0.14	0.38	0.62	0.17	0.47	0.77
4	14065	0.13	0.31	0.49	0.14	0.38	0.62	0.17	0.47	0.77
	14270	0.13	0.31	0.49	0.14	0.38	0.62	0.17	0.47	0.77
	14271	0.13	0.31	0.50	0.15	0.39	0.62	0.17	0.47	0.78
5	14476	0.13	0.32	0.50	0.15	0.39	0.63	0.17	0.47	0.78
	14681	0.14	0.32	0.50	0.15	0.39	0.63	0.17	0.48	0.78
6	14682	0.14	0.32	0.50	0.15	0.39	0.63	0.18	0.48	0.78
	14887	0.14	0.32	0.51	0.16	0.39	0.63	0.18	0.48	0.79

Based on an analysis of the sea level rise projections from UKCP09, it is proposed, subject to agreement by the Steering Group, to use the 50 percentile value of the medium emissions scenario for the assessments. This represents the central estimate value from the most likely future emissions scenario. We also propose to use an average of the 50 percentile value per PDZ.

4.3 'Coastal Squeeze' Analysis

We have established a suite of Digital Ground Models (DGMs) using Geographic Information Systems (GIS) computer software for the study frontage. The areas of potential Coastal Squeeze (under Scenarios 1 and 2) will then be located in GIS by superimposing the mapping of:

- the location of rocky reefs and foreshores (see App. A)
- the locations of coastal defences and cliff features (see App. A)
- future water level scenarios for 2025, 2055 and 2105 which we have derived from UKCP09, and
- geomorphological interpretation of future cliff recession lines for the next 20, 50 and 100 years contained in the SMP2 database.

An initial assessment of the Lidar data has shown that none of the areas have data coverage down to Mean Low Water Springs.

In order to undertake the 'Coastal Squeeze' analysis we propose to overcome this shortfall in two possible ways:

a) use the Mean Low Water (MLW) and Mean High Water (MHW) lines as shown on the Ordnance Survey 10K scale mapping provided the Lidar coverage extends far enough to cover MLW;
b) if the Lidar data does not cover MLW then we propose to use existing topographic survey data where possible to identify the MLW line.

We therefore propose, subject to agreement by the Steering Group, to follow the approach described above. This stage is subject to further investigating the available data.

The analysis process will then assess the potential areas of Coastal Squeeze to quantify

- the habitat loss due to submergence of the low water rocky foreshore (Scenarios 1 and 2),
- the gain that will occur in the upper rocky foreshore (Scenario 2), and
- the net loss of rocky reef and foreshore over epochs of 20, 50 and 100 years across the SMP2 area.

Appendix A

Policy Development Zone (PDZ) Maps

Appendix B

Initial Consultation

Project Information Sheet and Questionnaire

Dear Consultee

Please find enclosed a ***Project Information Sheet*** and ***Questionnaire*** relating to a study that you may find of interest.

The study will investigate the loss of rock reef and foreshore over the next 20, 50 and 100 years due to sea level rise and under Shoreline Management Plan 2 policies for these future epochs.

You have been identified as a principal point of contact within your organisation, so if there are other people/departments that you think may also be interested then we would be grateful if you could please forward the information to them.

We would be grateful if you could please read the enclosed documentation, and if you are interested in the study, fill out the questionnaire and reply with your views and any additional information. Your involvement and responses are important to us and any feedback you might have would be very valuable to the study.

We look forward to receiving your completed questionnaires by **Friday 26th March 2010.**

Thank you very much for your assistance and time on this matter.

Yours sincerely

Northumberland and North Tyneside
Rocky Reef and Foreshore 'Coastal Squeeze' Study

Project Information Sheet

1 Background and Links with the Shoreline Management Plan 2

- The *Northumberland and North Tyneside Shoreline Management Plan 2* ('the SMP2') was published in May 2009.
- One of its recommendations was to undertake a study to quantify the loss of rocky reef and foreshore due to sea level rise to the years of 2025, 2055 and 2105, given the preferred SMP2 management policies over these timescales.
- The loss will be due to a process known as 'coastal squeeze' whereby the rocky reef and foreshore will become increasingly submerged due to rising sea levels.
- This study of importance to better understand the implications of SMP2 policies on the following designated sites (collectively known as 'rocky reef and foreshore'):
  - the designated 'rocky shore' within the Special Protection Areas (SPA)
  - the designated 'inter-tidal reefs' within the Special Areas of Conservation (SAC)
  - the designated 'inter-tidal rock' within the various Sites of Special Scientific Interest (SSSI)
- This *Rocky Reef and Foreshore 'Coastal Squeeze' Study* is required to be undertaken prior to development of the future SMP3 (in around 5 - 10 years time) so that its findings can help inform future management policies.
- The study commenced on 9th March 2010 and will be completed within a 6-month programme.

2 How Can I Help?

If you are interested in this study please complete and return the attached questionnaire by **Friday 26th March 2010**.

If there are other people/ departments in your organisation who may be interested please forward this *Project Information Sheet* and attached *Questionnaire* to them.

3 Where Can I Get More Information

If you would like further details about the study, then please contact:

Tanja Cooper
Royal Haskoning
Marlborough House, Marlborough Crescent
Newcastle upon Tyne, Tyne and Wear
NE61 2EF

tel. ++44 (0)191 211 3240
e-mail t.cooper@royalhaskoning.com

Northumberland and North Tyneside
Rocky Reef and Foreshore 'Coastal Squeeze' Study

Questionnaire

We would be grateful if you could please complete and return this questionnaire if you are interested in the study.

If you think that other people/ departments within your organisation may be interested, we would be grateful if you could please circulate this message to them.

Name:	
Organisation:	
Address:	
Tel:	
e-mail:	

1a	**Are you aware of the Northumberland and North Tyneside Shoreline Management Plan? ***		
	No	Yes, in general	Yes, in detail
1b	**Are you aware of the Northumberland Coast Area of Outstanding Natural Beauty (AONB)? ***		
	No	Yes, in general	Yes, in detail
1c	**Are you aware of the European Marine Site (EMS)? ***		
	No	Yes, in general	Yes, in detail

* delete as appropriate and please annotate with any comments you wish to make

2	**Please state why 'rocky reef and foreshore' is important to you/ your organisation.**

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

3	**Do you possess any relevant data or information sources relating to rocky reef and foreshore – especially loss due to coastal squeeze – that would be of value to the study?**

4	**What are the aspirations of your organisation in relation to the long term management of rocky reef and foreshore?**

5	**What is your organisation doing to ensure that these aspirations are achieved?**

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

6	**What more would your organisation like to see done to better understand or manage the issue of rocky reef and foreshore loss?**

7	**Are there any other comments on this subject that your organisation would like to make? Please continue on a separate sheet if necessary.**

8	**Would you like to be contacted by telephone for further discussion about the study?***	
	No thanks	Yes please

* delete as appropriate

9	**Are you happy for your questionnaire response to be published in the appendices to the study report for wider distribution?***	
	No, please treat these comments confidentially	Yes, these comments may be included in the appendices to the study report

* delete as appropriate

10	**Would you like to be made aware of the outcomes of the study? ***		
	No thanks, please remove me from your distribution list	Yes please, but general findings for awareness only	Yes please, detailed findings and discussion about the future way forward following the study

* delete as appropriate

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

Thank you for taking the time to complete this questionnaire.

Please return your completed forms by close of play on **Friday 26th March 2010** to:

Tanja Cooper
Royal Haskoning
Marlborough House, Marlborough Crescent
Newcastle upon Tyne, Tyne and Wear
NE61 2EF

tel. ++44 (0)191 211 3240
e-mail t.cooper@royalhaskoning.com

Appendix C

Initial Consultation

Non-confidential Questionnaire Responses

Northumberland and North Tyneside
Rocky Reef and Foreshore 'Coastal Squeeze' Study

Questionnaire

We would be grateful if you could please complete and return this questionnaire if you are interested in the study.

If you think that other people/ departments within your organisation may be interested, we would be grateful if you could please circulate this message to them.

Name:	Roger Martin
Organisation:	Environment Agency
Address:	Rivers House, 21 Park Square South, Leeds, LS1 2QG
Tel:	0113 231 2026
e-mail:	roger.martin@environment-agency.gov.uk

1a	**Are you aware of the Northumberland and North Tyneside Shoreline Management Plan? ***		
		Yes, in general Aware of the SMP2 and SMP process but not of the Northumberland Coast SMP specifics.	
1b	**Are you aware of the Northumberland Coast Area of Outstanding Natural Beauty (AONB)? ***		
		Yes, in general I'm aware of AONB's and the Northumberland Coast AONB generally and that a joint management plan has been put together with the EMS. Not aware of specific details of this plan.	
1c	**Are you aware of the European Marine Site (EMS)? ***		
	No*	Yes, in general I'm aware generally of EMS and that the Northumberland Coast EMS has been combined into a single management plan with the AONB. Not aware of specific details of this plan.	

* delete as appropriate and please annotate with any comments you wish to make

2	**Please state why 'rocky reef and foreshore' is important to you/ your organisation.**
	I work for the Agency's Flood & Coastal Risk Management (FCRM) department as the Regional Habitats Creation Co-ordinator. I am interested in the loss of

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

	designated rocky shore habitat on the Northumberland coast as part of my role is to ensure that any FCRM works undertaken which involve the loss of internationally designated habitat (SAC & SPA) are compensated for by at least an equal amount of habitat creation (preferably of the same type of habitat so there is no net loss of specific designated habitat types). This is a legal requirement of the Habitats Regulations, 1994. The compensation for loss of SAC / SPA habitat applies to all FCRM Operating Authorities (i.e. Environment Agency, Internal Drainage Boards and Local Authorities) which covers all SMP FCRM works. Specifically, I need to have links with the three SMP's which cover the North East Coast (Humber Estuary to Berwick) so I can record and report back habitat losses and gains of SAC / SPA for national reporting purposes. These figures are fed back to Defra via the Environment Agency for all FCRM operating authorities. In addition, if there are specific habitat losses that need to be compensated, I can help support bids for national FCRM money for purchasing land and / or paying for the creation of compensation habitat and its future maintenance. I understand that rocky shore habitat would be extremely difficult to replace (given its nature) and would like to be involved (or kept informed) of local discussions where it is proposed to replace lost rocky shore habitat with a different type of coastal habitat.

3	**Do you possess any relevant data or information sources relating to rocky reef and foreshore – especially loss due to coastal squeeze – that would be of value to the study?**
	No.

4	**What are the aspirations of your organisation in relation to the long term management of rocky reef and foreshore?**
	I couldn't state specifically but from a FCRM perspective providing the Habitats Regulations driver for compensating for lost rocky reef and foreshore SAC / SPA habitat are met this should suffice.

5	**What is your organisation doing to ensure that these aspirations are achieved?**
	For the Agency's North East and Yorkshire Region we are involved with all three SMPs along the North East Coast.

6	**What more would your organisation like to see done to better understand or manage the issue of rocky reef and foreshore loss?**
	I couldn't comment specifically as I don't know the details relating to the Northumberland Coast. However, in order to meet the requirements of the Habitats Regulations it is important to understand how much habitat would be lost due to sea level rise over varying timescales so that habitat compensation works can be planned to compensate for the predicted losses. As habitat creation sites often take many years to develop into semi-natural functioning ecosystems, the sooner this work is done the better in order to give as much lead-in time as possible for compensating against any predicted designated habitat losses.

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

7	**Are there any other comments on this subject that your organisation would like to make? Please continue on a separate sheet if necessary.**	
	Any habitat creation or BAP species recovery work undertaken may fall under our wider Biodiversity targets as an organisation.	

8	**Would you like to be contacted by telephone for further discussion about the study?***	
		Yes please

* delete as appropriate

9	**Are you happy for your questionnaire response to be published in the appendices to the study report for wider distribution?***	
		Yes, these comments may be included in the appendices to the study report

* delete as appropriate

10	**Would you like to be made aware of the outcomes of the study? ***		
			Yes please, detailed findings and discussion about the future way forward following the study

* delete as appropriate

Thank you for taking the time to complete this questionnaire.

Please return your completed forms by close of play on **Friday 26th March 2010** to:

Tanja Cooper
Royal Haskoning
Marlborough House, Marlborough Crescent
Newcastle upon Tyne, Tyne and Wear
NE61 2EF

tel. ++44 (0)191 211 3240
e-mail t.cooper@royalhaskoning.com

Northumberland and North Tyneside
Rocky Reef and Foreshore 'Coastal Squeeze' Study

Questionnaire

We would be grateful if you could please complete and return this questionnaire if you are interested in the study.

If you think that other people/ departments within your organisation may be interested, we would be grateful if you could please circulate this message to them.

Name:	P Davey
Organisation:	Natural England
Address:	Lindisfarne NNR Beal Station, Beal Berwick-upon-Tweed TD15 2PB
Tel:	01289 381470
e-mail:	

1a	**Are you aware of the Northumberland and North Tyneside Shoreline Management Plan? ***		
	No	Yes, in general /	Yes, in detail
1b	**Are you aware of the Northumberland Coast Area of Outstanding Natural Beauty (AONB)? ***		
	No	Yes, in general /	Yes, in detail
1c	**Are you aware of the European Marine Site (EMS)? ***		
	No	Yes, in general /	Yes, in detail

* delete as appropriate and please annotate with any comments you wish to make

2	**Please state why 'rocky reef and foreshore' is important to you/ your organisation.**
	Interest features of the SAC

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

3	**Do you possess any relevant data or information sources relating to rocky reef and foreshore – especially loss due to coastal squeeze – that would be of value to the study?** No quantative information but the loss of (fixed) dune habitat is evident along the north Northumberland shore

4	**What are the aspirations of your organisation in relation to the long term management of rocky reef and foreshore?** Managed realignment where there are artificial defences adjoining arable land Some (undefined) mechanism for re-creating fixed dune habitat

5	**What is your organisation doing to ensure that these aspirations are achieved?** Working with EA on the former Some (ad hoc) trials with farmers to transfer seed onto areas of arable land

6	**What more would your organisation like to see done to better understand or manage the issue of rocky reef and foreshore loss?** A definite policy for maintaining extent of dune grasslands

7	**Are there any other comments on this subject that your organisation would like to make? Please continue on a separate sheet if necessary.**

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

8	**Would you like to be contacted by telephone for further discussion about the study?***	
		Yes please

* delete as appropriate

9	**Are you happy for your questionnaire response to be published in the appendices to the study report for wider distribution?***	
	No, please treat these comments confidentially	Yes, these comments may be included in the appendices to the study report

* delete as appropriate

10	**Would you like to be made aware of the outcomes of the study? ***		
		Yes please, but general findings for awareness only	

* delete as appropriate

Thank you for taking the time to complete this questionnaire.

Please return your completed forms by close of play on **Friday 26th March 2010** to:

Tanja Cooper
Royal Haskoning
Marlborough House, Marlborough Crescent
Newcastle upon Tyne, Tyne and Wear
NE61 2EF

tel. ++44 (0)191 211 3240
e-mail t.cooper@royalhaskoning.com

Northumberland and North Tyneside
Rocky Reef and Foreshore 'Coastal Squeeze' Study

Questionnaire

We would be grateful if you could please complete and return this questionnaire if you are interested in the study.

If you think that other people/ departments within your organisation may be interested, we would be grateful if you could please circulate this message to them.

Name:	Kelly Rose
Organisation:	Natural England
Address:	The Quadrant, Newburn Riverside, Newcastle-Upon-Tyne, NE15 8NZ
Tel:	0300 060 2902, 07919 598 129
e-mail:	Kelly.rose@naturalengland.org.uk

1a	**Are you aware of the Northumberland and North Tyneside Shoreline Management Plan? ***		
			Yes, in detail
1b	**Are you aware of the Northumberland Coast Area of Outstanding Natural Beauty (AONB)? ***		
		Yes, in general	
1c	**Are you aware of the European Marine Site (EMS)? ***		
		Yes, in general	

* delete as appropriate and please annotate with any comments you wish to make

2	**Please state why 'rocky reef and foreshore' is important to you/ your organisation.**
	Natural England has a requirement to protect and enhance designated sites and is a Statutory Consultee under the Conservation (Natural Habitats &c) Regulations 1994 (As Amended) with regard to European designations, and the Wildlife and Countryside Act 1981 (As Amended) with regard to United Kingdom designations. Rocky Reef is an important habitat and notified feature of Special Areas of Conservation including at the Berwickshire and North Northumberland European Marine site.

3	**Do you possess any relevant data or information sources relating to rocky reef and foreshore – especially loss due to coastal squeeze – that would be of value to the study?**
	Natural England holds a variety of data regarding the designation of sites and on-going monitoring and Risk & Condition assessment.

4	**What are the aspirations of your organisation in relation to the long term management of rocky reef and foreshore?**
	Natural England acts to protect and enhance designated sites and habitats including rocky reef and foreshore.

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

5	**What is your organisation doing to ensure that these aspirations are achieved?**
	Natural England acts as a statutory consultee; undertakes monitoring and condition assessment; implements and undertakes management of sites and in the case is aiding in the development of the Northumberland and North Tyneside Rocky Reef and Foreshore 'Coastal Squeeze' study.

6	**What more would your organisation like to see done to better understand or manage the issue of rocky reef and foreshore loss?**
	Further useful information includes: • Rate of erosion, and potential exposure of new rocky foreshore habitats in unprotected coastal rates; • Understanding the underlying geology to predict exposure of new habitats • Potential to re-expose rocky foreshore habitats covered by sand or coastal sediments, and the impacts of this • Understanding creation of subtidal rocky reefs, through increasing sea level and the submersion of intertidal rocky reefs • Similar study required into the impacts of climate change and sea level rise upon marine rocky reefs.

7	**Are there any other comments on this subject that your organisation would like to make? Please continue on a separate sheet if necessary.**	
	/	

8	**Would you like to be contacted by telephone for further discussion about the study?***	
		Yes please

* delete as appropriate

9	**Are you happy for your questionnaire response to be published in the appendices to the study report for wider distribution?***	
		Yes, these comments may be included in the appendices to the study report

* delete as appropriate

10	**Would you like to be made aware of the outcomes of the study? ***		
			Yes please, detailed findings and discussion about the future way forward following the study

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

* delete as appropriate

Thank you for taking the time to complete this questionnaire.

Please return your completed forms by close of play on **Friday 26th March 2010** to:

Tanja Cooper
Royal Haskoning
Marlborough House, Marlborough Crescent
Newcastle upon Tyne, Tyne and Wear
NE61 2EF

tel. ++44 (0)191 211 3240
e-mail t.cooper@royalhaskoning.com

Northumberland and North Tyneside
Rocky Reef and Foreshore 'Coastal Squeeze' Study

Questionnaire

We would be grateful if you could please complete and return this questionnaire if you are interested in the study.

If you think that other people/ departments within your organisation may be interested, we would be grateful if you could please circulate this message to them.

Name:	Martin Kerby
Organisation:	Royal Society for the Protection of Birds
Address:	Northern England Region, 1 Sirius House, Amethyst Road, Newcastle Business Park, Newcastle upon Tyne, NE4 7YL
Tel:	0191-233-4309
e-mail:	martin.kerby@rspb.org.uk

1a	**Are you aware of the Northumberland and North Tyneside Shoreline Management Plan? ***		
	No	Yes, in general	**Yes, in detail**
1b	**Are you aware of the Northumberland Coast Area of Outstanding Natural Beauty (AONB)? ***		
	No	Yes, in general	**Yes, in detail**
1c	**Are you aware of the European Marine Site (EMS)? ***		
	No	**Yes, in general**	Yes, in detail

* delete as appropriate and please annotate with any comments you wish to make

2	**Please state why 'rocky reef and foreshore' is important to you/ your organisation.**
	Rocky reef and foreshore is important to the RSPB in the North East because of its importance to birdlife. In particular, the RSPB wants to secure the populations of birds associated with the Northumbria Coast Special Protection Area (SPA) and Ramsar site, and also the Northumberland Shore SSSI, notified for their European and national importance for wintering waders.

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

3	**Do you possess any relevant data or information sources relating to rocky reef and foreshore – especially loss due to coastal squeeze – that would be of value to the study?** RSPB doesn't hold any specific data. As a volunteer for the British Trust for Ornithology (BTO) I count the Wetland Bird Survey (WeBS) sector between Tynemouth North Pier and Whitley Bay north beach, so could provide more detailed information on how waders in this WeBS sector use the rocky shore and how they might be affected by coastal squeeze – and also how defence works could help accommodate the needs of wintering waders.

4	**What are the aspirations of your organisation in relation to the long term management of rocky reef and foreshore?** To secure favourable conservation status for the SPA/Ramsar site and to ensure the SSSI holds optimum populations of its notified wader species. Specifically, to ensure that all coastal defence works fully respect the designated sites by ensuring that: - potential impacts the designated sites as a result of coastal squeeze are adequately quantified in terms of habitat loss - any coastal defence works that could adversely affect SPA/Ramsar site integrity, including in combination with other schemes, can robustly demonstrate no alternative solutions and Imperative Reasons of Overriding Public Interest (IROPI) - any adverse effects on integrity as a result of coastal defence works are fully compensated for, including loss of artificial roost sites - any small-scale loss of intertidal habitat that is deemed unlikely to affect SPA integrity is mitigated for - that new defence works include measures to maintain/create suitable roosting and foraging habitat for SPA and SSSI species - that innovative measures regarding creation of rocky shore habitat and other foraging opportunities are identified, trialled and monitored.

5	**What is your organisation doing to ensure that these aspirations are achieved?** Lengthy response to SMP2 consultation setting out our concerns both in particular areas and across the SMP area as a whole. Responses to planning consultations including scoping, discussions with consultants etc. Further involvement/input into the Rocky Reef and Foreshore 'Coastal Squeeze' Study

Royal Haskoning (Haskoning UK Ltd.)
Marlborough House, Marlborough Crescent, Newcastle upon Tyne, NE1 4EE

6	**What more would your organisation like to see done to better understand or manage the issue of rocky reef and foreshore loss?**
	Key is to identify likely rates of loss across the SMP area as a whole and then to identify potential solutions in terms of loss of foraging/roosting habitat. Development of innovative approaches to addressing coastal squeeze of rocky shore habitat and impacts on SPA e.g. through creation of new foraging habitats, trialling of new materials to encourage colonisation of artificial surfaces by prey items, creation of new roost sites as part of coastal defence works.

7	**Are there any other comments on this subject that your organisation would like to make? Please continue on a separate sheet if necessary.**
	No additional comments.

8	**Would you like to be contacted by telephone for further discussion about the study?***	
	No thanks	Yes please

* delete as appropriate

9	**Are you happy for your questionnaire response to be published in the appendices to the study report for wider distribution?***	
	No, please treat these comments confidentially	**Yes, these comments may be included in the appendices to the study report**

* delete as appropriate

10	**Would you like to be made aware of the outcomes of the study? ***		
	No thanks, please remove me from your distribution list	Yes please, but general findings for awareness only	**Yes please, detailed findings and discussion about the future way forward following the study**

* delete as appropriate

Thank you for taking the time to complete this questionnaire.

Please return your completed forms by close of play on **Friday 26th March 2010** to:

Tanja Cooper
Royal Haskoning
Marlborough House, Marlborough Crescent
Newcastle upon Tyne, Tyne and Wear
NE61 2EF

tel. ++44 (0)191 211 3240
e-mail t.cooper@royalhaskoning.com

Edwards, J.L. (Jennifer)

From: Howell, Dickon (MMO) [Dickon.Howell@marinemanagement.org.uk]
Sent: 12 April 2010 10:06
To: Cooper, T. (Tanja)
Subject: RE: Rocky Reef and Foreshore Coastal Squeeze Study - Consultation
Attachments: ATT00001..txt

Tanja

I'm so sorry for not getting back to you on this. As you know, the MMO has only been in existence for 2 weeks and we are currently still in the process of getting fully operational. As such I'm not sure I can give you much of the detail you want in your questionnaire at the current moment in time. Without getting too corporate, we have been tasked with the delivery of sustainable development in the marine area, and amongst our main responsibilities relevant to this project are:

- An integrated system of marine planning
- A streamlined, transparent and consistent system for licensing marine activities and developments
- A dynamic contribution to conserving natural resources, ecosystems and species, including the development of marine protected areas

As such, we would be interested in this work from a planning and licensing point of view, and also in our work to input into the delivery of the Marine Strategy Framework Directive and our work to help co-deliver the remits of the statutory nature conservation agencies (Habs Directive) and the Environment Agency (WFD) when we can.

I do have a personal interest in this project as you know and I think for the time being that I would be the best person to contact going forward.

Sorry I haven't been more help at this stage, do keep me informed about how it goes

Best regards

Dickon

From: Cooper, T. (Tanja) [mailto:t.cooper@royalhaskoning.com]
Sent: 12 March 2010 15:26
To: Undisclosed recipients
Subject: Rocky Reef and Foreshore Coastal Squeeze Study - Consultation

Dear Consultee

Please find enclosed a ***Project Information Sheet*** and ***Questionnaire*** relating to a study that you may find of interest.

The study will investigate the loss of rock reef and foreshore over the next 20, 50 and 100 years due to sea level rise and under Shoreline Management Plan 2 policies for these future epochs.

You have been identified as a principal point of contact within your organisation, so if there are other people/departments that you think may also be interested then we would be grateful if you could please forward the information to them.

We would be grateful if you could please read the enclosed documentation, and if you are interested in the study, fill out the questionnaire and reply with your views and any additional information. Your involvement and responses are important to us and any feedback you might have would be very valuable to the study.

We look forward to receiving your completed questionnaires by Friday 26th March 2010.

Thank you very much for your assistance and time on this matter.

Yours sincerely

Tanja Cooper Dipl-Ing

GIS Specialist

T: +44 (0) 191 211 3240 F: +44 (0) 191 2111 313
E: t.cooper@royalhaskoning.com

Haskoning UK Ltd., Marlborough House, Marlborough Crescent,
Newcastle-Upon-Tyne. NE1 4EE. United Kingdom. Registered in England 1336844

www.royalhaskoning.co.uk

Herewith this committee's response to the questionanaire.

per
M.H. Hardy
Chief Executive

Northumberland and North Tyneside Rocky Reef and Foreshore 'Coastal Squeeze' Study

Questionnaire

We would be grateful if you could please complete and return this questionnaire if you are interested in the study.

If you think that other people/ departments within your organisation may be interested, we would be grateful if you could please circulate this message to them.

Name:	Jon Green
Organisation:	Northumberland Sea Fisheries Committee
Address:	Unit 60b South Nelson Industrial EST South Nelson RD Cramlington NE 23 1WF
Tel:	01670 731399
e-mail:	nsfc@nsfc.org.uk

1a	**Are you aware of the Northumberland and North Tyneside Shoreline Management Plan? ***		
			Yes, in detail
1b	**Are you aware of the Northumberland Coast Area of Outstanding Natural Beauty (AONB)? ***		
			Yes, in detail
1c	**Are you aware of the European Marine Site (EMS)? ***		
			Yes, in detail

* delete as appropriate and please annotate with any comments you wish to make

2	**Please state why 'rocky reef and foreshore' is important to you/ your organisation.**
	As they form important habitat for a wide range of marine species, including some that are commercially important,such as lobsters. They also serve to function as nursery areas for many species. Reefs in the sub litteral zone are extensively fished through out Northumberland and North Tyneside. In certain locations they also serve as harbours or safe anchorages.

3	**Do you possess any relevant data or information sources relating to rocky reef and foreshore – especially loss due to coastal squeeze – that would be of value to the study?**
	No

4	**What are the aspirations of your organisation in relation to the long term management of rocky reef and foreshore?**
	That they continue in similar conditions as currently occur, and continue to function as now.

5	**What is your organisation doing to ensure that these aspirations are achieved?**
	The committee takes an active role in assisting with the management of the Berwickshire and North Northumberland EMS, and participates in the Net Gain meetings.

6	**What more would your organisation like to see done to better understand or manage the issue of rocky reef and foreshore loss?**
	N/A

7	**Are there any other comments on this subject that your organisation would like to make? Please continue on a separate sheet if necessary.**

8	**Would you like to be contacted by telephone for further discussion about the study?***	
	No thanks	

* delete as appropriate

9	**Are you happy for your questionnaire response to be published in the appendices to the study report for wider distribution?***	
		Yes, these comments may be included in the appendices to the study report

* delete as appropriate

10	**Would you like to be made aware of the outcomes of the study? ***		
			Yes please, detailed findings and discussion about the future way forward following the study

* delete as appropriate

Thank you for taking the time to complete this questionnaire.

Please return your completed forms by close of play on **Friday 26th March 2010** to:

Tanja Cooper
Royal Haskoning
Marlborough House, Marlborough Crescent
Newcastle upon Tyne, Tyne and Wear
NE61 2EF

tel. ++44 (0)191 211 3240
e-mail t.cooper@royalhaskoning.com

ROYAL HASKONING

Appendix D

Start-up Meeting - Notes

Northumberland Coastal Squeeze Study

Pre Contract Meeting

9th March 2009 at County Hall, Morpeth

Attendance

Northumberland County Council	North Tyneside	Natural England	Royal Haskoning
Ruth Bendell (ARB)	Peter Woods (PW)	Mike Quigley (MQ)	Nick Cooper (NC)
Trevor Dixon (TD)			Tanja Cooper (TCo)
Tom Cadwallender (TCa)			

Apologies

Kelly Rose, Natural England

Item	Detail	Action
1	**Introductions** Relevant introductions were made	
2	**Project Steering Group** The client Steering Group comprises representatives of Northumberland County Council, North Tyneside Council, the Northumberland Coast Area of Outstanding Natural Beauty (AONB) and Natural England For Royal Haskoning, Nick Cooper is the Project Director and Tanja Cooper is the Project Manager It was agreed that the key points of contact/communication channels would be through Trevor Dixon and Tanja Cooper	
3	**Contract Start and Duration** It was agreed that the contract start date will be 9th March and that the contract duration will be 6 months (as set out in the project specification). It may be that the study can be completed in a shorter timescale, but this will be kept under review as the study progresses. NC advised that Royal Haskoning have not received the official order for the commission. It is understood that the order has been sent through NCC's IProcurement system, and this will be checked.	**TD**
4	**Programme** NC outlined the draft programme and the key tasks associated with the study, as follows: - 1. Collation and review of data (see item 5 below) 2. Development of consultation plan and summary sheet – RH to develop consultation documents for review and approval by the steering group. It is intended to send out the consultation documents to relevant stakeholders	

	on Friday 12th March, with a return date of 26th March 2010. 3. The data obtained through items 1 and 2 will be incorporated into a scoping report, to be produced within 5 to 6 weeks of the contract start date 4. Development of a digital ground model using GIS and Lidar data 5. Analysis of data usingUKCP09 climate projections over the next 20, 50 and 100 years. NC suggested using medium emissions scenario (50th%ile) 6. Final report within 6 month contract period.	
5	**Data and Information Requirements** The following data is required: - 1. Aerial Photographs – MQ has access to orthorectified digital images, which can be made available to RH 2. 10k and 50k raster mapping, to be provided by NCC 3. Lidar data – to be provided free of charge by NCC Note: - There will be a potential problem if the Lidar data is not available at "low water" and if this is the case the data may need to be extrapolated from other sources	**MQ** **TD** **TD**
6.	**Frequency of Meetings** It was agreed that following this pre-contract meeting, further meetings will be held, as follows; - 1. to review scoping report 2. to review and provide feedback on the draft final report 3. consideration will be given to giving a "feedback" presentation to consultees Monthly progress reports will be provided in lieu of monthly meetings	**TCo**