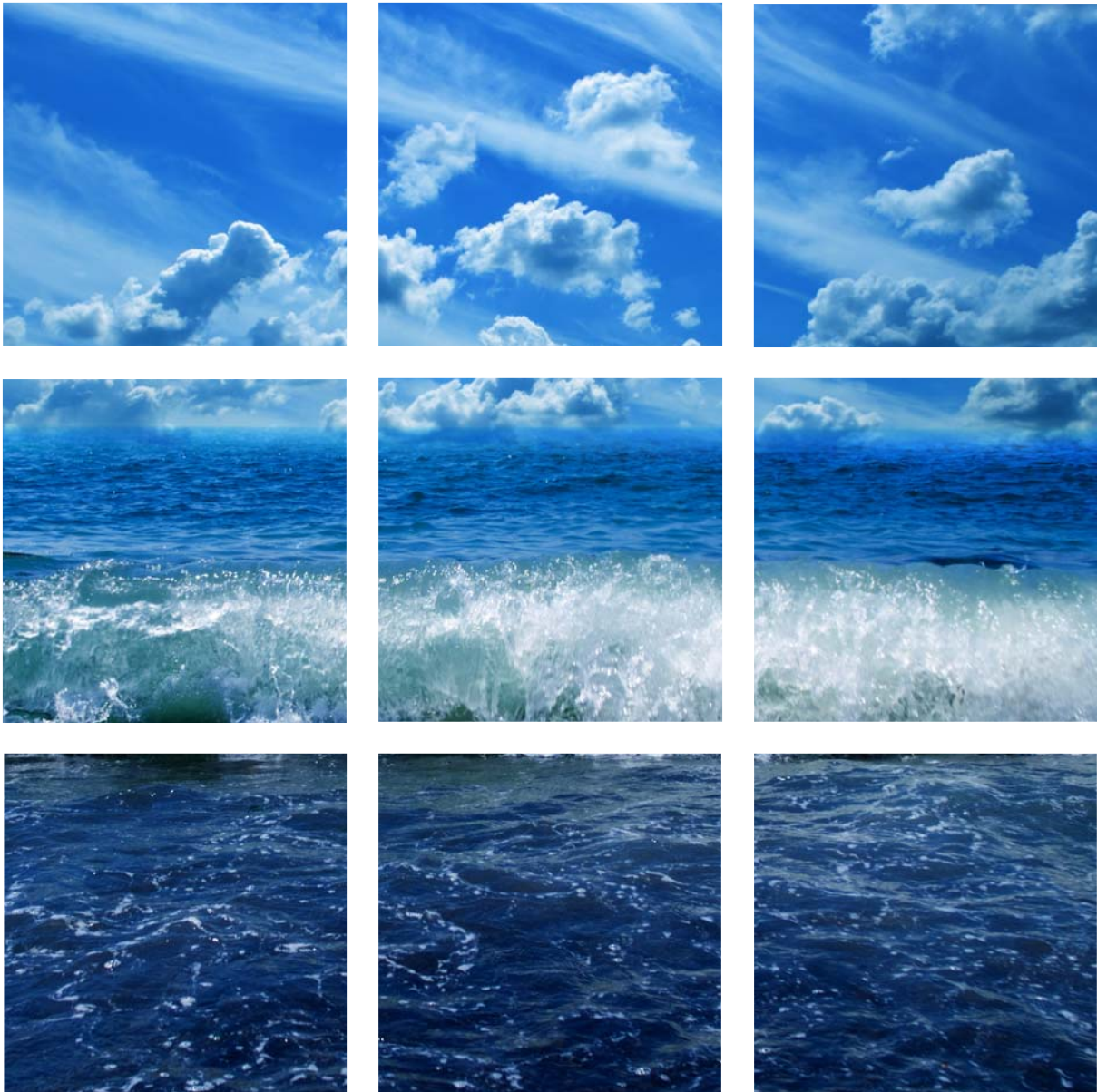




Irish Coastal Protection Strategy Study Phase 3 - North East Coast

Work Packages 2, 3 & 4A - Appendix 8 - Erosion Mapping

IBE0071/June 2010





Office of Public Works

Irish Coastal Protection Strategy Study - Phase III

Work Packages 2, 3 & 4A

Strategic Assessments of Coastal Flooding and Erosion Extents

Dalkey Island to Omeath

Appendix 8 Erosion Assessment - June 2010



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Irish Coastal Protection Strategy Study - Phase III

Work Packages 2, 3 & 4A

Strategic Assessments of Coastal Flooding and Erosion Extents

Dalkey Island to Omeath

Appendix 8 Erosion Assessment - June 2010

DOCUMENT CONTROL SHEET

Client	Office of Public Works					
Project Title	Irish Coastal Protection Strategy Study, Phase II, Work Package 2, 3, & 4A					
Document Title	Strategic Assessments of Coastal Flooding and Erosion Extents					
Document No.	IBE071/EFORev03_APP8					
This Document Comprises	DCS	TOC	Text	List of Tables	List of Figures	No. of Appendices
	1	-	4	-	-	1

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
01	Draft	CR	MB	AKB	Belfast	July 08
02	Revised draft	CR	MB	AKB	Belfast	Aug 08
03	Final	CR	MB	AKB	Belfast	June 10

IMPORTANT DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE FOR EROSION MAPS

Please read the disclaimer, guidance notes and conditions of use below carefully to avoid incorrect interpretation of the information and data provided on the maps contained in this volume. The maps must be used only in conjunction with these notes, and must not be used in isolation.

PURPOSE OF THE MAPS

The maps contained within this bound volume were prepared under the following project:

- **Project Name: Irish Coastal Protection Strategy Study (ICPSS)**
- **Project Period: 2006 – 2010**

The maps were prepared for the purpose of assessing the degree of erosion hazard and risk to assist in the identification and development of measures for managing the erosion risk. They may, however, also be of use to the public, Local Authorities and other parties as indicative maps of erosion-prone areas for a range of purposes, including raising awareness of erosion hazard and risk, assisting in planning and development decisions etc.

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GUIDANCE NOTES

This bound volume contains two sets of erosion maps with predicted future position of the coastline in 2030 and 2050 indicated. How these maps have been derived, and what they do and do not present, is described below.

Derivation of Maps

The maps included within this bound volume are ‘predictive’ erosion maps, as they provide the future predicted position of the coastline, and are developed by various analyses as described below.

A comparison of the best available current and historical mapping and aerial photography was used to estimate the annual rate of change in the coastline position and hence to predict the likely future position of the coastline in the years 2030 and 2050. The rate of coastline change (annual erosion rate) for future years was assumed to be the same as in the past.

An erosion ‘baseline’ was derived from the visible vegetation line shown on the Ordnance Survey Ireland (OSi) year 2000 aerial photography, or where appropriate, the cliff top line, and this was used as the basis for generating the year 2030 and 2050 erosion maps.

In developing the erosion maps, the coast was divided into nominal lengths, typically 1km, and an annualised average rate of coastal retreat applicable to each sector established. The resulting preliminary erosion lines contained a number of steps, where the annualised rate of erosion derived from the comparison of aerial photographic series changed between adjacent sectors. These preliminary lines were subsequently reviewed by an experienced Coastal Engineer and the transitions between the various sectors modified based on an assessment of coastal form and underlying geology as derived from Geological Survey of Ireland (GSI) quaternary (subsoil) geological mapping.

The maps have been produced at a strategic level, and minor or local features may not have been included in their preparation. Therefore, the maps should not be used to assess the erosion hazard and risk associated with individual properties or point locations, or to replace a detailed local erosion hazard and risk assessment.

In contrast to the floodplain mapping, it was not possible to eliminate the effect of existing coastal defence structures from the erosion hazard and risk assessment. Consequently there will be areas where no erosion line is shown that are at risk from erosion, should the present defences fail or not be maintained in the future. Equally there may be an erosion line shown in areas that are now adequately defended by coastal protection structures that were introduced during or after the assessment period.

Detailed explanations of the methods of derivation, survey data used, etc. are provided in the relevant reports produced for the project under which the maps were prepared. Users of the maps should familiarise themselves fully with the contents of these reports in advance of the use of the maps.

Uncertainty

Although great care and modern, widely-accepted best practice methods have been used to prepare the predictive erosion maps, there is a range of inherent uncertainties within the process of preparing these maps. These include:

- Uncertainty in the underlying geology and hence in the annual rate of coastal change
- Uncertainty in the protected status of the coast
- Uncertainty in the resolution of the assessment
- Uncertainty in the geographical accuracy of historical imagery (A principal source of inaccuracy in this analysis was the geo-referencing and rectification of historical aerial photography)

The erosion maps are therefore only indicative, and the potential for inaccuracy should be recognised if these maps are to be used for any purpose. Analysis of the confidence of the erosion lines or extents has been undertaken and is represented on the erosion maps (see below).

Sets of Erosion Maps

There are two sets of erosion maps presented, illustrating the estimated future position of the coastline in the years 2030 and 2050, together with the erosion baseline derived from the OSi aerial photography. These are displayed at a scale of 1:25,000 relative to OSi discovery series raster maps. Further details on these maps, including the methods of derivation, assumptions made, data used, etc. are provided in the relevant project reports.

Due to the various uncertainties within the process of preparing the maps (see 'Uncertainty' above), it is not possible to state that the maps are absolutely accurate. An assessment of some of the principal sources of uncertainty has been undertaken to estimate the degree of confidence one may have in the mapped erosion lines (refer to relevant project report for details and limitations of method used). The line type (solid, dashed, dotted etc) denoting the erosion baseline provides an indication of the degree of confidence, whereby:

- A solid strikethrough line represents a very high degree of confidence, and it is estimated that, based on the confidence estimation method used, there is over 85% confidence in the erosion extent shown in that location.
- A solid line represents a high degree of confidence, and it is estimated that, based on the confidence estimation method used, there is between 70 and 85% confidence in the erosion extent shown in that location.
- A dashed line represents a medium degree of confidence, and it is estimated that, based on the confidence estimation method used, there is between 55 and 70% confidence in the erosion extent shown in that location.
- A dotted line represents a low degree of confidence, and it is estimated that, based on the confidence estimation method used, there is between 40 and 55% confidence in the erosion extent shown in that location.
- A dashed - dotted line represents a very low degree of confidence, and it is estimated that, based on the confidence estimation method used, there is below 40% confidence in the erosion extent shown in that location.

Consideration of Climate and Other Future Changes

The erosion maps have been produced for existing conditions only and do not currently include for projected future changes in climate such as sea level rise, increased storm frequency or associated variations in erosion rates. Neither do they include for variations in erosion rates due to planned coastal protection or dredging works or other potential changes of a geological nature.

CONDITIONS OF USE

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The user of these maps shall be deemed to have agreed to, and unconditionally accepted all of these statements and conditions.

The user is deemed to have read in full, understood and accepted all of the above disclaimer, guidance notes and statements concerning the preparation, limitations and use of the maps in this bound volume.

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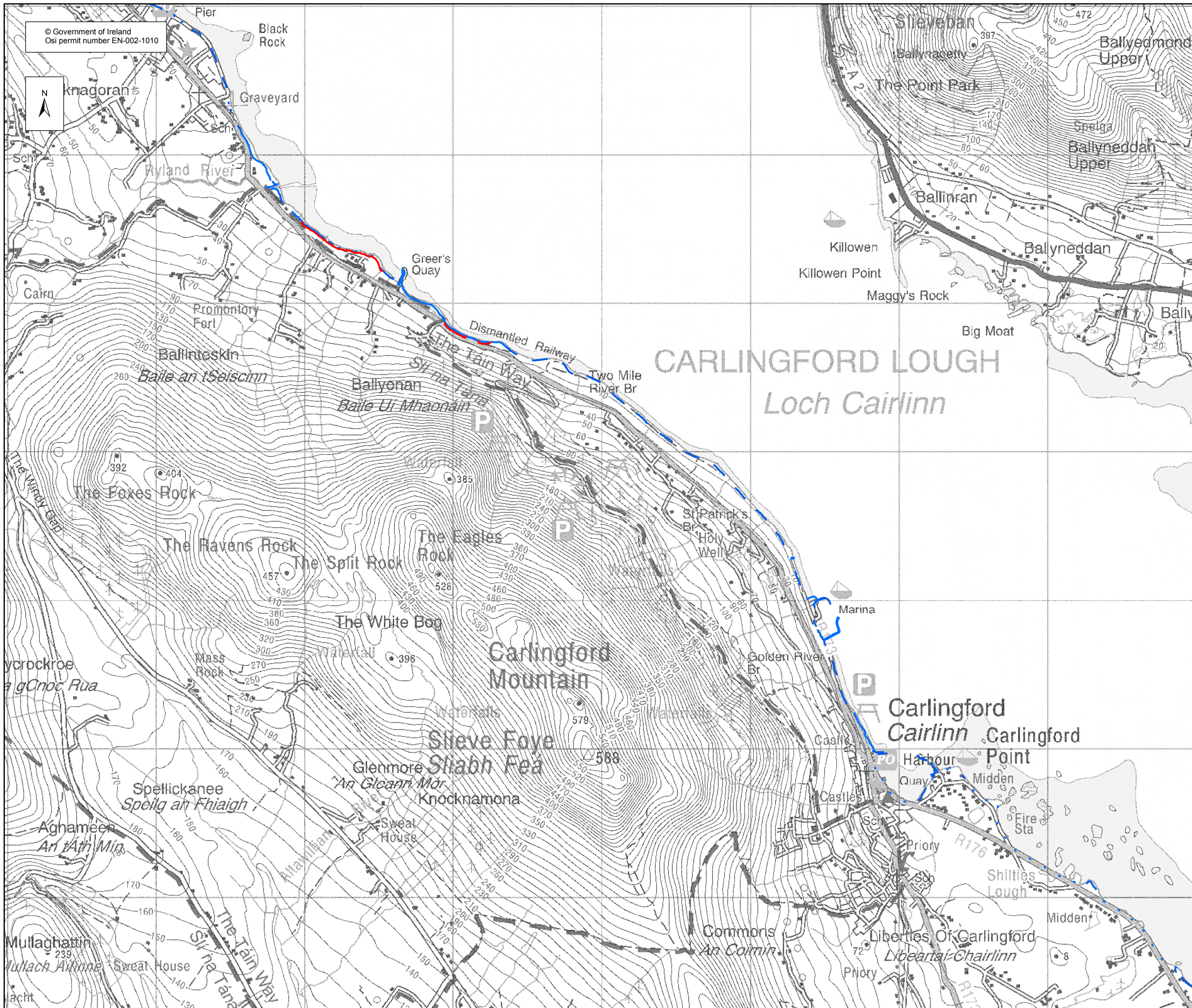
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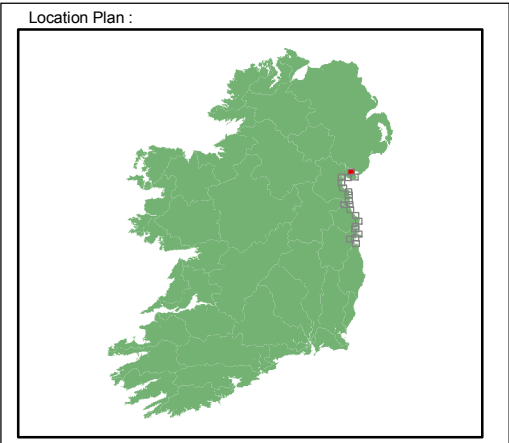
CONTACTS REGARDING MAP INFORMATION

Any user who has reason to believe that these maps contain an error, or who wishes to contribute additional information, is requested to contact the Office of Public Works Engineering Services Section at the following address:

Erosion Mapping Queries
Engineering Services
Office of Public Works
17-19 Lower Hatch Street
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EROSION MAP

- Legend**
- Denotes 2050 Erosion Line
 - Very High Confidence
 - High Confidence
 - Medium Confidence
 - Low Confidence
 - Very Low Confidence

(All Confidence Lines Co-incide with Year 2000 Baseline / Vegetation Line)

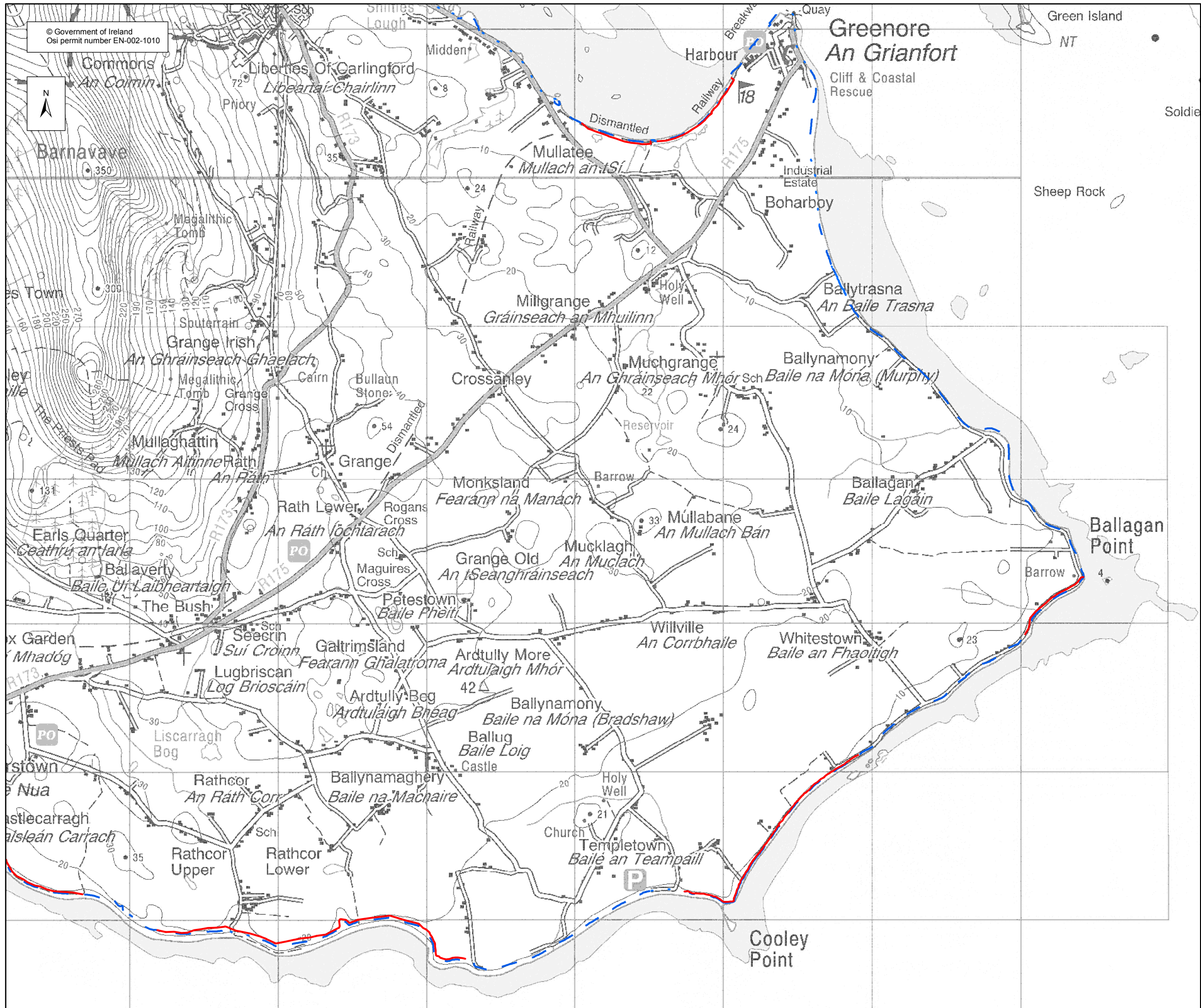
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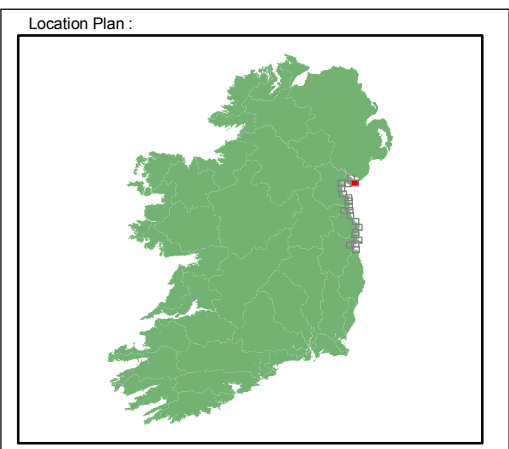
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Map: NORTH EAST COAST EROSION	
Map Type:	EROSION
Prediction Year:	2050
Source:	COASTAL
Map area:	RURAL AREA
Scenario:	2050
Figure By:	PJW
Date:	Mar 2010
Checked By:	JMC
Date:	Mar 2010
Figure No.:	Revision
NE / RA / EROS / 2050 / 1	1
Drawing Scale: 1:25,000	Plot Scale: 1:1 @ A3





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EROSION MAP

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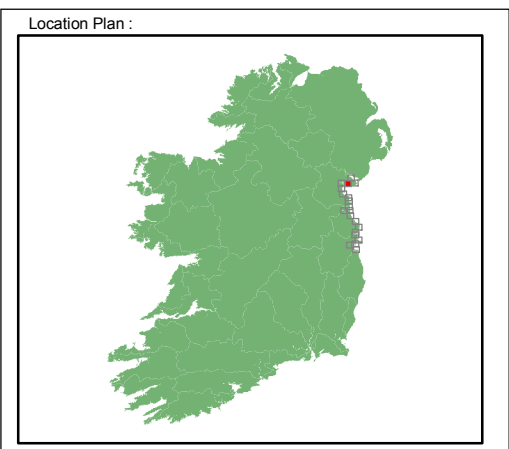
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Map :	
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Map Type :	EROSION
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Source :	COASTAL
Map area :	RURAL AREA
Scenario :	2050
Figure By :	PJW
Date :	Mar 2010
Checked By :	JMC
Date :	Mar 2010
Figure No. :	Revision
NE / RA / EROS / 2050 / 2	1
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EROSION MAP

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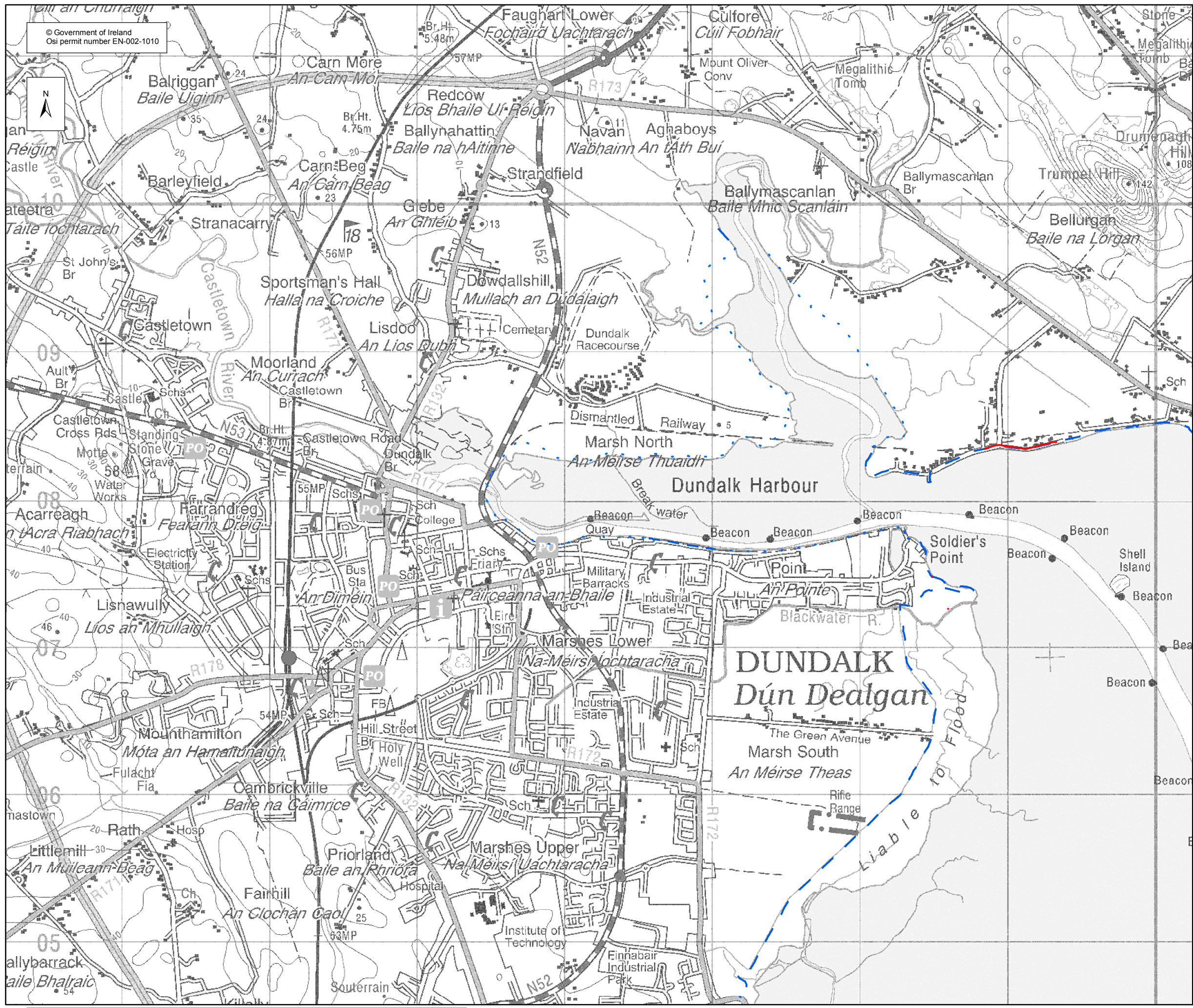
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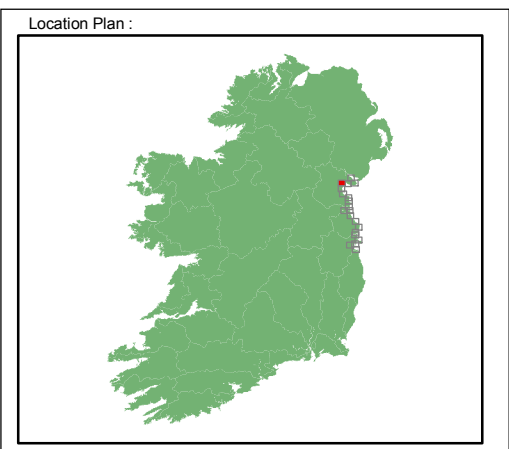
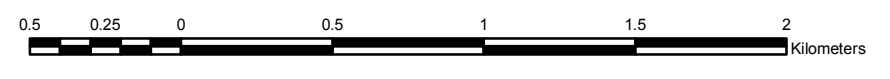
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Scenario :	2050
Figure By :	PJW
Date :	Mar 2010
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Date :	Mar 2010
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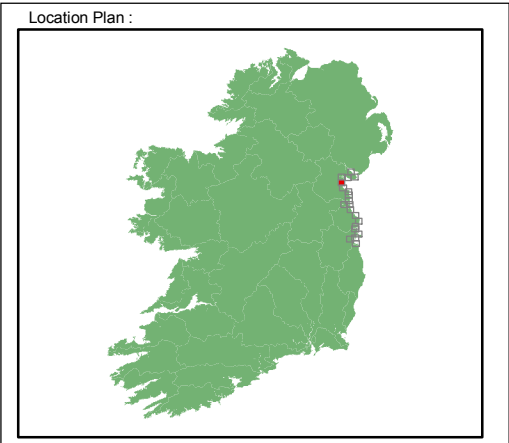
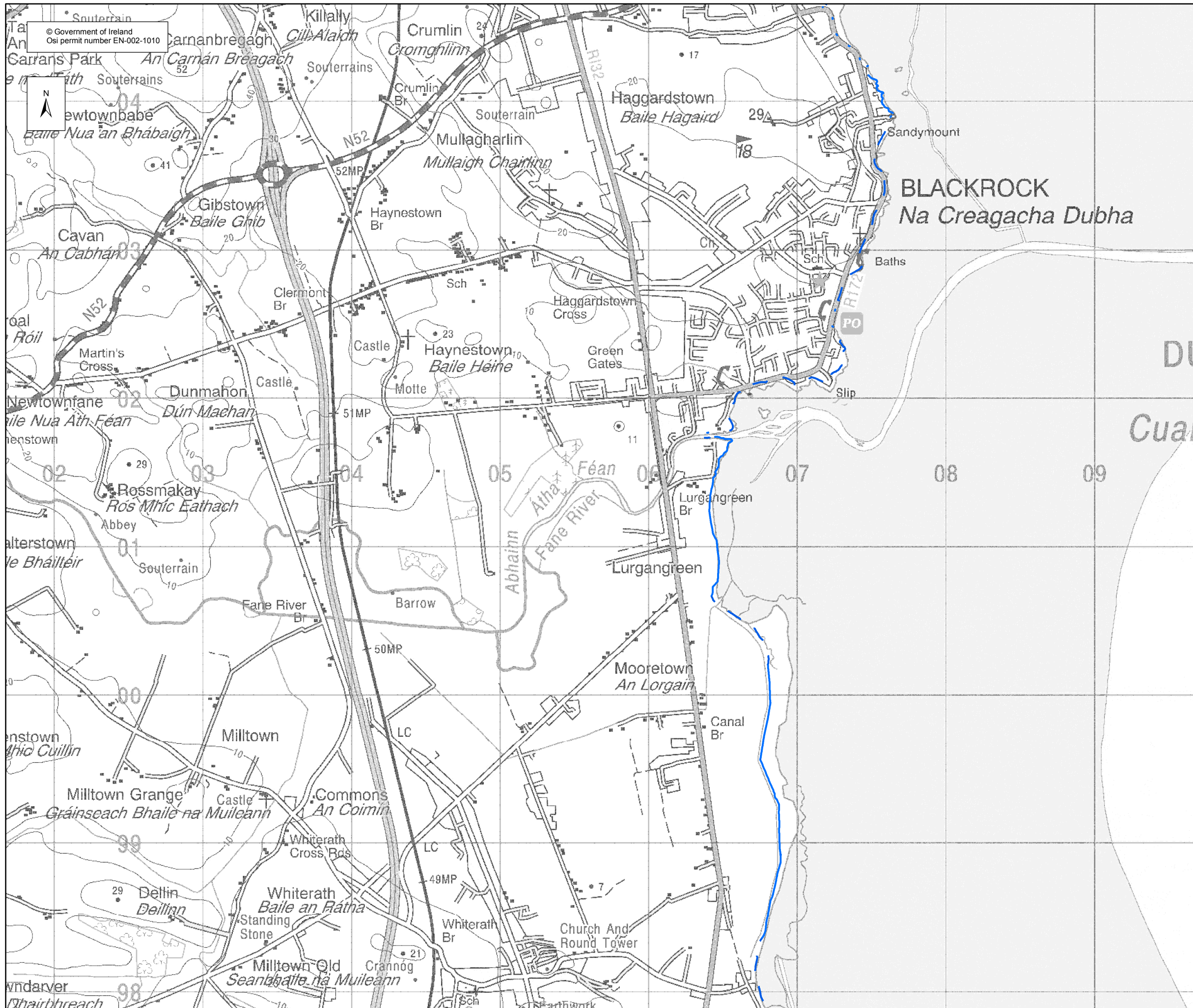


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Map : NORTH EAST COAST EROSION	
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Prediction Year :	2050
Source :	COASTAL
Map area :	RURAL AREA
Scenario :	2050
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Date :	Mar 2010
Checked By :	JMC
Date :	Mar 2010
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Drawing Scale : 1:25,000	Plot Scale : 1:1 @ A3



EROSION MAP

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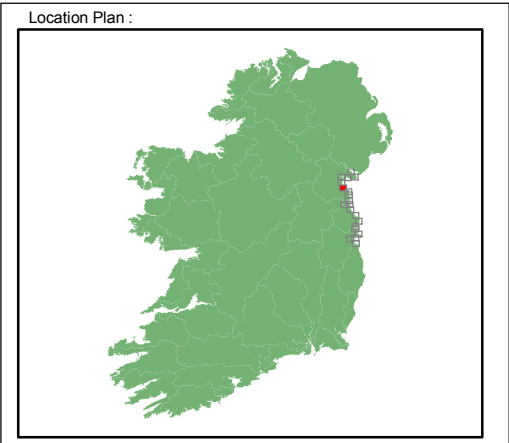
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Date :	Mar 2010
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Project:
**IRISH COASTAL PROTECTION STRATEGY
STUDY - PHASE III**

Map:
NORTH EAST COAST EROSION

Map Type: **EROSION**

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Source: **COASTAL**

Map area: **RURAL AREA**

Scenario: **2050**

Figure By: **PJW** Date: **Mar 2010**

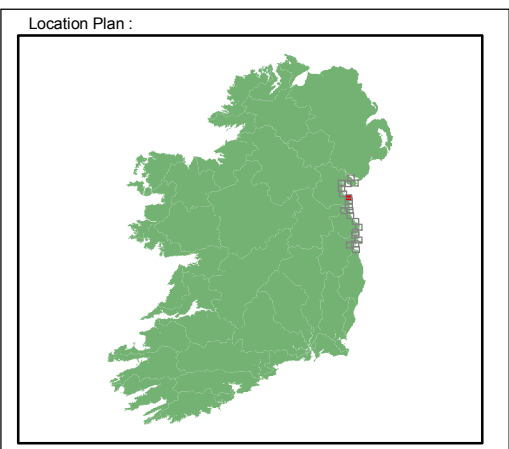
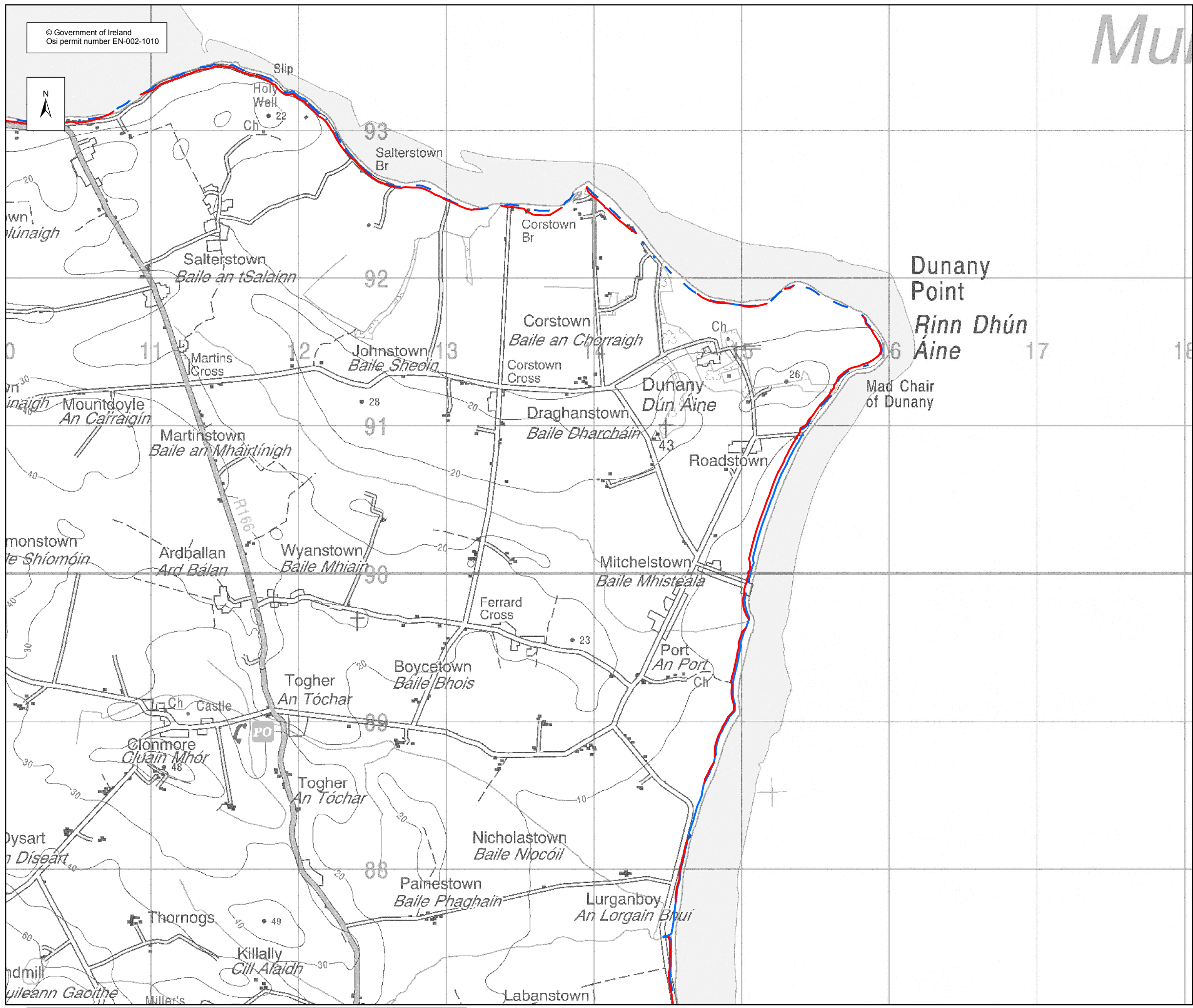
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Drawing Scale: **1:25,000** Plot Scale: **1:1 @ A3**

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EROSION MAP

Legend

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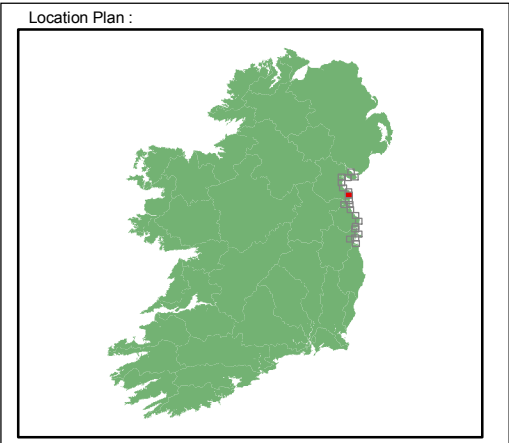
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Map : NORTH EAST COAST EROSION	
Map Type :	EROSION
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Figure By :	PJW
Date :	Mar 2010
Checked By :	JMC
Date :	Mar 2010
Figure No. :	Revision
NE / RA / EROS / 2050 / 7	1
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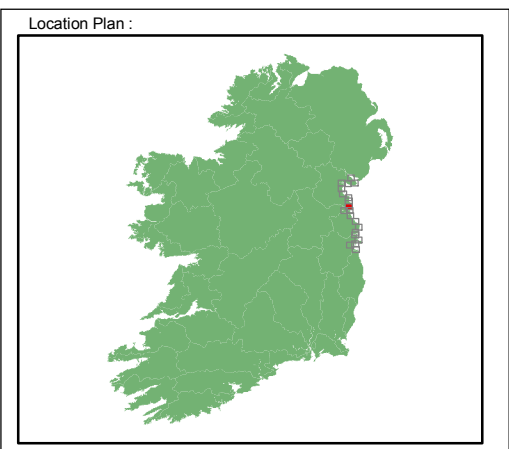
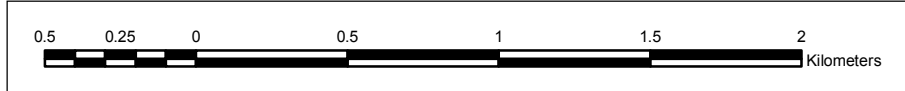
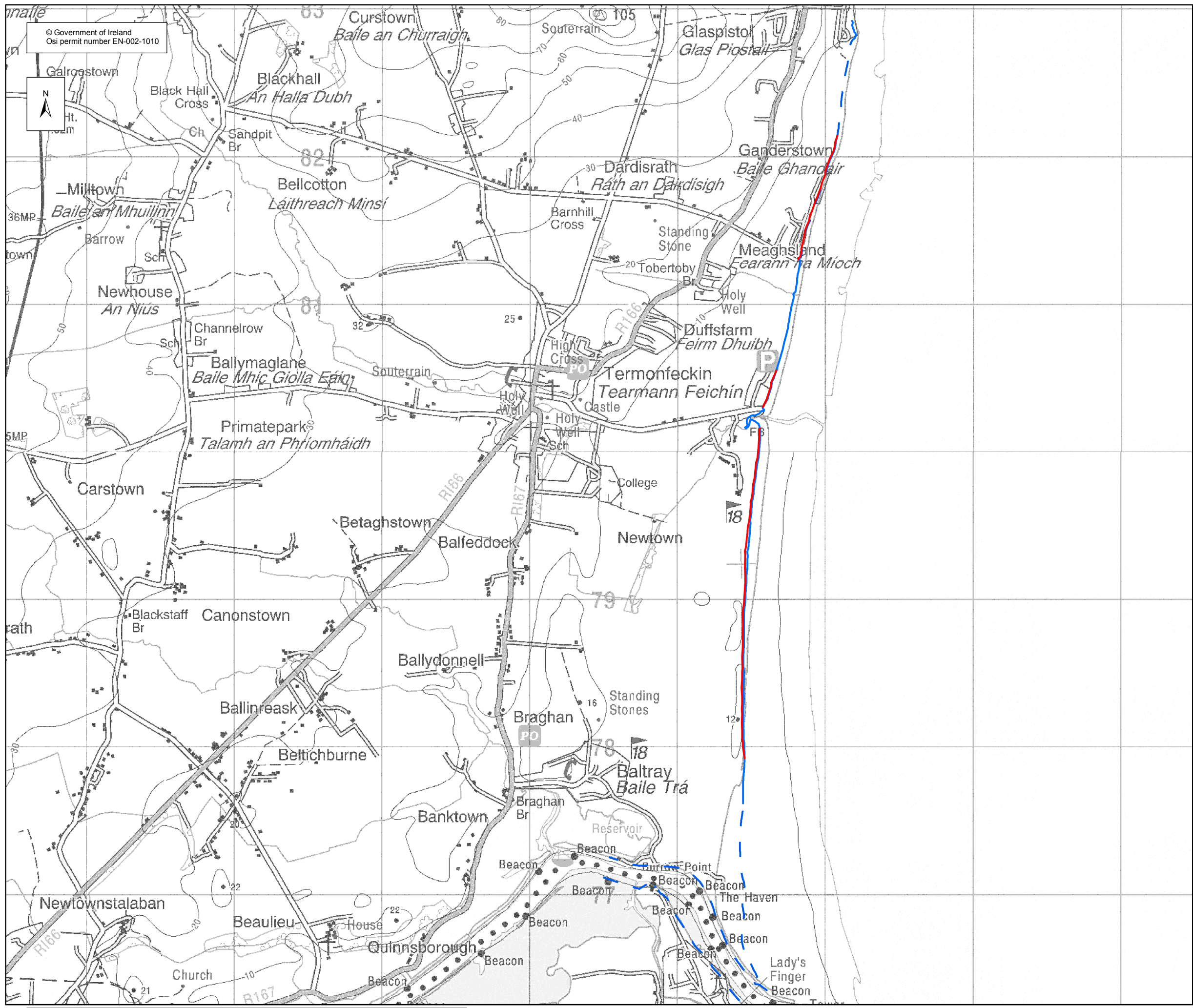


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Scenario :	2050
Figure By :	PJW
Date :	Mar 2010
Checked By :	JMC
Date :	Mar 2010
Figure No. : NE / RA / EROS / 2050 / 8	Revision 1
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EROSION MAP

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Checked By :	JMC
Date :	Mar 2010
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