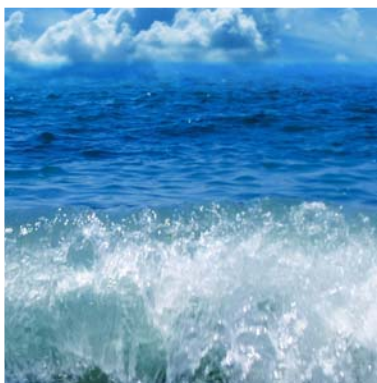


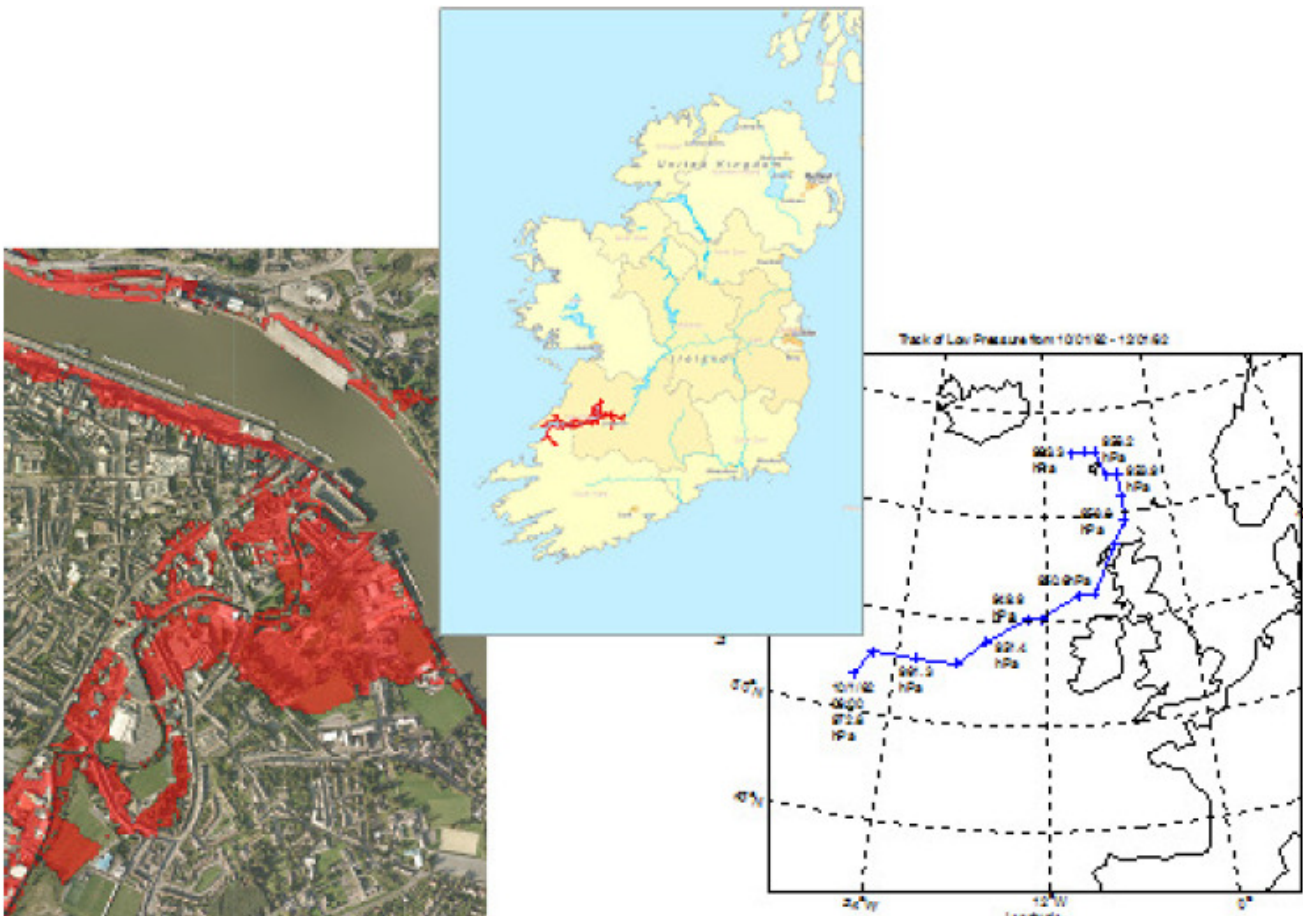
Irish Coastal Protection Strategy Study

Phase 4 - Shannon Estuary

Work Package 9A - Appendix 1B - Flood Mapping for Mid Range Future Scenario

IBE0388/November 2013







Office of Public Works

Irish Coastal Protection Strategy Study - Phase 4

Work Package 9A

Strategic Assessment of Coastal Flooding Extents – Future Scenario

Shannon Estuary

Appendix 1B - Flood Mapping for Mid Range Future Scenario

November 2013

DOCUMENT CONTROL SHEET

Client	Office of Public Works
Project Title	Irish Coastal Protection Strategy Study, Phase 4, Work Package 9A
Document Title	Strategic Assessment of Coastal Flooding Extents – Future Scenario
Document No.	IBE0071/ FS_App9A_R01
Document Date	November 2013

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

COASTAL FLOOD MAPS FOR MID RANGE FUTURE SCENARIO FOR SHANNON ESTUARY

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: 2005 – 2013***

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

DISCLAIMER

The Office of Public Works makes no representations, warranties or undertakings about any of the information provided on these maps including, without limitation, their accuracy, their completeness or their quality or fitness for any particular purpose.

To the fullest extent permitted by applicable law, neither the State, the Office of Public Works nor any of its members, officers, associates, consultants, employees, affiliates, servants, agents or other representatives shall be liable for loss or damage arising out of, or in connection with, the use of, or the inability to use, the information provided on these maps including, but not limited to, indirect or consequential loss or damages, loss of data, income, profit, or opportunity, loss of, or damage to, property and claims of third parties, even if the Office of Public Works has been advised of the possibility of such loss or damages, or such loss or damages were reasonably foreseeable.

The Office of Public Works reserves the right to change the content and / or presentation of any of the information provided on these maps at its sole discretion, including these notes and disclaimer.

This disclaimer, guidance notes and conditions of use shall be governed by, and construed in accordance with, the laws of the Republic of Ireland. If any provision of these disclaimer, guidance notes and conditions of use shall be unlawful, void or for any reason unenforceable, that provision shall be deemed severable and shall not affect the validity and enforceability of the remaining provisions.

GUIDANCE NOTES

This bound volume contains future scenario flood maps. 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' flood maps, as they provide predicted flood extent and other information for a future scenario 'design' flood event (Mid-Range to 2100) that has an estimated probability of occurrence (e.g., the 0.5% AEP event – see below), rather than information for floods that have occurred in the past (which is presented on 'historic' flood maps).

The predicted extents are based on analysis and modelling. This includes:

- Numerical Modelling of combined storm surges and tide levels which was used to estimate extreme water levels along the coastline
- Statistical extreme value analysis and joint probability analysis to both historic recorded tide gauge data and data generated by numerical modelling, which allowed an estimation of the extreme water levels of defined annual exceedance probability (AEP) to be established along the coastline
- Definition of the plan extent of the predictive floodplain, by use of a Digital Terrain Model (DTM) commissioned by the Office of Public Works. The predictive flood outlines shown on these maps were calculated by combining the results of the surge and tide level modelling, the statistical analysis, the DTM using GIS technology and incorporating future allowances for both mean sea level rise and glacial isostatic adjustment (GIA).

The maps have been produced at a strategic level to provide an overview of coastal flood hazard and risk in Ireland, and minor or local features may not have been included in their preparation. A DTM is used to generate the maps, which is a 'bare earth' model of the ground surface with the digital removal of man-made and natural landscape features such as vegetation, buildings, bridges and embankments. The mapping process can show some of these man-made features, such as bridges and embankments, as flooded on the flood maps, when in reality they do not flood. In addition, 'cleansing' is undertaken during flood map production, which involves various processes such as the removal of very small areas of flooding that is remote and isolated, the removal of very small islands within the flooded area, etc. Therefore, the maps should not be used to assess the flood hazard and risk

associated with individual properties or point locations, or to replace a detailed local flood risk assessment. Local factors such as flood defence schemes, structures in or around river channels (e.g. bridges), buildings and other local influences, which might affect a coastal flood, have not been accounted for.

The maps were produced based on survey data captured prior to, and during the early part of the project. They do not account for changes in development, infrastructure or topography that occurred after the date of survey data capture (except for GIA).

The DTM is derived from airborne survey data. The majority of this data is Interferometric Synthetic Aperture Radar (IfSAR) data. Where Light Detection and Ranging (LiDAR) data was available, namely for some localised coastal areas in Dingle Bay, Tralee Bay and Shannon estuary, it was used in lieu of IfSAR data to derive the DTM.

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.**

Flood Event Probabilities

The maps refer to flood event probabilities in terms of a percentage Annual Exceedance Probability, or 'AEP'. This represents the probability of an event of this, or greater, severity occurring in any given year. These probabilities may also be expressed as odds (e.g., 100 to 1) of the event occurring in any given year. They are also commonly referred to in terms of a return period (e.g., the 100-year flood), although it should be understood that this does not mean the length of time that will elapse between two such events occurring, as, although unlikely, two very severe events may occur within a very short space of time.

Table 1 below sets out a range of flood event probabilities expressed in terms of AEP, and identifies their parallels under other forms of expression.

Table 1: Flood Event Probabilities

Annual Exceedance Probability (%)	Odds of Occurrence in any Given Year	Return Period (yrs)
50	2 : 1	2
20	5 : 1	5
10	10 : 1	10
5	20 : 1	20
2	50 : 1	50
1	100 : 1	100
0.5	200 : 1	200
0.2	500 : 1	500
0.1	1000 : 1	1000

Uncertainty

Although great care and modern, widely-accepted methods have been used to prepare the maps, there is a range of inherent uncertainties within the process of preparing the predicted flood extents maps. These include:

- Uncertainty in Flood Levels: This can arise due to uncertainties in topographic, bathymetric and other survey data, meteorological data, assumptions and / or approximations in the hydraulic / hydrodynamic models in representing physical reality, assumptions in the hydraulic / hydrodynamic modelling, and datum conversions, etc.
- Uncertainty in Flood Extents: This can arise due to uncertainties in flood levels, topographic and other survey data, assumptions and / or approximations in the way that flooding spreads over a floodplain, etc.

The flood maps are therefore only indicative, and the potential for inaccuracy should be recognised if these maps are to be used for any purpose.

Types of Flood Map

This volume contains only flood extent maps as outlined below. Further details on this type of map, including the methods of derivation, assumptions made, data used, etc. are provided in the relevant project reports.

Flood Extent Maps

Flood extent maps contained in this volume show the predicted extents of flooding for future scenario flood events of two estimated probabilities of occurrence:

- 0.5% AEP flood event
- 0.1% AEP flood event

It should be noted that the flood extent maps indicate the predicted maximum extent of flooding (subject to limitations referred to herein), and flooding in some areas, such as near the edge of the flooded area, might be very shallow.

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.

Consideration of Projected Future Changes in Climate

The maps produced in this bound volume represent a projected future scenario for the year 2100 and include allowances for projected future changes in climate and glacial isostatic adjustment (GIA). The maps represent a Mid-Range Future Scenario (MRFS) reflecting changes that are within the typical range projected.

The allowances used for this Mid-Range Future Scenario are as follows:-

Mean Sea Level Rise: + 500 mm (to 2100)
Land Movement (GIA): Varies - 0.5 to – 0.2 mm/year (Shannon Estuary)

This volume includes maps that show the predicted extents of (tidal/coastal) flooding for the MRFS for flood events of two estimated probabilities of occurrence:-

0.5 % AEP
0.1% AEP

The future scenario water levels shown on the maps are relative to Ordnance Datum Malin and include the above mean sea level rise allowance (+ 500mm) but have not been adjusted for GIA.

Sources of Flooding Not Mapped

The maps indicate only the extents associated with flooding from coastal areas and the sea. There are however many other possible sources of flooding, such as fluvial flooding from rivers, surcharged urban drainage systems, ponding rainwater, groundwater, overtopping or breaching of water retaining structures (such as embankments and reservoirs), etc. Flooding from these other sources have not been mapped, and so areas that are not shown as being within a flood extent may therefore be at risk from flooding from one of these other sources.

CONDITIONS OF USE

Please read the following statements and conditions of use of the maps in this bound volume carefully. Use of these maps is conditional upon the following:-

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.

The user acknowledges that the flood-related data (including flood extents, levels, etc.) presented on the maps contained within this bound volume are copyright of the Office of Public Works.

The user agrees that the Office of Public Works has the absolute right to reprocess, revise, add to, or remove any of the information shown on these maps at any time, and that this will in no way render them, the State or it's servants or agents liable for any damage or cost incurred as a result of such acts.

The user will use any data shown on these maps in an appropriate and responsible manner and in accordance with this disclaimer, guidance notes and conditions of use.

The user understands that the Office of Public Works does not guarantee the accuracy of any of the data shown on these maps and it is the user's responsibility to independently verify and quality control any of the data used and ensure that it is fit for their intended use.

The user will not pass on any of the maps to any third party without ensuring that said party is fully aware of this disclaimer, guidance notes and conditions of use.

The user accepts all responsibility for the use by them of the information shown on these maps, or that which is passed to a third party by them, and will in no way seek to hold the State or the Office of Public Works, its servants or agents liable for any damage or loss howsoever arising out of the use or interpretation of this information.

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:

Flood Mapping Queries
Engineering Services
Office of Public Works
17-19 Lower Hatch Street
Dublin 2

ICPSS PHASE IV - SHANNON ESTUARY - MRFS

RPS

Predicted Extreme Water Levels Associated with Combined Tide and Surge

PREDICTION POINT ID	ANNUAL EXCEEDANCE PROBABILITY (AEP)								CO-ORDINATES OF PREDICTION POINTS	
	50%	20%	10%	5%	2%	1%	0.5%	0.1%	EASTINGS	NORTHINGS
S1	3.14	3.26	3.35	3.44	3.56	3.65	3.73	3.93	82688	148391
S2	3.21	3.32	3.41	3.49	3.60	3.68	3.76	3.94	84845	138260
S3	3.23	3.35	3.43	3.52	3.63	3.72	3.80	3.99	85474	144422
S4	3.21	3.33	3.42	3.51	3.62	3.71	3.80	4.00	86013	151950
S5	3.22	3.34	3.42	3.51	3.62	3.70	3.79	3.98	88695	148419
S6	3.24	3.36	3.45	3.53	3.65	3.74	3.82	4.02	91646	152584
S7	3.27	3.39	3.48	3.57	3.68	3.77	3.85	4.05	95785	147777
S8	3.26	3.39	3.48	3.57	3.69	3.78	3.87	4.08	98052	153862
S9	3.29	3.41	3.50	3.59	3.70	3.79	3.87	4.07	99936	147831
S10	3.25	3.37	3.46	3.55	3.67	3.76	3.85	4.05	103931	150900
S11	3.27	3.39	3.49	3.58	3.70	3.79	3.88	4.09	106638	150798
S12	3.22	3.34	3.43	3.52	3.63	3.71	3.79	3.98	108294	149661
S13	3.20	3.33	3.42	3.51	3.62	3.71	3.80	4.00	109699	148606
S14	3.22	3.35	3.44	3.53	3.65	3.74	3.83	4.03	112483	148567
S15	3.22	3.36	3.46	3.56	3.70	3.80	3.90	4.13	115609	151987
S16	3.25	3.39	3.50	3.60	3.74	3.84	3.95	4.19	118265	150532
S17	3.28	3.43	3.54	3.66	3.80	3.92	4.03	4.29	121126	152131
S18	3.33	3.49	3.61	3.72	3.88	4.00	4.12	4.39	123686	152457
S19	3.39	3.54	3.67	3.79	3.95	4.07	4.19	4.47	126062	153757
S20	3.43	3.59	3.72	3.84	4.01	4.13	4.26	4.55	127363	157071
S21	3.53	3.70	3.82	3.95	4.11	4.24	4.36	4.65	131090	154017
S22	3.62	3.81	3.94	4.08	4.25	4.39	4.52	4.83	135251	158930
S23	3.68	3.87	4.02	4.16	4.36	4.50	4.65	4.98	138731	157900
S24	3.72	3.92	4.07	4.22	4.42	4.57	4.71	5.06	140612	159730
S25	3.79	4.00	4.16	4.31	4.52	4.67	4.83	5.18	144515	159263
S26	3.90	4.14	4.32	4.50	4.74	4.91	5.09	5.50	149662	158626

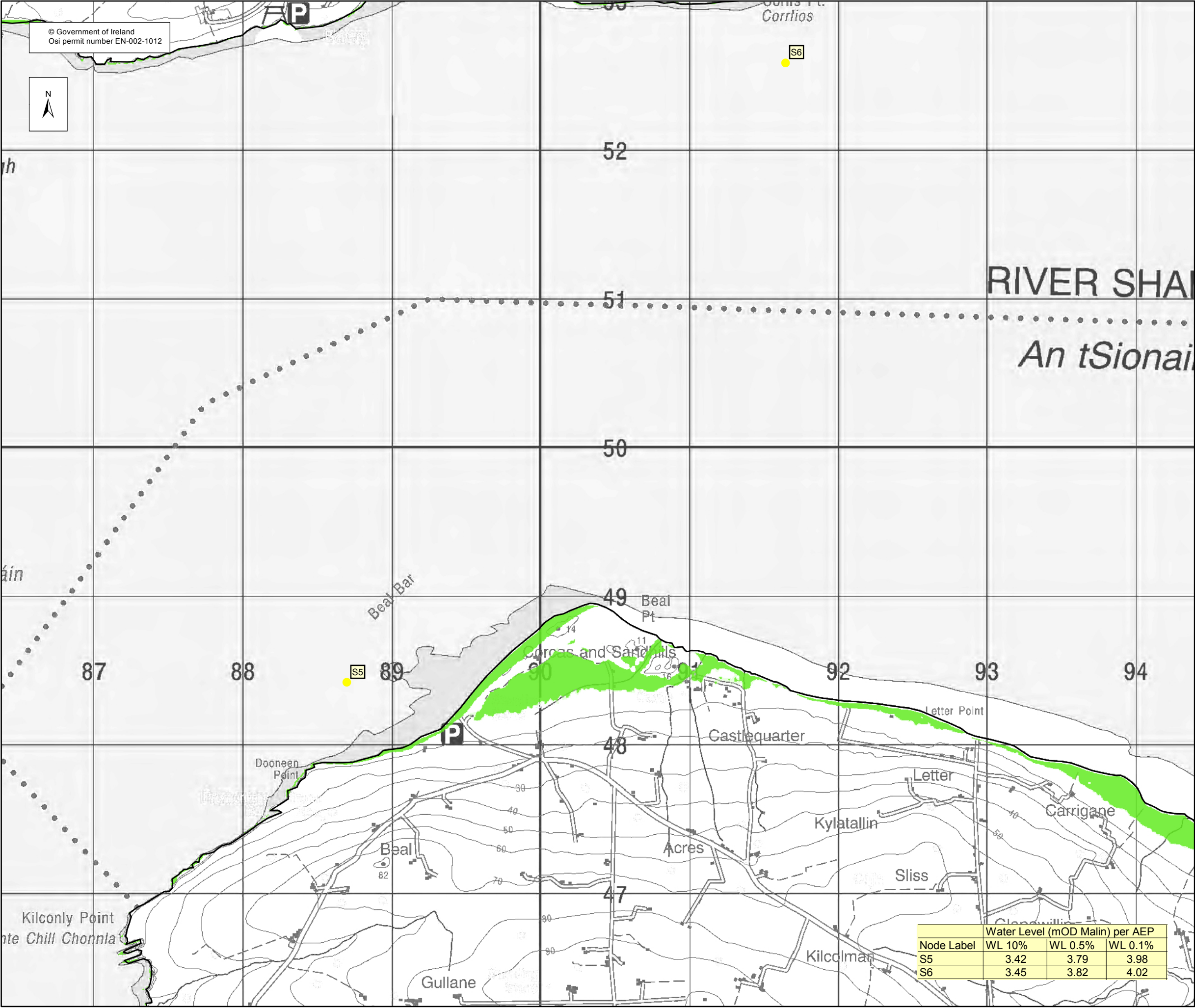
Notes

- 1 - All water levels shown are in metres and referenced to Ordnance Datum Malin
- 2 - All co-ordinates shown are in Irish Grid (TM65)
- 3 - AEP denotes Annual Exceedance Probability

Prepared By: RPS Date: June 2012

Checked By: JMC & JR Date: June 2012

Table No.: SW/SHAN/MRFS/WL/1 Revision: 1

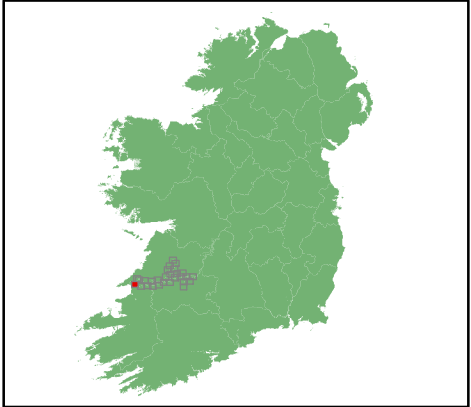


© Government of Ireland
Osi permit number EN-002-1012



Node Label	Water Level (mOD Malin) per AEP		
	WL 10%	WL 0.5%	WL 0.1%
S5	3.42	3.79	3.98
S6	3.45	3.82	4.02

Location Plan :



EXTENT MAP

Legend:

- 0.5% AEP FLOOD EXTENT
(1 in 200 chance in any given year)
- 0.1% AEP FLOOD EXTENT
(1 in 1000 chance in any given year)
- High Water Mark (HWM)
- Node Point
- SW 15 Node Label (refer to table)

USER NOTE :

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF A BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.



Elmwood House
74 Boucher Road
Belfast
BT 12 6RZ
Northern Ireland



Office of Public Works
17-19 Lower Hatch Street
Dublin 2
Ireland

Project :

IRISH COASTAL PROTECTION STRATEGY
STUDY - PHASE IV

Map :

SHANNON ESTUARY FLOOD EXTENT MAP

Map Type : FLOOD EXTENT

Source : TIDAL FLOODING

Map area : RURAL AREA

Scenario : MID RANGE FUTURE SCENARIO

Figure By : PJW

Date : Apr 2012

Checked By : JMC & JR

Date : Apr 2012

Figure No. :

SH / RA / EXT / MRFS / 1

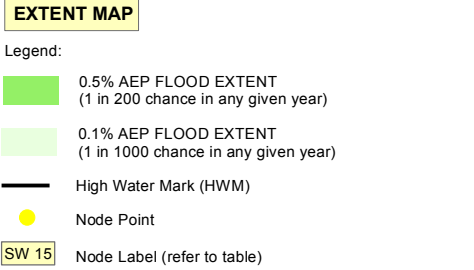
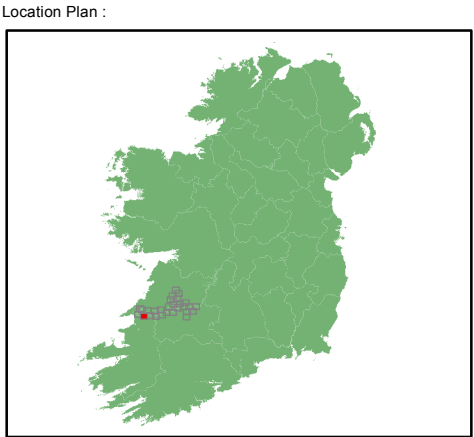
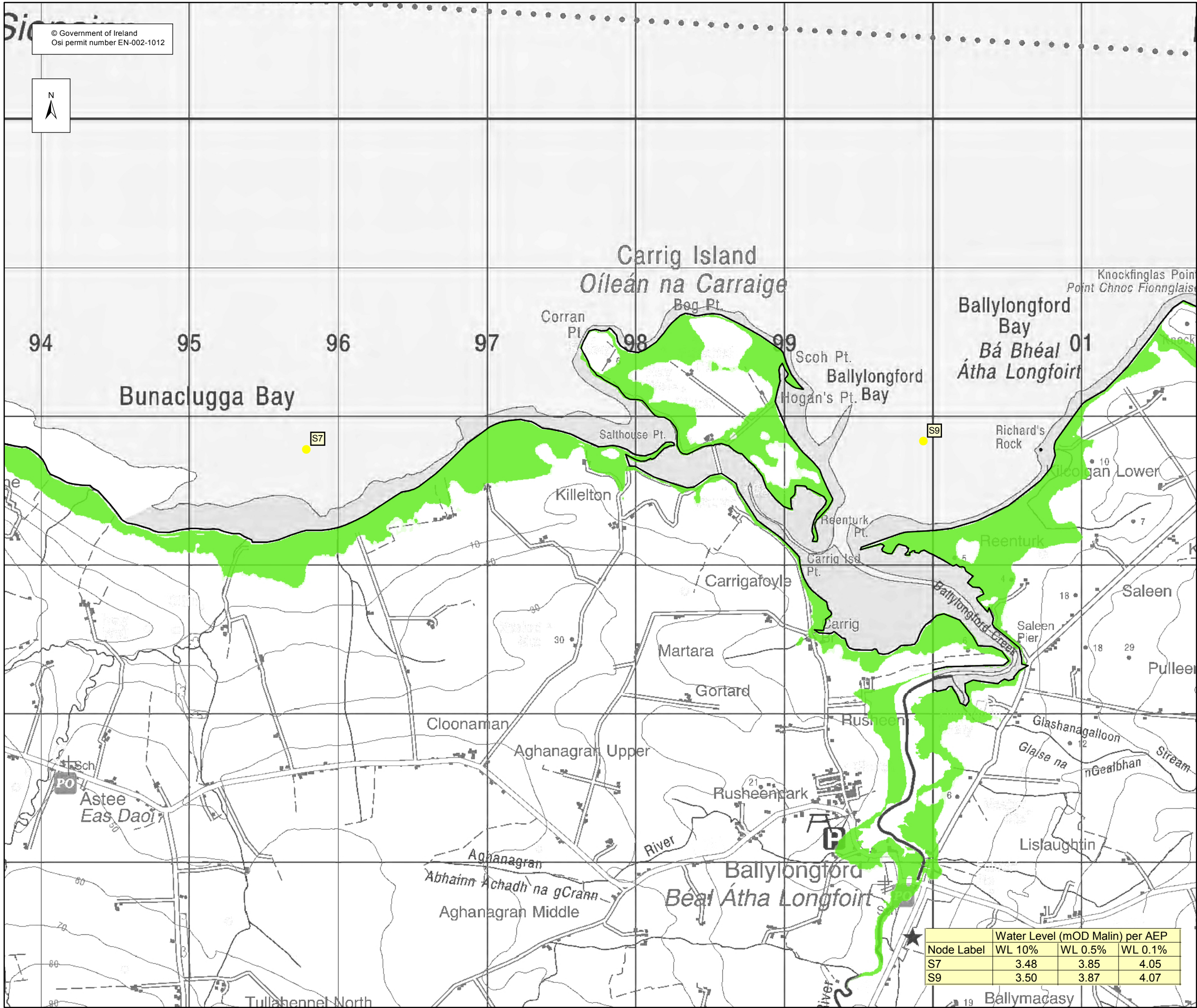
Revision

0

Drawing Scale : 1:25,000

Plot Scale : 1:1 @ A3





USER NOTE :

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF A BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.



Project :

IRISH COASTAL PROTECTION STRATEGY
STUDY - PHASE IV

Map :

SHANNON ESTUARY FLOOD EXTENT MAP

Map Type : FLOOD EXTENT

Source : TIDAL FLOODING

Map area : RURAL AREA

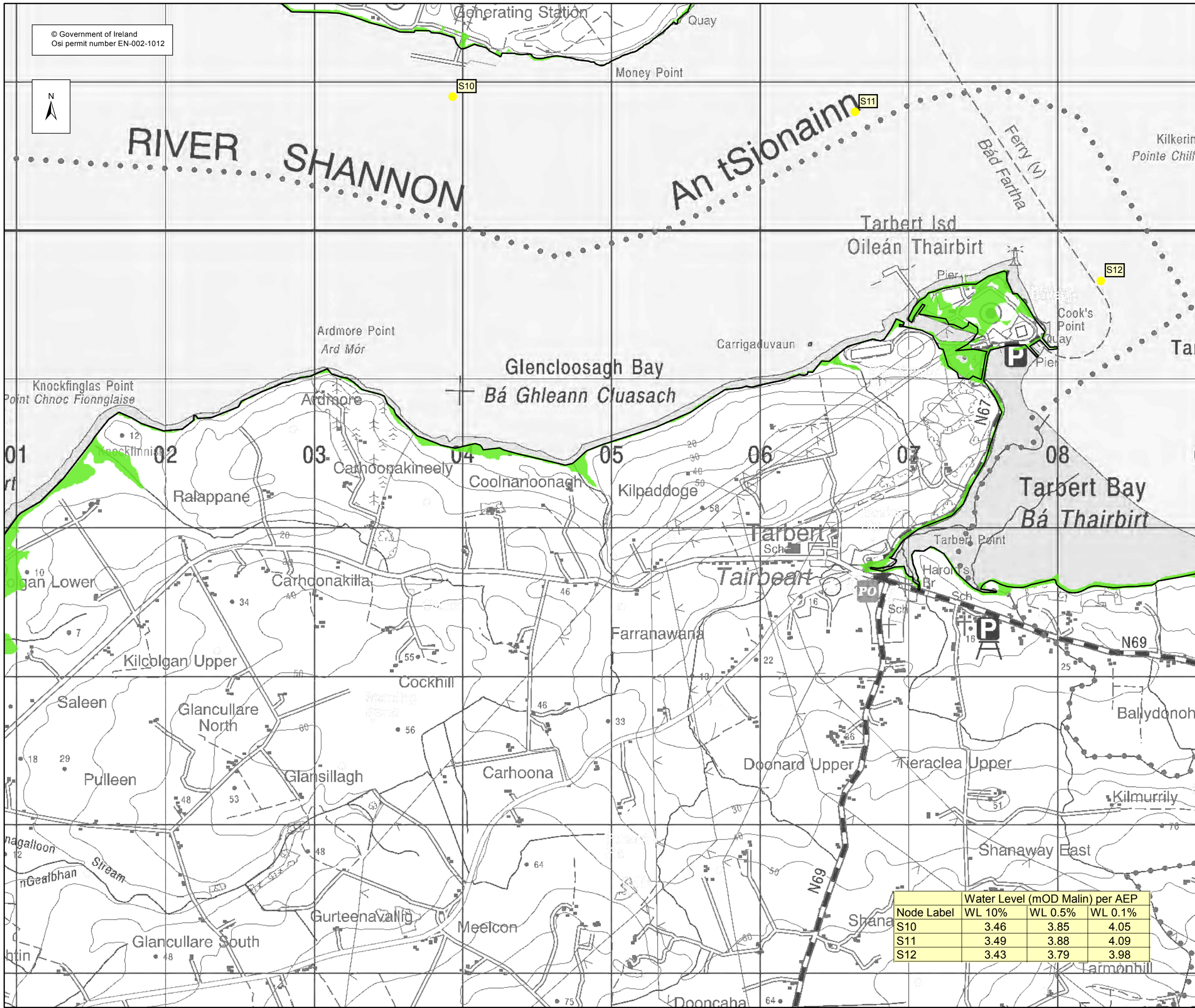
Scenario : MID RANGE FUTURE SCENARIO

Figure By : PJW Date : Apr 2012

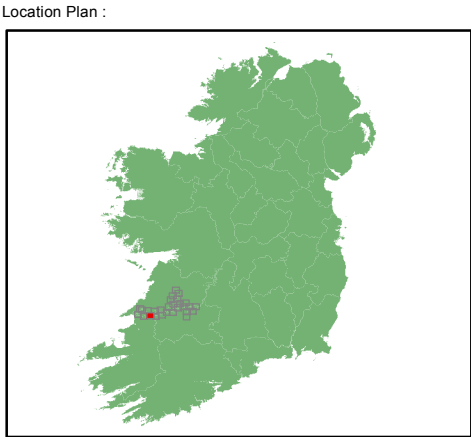
Checked By : JMC & JR Date : Apr 2012

Figure No. : SH / RA / EXT / MRFS / 2 Revision : 0

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



© Government of Ireland
Osi permit number EN-002-1012



EXTENT MAP

Legend:

- 0.5% AEP FLOOD EXTENT (1 in 200 chance in any given year)
- 0.1% AEP FLOOD EXTENT (1 in 1000 chance in any given year)
- High Water Mark (HWM)
- Node Point
- SW 15 Node Label (refer to table)

USER NOTE :

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF A BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.

Elmwood House
74 Boucher Road
Belfast
BT 12 6RZ
Northern Ireland

Office of Public Works
17-19 Lower Hatch Street
Dublin 2
Ireland

Project :
IRISH COASTAL PROTECTION STRATEGY STUDY - PHASE IV

Map :
SHANNON ESTUARY FLOOD EXTENT MAP

Map Type : FLOOD EXTENT
Source : TIDAL FLOODING
Map area : RURAL AREA
Scenario : MID RANGE FUTURE SCENARIO

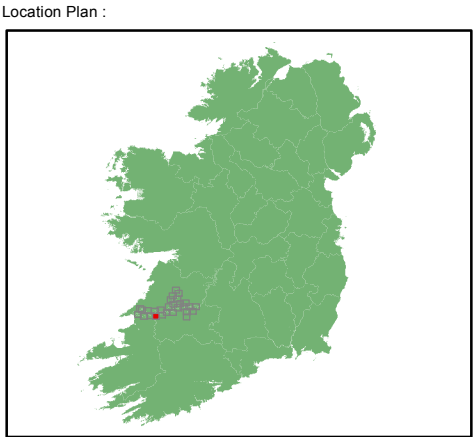
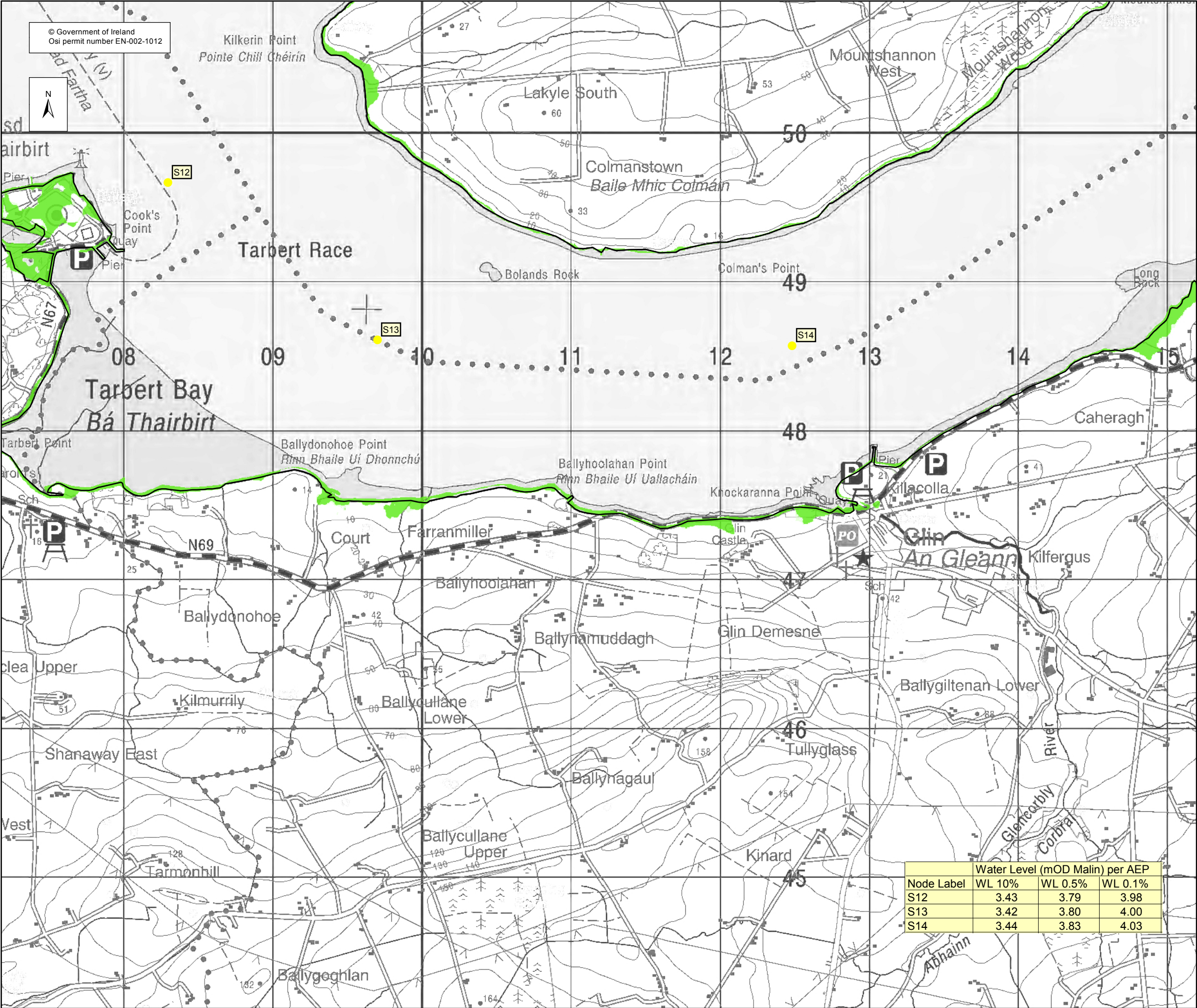
Figure By : PJW Date : Apr 2012
Checked By : JMC & JR Date : Apr 2012

Node Label	Water Level (mOD Malin) per AEP		
	WL 10%	WL 0.5%	WL 0.1%
S10	3.46	3.85	4.05
S11	3.49	3.88	4.09
S12	3.43	3.79	3.98

Figure No. :
SH / RA / EXT / MRFS / 3

Revision
0

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



EXTENT MAP

Legend:

- 0.5% AEP FLOOD EXTENT
(1 in 200 chance in any given year)
- 0.1% AEP FLOOD EXTENT
(1 in 1000 chance in any given year)
- High Water Mark (HWM)
- Node Point
- SW 15 Node Label (refer to table)

USER NOTE :

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF A BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.



Elmwood House
74 Boucher Road
Belfast
BT 12 6RZ
Northern Ireland



Office of Public Works
17-19 Lower Hatch Street
Dublin 2
Ireland

Project :
**IRISH COASTAL PROTECTION STRATEGY
STUDY - PHASE IV**

Map :
SHANNON ESTUARY FLOOD EXTENT MAP

Map Type : FLOOD EXTENT

Source : TIDAL FLOODING

Map area : RURAL AREA

Scenario : MID RANGE FUTURE SCENARIO

Figure By : PJW Date : Apr 2012

Checked By : JMC & JR Date : Apr 2012

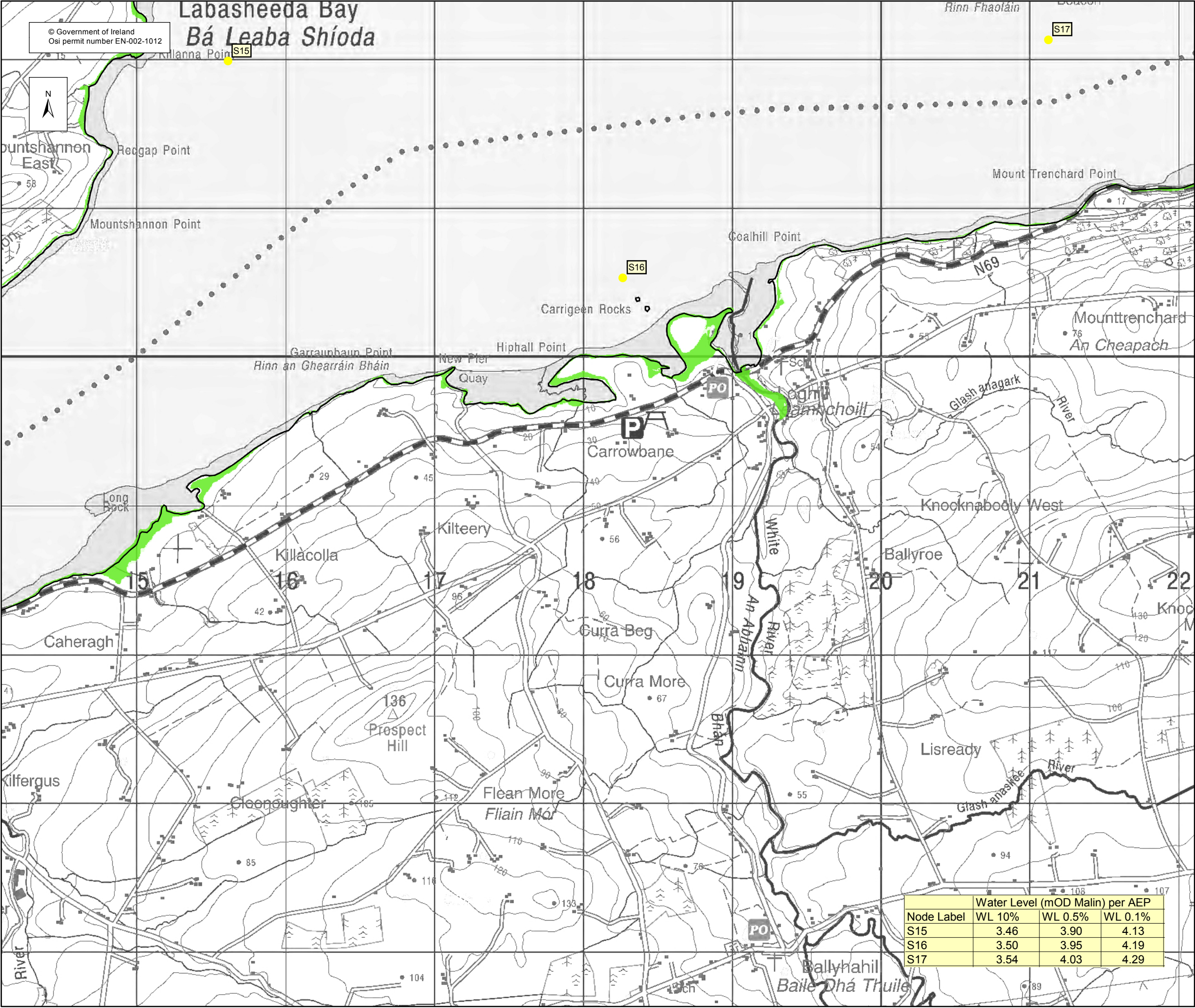
Figure No. :
SH / RA / EXT / MRFS / 4

Revision
0

Drawing Scale : 1:25,000

Plot Scale : 1:1 @ A3

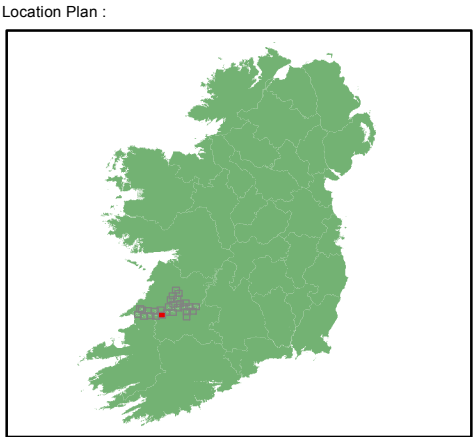
Water Level (mOD Malin) per AEP			
Node Label	WL 10%	WL 0.5%	WL 0.1%
S12	3.43	3.79	3.98
S13	3.42	3.80	4.00
S14	3.44	3.83	4.03



© Government of Ireland
Osi permit number EN-002-1012



Node Label	Water Level (mOD Malin) per AEP		
	WL 10%	WL 0.5%	WL 0.1%
S15	3.46	3.90	4.13
S16	3.50	3.95	4.19
S17	3.54	4.03	4.29



EXTENT MAP

- Legend:
- 0.5% AEP FLOOD EXTENT
(1 in 200 chance in any given year)
 - 0.1% AEP FLOOD EXTENT
(1 in 1000 chance in any given year)
 - High Water Mark (HWM)
 - Node Point
 - SW 15 Node Label (refer to table)

USER NOTE :
USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF A BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.

Elmwood House
74 Boucher Road
Belfast
BT 12 6RZ
Northern Ireland

Office of Public Works
17-19 Lower Hatch Street
Dublin 2
Ireland

Project :
IRISH COASTAL PROTECTION STRATEGY
STUDY - PHASE IV

Map :
SHANNON ESTUARY FLOOD EXTENT MAP

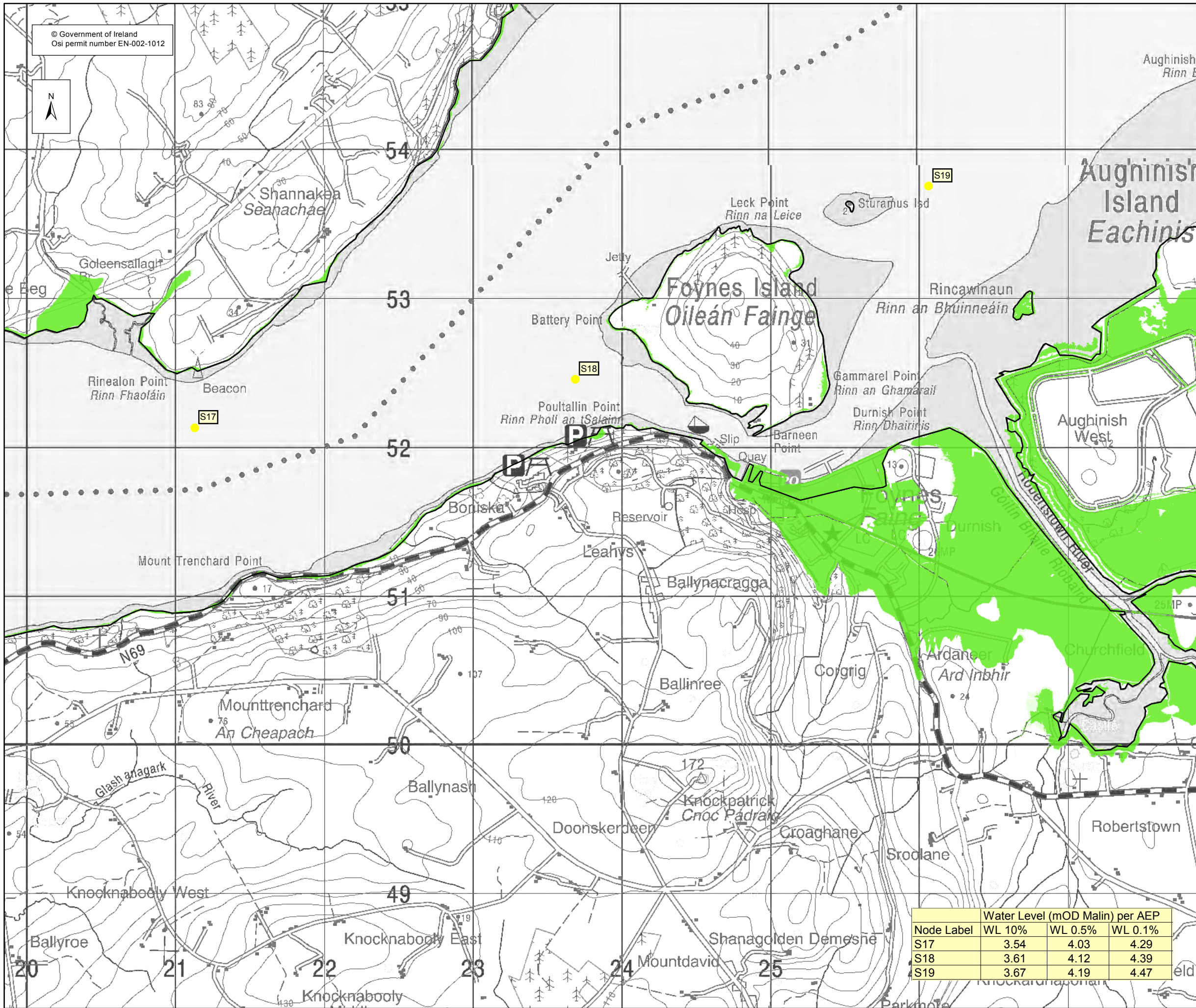
Map Type : FLOOD EXTENT
Source : TIDAL FLOODING
Map area : RURAL AREA
Scenario : MID RANGE FUTURE SCENARIO

Figure By : PJW Date : Apr 2012
Checked By : JMC & JR Date : Apr 2012

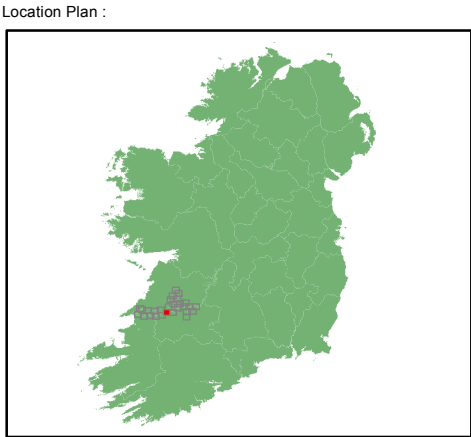
Figure No. :
SH / RA / EXT / MRFS / 5

Revision
0

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



© Government of Ireland
Osi permit number EN-002-1012



EXTENT MAP

Legend:

- 0.5% AEP FLOOD EXTENT
(1 in 200 chance in any given year)
- 0.1% AEP FLOOD EXTENT
(1 in 1000 chance in any given year)
- High Water Mark (HWM)
- Node Point
- SW 15 Node Label (refer to table)

USER NOTE :

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF A BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.

Elmwood House
74 Boucher Road
Belfast
BT 12 6RZ
Northern Ireland

Office of Public Works
17-19 Lower Hatch Street
Dublin 2
Ireland

Project :
**IRISH COASTAL PROTECTION STRATEGY
STUDY - PHASE IV**

Map :
SHANNON ESTUARY FLOOD EXTENT MAP

Map Type : FLOOD EXTENT
Source : TIDAL FLOODING
Map area : RURAL AREA
Scenario : MID RANGE FUTURE SCENARIO

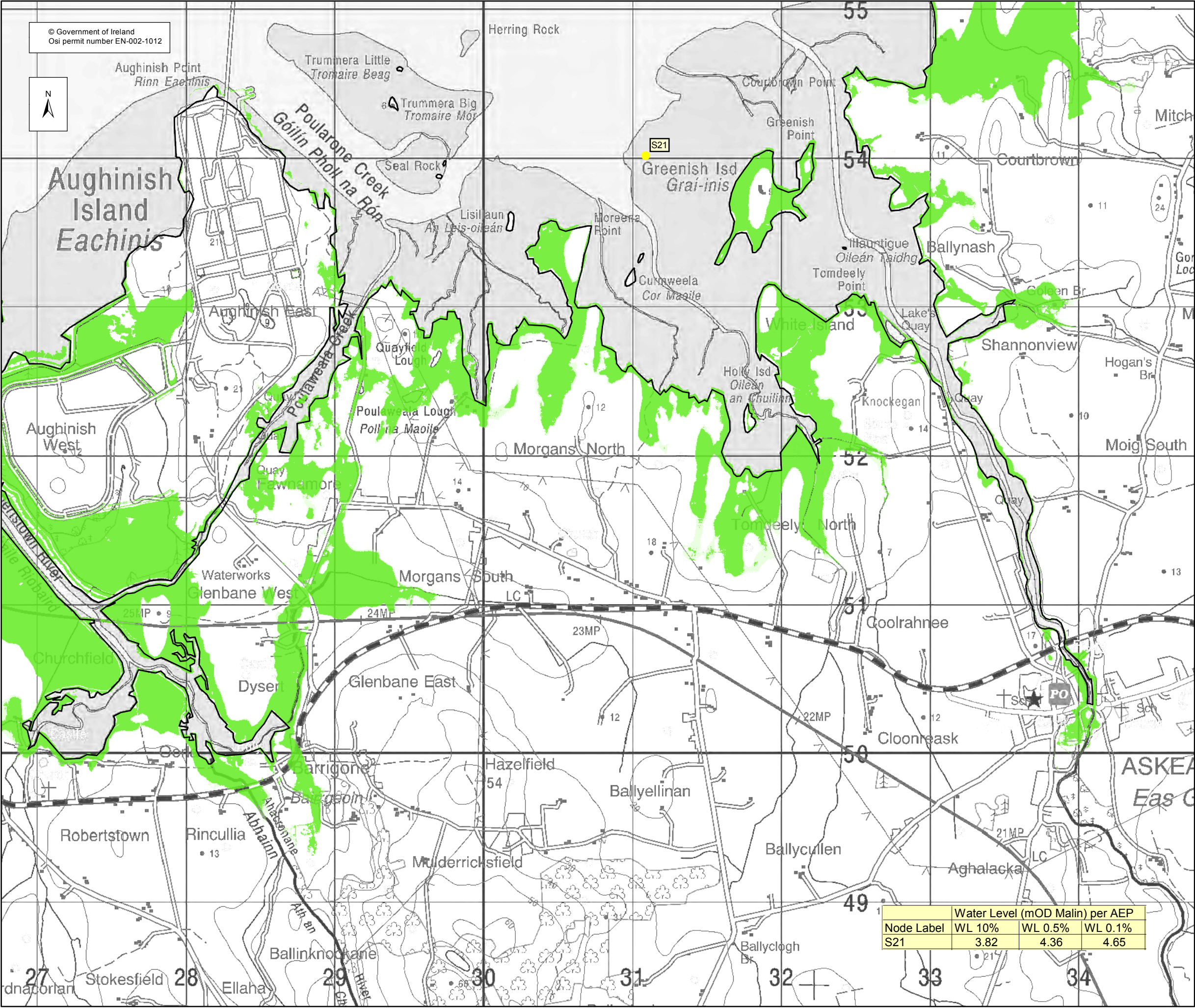
Figure By : PJW Date : Apr 2012
Checked By : JMC & JR Date : Apr 2012

Node Label	Water Level (mOD Malin) per AEP		
	WL 10%	WL 0.5%	WL 0.1%
S17	3.54	4.03	4.29
S18	3.61	4.12	4.39
S19	3.67	4.19	4.47

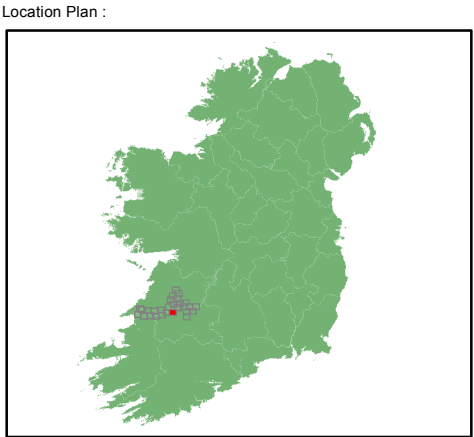
Figure No. :
SH / RA / EXT / MRFS / 6

Revision
0

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



© Government of Ireland
Osi permit number EN-002-1012



EXTENT MAP

Legend:

- 0.5% AEP FLOOD EXTENT
(1 in 200 chance in any given year)
- 0.1% AEP FLOOD EXTENT
(1 in 1000 chance in any given year)
- High Water Mark (HWM)
- Node Point
- SW 15 Node Label (refer to table)

USER NOTE :

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF A BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.



Elmwood House
74 Boucher Road
Belfast
BT 12 6RZ
Northern Ireland



Office of Public Works
17-19 Lower Hatch Street
Dublin 2
Ireland

Project :
**IRISH COASTAL PROTECTION STRATEGY
STUDY - PHASE IV**

Map :
SHANNON ESTUARY FLOOD EXTENT MAP

Map Type : FLOOD EXTENT
Source : TIDAL FLOODING
Map area : RURAL AREA
Scenario : MID RANGE FUTURE SCENARIO

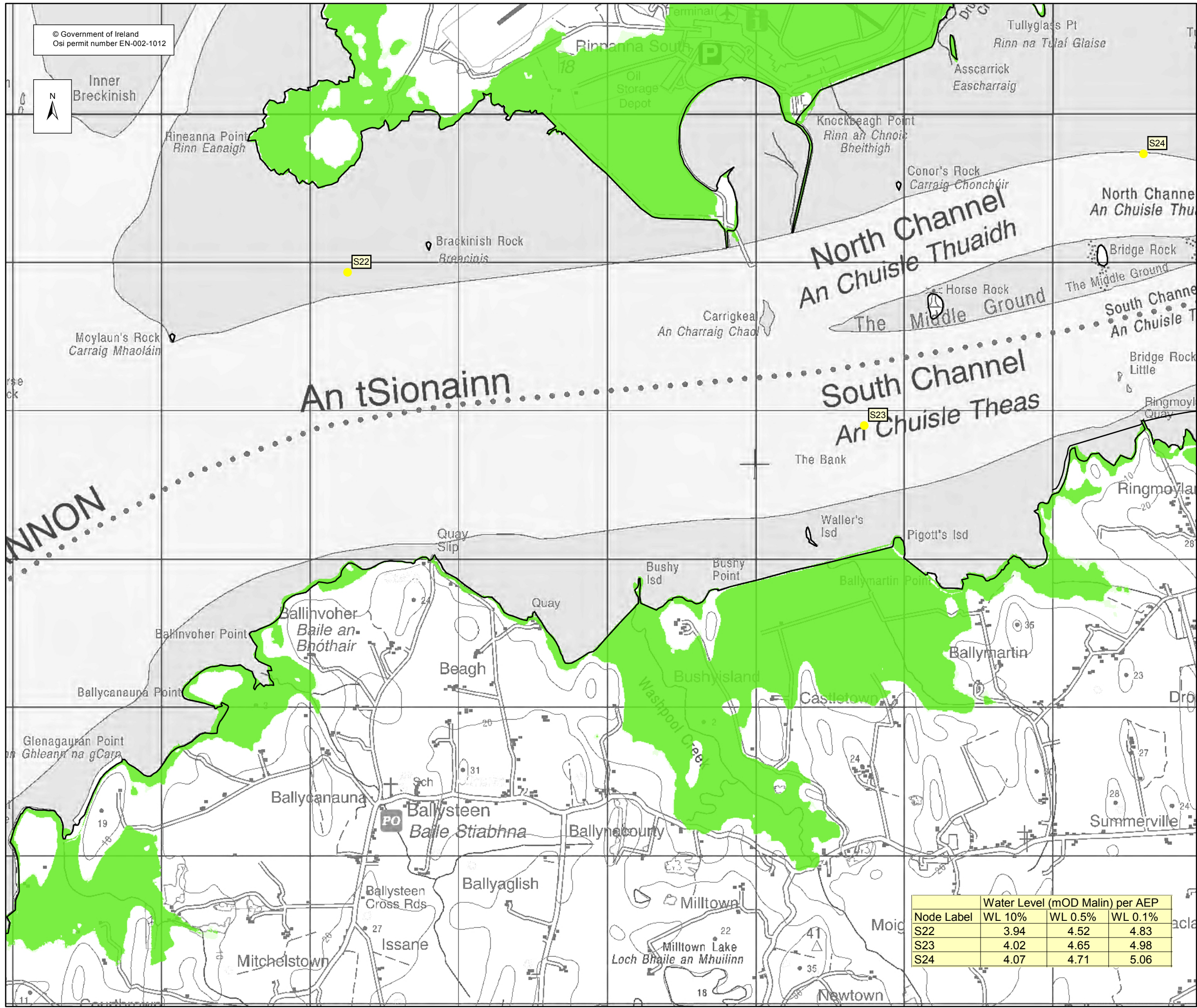
Figure By : PJW Date : Apr 2012
Checked By : JMC & JR Date : Apr 2012

Figure No. : SH / RA / EXT / MRFS / 7 Revision : 0

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

Node Label	Water Level (mOD Malin) per AEP		
	WL 10%	WL 0.5%	WL 0.1%
S21	3.82	4.36	4.65

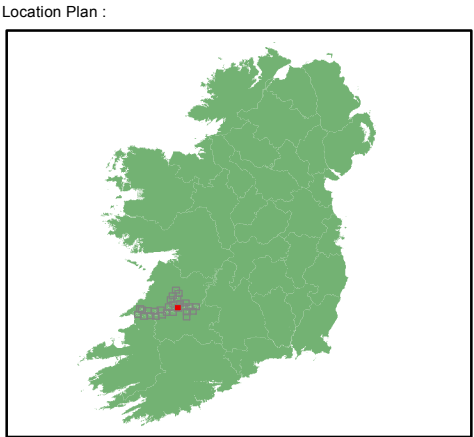




© Government of Ireland
Osi permit number EN-002-1012



Node Label	Water Level (mOD Malin) per AEP		
	WL 10%	WL 0.5%	WL 0.1%
S22	3.94	4.52	4.83
S23	4.02	4.65	4.98
S24	4.07	4.71	5.06



EXTENT MAP

Legend:

- 0.5% AEP FLOOD EXTENT
(1 in 200 chance in any given year)
- 0.1% AEP FLOOD EXTENT
(1 in 1000 chance in any given year)
- High Water Mark (HWM)
- Node Point
- SW 15 Node Label (refer to table)

USER NOTE :

USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION, LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE PROVIDED AT THE FRONT OF THIS BOUND VOLUME. IF THIS MAP DOES NOT FORM PART OF A BOUND VOLUME, IT SHOULD NOT BE USED FOR ANY PURPOSE.

Elmwood House
74 Boucher Road
Belfast
BT 12 6RZ
Northern Ireland

Office of Public Works
17-19 Lower Hatch Street
Dublin 2
Ireland

Project :
IRISH COASTAL PROTECTION STRATEGY
STUDY - PHASE IV

Map :
SHANNON ESTUARY FLOOD EXTENT MAP

Map Type : FLOOD EXTENT
Source : TIDAL FLOODING
Map area : RURAL AREA
Scenario : MID RANGE FUTURE SCENARIO

Figure By : PJW Date : Apr 2012
Checked By : JMC & JR Date : Apr 2012

Figure No. : SH / RA / EXT / MRFS / 8 Revision : 0

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