LOUTH COUNTY COUNCIL

APPROPRIATE ASSESSMENT SCREENING REPORT

FOR

PROPOSED PLAYGROUND,

THE GLEN PARK, DROGHEDA, CO. LOUTH

VOLUME III. APPENDICES

31st March 2026

DOCUMENT ISSUE STATUS

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MANAGING DIRECTOR	Padraic Mulroy	Project Director	Padraic Mulroy	31/03/2026

LIST OF APPENDICES

APP. NO.	DESCRIPTION
1	Desk Study Information on Topsoils, Subsoils, Geology, Hydrogeology, Hydrology, Borehole Drilling Data and Historical Data from EPA, OSI, www.catchment.ie.
2	*NPWS Site Synopsis: River Boyne and River Blackwater SAC 002299 (2014); Boyne Estuary SPA (2015), Boyne Coast and Estuary SAC (2016); and the North-West Irish Sea SPA 004236 (2023)* *NPWS Conservation Objectives: River Boyne and River Blackwater SAC 002299 (2021); Boyne Estuary SPA (2013), Boyne Coast and Estuary SAC (2012); and the North-West Irish Sea SPA 004236 (2023)* National Biodiversity Data Centre Species Data and 1km & 2km Grid Reference Reports
3	Stormwater Drainage and Foulwater Drainage Drawings for Drogheda in the Vicinity of the Site

APPENDIX 1

DESK STUDY INFORMATION ON TOPSOILS, SUBSOILS, GEOLOGY, HYDROGEOLOGY, HYDROLOGY, BOREHOLE DRILLING DATA & HISTORICAL DATA GATHERED FROM OSI, EPA, GSI & WWW.CATCHMENT.IE

IRELAND

General Soil Map

Second Edition

Prepared and published by the National Soil Survey, An Foras Taluntais.
Head of National Soil Survey: M.J.Gardiner.

Scale: 1:575,000

1 cm equals 5·75 Km

10 0 10 20 30 40 50 60 70 Kilometres

10 0 10 20 30 40 Miles

Soil Boundaries
Roads
Rivers
Cities
Towns and Villages
Extensive Outcropping Rock
Railways
Major Lakes
Altitudes ·1380
County Boundaries
Northern Ireland Boundary

RELIABILITY MAP

Detailed Reconnaissance Surveys.
Reconnaissance Surveys.
Preliminary Reconnaissance Surveys.

NATIONAL GRID

The Grid is divided into lettered Sub-Zones as shown by the diagram. The termination of the grid lines are shown at 10 Km intervals on the frame line.

A grid reference consists of the appropriate Sub-Zone letter, the Easting co-ordinate, and the Northing co-ordinate of the position given in that sequence

EXAMPLE : Port Laoise S 4 9

MAP COMPILATION: M.J.Gardiner and T.Radford.
Compiled from data supplied by:
Research Staff: M.Bulfin, M.J.Conry, E.Culleton, S.Diamond, T.F.Finch, M.J.Gardiner, R.F.Hammond, J.Kiely, M.Walsh.
Technical Staff: E.Brennan, P.J.Burke, A.Comey, P.Feeney, J.Hartigan, T.Martin, T.O'Shea, T.Radford.
Soils of Northern Ireland: S.McConaghy, V.McAllister.
Cartography: V.Staples, J.Lynch.

Except for soil number changes dictated by the enlarged legend, the soils information for Northern Ireland is the same as that on the first edition, 1969 and sanctioned by the Controller of H.M.Stationery Office. Smaller islands not surveyed.

Broad Physiographic Divisions	Nos.	Principal Soil	Associated Soils	Parent Material	Per cent of total area
Mountain and Hill	1	Peaty Podzols (75%) [1]	Lithosols (15%), Blanket Peat (10%)	Mostly granite – sandstone	7·31 [2] 6·39 [3]
	2	Peaty Gleys* (70)	Blanket Peat (20) Peaty Podzols (10)	Mostly mica schist, gneiss, quartzite and sandstone	·30 1·41
	3	Blanket Peat (75)	Shallow Brown Earths [4] (25)	Mostly basalt	— 1·02
	4	Lithosols and Outcropping Rock (70)	Blanket Peat (25) Peaty Podzols (5)	Mostly sandstone, granite, quartzite or mica schist	2·30 1·91
	5	Blanket Peat (High level)			5·67 5·11
Hill	6	Brown Podzolics (80)	Gleys (15) Podzols (5)	Mostly sandstone	1·88 2·12
	7	Rendzinas (15) with Outcropping Rock (75)	Lithosols (5) Shallow Brown Earths(5)	Limestone	·81 ·68
	8	Brown Podzolics (60)	Gleys (20), Podzols (10) Blanket Peats (10)	Mainly granite	·52 ·43
	9	Brown Podzolics (80)	Gleys (15) Podzols (5)	Ordovician – Silurian – Cambrian shales and mica schist	1·85 1·54
	10	Grey Brown Podzolics (75)	Gleys (15), Brown Earths (10)	Mostly limestone and shale	·37 ·31
	11	Gleys* (90)	Brown Earths (10)	Mostly Silurian shale	·35 ·29

* Dominantly influenced by surface – water impedence.
** Dominantly influenced by ground water, seepage or springs.

1. Percentage (approximately) of the soil association area.
2. "Total area" refers to area of Republic of Ireland minus major lake and urban areas.

Broad Physiographic Divisions	Nos.	Principal Soil	Associated Soils	Parent Material	Per cent of total area
Rolling Lowland	12	Acid Brown Earths (70%) (Coarse texture)	Gleys (25%) Podzols (5%)	Mostly granite or rhyolite glacial till	1·13 2·50
	13	Acid Brown Earths (70)	Grey Brown Podzolics (15) Gleys (15)	Mixed sandstone, limestone glacial till	1·69 1·40
	14	Acid Brown Earths (75)	Gleys (15) Brown Podzolics (10)	Ordovician – Silurian – Cambrian shale glacial till	4·22 4·32
	15	Brown Podzolics (60)	Acid Brown Earths (20) Gleys (20)	Sandstone, Lower Avonian shale glacial till	6·31 5·23
	16	Acid Brown Earths (90)	Gleys (5), Regosols (3), Podzols (2)	Morainic sands and gravels and blown sands	·42 ·35
	17	Acid Brown Earths (90)	Gleys (5) Peaty Gleys (5)	Basalt glacial till	·02 1·35
	18	Podzols (70)	Gleys (20), Peat (10)	Sandstone, granite, mica schist glacial till	·74 ·61
	19	Acid Brown Earths (70)	Gleys (15), Peaty Gleys (15)	Upper Carboniferous shale and sandstone glacial till	·77 ·64
	20	Brown Podzolics (60)	Acid Brown Earths (20), Gleys (20)	Mica schist glacial till	1·41 2·46
	21	Gleys (75)	Peaty Gleys (25)	Sandstone glacial till	2·95 2·78
	22	Gleys (75)*	Acid Brown Earths (15) Peat (10)	Upper Carboniferous shale glacial till	4·86 4·27
	23	Lithosols (80)	Rock Outcrop and Peat (20)	Granite and sandstone and shallow glacial till (quartzite in places)	1·31 1·08
	24	Blanket Peat (Low level)			5·14 4·40

3. "Total area" of the Republic of Ireland plus Northern Ireland.
4. "Brown Earths" refer to brown earth soils of medium to high base status.

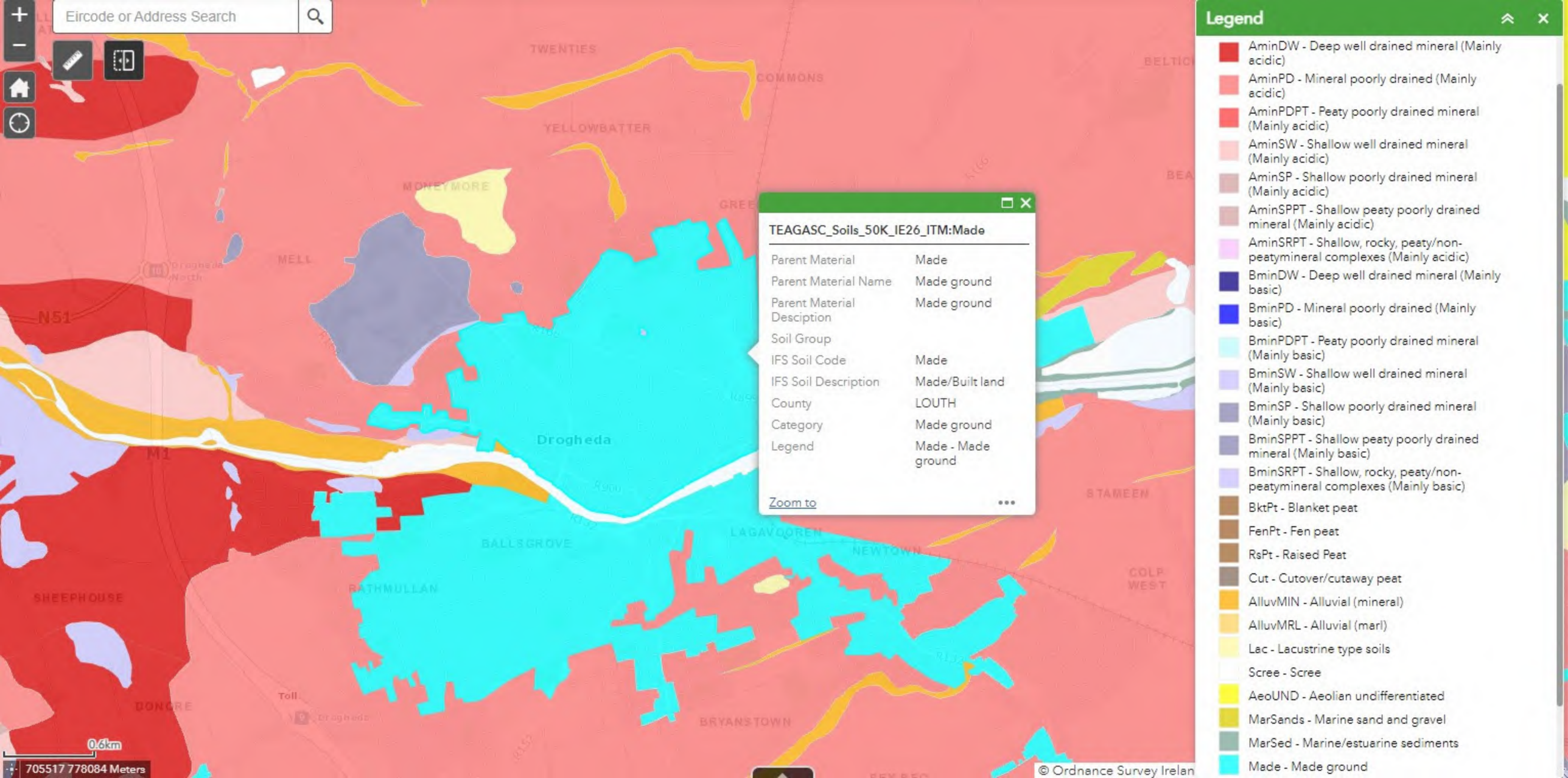
Broad Physiographic Divisions	Nos.	Principal Soil	Associated Soils	Parent Material	Per cent of total area
Drumlin (Wet Mineral and Organic Soils)	25	Gleys (50%)*	Acid Brown Earths (40%) Interdrumlin Peat and Peaty Gleys (10%)	Mostly Ordovician – Silurian shale sandstone glacial till	2·57 3·66
	26	Gleys (60)*	Acid Brown Earths (40)	Basalt glacial till	— 1·86
	27	Gleys (85)*	Interdrumlin Peat and Peaty Gleys (15)	Mostly Upper Carboniferous limestone and shale – sandstone glacial till	3·77 4·73
Drumlin (Drier Mineral and Organic Soils)	28	Grey Brown Podzolics (60)	Gleys (20), Interdrumlin Peat and Peaty Gleys (20)	Mostly limestone glacial till	3·43 3·23
	29	Acid Brown Earths (75)	Interdrumlin Peat and Peaty Gleys (25)	Mostly Ordovician – Silurian shale – glacial till	1·16 2·73
Flat to Undulating Lowland (Mainly dry Mineral Soils)	30	Grey Brown Podzolics (70)	Brown Earths (20) Gleys (5) Basin Peat (5)	Limestone morainic gravels and sands	2·64 2·18
	31	Minimal Grey Brown Podzolics (80)	Gleys(10) Brown Earths(5) Basin Peat (5)	Limestone glacial till	4·47 3·70
	32	Degraded Grey Brown Podzolics (50)	Peat(15) Brown Earths(15) Gleys (10), Podzols (10)	Mostly limestone glacial till	3·08 2·56
	33	Shallow Brown Earths and Rendzinas (60)	Grey Brown Podzolics(25) Gleys (10) Peat (5)	Limestone till, shallow in places	3·21 2·66
	34	Minimal Grey Brown Podzolics (70)	Gleys (20) Brown Earths (10)	Limestone glacial till	6·02 4·98
	35	Grey Brown Podzolics (80)	Gleys (10), Brown Earths (10)	Stony limestone glacial till	·64 ·53
	36	Grey Brown Podzolics (80)	Gleys (20)	Limestone gravelly till	·70 ·58
	37	Grey Brown Podzolics (75)	Gleys (20), Brown Earths (5)	Limestone and shale glacial till	1·42 1·18
	38	Grey Brown Podzolics (75)	Gleys (25)	Till of Irish Sea origin with limestone and shale	1·14 ·95
Flat to Undulating Lowland (Mainly wet Mineral and Organic Soils)	39	Gleys** (90)	Grey Brown Podzolics (10)	Limestone glacial till	3·27 2·86
	40	Gleys* (80)	Grey Brown Podzolics (20)	Till of Irish Sea origin with limestone and shale	2·07 1·56
	41	Gleys* (75)	Acid Brown Earths (15) Peaty Gleys (10)	Basalt glacial till	— ·22
	42	Gleys* (90)	Grey Brown Podzolics (10)	Glacial muds of Irish Sea origin	·49 ·61
	43	Gleys (60)	Brown Earths (20) Peaty Gleys (20)	Alluvium	1·34 1·15
	44	Basin Peat			5·79 5·08

Prepared and published by the National Soil Survey, An Foras Taluntais.

Printed at Ordnance Survey, Phoenix Park, Dublin, 1980.

Based on the Ordnance Survey by permission of the Government.

Copies of this map and bulletin available from Publications Section, An Foras Taluntais, 19 Sandymount Avenue, Dublin 4.


Eircode or Address Search
TWENTIES
COMMONS
YELLOWBATTER
MONEYMORE
MELL
N51
M1
Drogheda
BALLSGROVE
RATHMULLAN
SHEEPHOUSE
DONORE
BRYANSTOWN
LAGAVOOREN
NEWTOWN
STAMEEN
COLP WEST
TEAGASC_Soils_50K_IE26_ITM:Made
Parent Material Made
Parent Material Name Made ground
Parent Material Desciption Made ground
Soil Group
IFS Soil Code Made
IFS Soil Description Made/Built land
County LOUTH
Category Made ground
Legend Made - Made ground
Zoom to
Legend
AminDW - Deep well drained mineral (Mainly acidic)
AminPD - Mineral poorly drained (Mainly acidic)
AminPDPT - Peaty poorly drained mineral (Mainly acidic)
AminSW - Shallow well drained mineral (Mainly acidic)
AminSP - Shallow poorly drained mineral (Mainly acidic)
AminSPPT - Shallow peaty poorly drained mineral (Mainly acidic)
AminSRPT - Shallow, rocky, peaty/non-peatymineral complexes (Mainly acidic)
BminDW - Deep well drained mineral (Mainly basic)
BminPD - Mineral poorly drained (Mainly basic)
BminPDPT - Peaty poorly drained mineral (Mainly basic)
BminSW - Shallow well drained mineral (Mainly basic)
BminSP - Shallow poorly drained mineral (Mainly basic)
BminSPPT - Shallow peaty poorly drained mineral (Mainly basic)
BminSRPT - Shallow, rocky, peaty/non-peatymineral complexes (Mainly basic)
BktPt - Blanket peat
FenPt - Fen peat
RsPt - Raised Peat
Cut - Cutover/cutaway peat
AlluvMIN - Alluvial (mineral)
AlluvMRL - Alluvial (marl)
Lac - Lacustrine type soils
Scree - Scree
AeoUND - Aeolian undifferentiated
MarSands - Marine sand and gravel
MarSed - Marine/estuarine sediments
Made - Made ground
0.6km
705517 778084 Meters
© Ordnance Survey Irelan

Results

Keep Previous Results

Subsoils

14167.03416

PERIMETER	14167.03416
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COUNTY	LOUTH
CATEGORY	n.a.
DESCRIPT	Man made
TEXTURE	n.a.
Class	n.a.

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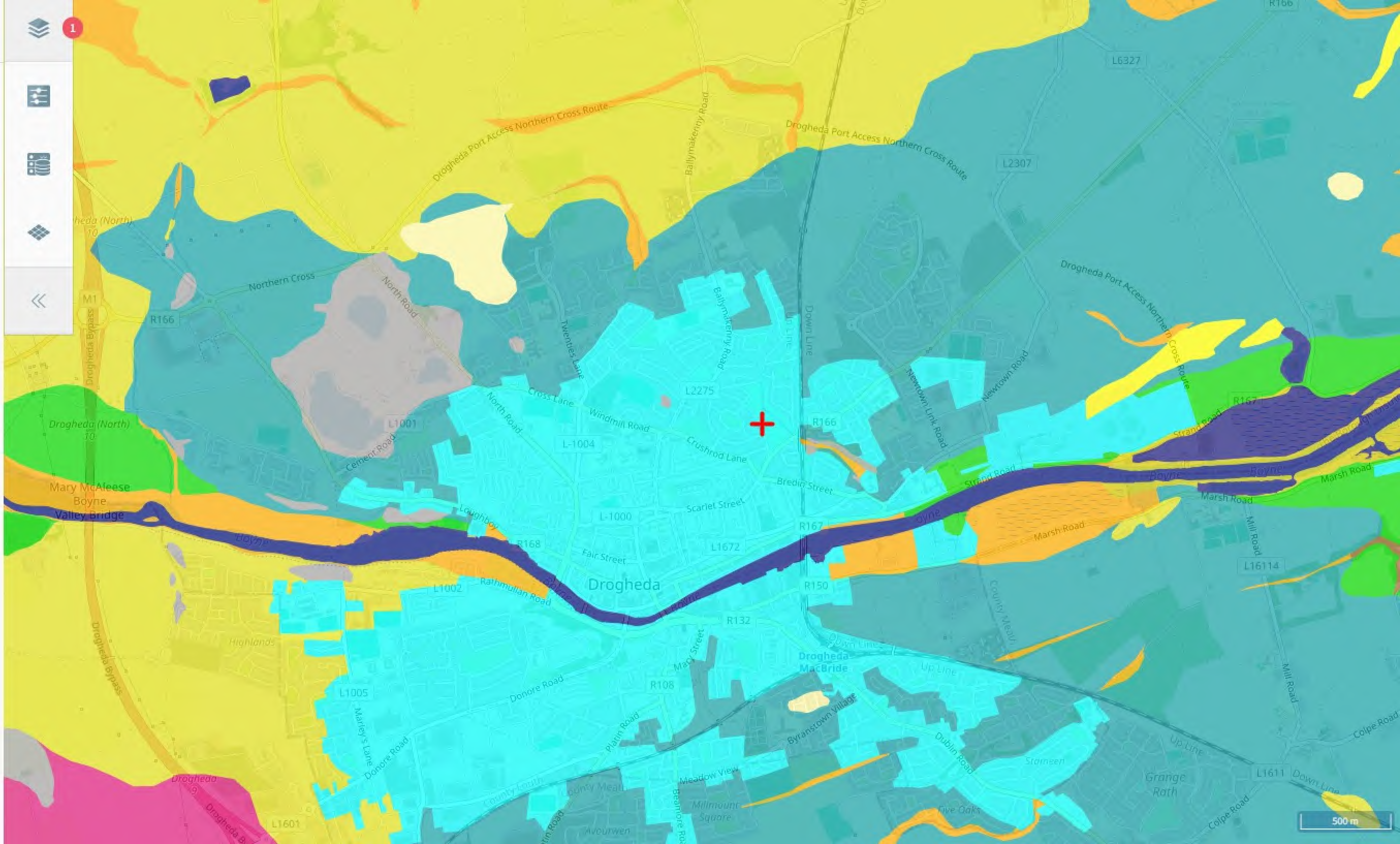
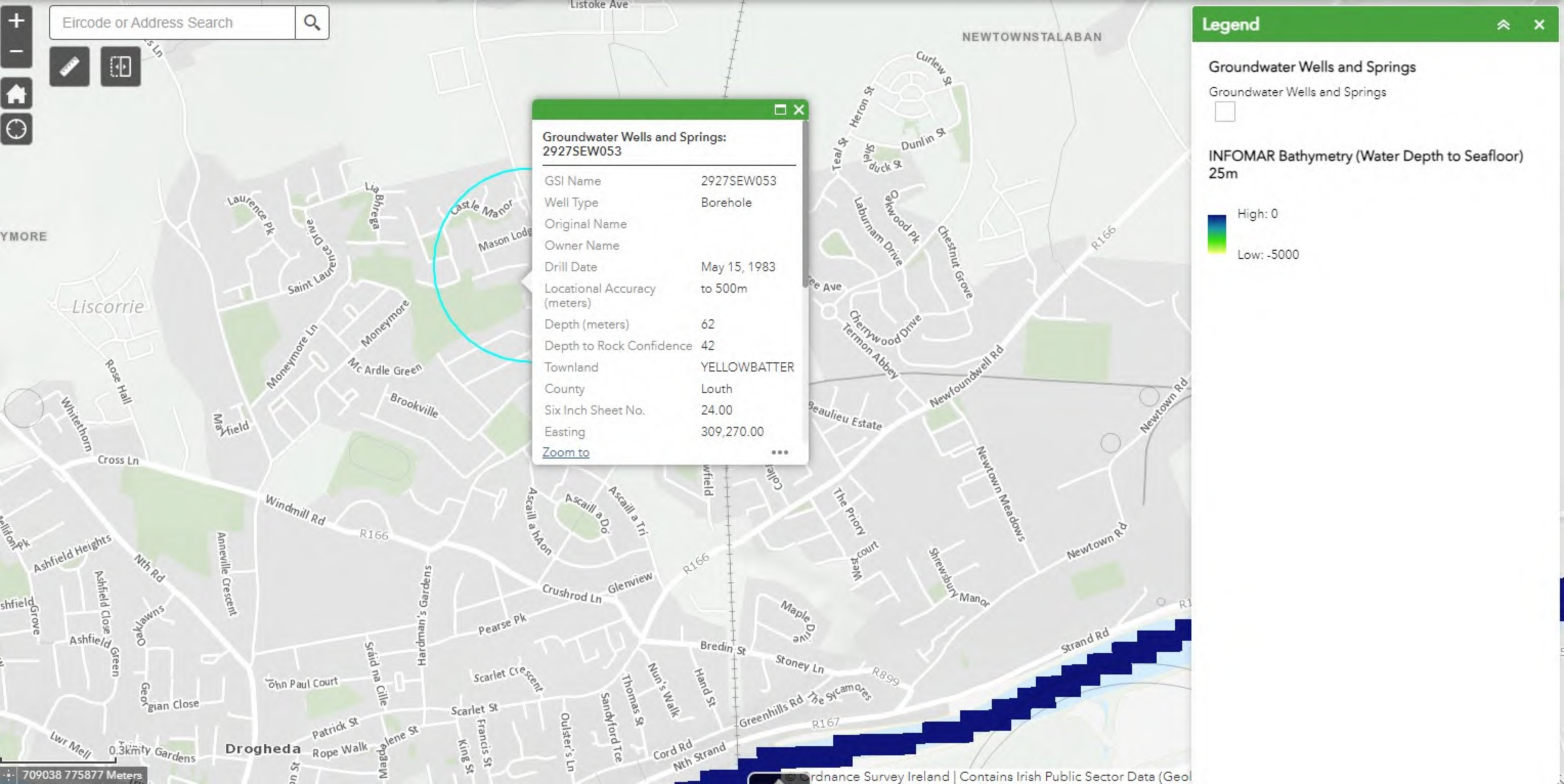


Drogheda
Mary McAleese Boyne Valley Bridge
Drogheda Port Access Northern Cross Route
Northern Cross
North Road
Windmill Road
Crushrod Lane
Bredin Street
Scarlet Street
Fair Street
Rathmullan Road
Donore Road
Marsh Road
Dublin Road
Drogheda MacBride
Boyne
M1
R166
R167
R168
R150
R132
R108
L2275
L-1004
L-1000
L1672
L1002
L1005
L1001
L2307
L6327
L16114
L1611
L1601
500 m

https://gis.epa.ie/EPAMaps/Water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GSI Name 2927SEW053
Well Type Borehole
Original Name
Owner Name
Drill Date May 15, 1983
Locational Accuracy (meters) to 500m
Depth (meters) 62
Depth to Rock Confidence 42
Townland YELLOWBATTER
County Louth
Six Inch Sheet No. 24.00
Easting 309,270.00
Zoom to
Legend
Groundwater Wells and Springs
Groundwater Wells and Springs
INFOMAR Bathymetry (Water Depth to Seafloor) 25m
High: 0
Low: -5000
NEWTOWNSTALABAN
Liscorrie
Drogheda
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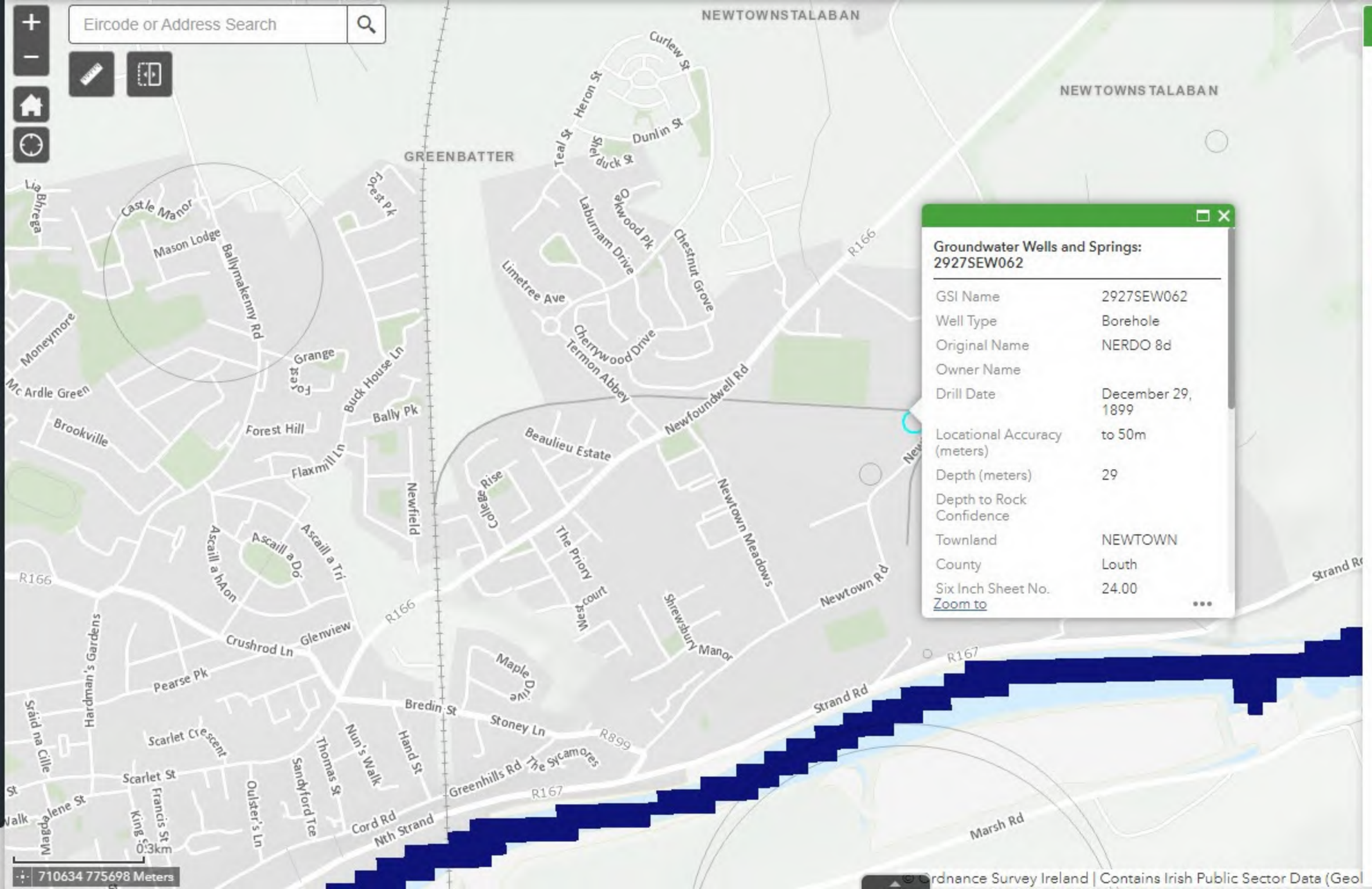
709038 775877 Meters
© Ordnance Survey Ireland | Contains Irish Public Sector Data (Geol


Eircode or Address Search
NEWTOWNSTALABAN
NEWTOWNSTALABAN
GREENBATTER
Curlew St
Heron St
Teal St
Dunlin St
Shelduck St
Oakwood Pk
Laburnam Drive
Chestnut Grove
Limetree Ave
Cherrywood Drive
Termon Abbey
R166
Newfoundwell Rd
Beaulieu Estate
Newtown Meadows
Newtown Rd
Strand Rd
R167
Marsh Rd
Castle Manor
Mason Lodge
Ballymakenny Rd
Forest Pk
Grange
Forest
Buck House Ln
Bally Pk
Forest Hill
Flaxmill Ln
Newfield
College Rise
The Priory
Westcourt
Shrewsbury Manor
Maple Drive
Bredin St
Stoney Ln
R899
Greenhills Rd
The Sycamores
Hand St
Nun's Walk
Thomas St
Sandyford Tce
Ouslter's Ln
Cord Rd
Nth Strand
Francis St
Scarlet Crescent
Scarlet St
Pearse Pk
Crushrod Ln
Glenview
Ascaill a hAon
Ascaill a Dó
Ascaill a Trí
Hardman's Gardens
Sráid na Cille
Moneymore
Mc Ardle Green
Brookville
Lia Bhréga
0 0.3km
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GSI Name 2927SEW062
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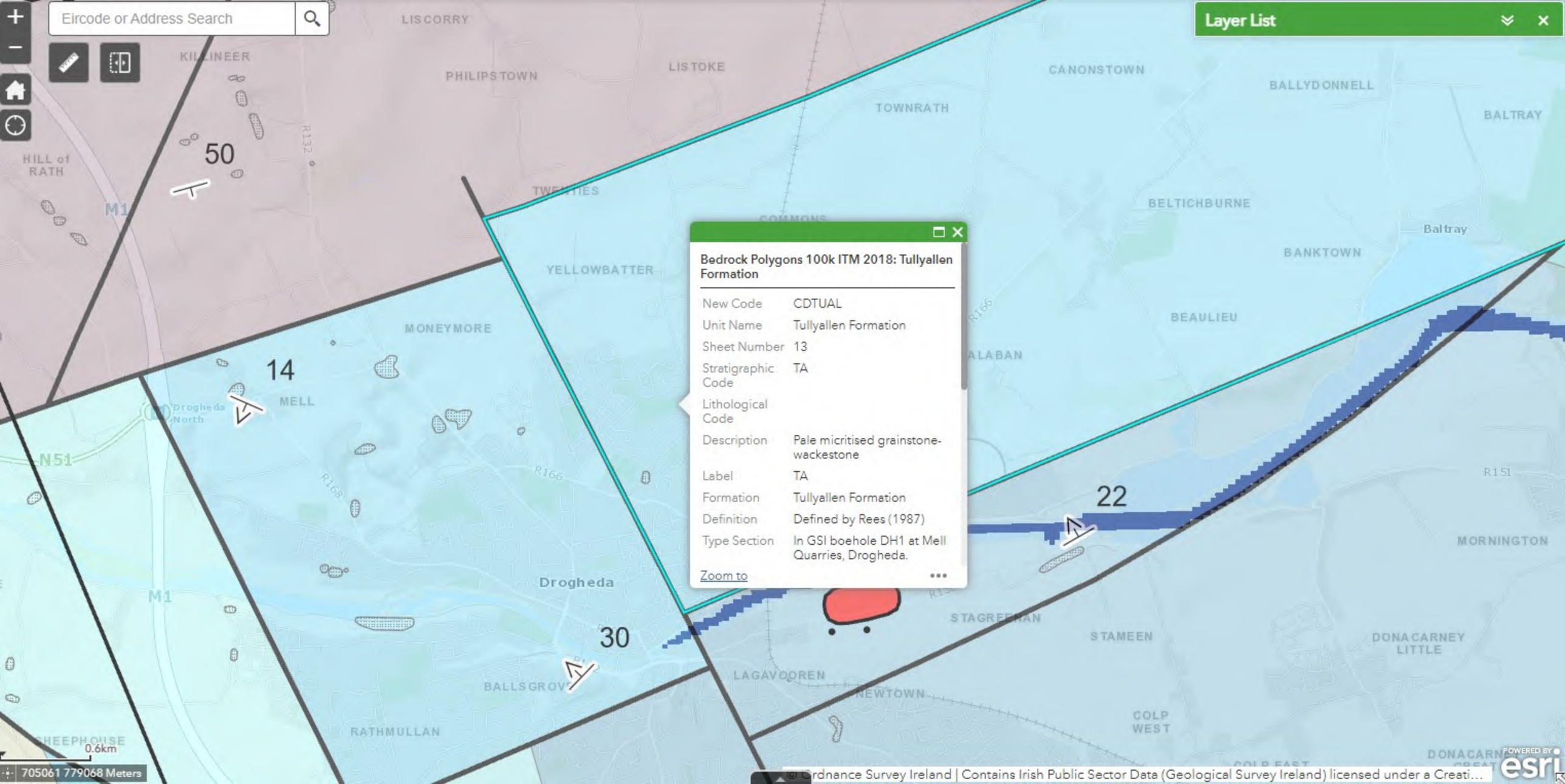
Original Name NERDO 8d
Owner Name
Drill Date December 29, 1899
Locational Accuracy (meters) to 50m
Depth (meters) 29
Depth to Rock Confidence
Townland NEWTOWN
County Louth
Six Inch Sheet No. 24.00
Zoom to
Legend
Groundwater Wells and Springs
Groundwater Wells and Springs
INFOMAR Bathymetry (Water Depth to Seafloor) 25m
High: 0
Low: -5000
© Ordnance Survey Ireland | Contains Irish Public Sector Data (Geol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New Code CDTUAL
Unit Name Tullyallen Formation
Sheet Number 13
Stratigraphic Code TA
Lithological Code
Description Pale micritised grainstone-wackestone
Label TA
Formation Tullyallen Formation
Definition Defined by Rees (1987)
Type Section In GSI boehole DH1 at Mell Quarries, Drogheda.
Zoom to
LISCORRY
KILLINEER
PHILIPSTOWN
LISTOKE
CANONSTOWN
BALLYDONNELL
TOWNRATH
BALTRAY
HILL of RATH
TWEATIES
BELTICHBURNE
Baltray
BANKTOWN
YELLOWBATTER
MONEYMORE
BEAULIEU
MELL
Drogheda North
N51
Drogheda
BALLSGROVE
RATHMULLAN
STAGREENAN
STAMEEN
DONACARNEY LITTLE
MORNINGTON
LAGAVOOREN
NEWTOWN
COLP WEST
SHEEPHOUSE
M1
R132
R166
R168
R151
50
14
22
30
0.6km
705061 779068 Meters
Ordnance Survey Ireland | Contains Irish Public Sector Data (Geological Survey Ireland) licensed under a Creati...
esri

Results

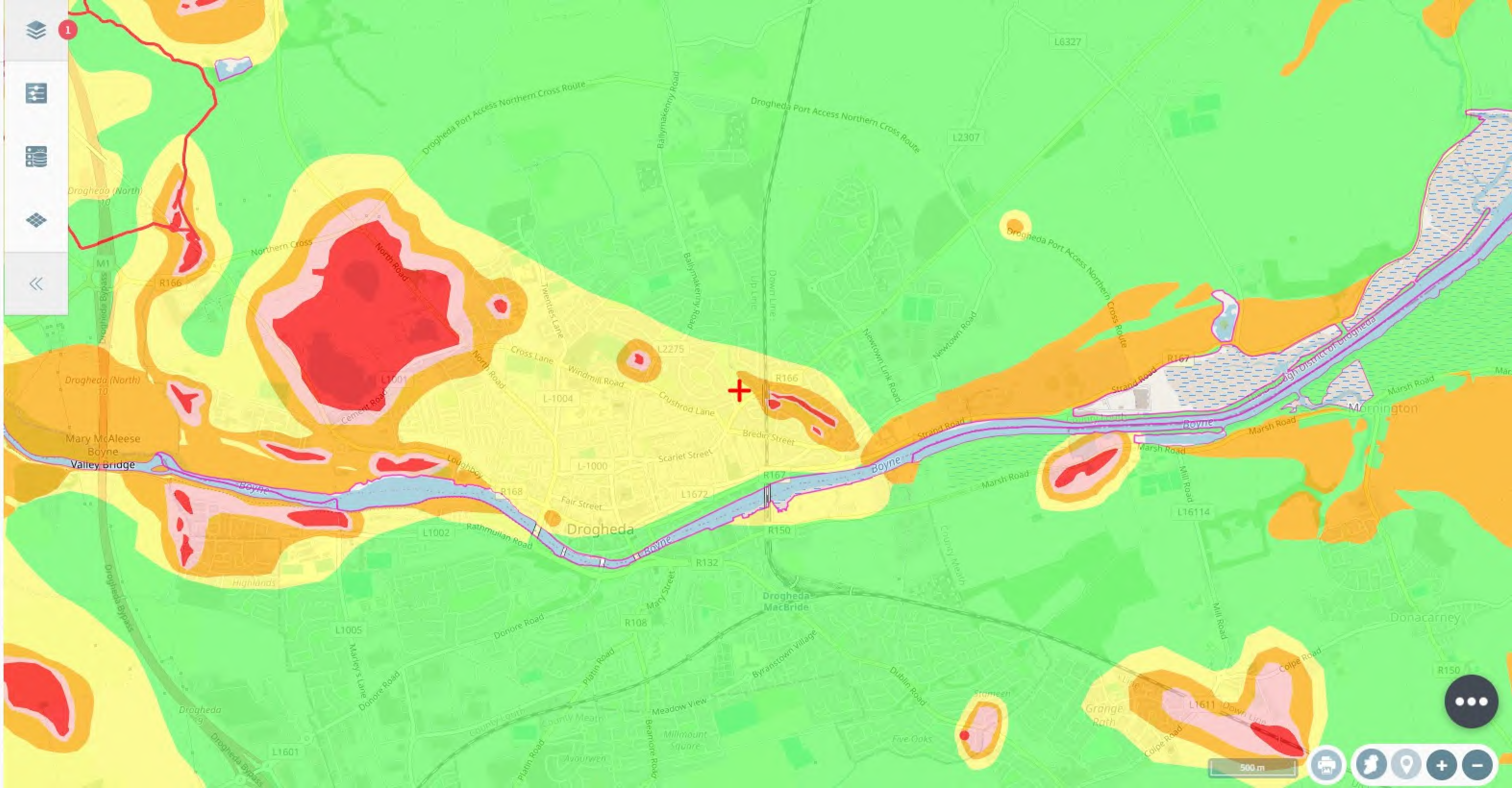
Keep Previous Results

GSI Vulnerability
High Vulnerability

GSI Vulnerability
Moderate Vulnerability

VulnerabilityDesc	Moderate Vulnerability
VulnerabilityCode	M
PlainEnglish	Groundwater here has natural characteristics that mean it has moderate vulnerability to contamination by human activities.

EXPORT


Drogheda
Boyne
Mary McAleese
Boyne
Valley Bridge
Mornington
Donacarney
Drogheda (North)
Drogheda Port Access Northern Cross Route
Northern Cross
North Road
Cement Road
Cross Lane
Windmill Road
Crushrod Lane
Twenties Lane
Ballymakenny Road
Bredin Street
Scarlet Street
Fair Street
Loughboy
Rathmullan Road
Strand Road
Marsh Road
Mill Road
Newtown Link Road
Newtown Road
Drogheda MacBride
Mary Street
Donore Road
Marley's Lane
Platin Road
Beamore Road
Bryanstown Village
Meadow View
Dublin Road
Five Oaks
Stameen
Grange Rath
Colpe Road
Highlands
Drogheda Bypass
R166
R167
R168
R132
R150
R108
L2275
L-1004
L-1000
L1001
L1672
L1002
L1005
L1601
L1611
L6327
L2307
L16114
M1
500 m

Results

Keep Previous Results

GSI Vulnerability

High Vulnerability

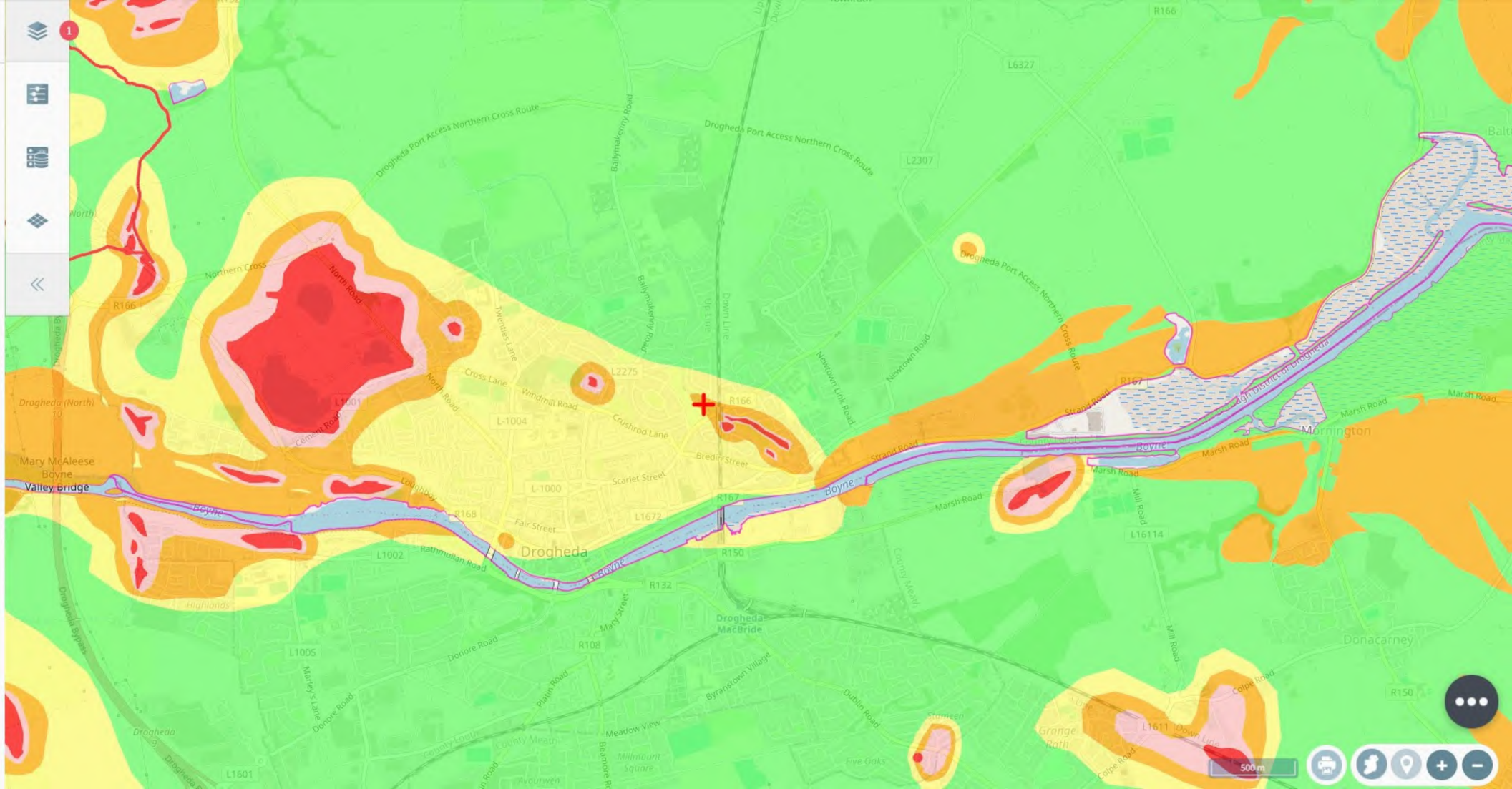
VulnerabilityDesc	High Vulnerability
VulnerabilityCode	H
PlainEnglish	Groundwater here has natural characteristics that make it highly vulnerable to contamination by human activities.

GSI Vulnerability

Moderate Vulnerability

VulnerabilityDesc	Moderate Vulnerability
VulnerabilityCode	M
PlainEnglish	Groundwater here has natural characteristics that mean it has moderate vulnerability to contamination by human activities.

EXPORT



Results

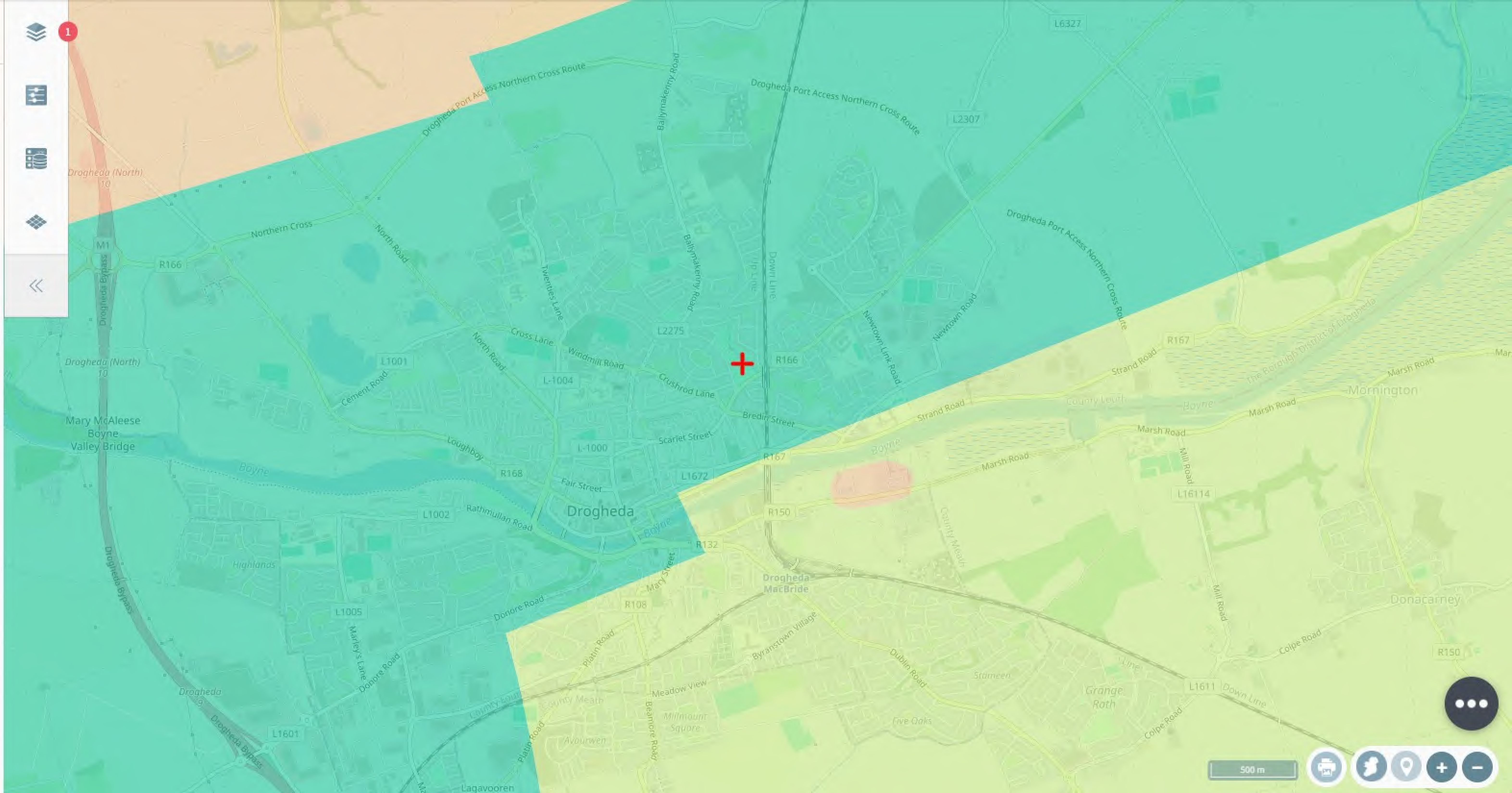
Keep Previous Results

GSI Bedrock Aquifer

Rkd

AquiferCode	Rkd
AquiferDesc	Regionally Important Aquifer - Karstified (diffuse)

EXPORT



Drogheda
Drogheda Port Access Northern Cross Route
Northern Cross
North Road
Cross Lane
Windmill Road
Crushrod Lane
Bredin Street
Scarlet Street
Fair Street
Rathmullan Road
Donore Road
Mary Street
Dublin Road
Strand Road
Marsh Road
Mill Road
Colpe Road
Newtown Link Road
Newtown Road
Ballymakenny Road
Twenties Lane
Cement Road
Loughboy
Mary McAleese Boyne Valley Bridge
Drogheda (North)
Drogheda Bypass
Drogheda MacBride
Mornington
Donacarney
Grange Rath
Highlands
Boyne
R166
R167
R150
R132
R108
R168
L2275
L1001
L-1004
L-1000
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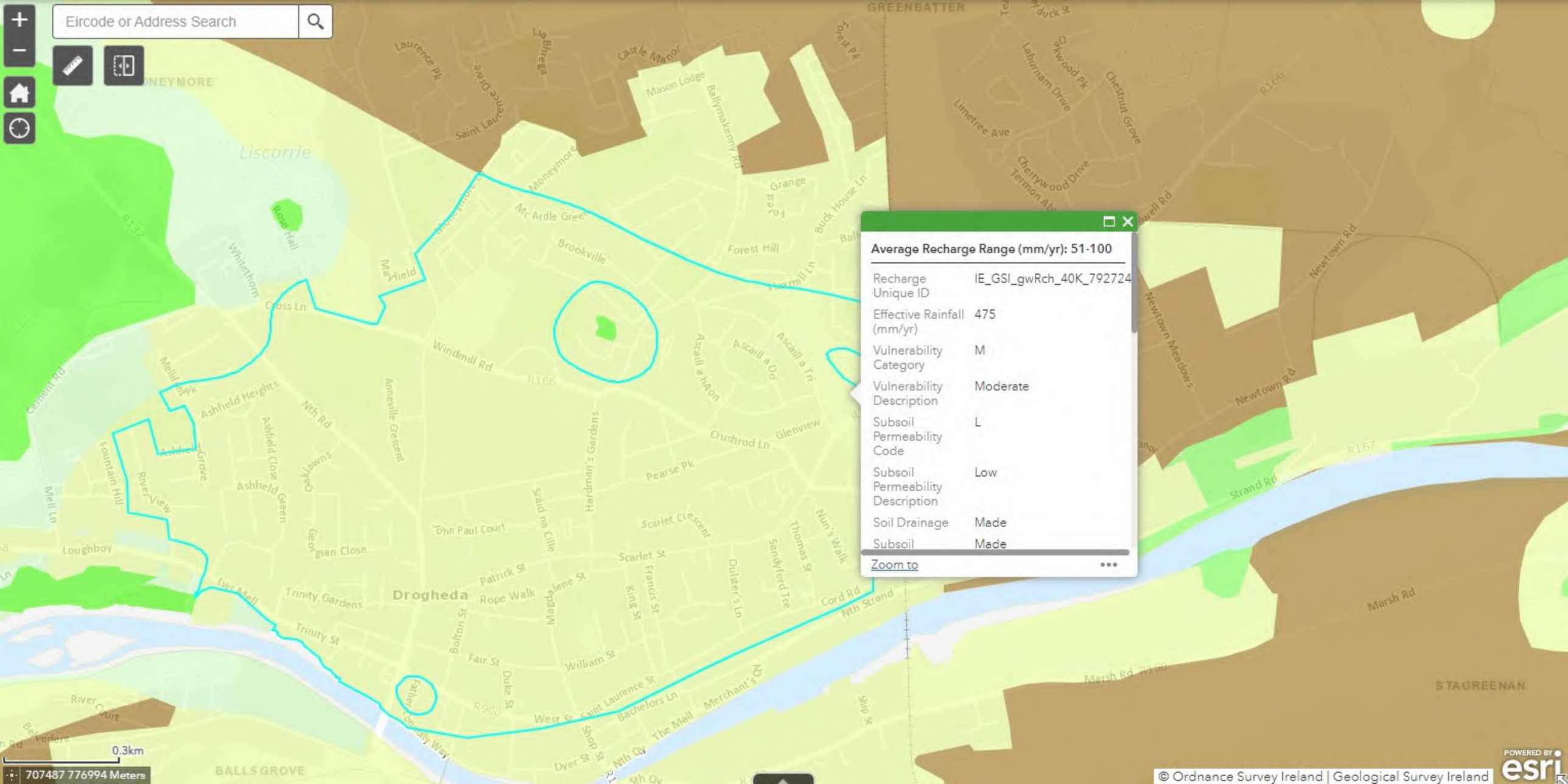
L2307
L6327
M1
500 m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Average Recharge Range (mm/yr): 51-100
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Effective Rainfall (mm/yr) 475
Vulnerability Category M
Vulnerability Description Moderate
Subsoil Permeability Code L
Subsoil Permeability Description Low
Soil Drainage Made
Subsoil Made
Zoom to
Drogheda
Liscorrie
GREENBATTER
STAGREENAN
BALLSGROVE
0.3km
707487 776994 Meters
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POWERED BY esri

Results

Keep Previous Results

WFD Catchments

07

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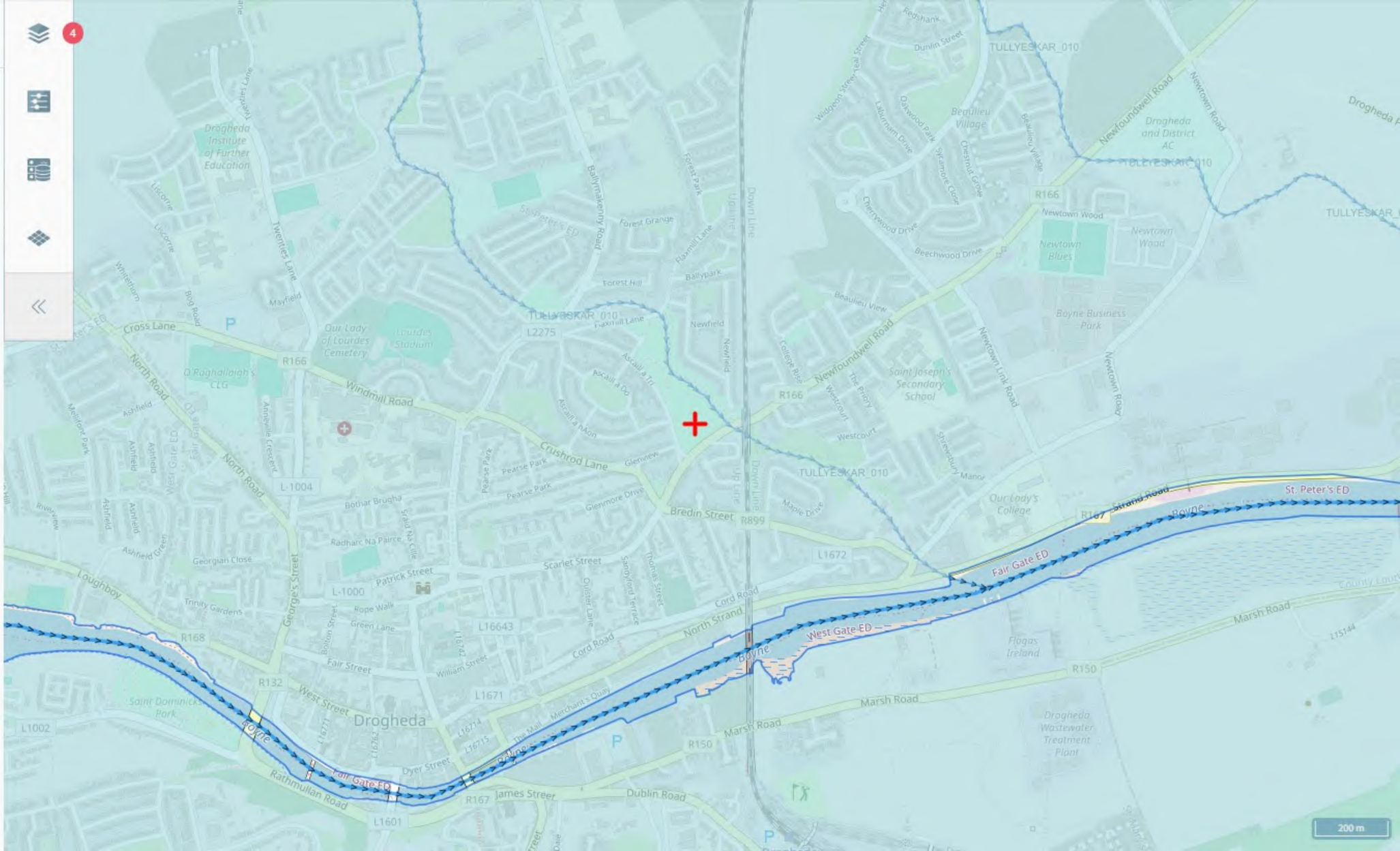
Name	Boyne
Area_km2	2696.16629881
District_Code	IEEA

EXPORT



Results

Keep Previous Results

WFD River Sub Basins

TULLYESKAR_010

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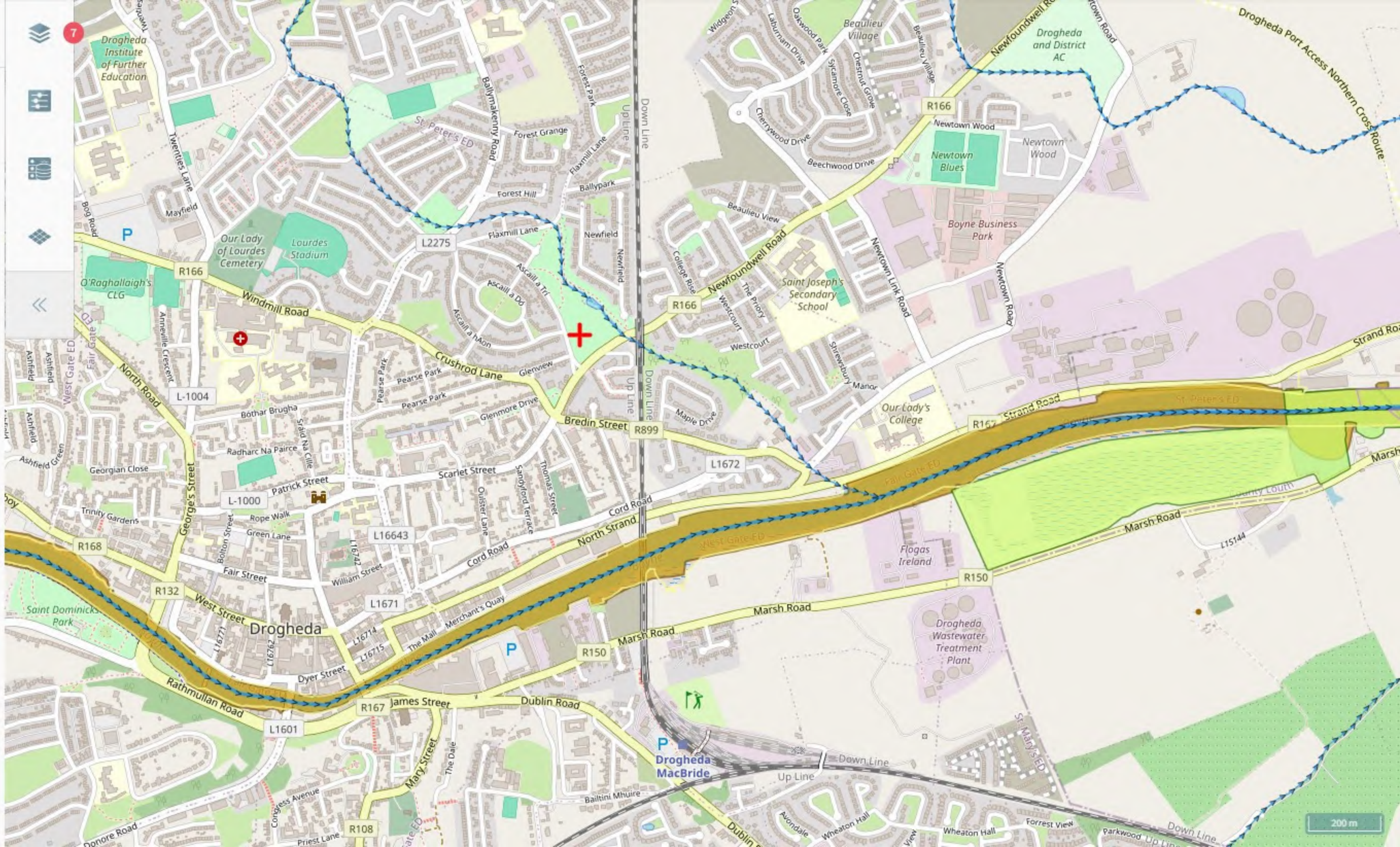

Results

Keep Previous Results

WFD SubCatchments

Boyne_SC_130

Name	Boyne_SC_130
Subcatchment_Id	07_17
Catchment_Id	07
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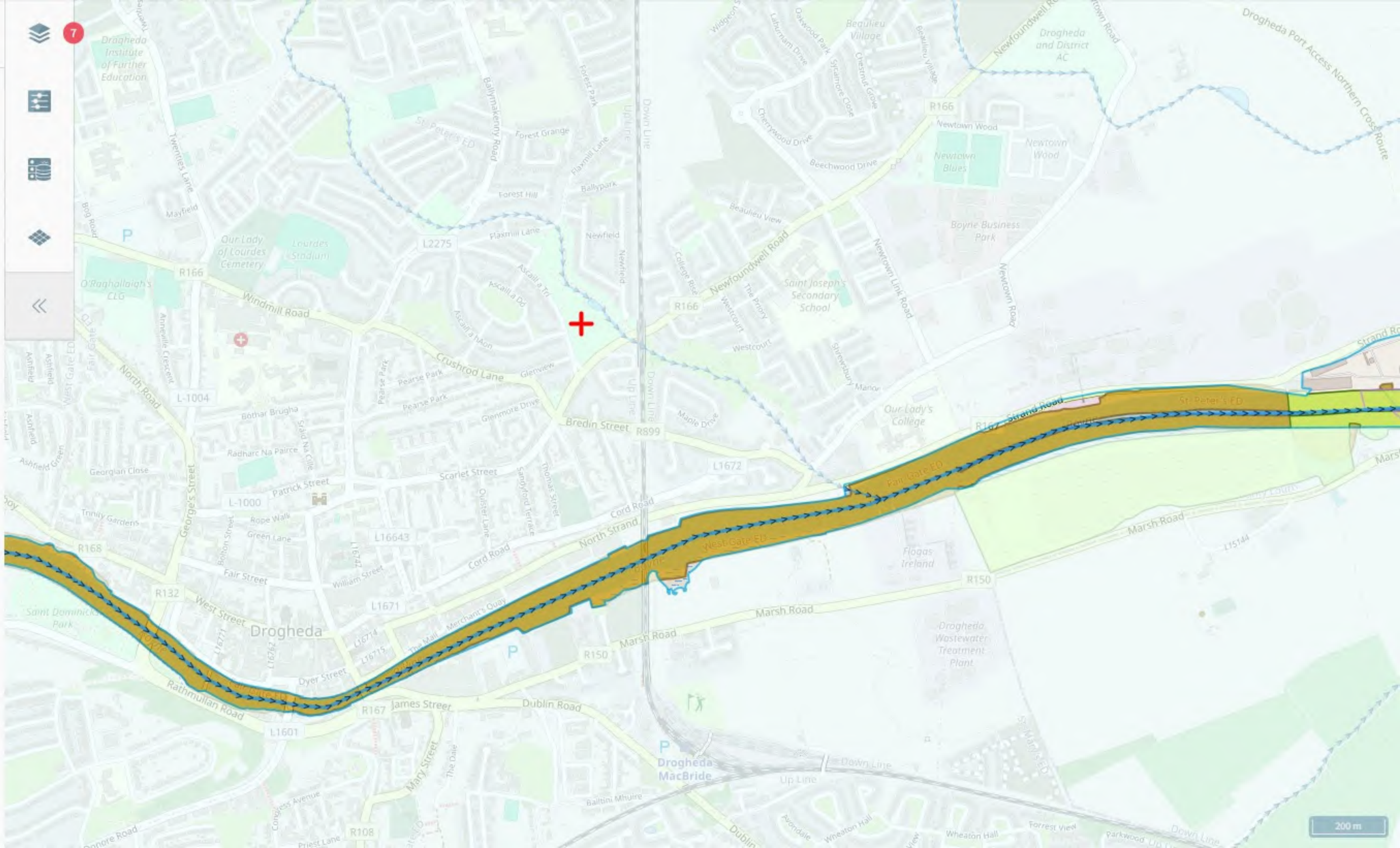
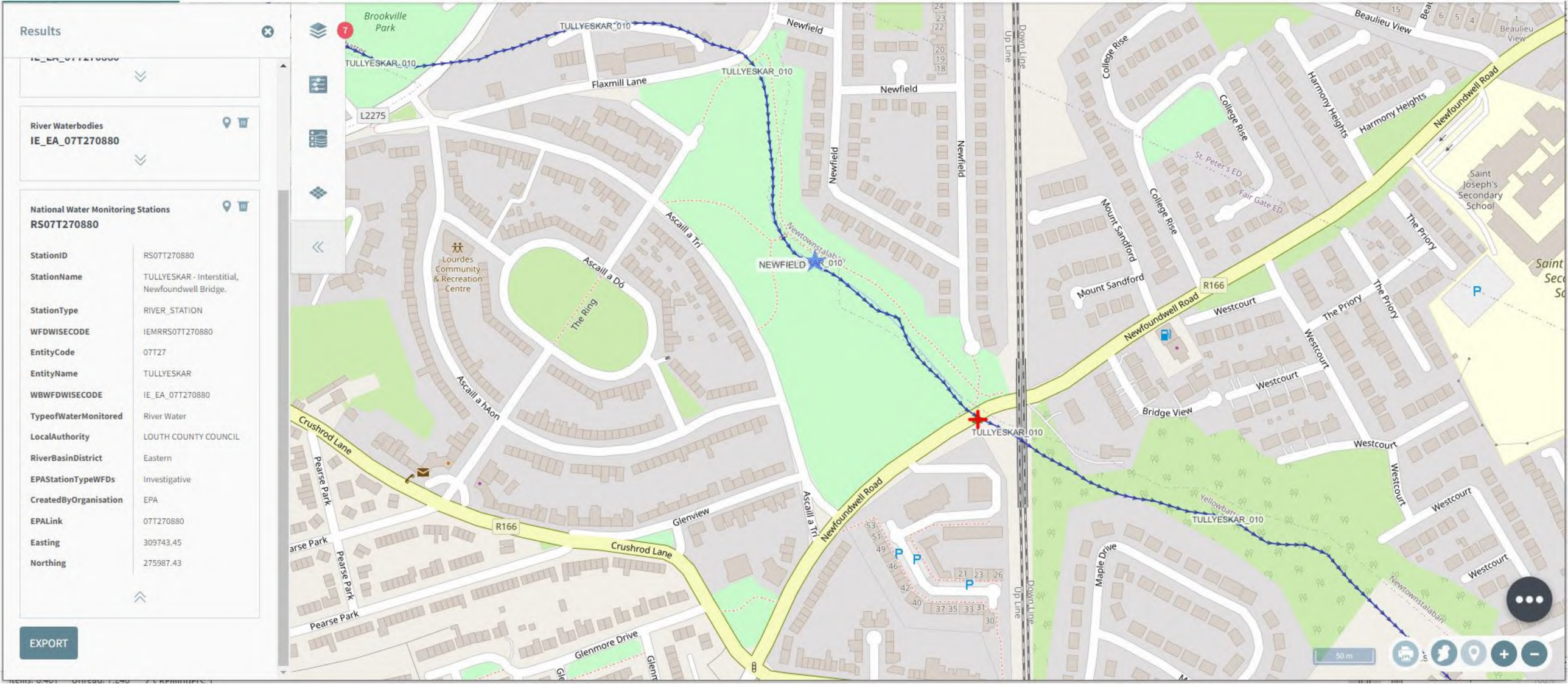
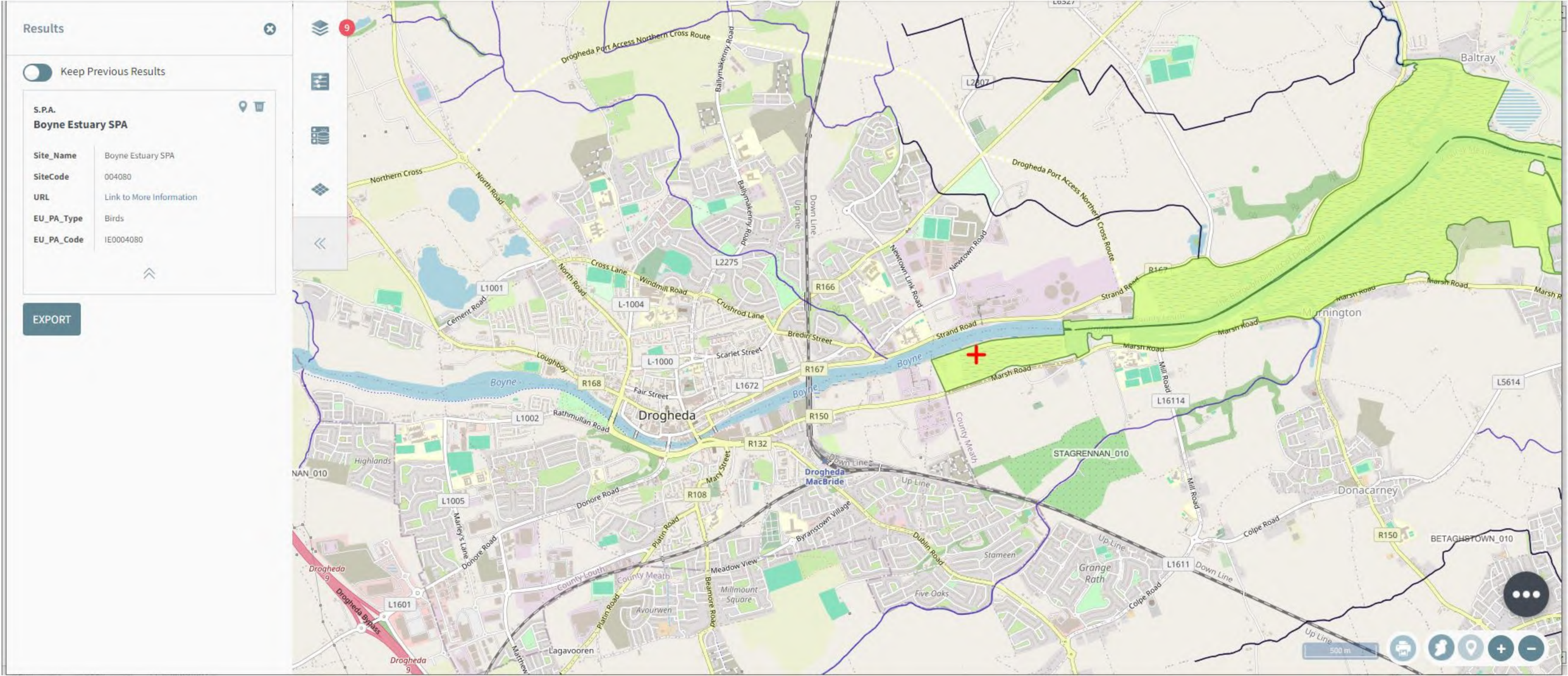
UpdatedOn	2017-03-07T00:00:00Z
Local_Authority	LOUTH COUNTY COUNCIL

EXPORT




Results
River Waterbodies
IE_EA_07T270880
National Water Monitoring Stations
RS07T270880
StationID RS07T270880
StationName TULLYESKAR - Interstitial, Newfoundwell Bridge.
StationType RIVER_STATION
WFDWISECODE IEMRRS07T270880
EntityCode 07T27
EntityName TULLYESKAR
WBWFDWISECODE IE_EA_07T270880
TypeofWaterMonitored River Water
LocalAuthority LOUTH COUNTY COUNCIL
RiverBasinDistrict Eastern
EPAStationTypeWFDs Investigative
CreatedByOrganisation EPA
EPALink 07T270880
Easting 309743.45
Northing 275987.43
EXPORT
Brookville Park
TULLYESKAR_010
Flaxmill Lane
L2275
Newfield
Down Line
Up Line
College Rise
Beaulieu View
Harmony Heights
Newfoundwell Road
St. Peter's ED
Fair Gate ED
Saint Joseph's Secondary School
Mount Sandford
The Priory
Westcourt
R166
Lourdes Community & Recreation Centre
Ascaill a Dó
Ascaill a Trí
Ascaill a hAon
The Ring
NEWFIELD
Bridge View
Crushrod Lane
Pearse Park
Glenview
Glenmore Drive
Maple Drive
Yellowbarn
Newtownstalaban
50 m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Keep Previous Results
S.P.A.
Boyne Estuary SPA
Site_Name Boyne Estuary SPA
SiteCode 004080
URL Link to More Information
EU_PA_Type Birds
EU_PA_Code IE0004080
EXPORT
Drogheda
Boyne
Baltray
Mornington
Donacarney
Grange Rath
Stameen
Five Oaks
Millmount Square
Avourwen
Lagavooren
Highlands
Meadow View
Byranstown Village
Drogheda MacBride
STAGRENNAN_010
BETAGHSTOWN_010
Drogheda Port Access Northern Cross Route
Northern Cross
North Road
Ballymakenny Road
Up Line
Down Line
Newtown Road
Newtown Link Road
Strand Road
Marsh Road
Mill Road
Cross Lane
Windmill Road
Crushrod Lane
Bredin Street
Scariet Street
Loughboy
Fair Street
Rathmullan Road
Donore Road
Mary Street
Dublin Road
Colpe Road
Platin Road
Beamore Road
Marley's Lane
Drogheda Bypass
County Meath
County Louth
County Down
L1001
L1002
L1005
L1601
L1611
L16114
L2275
L-1004
L-1000
L1672
L2607
L5614
R166
R167
R168
R150
R132
R108
500 m

Results

Keep Previous Results

S.A.C

River Boyne And River Blackwater SAC

Site_Name	River Boyne And River Blackwater SAC
SiteCode	002299
URL	Link to More Information
EU_PA_Type	Habitats
EU_PA_Code	IE0002299

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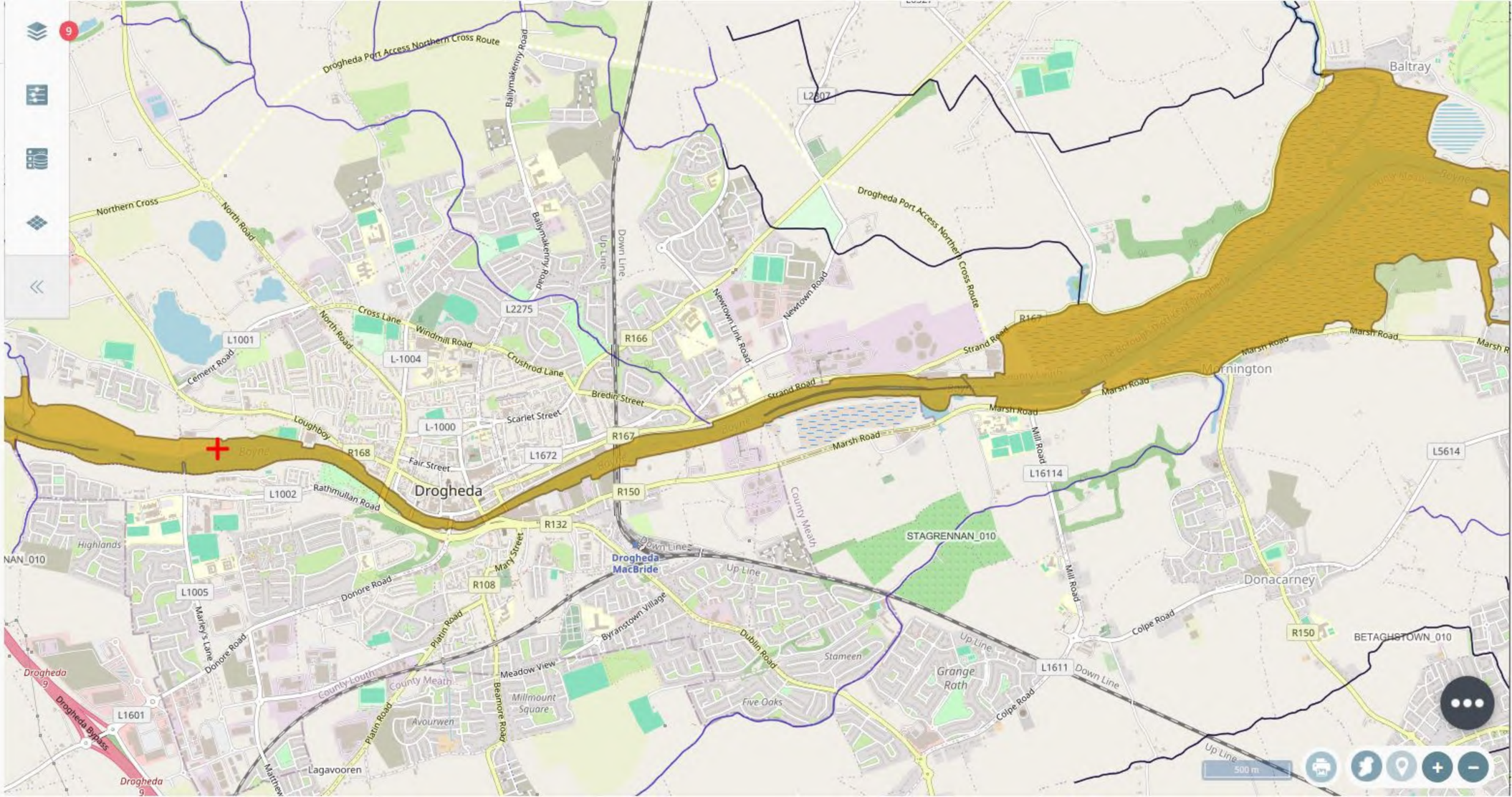

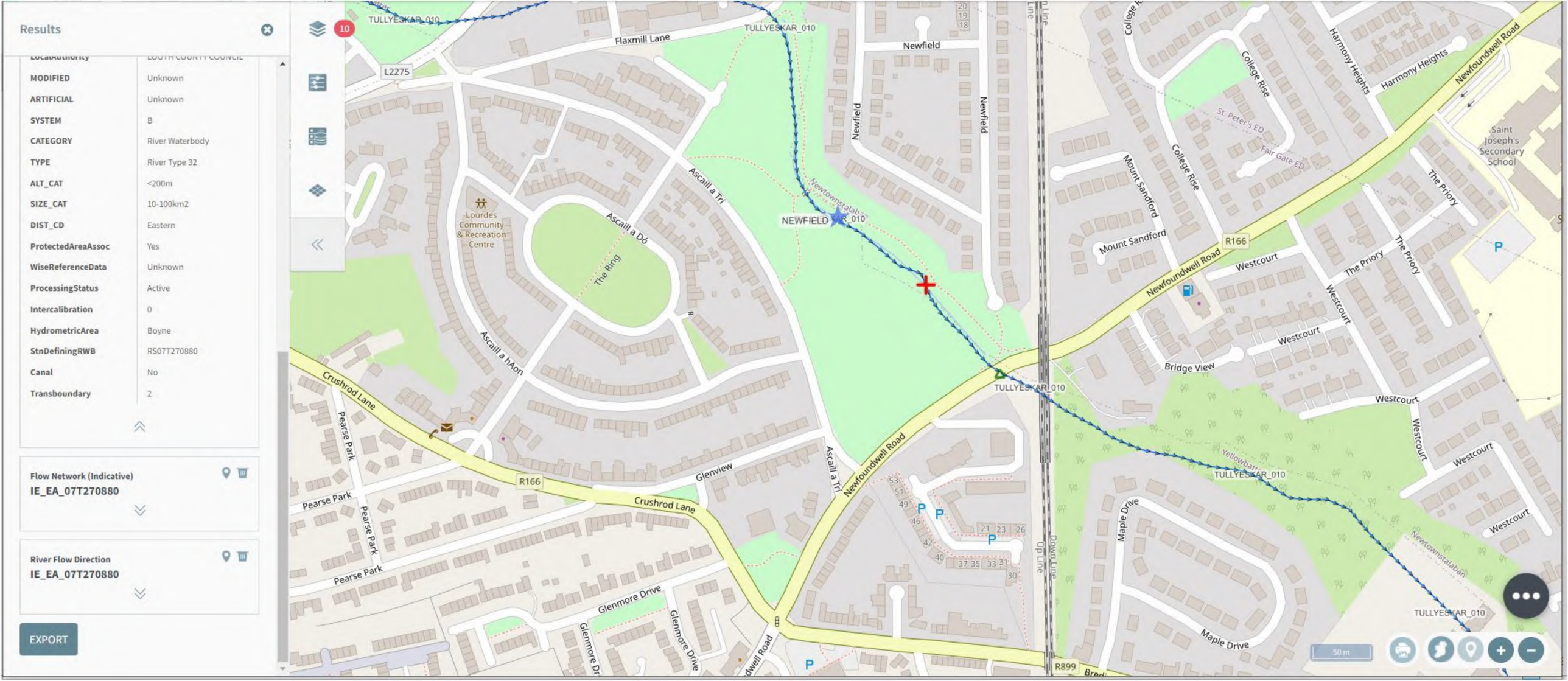
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LocalAuthority
LOUTH COUNTY COUNCIL
MODIFIED
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ARTIFICIAL
Unknown
SYSTEM
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CATEGORY
River Waterbody
TYPE
River Type 32
ALT_CAT
<200m
SIZE_CAT
10-100km2
DIST_CD
Eastern
ProtectedAreaAssoc
Yes
WiseReferenceData
Unknown
ProcessingStatus
Active
Intercalibration
0
HydrometricArea
Boyne
StnDefiningRWB
RS07T270880
Canal
No
Transboundary
2
Flow Network (Indicative)
IE_EA_07T270880
River Flow Direction
IE_EA_07T270880
EXPORT
10
TULLYESKAR_010
Flaxmill Lane
L2275
Newfield
Lourdes Community & Recreation Centre
Ascaill a Dó
Ascaill a Trí
Ascaill a hAon
The Ring
NEWFIELD
Crushrod Lane
R166
Pearse Park
Glenview
Glenmore Drive
Newfoundwell Road
College Rise
Harmony Heights
St. Peter's ED
Fair Gate ED
Saint Joseph's Secondary School
Mount Sandford
The Priory
Westcourt
Bridge View
Maple Drive
R899
50 m

SW 2010-2015

Status	Assessment Technique	Status Confidence	Value
Ecological Status or Potential		no information or unknown	Unassigned

SW 2010-2012

Status	Assessment Technique	Status Confidence	Value
Ecological Status or Potential		no information or unknown	Unassigned

SW 2007-2009

Status	Assessment Technique	Status Confidence	Value
Ecological Status or Potential		no information or unknown	Unassigned

Waterbody: TULLYESKAR_010

Name:	**TULLYESKAR_010**	Code:	**IE_EA_07T270880**
Subcatchments:	07_17 Boyne_SC_130	Catchments:	07 Boyne
Latitude:	**53.7395379**	Longitude:	**-6.3431498**
Cycle 1 RBD:	**Eastern**	Local Authority:	**Louth County Council**
Waterbody Category:	**River**	WFD Risk:	**Review**
Protected Area:	**Yes**	High Status Objective:	**No**
Heavily Modified:	**Unknown**	Artificial:	**Unknown**
Area (Km^2):	**N/A**	Length (Km):	**47.52**
Transboundary:	**No**	Canal:	**No**
Chemistry Data:	Download		

View on Map

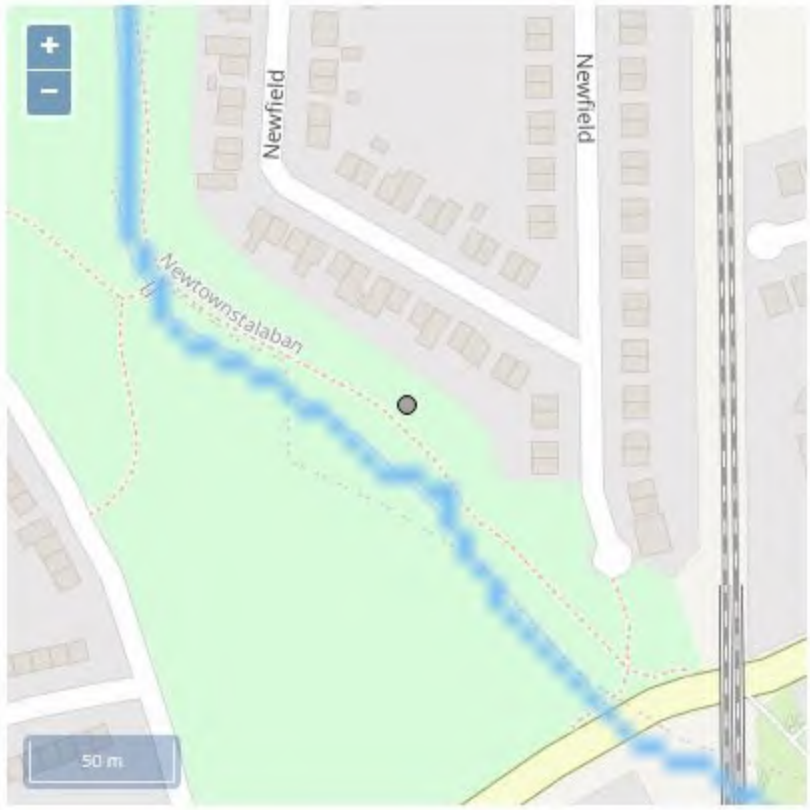
STATUS | MONITORING PROGRAMME | INPUTTING & RECEIVING WATERBODIES | TRENDS & CHARTS

SW 2016-2021

Status	Assessment Technique	Status Confidence	Value
Ecological Status or Potential	Modelling	low confidence	Moderate

NEWFIELD (STREAM)

Easting	309600.00
Northing	276119.00
Data Provider	Office of Public Works
River Basin District	Eastern RBD
Catchment size	
LTA rainfall 1961-1990 (mm/yr)	
Available data	Water Level and Flow
Gauge datum	
Gauge datum unit	
Estimated 5%tile Flow	
Estimated 10%tile Flow	
Estimated 20%tile Flow	
Estimated 30%tile Flow	
Estimated 40%tile Flow	
Estimated 50%tile Flow	
Estimated 60%tile Flow	
Estimated 70%tile Flow	
Estimated 80%tile Flow	
Estimated 90%tile Flow	
Estimated 95%tile Flow	
Description	
External Link	CLICK HERE for Station 07115 Data

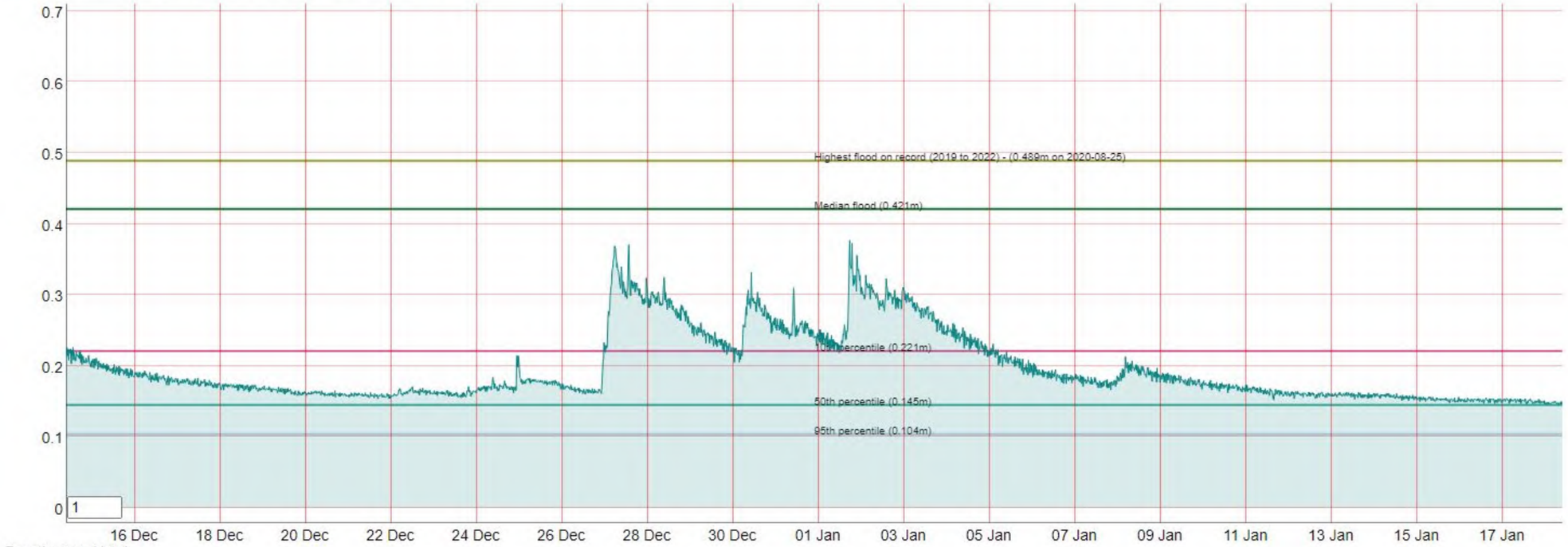


Data for Station 07115 Newfield - Water level (0001)

OPW **Latest data: Jan. 18, 2024, 10 a.m. (UTC / GMT)** staff gauge level 0.147 m. OD level 16.306 m.

Stage is in meters relative to the bottom of the staff gauge at the station.

You can view an image or download data using the Download button on the menu.



Zoom to current level

Only data for the past 35 days are shown.

Times are always shown in UTC (GMT).

To use the graph:

Scale = 1 : 1693
309586.09028, 276134.49474

Disclaimer

Use of this site is subject to the disclaimer on the Home page.

Sensors on Station 07115 Newfield

OPW **Latest data: Jan. 18, 2024, 10 a.m. (UTC / GMT)** staff gauge level 0.147 m. OD level 16.306 m.

Water level for past 5 weeks	Water level for past week.	Water level for past day.	Summary for Water level
Temperature for past 5 weeks	Temperature for past week.	Temperature for past day.	Summary for Temperature
Voltage for past 5 weeks	Voltage for past week.	Voltage for past day.	Summary for Voltage
Ordnance datum for past 5 weeks	Ordnance datum for past week.	Ordnance datum for past day.	Summary for Ordnance datum

Datum

07115 Newfield 16.159m above Ordnance Datum at Malin Head OSGM15.

Water level and flow records older than 5 weeks

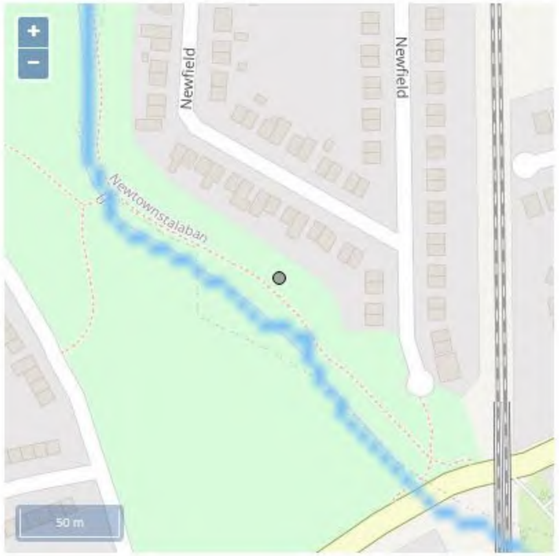
See our newly updated Hydro-Data website https://waterlevel.ie/hydro-data/.

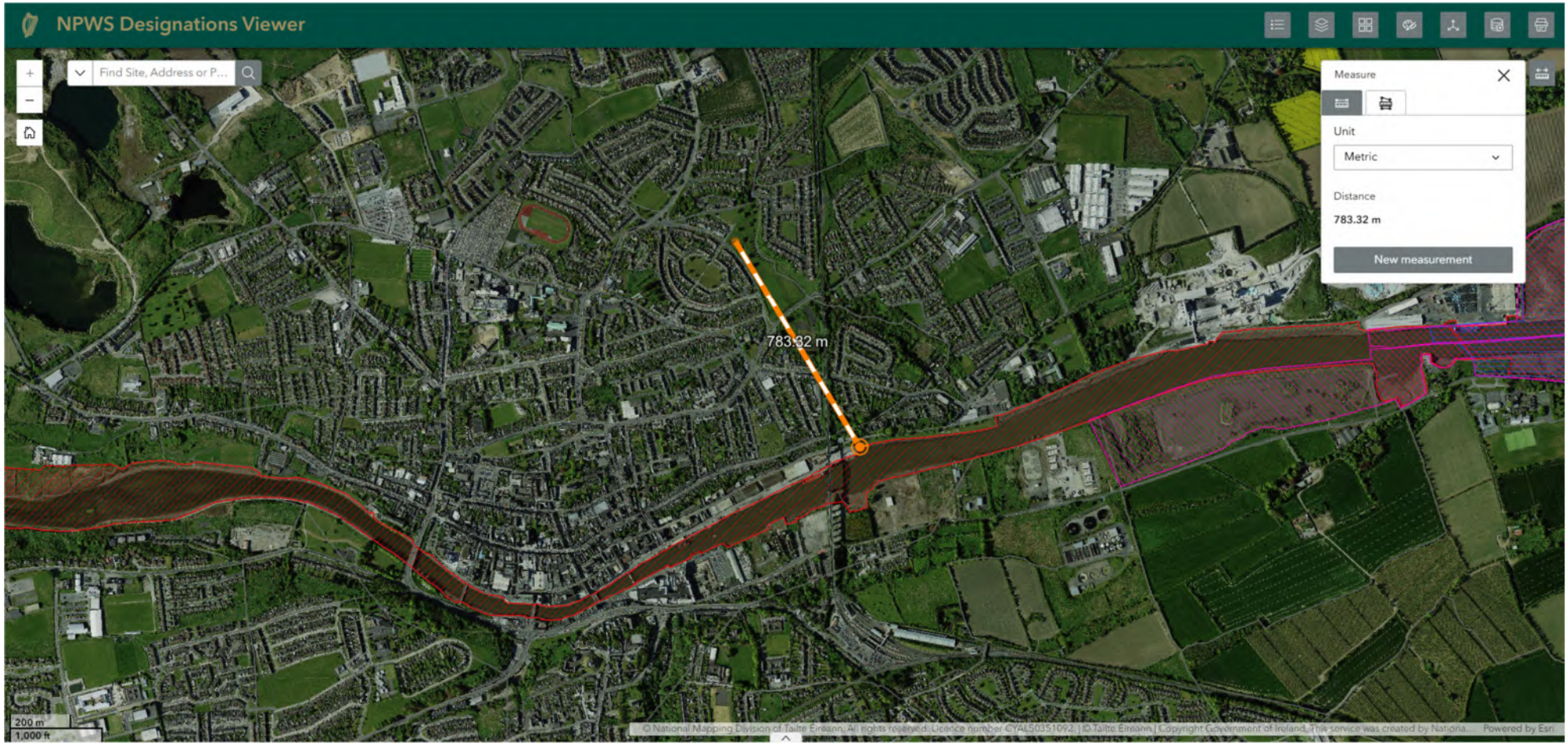
Back

Information

NEWFIELD (STREAM)

Station number	07115
Station name	NEWFIELD
Station status	Active
Waterbody	STREAM
Owner	Office of Public Works
Easting	309600.00
Northing	276119.00
Data Provider	Office of Public Works
River Basin District	Eastern RBD
Catchment size	
LTA rainfall 1961-1990 (mm/yr)	
Available data	Water Level and Flow
Gauge datum	
Gauge datum unit	
Estimated 5%tile Flow	
Estimated 10%tile Flow	
Estimated 20%tile Flow	
Estimated 30%tile Flow	
Estimated 40%tile Flow	
Estimated 50%tile Flow	
Estimated 60%tile Flow	
Estimated 70%tile Flow	




NPWS Designations Viewer
Find Site, Address or P...
Measure
Unit
Metric
Distance
783.32 m
New measurement
783.32 m
200 m
1,000 ft
© National Mapping Division of Tailte Éireann. All rights reserved. Licence number CYAL50351092 | © Tailte Éireann | Copyright Government of Ireland, this service was created by Nationa...
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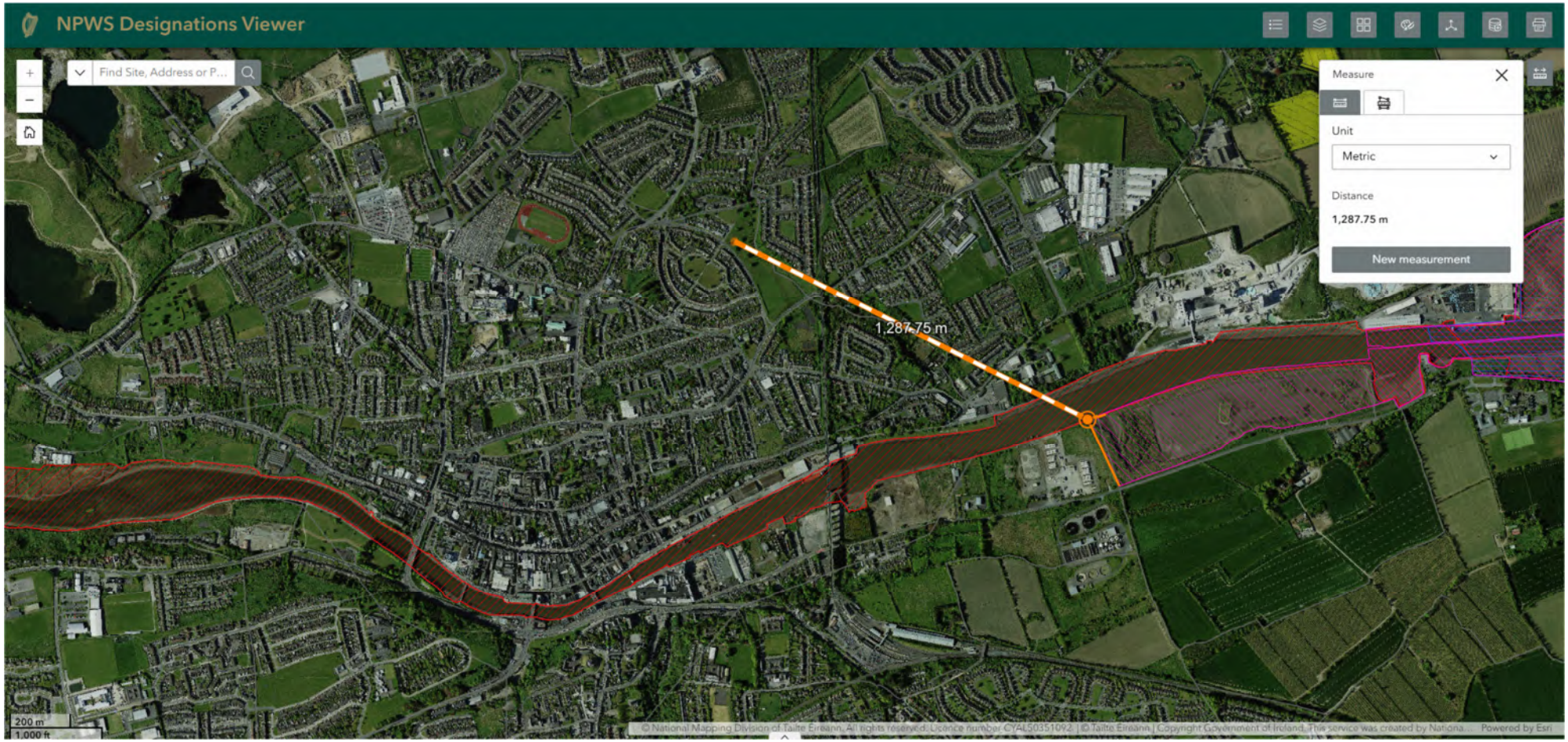
NPWS Designations Viewer
Find Site, Address or P...
Measure
Unit
Metric
Distance
1,287.75 m
New measurement
1,287.75 m
200 m
1,000 ft
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APPENDIX 2

NPWS SITE SYNOPSIS: RIVER BOYNE AND RIVER BLACKWATER SAC 002299 (2014); BOYNE ESTUARY SPA (2015), BOYNE COAST AND ESTUARY SAC (2016); AND THE NORTH-WEST IRISH SEA SPA 004236 (2023)

NPWS CONSERVATION OBJECTIVES: RIVER BOYNE AND RIVER BLACKWATER SAC 002299 (2021); BOYNE ESTUARY SPA (2013), BOYNE COAST AND ESTUARY SAC (2012); AND THE NORTH-WEST IRISH SEA SPA 004236 (2023)

NATIONAL BIODIVERSITY DATA CENTRE
SPECIES DATA AND 1KM & 2KM GRID REFERENCE REPORT

SITE SYNOPSIS

Site Name: River Boyne and River Blackwater SAC

Site Code: 002299

This site comprises the freshwater element of the River Boyne as far as the Boyne Aqueduct, the Blackwater as far as Lough Ramor and the Boyne tributaries including the Deel, Stoneyford and Tremblestown Rivers. These riverine stretches drain a considerable area of Meath and Westmeath, and smaller areas of Cavan and Louth. The underlying geology is Carboniferous Limestone for the most part, with areas of Upper, Lower and Middle well represented. In the vicinity of Kells Silurian Quartzite is present while close to Trim are Carboniferous Shales and Sandstones. There are many large towns adjacent to but not within the site, including Slane, Navan, Kells, Trim, Athboy and Ballivor.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[7230] Alkaline Fens
[91E0] Alluvial Forests*
[1099] River Lamprey (*Lampetra fluviatilis*)
[1106] Atlantic Salmon (*Salmo salar*)
[1355] Otter (*Lutra lutra*)

The main areas of alkaline fen in this site are concentrated in the vicinity of Lough Shesk, Freehan Lough and Newtown Lough. The hummocky nature of the local terrain produces frequent springs and seepages which are rich in lime. A series of base-rich marshes have developed in the poorly-drained hollows, generally linked with these three lakes. Open water is usually fringed by Bulrush (*Typha latifolia*), Common Club-rush (*Scirpus lacustris*) or Common Reed (*Phragmites australis*), and this last species also extends shorewards where a dense stand of Great Fen-sedge (*Cladium mariscus*) frequently occurs. This in turn grades into a sedge and grass community (*Carex* spp. and Purple Moor-grass, *Molinia caerulea*), or one dominated by Black Bog-rush (*Schoenus nigricans*). An alternative aquatic/terrestrial transition is a floating layer of vegetation. This is normally based on Bogbean (*Menyanthes trifoliata*) and Marsh Cinquefoil (*Potentilla palustris*). Other species gradually become established on this cover, especially plants tolerant of low nutrient status e.g. bog mosses (*Sphagnum* spp.). Diversity of plant and animal life is high in the fen and the flora includes many rarities. Plants of interest include Narrow-leaved Marsh-orchid (*Dactylorhiza traunsteineri*), Fen Bedstraw (*Galium uliginosum*), Cowbane (*Cicuta virosa*), Frogbit (*Hydrocharis morsus-ranae*) and Least Bur-reed (*Sparganium minimum*). These species tend to be restricted in their distribution in Ireland. Also notable is the

abundance of aquatic stoneworts (*Chara* spp.) which are characteristic of calcareous wetlands.

The rare plant Round-leaved Wintergreen (*Pyrola rotundifolia*) occurs around Newtown Lough. This species is listed in the Red Data Book and this site represents its only occurrence in Co. Meath.

Wet woodland fringes many stretches of the Boyne. The Boyne River Islands are a small chain of three islands situated 2.5 km west of Drogheda. The islands were formed by the build-up of alluvial sediment in this part of the river where water movement is sluggish. All of the islands are covered by dense thickets of wet, willow (*Salix* spp.) woodland, with the following species occurring: Osier (*S. viminalis*), Crack Willow (*S. fragilis*), White Willow (*S. alba*), Purple Willow (*Salix purpurea*) and Rusty Willow (*S. cinerea* subsp. *oleifolia*). A small area of Alder (*Alnus glutinosa*) woodland is found on soft ground at the edge of the canal in the north-western section of the islands. Along other stretches of the rivers of the site Rusty Willow scrub and pockets of wet woodland dominated by Alder have become established, particularly at the river edge of mature deciduous woodland. Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*) are common in the latter, and the ground flora is typical of wet woodland with Meadowsweet (*Filipendula ulmaria*), Wild Angelica (*Angelica sylvestris*), Yellow Iris (*Iris pseudacorus*), horsetails (*Equisetum* spp.) and occasional tussocks of Greater Tussock-sedge (*Carex paniculata*).

The dominant habitat along the edges of the river is freshwater marsh, and the following plant species occur commonly in these areas: Yellow Iris, Creeping Bent (*Agrostis stolonifera*), Canary Reed-grass (*Phalaris arundinacea*), Marsh Bedstraw (Galium palustre), Water Mint (*Mentha aquatica*) and Water Forget-me-not (*Myosotis scorpioides*). In the wetter areas Common Meadow-rue (*Thalictrum flavum*) is found. In the vicinity of Dowth, Fen Bedstraw (*Galium uliginosum*), a scarce species mainly confined to marshy areas in the midlands, is common in this vegetation. Swamp Meadow-grass (*Poa palustris*) is an introduced plant which has spread into the wild (naturalised) along the Boyne approximately 5 km south-west of Slane. It is a rare species which is listed in the Red Data Book and has been recorded among freshwater marsh vegetation on the banks of the Boyne in this site. The only other record for this species in the Republic of Ireland is from a site in Co. Monaghan.

The secondary habitat associated with the marsh is wet grassland and species such as Tall Fescue (*Festuca arundinacea*), Silverweed (*Potentilla anserina*), Creeping Buttercup (*Ranunculus repens*), Meadowsweet and Meadow Vetchling (*Lathyrus pratensis*) are well represented. Strawberry Clover (*Trifolium fragiferum*), a plant generally restricted to coastal locations in Ireland, has been recorded from wet grassland vegetation at Trim. At Rossnaree river bank on the River Boyne, Round-Fruited Rush (*Juncus compressus*) is found in alluvial pasture, which is generally periodically flooded during the winter months. This rare plant is only found in three counties in Ireland.

Along much of the Boyne and along tributary stretches are found areas of mature deciduous woodland on the steeper slopes above the floodplain marsh or wet woodland vegetation. Many of these are planted in origin. However the steeper areas of King Williams Glen and Townley Hall wood have been left unmanaged and now have a more natural character. East of Curley Hole the woodland has a natural appearance with few conifers. Broadleaved species include oaks (*Quercus* spp.), Ash, willows, Hazel (*Corylus avellana*), Sycamore (*Acer pseudoplatanus*), Holly (*Ilex aquifolium*), Horse-chestnut (*Aesculus hipposcastanum*) and the shrubs Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and Elder (*Sambucus nigra*). South-west of Slane and in Dowth, some more exotic tree species such as Beech (*Fagus sylvatica*), and occasionally Lime (*Tilia cordata*), are seen. The coniferous trees Larch (*Larix* sp.) and Scots Pine (*Pinus sylvestris*) also occur. The woodland ground flora includes Barren Strawberry (*Potentilla sterilis*), Enchanter's-nightshade (*Circaea lutetiana*) and Ground-ivy (*Glechoma hederacea*), along with a range of ferns. Variation occurs in the composition of the canopy - for example, in wet patches alongside the river, White Willow and Alder form the canopy.

Other habitats present along the Boyne and Blackwater include lowland dry grassland, improved grassland, reedswamp, weedy waste ground, scrub, hedge, drainage ditch and canal. In the vicinity of Lough Shesk, the dry slopes of the morainic hummocks support grassland vegetation which, in some places, is partially colonised by Gorse (*Ulex europaeus*) scrub. Those grasslands which remain unimproved for pasture are species-rich, with Common Knapweed (*Centaurea nigra*), Creeping Thistle (*Cirsium arvense*) and Ribwort Plantain (*Plantago lanceolata*) commonly present. Fringing the canal alongside the Boyne south-west of Slane are areas with Reed Sweet-grass (*Glyceria maxima*), Great Willowherb (*Epilobium hirsutum*) and Meadowsweet.

The Boyne and its tributaries form one of Ireland's premier game fisheries and the area offers a wide range of angling, from fishing for spring salmon and grilse to seatrout fishing and extensive brown trout fishing. Atlantic Salmon (*Salmo salar*) use the tributaries and headwaters as spawning grounds. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the Habitats Directive. Atlantic Salmon run the Boyne almost every month of the year. The Boyne is most important as it represents an eastern river which holds large three-sea-winter fish from 20-30 lb. These fish generally arrive in February, with smaller spring fish (10 lb) arriving in April/May. The grilse come in July, water permitting. The river gets a further run of fish in late August and this run would appear to last well after the fishing season. The salmon fishing season lasts from 1st March to 30th September.

The Blackwater is a medium sized limestone river which is still recovering from the effects of the arterial drainage scheme of the 1970s. Salmon stocks have not recovered to the numbers that existed pre-drainage. The Deel, Riverstown, Stoneyford and Tremblestown Rivers are all spring-fed, with a continuous high volume of water. They are difficult to fish because some areas are overgrown, while others have been affected by drainage with resultant high banks.

This site is also important for the populations of two other species listed on Annex II of the E.U. Habitats Directive which it supports, namely River Lamprey (*Lampetra fluviatilis*), which is present in the lower reaches of the Boyne River, and Otter (*Lutra lutra*), which can be found throughout the site. In addition, the site also supports many more of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. Common Frog, another Red Data Book species, also occurs within the site. All of these animals, with the addition of the Stoat and Red Squirrel, which also occur within the site, are protected under the Wildlife Act, 1976.

Whooper Swans winter regularly at several locations along the Boyne and Blackwater Rivers. Known sites are at Newgrange (approx. 20 in recent winters), near Slane (20+ in recent winters), Wilkinstown (several records of 100+) and River Blackwater from Kells to Navan (104 at Kells in winter 1996/97, 182 at Headfort in winter 1997/98, 200-300 in winter 1999/00). The available information indicates that there is a regular wintering population of Whooper Swans based along the Boyne and Blackwater River valleys. The birds use a range of feeding sites but roosting sites are not well known. The population is substantial, certainly of national, and at times international, importance. Numbers are probably in the low hundreds.

Intensive agriculture is the main land use along the site. Much of the grassland is in very large fields and is improved. Silage harvesting is carried out. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the lakes. In the more extensive agricultural areas sheep grazing is carried out.

Fishing is a main tourist attraction on the Boyne and Blackwater and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. The Eastern Regional Fishery Board have erected fencing along selected stretches of the river as part of their salmonid enhancement programme. Parts of the river system have been arterially dredged. In 1969 an arterial dredging scheme commenced and disrupted angling for 18 years. The dredging altered the character of the river completely and resulted in many areas in very high banks. The main channel from Drogheda upstream to Navan was left untouched, as were a few stretches on the Blackwater. Ongoing maintenance dredging is carried out along stretches of the river system where the gradient is low. This is extremely destructive to salmonid habitat in the area. Drainage of the adjacent river systems also impacts on the many small wetland areas throughout the site. The River Boyne is a designated Salmonid Water under the E.U. Freshwater Fish Directive.

The site supports populations of several species listed on Annex II of the E.U. Habitats Directive, and habitats listed on Annex I of this Directive, as well as examples of other important habitat types. Although the wet woodland areas appear small there are few similar examples of this type of alluvial wet woodland remaining in the country, particularly in the north-east. The semi-natural habitats, particularly the strips of woodland which extend along the river banks, and the marsh and wet

grasslands, increase the overall habitat diversity and add to the ecological value of the site, as does the presence of a range of Red Data Book plant and animal species and the presence of nationally rare plant species.

ISSN 2009-4086

National Parks and Wildlife Service

Conservation Objectives Series

River Boyne and River Blackwater SAC 002299

An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

National Parks and Wildlife Service,
Department of Housing, Local Government and Heritage,

90 King Street North, Dublin 7, D07 N7CV, Ireland.

Web: www.npws.ie
E-mail: natureconservation@housing.gov.ie

Citation:

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Series Editors: Rebecca Jeffrey and Christina Campbell
ISSN 2009-4086

Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

**** indicates a priority habitat under the Habitats Directive***

002299	River Boyne and River Blackwater SAC
1099	River Lamprey *Lampetra fluviatilis*
1106	Salmon *Salmo salar*
1355	Otter *Lutra lutra*
7230	Alkaline fens
91E0	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)*

Please note that this SAC overlaps with Boyne Estuary SPA (004080) and River Boyne and River Blackwater SPA (004232). The SAC is also adjacent to Boyne Coast and Estuary SAC (001957). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping and adjacent sites as appropriate.

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

NPWS Documents

Year :	2006
Title :	Otter survey of Ireland 2004/2005
Author :	Bailey, M.; Rochford, J.
Series :	Irish Wildlife Manuals, No. 23
Year :	2006
Title :	A baseline survey of juvenile lamprey populations in the Boyne catchment
Author :	O'Connor, W.
Series :	Irish Wildlife Manuals, No. 24
Year :	2007
Title :	Supporting documentation for the Habitats Directive Conservation Status Assessment - backing documents. Article 17 forms and supporting maps
Author :	NPWS
Series :	Unpublished report to NPWS
Year :	2008
Title :	National survey of native woodlands 2003-2008
Author :	Perrin, P.M.; Martin, J.; Barron, S.; O'Neill, F.H.; McNutt, K.E.; Delaney, A.
Series :	Unpublished report to NPWS
Year :	2009
Title :	Ireland Red List No. 2: Non-marine molluscs
Author :	Byrne, A.; Moorkens, E.A.; Anderson, R.; Killeen, I.J.; Regan, E.C.
Series :	Ireland Red List series, NPWS
Year :	2010
Title :	A provisional inventory of ancient and long-established woodland in Ireland
Author :	Perrin, P.M.; Daly, O.H.
Series :	Irish Wildlife Manuals, No. 46
Year :	2010
Title :	Ireland Red List No. 4: Butterflies
Author :	Regan, E.C.; Nelson, B.; Aldwell, B.; Bertrand, C.; Bond, K.; Harding, J.; Nash, D.; Nixon, D.; Wilson, C.J.
Series :	Ireland Red List series, NPWS
Year :	2012
Title :	Ireland Red List No. 8: Bryophytes
Author :	Lockhart, N.; Hodgetts, N.; Holyoak, D.
Series :	Ireland Red List series, NPWS
Year :	2013
Title :	National otter survey of Ireland 2010/12
Author :	Reid, N.; Hayden, B.; Lundy, M.G.; Pietravalle, S.; McDonald, R.A.; Montgomery, W.I.
Series :	Irish Wildlife Manuals, No. 76
Year :	2013
Title :	Results of a monitoring survey of old sessile oak woods and alluvial forests
Author :	O'Neill, F.H.; Barron, S.J.
Series :	Irish Wildlife Manuals, No. 71

Year :	2013
Title :	The status of EU protected habitats and species in Ireland. Volume 2. Habitats assessments
Author :	NPWS
Series :	Conservation assessments
Year :	2016
Title :	Ireland Red List No. 10: Vascular Plants
Author :	Wyse Jackson, M.; FitzPatrick, Ú.; Cole, E.; Jebb, M.; McFerran, D.; Sheehy Skeffington, M.; Wright, M.
Series :	Ireland Red Lists series, NPWS
Year :	in prep.
Title :	The monitoring and assessment of four EU Habitats Directive Annex I woodland habitats
Author :	Daly, O.H.; O'Neill, F.H.; Barron, S.J.
Series :	Irish Wildlife Manuals
Year :	in prep.
Title :	Scoping study and pilot survey of fens
Author :	O'Neill, F.H.; Perrin, P.M.; Denyer, J.; Martin, J.R.; Daly, O.H.; Brophy, J.T.
Series :	Irish Wildlife Manuals

Other References

Year :	1982
Title :	Otter survey of Ireland
Author :	Chapman, P.J.; Chapman, L.L.
Series :	Unpublished report to Vincent Wildlife Trust
Year :	1991
Title :	The spatial organization of otters (*Lutra lutra*) in Shetland
Author :	Kruuk, H.; Moorhouse, A.
Series :	Journal of Zoology, 224: 41-57
Year :	2002
Title :	Reversing the habitat fragmentation of British woodlands
Author :	Peterken, G.
Series :	WWF-UK, London
Year :	2006
Title :	Otters - ecology, behaviour and conservation
Author :	Kruuk, H.
Series :	Oxford University Press
Year :	2010
Title :	Otter tracking study of Roaringwater Bay
Author :	De Jongh, A.; O'Neill, L.
Series :	Unpublished draft report to NPWS
Year :	2011
Title :	Comparison of field- and GIS-based assessments of barriers to Atlantic salmon migration: a case study in the Nore Catchment, Republic of Ireland
Author :	Gargan, P.G.; Roche, W.K.; Keane, S.; King, J.J.; Cullagh, A.; Mills, P.; O'Keeffe, J.
Series :	Journal of Applied Ichthyology, 27 (Suppl. 3): 66-72

Year :	2011
Title :	Review and revision of empirical critical loads and dose-response relationships. Proceedings of an expert workshop, Noordwijkerhout, 23-25 June 2010
Author :	Bobbink, R.; Hettelingh, J.P.
Series :	RIVM report 680359002, Coordination Centre for Effects, National Institute for Public Health and the Environment (RIVM)
Year :	2011
Title :	The Fen Management Handbook
Author :	McBride, A.; Diack, I.; Droy, N.; Hamill, B.; Jones, P.; Schutten, J.; Skinner, A.; Street, M. (eds.)
Series :	Scottish Natural Heritage, Perth
Year :	2015
Title :	Behaviour of sea lamprey (*Petromyzon marinus* L.) at man-made obstacles during upriver spawning migration: use of telemetry to access efficacy of weir modifications for improved passage
Author :	Rooney, S.M.; Wightman, G.D.; O Conchuir, R.; King, J.J.
Series :	Biology and Environment: Proceedings of the Royal Irish Academy, 115B: 1-12
Year :	2015
Title :	Common standards monitoring guidance for freshwater fauna. Version October 2015
Author :	JNCC
Series :	Joint Nature Conservation Committee, Peterborough
Year :	2016
Title :	Irish Vegetation Classification: Technical Progress Report No. 2
Author :	Perrin, P.
Series :	Report submitted to National Biodiversity Data Centre
Year :	2016
Title :	National Programme: Habitats Directive and Red Data Book Species Summary Report 2015
Author :	Gallagher, T.; O'Gorman, N.M.; Rooney, S.M.; Coghlan, B.; King, J.J.
Series :	IFI/2016/1-4344. Inland Fisheries Ireland
Year :	2018
Title :	Irish Vegetation Classification: Technical Progress Report No. 4
Author :	Perrin, P.
Series :	Report submitted to National Biodiversity Data Centre
Year :	2021
Title :	The Status of Irish Salmon Stocks in 2020 with Catch Advice for 2021
Author :	Gargan, P.; Fitzgerald, C.; Kennedy, R.; Maxwell, H.; McLean, S.;Millane, M.
Series :	Report of the Technical Expert Group on Salmon (TEGOS) to the North-South Standing Scientific Committee for Inland Fisheries

Spatial data sources

Year :	Revision 2010
Title :	National Survey of Native Woodlands 2003-2008. Version 1
GIS Operations :	QIs selected; clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	91E0 (map 3)
Year :	2018
Title :	Woodland Monitoring Survey 2017-2018
GIS Operations :	QIs selected; clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	91E0 (map 3)

7230 Alkaline fens

To maintain the favourable conservation condition of Alkaline fens in River Boyne and River Blackwater SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Alkaline fen has not been mapped in detail for River Boyne and River Blackwater SAC and thus the exact total current area of the qualifying habitat in the SAC is currently unknown. The main areas of alkaline fen in the SAC are documented to occur in the vicinity of Lough Shesk, Freekan Lough, Newtown Lough in the upper reaches of the Stonyford River. At Lough Shesk, the habitat is particularly well-represented and there is a good example of succession from open water to fen-type habitat (NPWS internal files)
Habitat distribution	Occurrence	No decline, subject to natural processes	See the notes for habitat area above
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil pH and nutrient status within natural ranges	Relevant nutrients and their natural ranges are yet to be defined. However, nitrogen deposition is noted as being relevant to this habitat in NPWS (2013). See also Bobbink and Hettelingh (2011). Increased nutrients can lead to changes in plant and invertebrate species through competition and subsequent structural changes to micro-habitat. These nutrients favour growth of grasses rather than forbs and mosses and leads to a higher and denser sward
Ecosystem function: peat formation	Percentage cover of peat-forming vegetation and water table levels	Maintain active peat formation, where appropriate	In order for peat to form, water levels need to be slightly below or above the soil surface for c.90% of the time
Ecosystem function: hydrology - groundwater levels	Water levels (centimetres); duration of levels; hydraulic gradients; water supply	Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	Fen habitats require high groundwater levels (i.e. water levels at or above the ground surface) for a large proportion of the calendar year (i.e. duration of mean groundwater level). Fen groundwater levels are controlled by regional groundwater levels in the contributing catchment area (which sustain the hydraulic gradients of the fen groundwater table). Regional abstraction of groundwater may affect fen groundwater levels
Ecosystem function: hydrology - surface water flow	Drain density and form	Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions	Drainage, either within or surrounding the fen habitat, can result in the drawdown of the groundwater table. The depth, geometry and density of drainage (hydromorphology) will indicate the scale and impact on fen hydrology. Drainage can result in loss of characteristic species and transition to drier habitats
Ecosystem function: water quality	Various	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat	Fens receive natural levels of nutrients (e.g. iron, magnesium and calcium) from water sources. However, they are generally poor in nitrogen and phosphorus, with the latter tending to be the limiting nutrient under natural conditions. Water supply should be also relatively calcium-rich
Vegetation composition: community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes	The entire diversity of alkaline fen vegetation communities present in the SAC is currently unknown. Information on the vegetation communities associated with alkaline fens is provided by O'Neill et al. (in prep.). See also the Irish Vegetation Classification (Perrin, 2018; www.biodiversityireland.ie/projects/ivc-classification-explorer)

Vegetation composition: typical brown mosses	Percentage cover at a representative number of monitoring stops	Maintain adequate cover of typical brown moss species	For lists of typical bryophyte species, including high quality indicator species, see O'Neill et al. (in prep.). Species recorded at Lough Shesk and Newtown Lough include: *Calliergon giganteum, Scorpidium scorpioides, Campylium stellatum, Bryum pseudotriquetrum, Fissidens adianthoides, Scorpidium scorpioides, Calliergonella cuspidata* and *Ctenidium molluscum* (NPWS internal files)
Vegetation composition: typical vascular plants	Percentage cover at a representative number of monitoring stops	Maintain adequate cover of typical vascular plant species	For lists of typical vascular plant species for the different vegetation communities, including high quality indicators, see O'Neill et al. (in prep.). Typical species recorded in the habitat in the SAC include black bog-rush (*Schoenus nigricans*), dioecious sedge (*C. dioica*) and common butterwort (*Pinguicula vulgaris*) (NPWS internal files)
Vegetation composition: native negative indicator species	Percentage cover at a representative number of monitoring stops	Cover of native negative indicator species at insignificant levels	Negative indicators include species not characteristic of the habitat and species indicative of undesirable activities such as overgrazing, undergrazing, nutrient enrichment, agricultural improvement or impacts on hydrology. Native negative indicators may include *Anthoxanthum odoratum, Epilobium hirsutum, Holcus lanatus, Juncus effusus, Phragmites australis* and *Ranunculus repens*. See O'Neill et al. (in prep.)
Vegetation composition: non-native species	Percentage cover at a representative number of monitoring stops	Cover of non-native species less than 1%	Attribute and target based on O'Neill et al. (in prep.). Non-native species can be invasive and have deleterious effects on native vegetation. A low target is set as non-native species can spread rapidly and are most easily dealt with when still at lower abundances
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 10%	Attribute and target based on O'Neill et al. (in prep.). Scrub and trees will tend to invade if fen conditions become drier
Vegetation composition: algal cover	Percentage cover at, and in local vicinity of, a representative number of monitoring stops	Cover of algae less than 2%	Attribute and target based on O'Neill et al. (in prep.). Algal cover is indicative of nutrient enrichment from multiple sources (McBride et al., 2011)
Vegetation structure: vegetation height	Percentage cover at a representative number of monitoring stops	At least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm above ground surface depending on community type	Attribute and target based on O'Neill et al. (in prep.). While grazing may be appropriate in this habitat, excessive grazing can reduce the ability of plant species to regenerate reproductively and maintain species diversity, especially if flowering shoots are cropped during the growing season
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of monitoring stops	Cover of disturbed bare ground not more than 10%	Attribute and target based on O'Neill et al. (in prep.). While grazing may be appropriate in this habitat, excessive areas of disturbed bare ground may develop due to unsuitable grazing regimes. Disturbance can include hoof marks, wallows, human footprints, vehicle and machinery tracks. Excessive disturbance can result in loss of characteristic species and presage erosion for peatlands
Physical structure: tufa formations	Percentage cover in local vicinity of a representative number of monitoring stops	Disturbed proportion of vegetation cover where tufa is present is less than 1%	Attribute and target based on O'Neill et al. (in prep.)
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes	This includes species on the Flora (Protection) Order, 2015 and/or Red Lists (Byrne et al., 2009; Regan et al., 2010; Lockhart et al., 2012; Wyse Jackson et al., 2016, etc.). The Near Threatened species (Wyse Jackson et al., 2016) round-leaved wintergreen (*Pyrola rotundifolia*) has been recorded in the habitat around Newtown Lough in the SAC (NPWS internal files)
Transitional areas between fen and adjacent habitats	Hectares; distribution	Maintain adequate transitional areas to support/protect the alkaline fen ecosystem and the services it provides	In many cases, fens transition to other wetland habitats. It is important that the transitional areas between fens and other habitats are maintained in as natural condition as possible in order to protect the functioning of the fen

91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)*

To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)* in River Boyne and River Blackwater SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes. See map 3 for surveyed woodland areas	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)* is present within River Boyne and River Blackwater SAC. As part of the National Survey of Native Woodlands (NSNW), the sub-sites Grove Island (NSNW site code 688) and Yellow Island (752) were surveyed by Perrin et al. (2008). Yellow Island (code 752) was also included in national monitoring surveys (O'Neill and Barron, 2013; Daly et al., in prep.). Map 3 shows the minimum area of alluvial forests within the SAC, which is estimated to be 16.7ha (Perrin et al., 2008; Daly et al., in prep.). It is important to note that further unsurveyed areas may be present within the SAC
Habitat distribution	Occurrence	No decline, subject to natural processes. The surveyed woodland locations are shown on map 3	Distribution based on Perrin et al. (2008) and Daly et al. (in prep.). It is important to note that further unsurveyed areas may be present within the SAC
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	The target areas for individual woodlands aim to reduce habitat fragmentation and benefit those species requiring 'deep' woodland conditions (Peterken, 2002). In some cases, topographical constraints may restrict expansion
Woodland structure: cover and height	Percentage; metres; centimetres	Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%	The target aims for a diverse structure with a canopy containing mature trees, shrub layer with semi-mature trees and shrubs, and well-developed field layer (herbs, graminoids and dwarf shrubs) and ground layer (bryophytes). Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013)
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types	The Boyne River Islands are an example of gallery forests of willows (Salicion albae), which occur alongside river channels and on river islands, where tree roots are almost continuously submerged (Daly et al., in prep.). Grove Island (NSNW site code 688) and Yellow Island (752) were assigned by Perrin et al. (2008) to the *Salix triandra – Urtica dioica* vegetation type (2h) of the *Fraxinus excelsior – Hedera helix* group. This corresponds to the *Salix fragilis – Calystegia sepium* sub-community (WL3Di) of the Irish Vegetation Classification (Perrin, 2016; www.biodiversityireland.ie/projects/ivc-classification-explorer)
Woodland structure: natural regeneration	Seedling: sapling: pole ratio	Seedlings, saplings and pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy	The target species for 91E0* are alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*) and willows (*Salix* spp.). Assessment criteria are described in Daly et al. (in prep.) and O'Neill and Barron (2013)

Hydrological regime: flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	Periodic flooding is essential to maintain alluvial woodlands along river and lake floodplains, but not for woodland around springs/seepage areas. Much of the river channel within the SAC was subject to arterial drainage schemes. Natural flood-plains now exist along only limited stretches of river (NPWS internal files)
Woodland structure: dead wood	Number per hectare	At least 19 stems/ha of dead wood of at least 20cm diameter	Dead wood is a valuable resource and an integral part of a healthy, functioning woodland ecosystem
Woodland structure: veteran trees	Number per hectare	No decline	Veteran trees are important habitats for bryophytes, lichens, saproxylic organisms and some bird species. Their retention is important to ensure continuity of habitats/niches and propagule sources
Woodland structure: indicators of local distinctiveness	Occurrence; population size	No decline in distribution and, in the case of red listed and other rare or localised species, population size	Includes ancient or long-established woodlands (see Perrin and Daly, 2010), archaeological and geological features as well as red listed and other rare or localised species
Woodland structure: indicators of overgrazing	Occurrence	All five indicators of overgrazing absent	There are five indicators of overgrazing within 91E0*: topiary effect on shrubs and young trees, browse line on mature trees, abundant dung, severe recent bark stripping, and trampling (Daly et al., in prep.)
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy	The target species for 91E0* are alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*) and willows (*Salix* spp.) (Daly et al., in prep.; O'Neill and Barron, 2013)
Vegetation composition: typical species	Occurrence	At least 1 target species for 91E0* woodlands present; at least 6 positive indicator species for 91E0* woodlands present	A variety of typical native species should be present, depending on woodland type. The target species for 91E0* are alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*) and willows (*Salix* spp.). Positive indicator species for 91E0* are listed in Daly et al. (in prep.) and O'Neill and Barron (2013)
Vegetation composition: negative indicator species	Occurrence	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent	Negative indicator species (i.e. any non-native species, including herbaceous species) should be absent or under control. The canopy at Grove Island (NSNW site code 688) and Yellow Island (752) is dominated by a range of *Salix* spp. (*S. cinerea, S. triandra, S. fragilis, S. viminalis*) (Perrin et al., 2008). Although the latter two are not native to Ireland, an exception is made for these species where they occur within gallery woodland (Daly et al., in prep.). Perrin et al. (2008) recorded some sycamore (*Acer pseudoplatanus*) in the canopy at Grove Island (NSNW site code 688). Daly et al. (in prep.) found that the recent arrival of the invasive non-native herb Himalayan balsam (*Impatiens glandulifera*) at Yellow Island (752) has caused significant negative impacts to the alluvial forest habitat
Vegetation composition: problematic native species	Percentage	Cover of common nettle (*Urtica dioica*) less than 75%	Common nettle (*Urtica dioica*) is a positive indicator species for 91E0* but, in some cases, it may become excessively dominant. Increased light and nutrient enrichment are factors which favour proliferation of common nettle (Daly et al., in prep.)

1099 River Lamprey *Lampetra fluviatilis*

To restore the favourable conservation condition of River Lamprey (*Lampetra fluviatilis*) in River Boyne and River Blackwater SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Percentage of river accessible	Restore access to all water courses down to first order streams	Artificial barriers can block or impede the passage of upstream migrating lamprey, thereby restricting access to spawning areas (Gargan et al., 2011; Rooney et al., 2015). There are a number of weirs along the lower sections of the Boyne main channel, the most substantial of these are located at Slane and downstream of Navan at Blackcastle. Efforts to trap adult river lamprey were undertaken at four locations throughout the catchment during November 2014 to April 2015. This was augmented in April 2015 by an extensive fyke-netting survey (n=26 sites). No adult river lamprey were encountered, with the only record to date being a dead individual from the River Boyne at Slane in late March 2015 (Gallagher et al., 2016). On the Boyne main channel, there is ideal spawning habitat both upstream and downstream of the weir at Blackcastle but spawning has not been observed at these locations to date
Distribution of larvae	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	Not less than 50% of sample sites with suitable habitat positive for larval brook/river lamprey	It is not possible to distinguish between larval brook and river lamprey in the field and they are therefore considered together in assessing conservation status. A survey of the Boyne catchment in 2015 recorded n=583 *Lampetra* spp. larvae from n=102 sites (Gallagher et al., 2016). As stated, the weirs in the lower main stem are a significant impediment to river lamprey passage and, for this reason, these larvae are considered to be mainly, if not all, brook lamprey. To achieve favourable condition *Lampetra* spp. should, as a minimum, be present in not less than 50% of all sampling sites surveyed with suitable habitat present within the natural range (JNCC, 2015). *Lampetra* spp. larvae were recorded from 72% of sites indicating a pass for this target. Distribution remained similar to a 2005 survey (O'Connor, 2006) although larvae continued to be absent from the Boycetown and Skane Rivers, as well as the upper reaches of the Kells Blackwater system
Population structure of larvae	Number of age/size classes	At least three age/size classes of larval brook/river lamprey present	The target of at least three age/size classes is based on guidance from JNCC (2015). Larvae typically range from 10-150mm in length and this corresponds to up to six age classes. A broad range of size classes (12-153mm), including young-of-year larvae, was recorded from the 2015 Boyne catchment-wide survey indicating a pass for this target. However, given the issue of artificial barriers on the River Boyne, it is likely that this value pertains to brook lamprey, as previously stated
Larval lamprey density in fine sediment	Larval lamprey/m²	Mean density of brook/river larval lamprey in sites with suitable habitat more than 5/m²	A target mean density of more than 5/m² larvae in sites with suitable habitat is required to achieve favourable condition (JNCC, 2015). In the Boyne survey a mean density of 6/m² *Lampetra* spp. larvae (n=583) was obtained. A number of tributaries did not achieve a pass for this target, including the Athboy/Tremblestown, Boycetown, Deel, Skane and Stonyford Rivers. Again, the overall mean density value is most likely indicative of the status of brook lamprey in the Boyne catchment

Extent and distribution of spawning nursery habitat	m^2 and occurrence	No decline in extent and distribution of spawning and nursery beds	This target is based on spawning and nursery bed mapping during targeted larval lamprey monitoring surveys. River lamprey spawn in clean gravels in flowing water where they excavate shallow nests. While coarse substrate is required for spawning, the close proximity of nursery areas comprising mainly sand/silt are necessary for the development of larvae. The 2015 Boyne survey recorded adequate spawning and nursery habitat availability within the catchment (Gallagher et al., 2016). However, the sequence of weirs in the lower main channel of the Boyne represents a significant impediment to upstream passage. In addition, this lower section of river is in a degraded hydromorphological state with impounding and, therefore, poor habitat availability for spawning

1106 Salmon *Salmo salar*

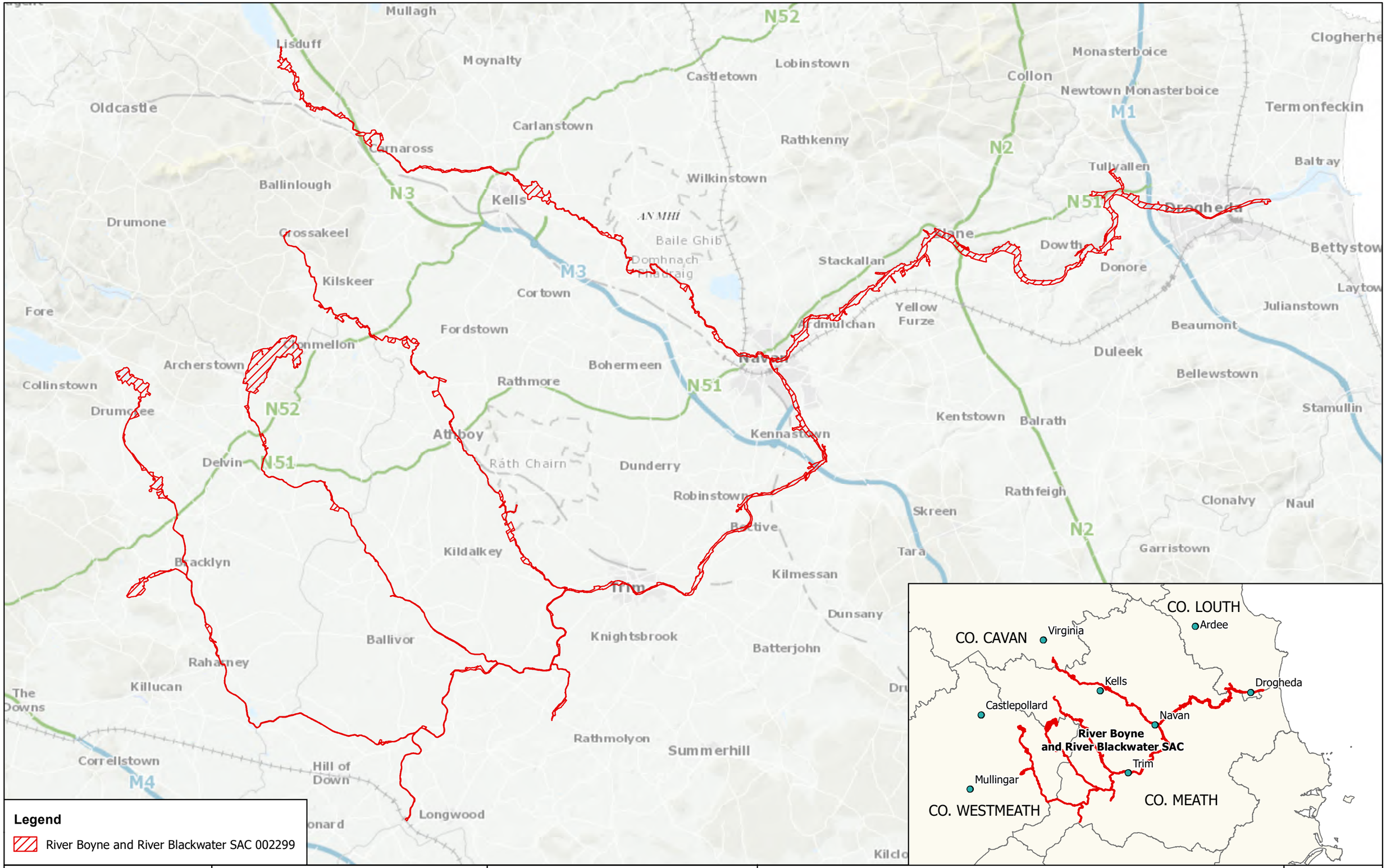
To restore the favourable conservation condition of Atlantic Salmon (*Salmo salar*) in River Boyne and River Blackwater SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution: extent of anadromy	Percentage of river accessible	100% of river channels down to second order accessible from estuary	Artificial barriers block salmons' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas. There are multiple barriers to fish migration in the Boyne system
Adult spawning fish	Number	Conservation limit (CL) for each system consistently exceeded	A conservation limit (CL) is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as "the spawning stock level that produces long-term average maximum sustainable yield as derived from the adult to adult stock and recruitment relationship". The target is based on the Technical Expert Group on Salmon's (TEGOS) annual model output of CL attainment levels. See Gargan et al. (2021) for further details. Stock estimates are either derived from direct counts of adults (rod catch, fish counter) or indirectly by fry abundance counts. The Boyne is significantly below its CL
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	Target is threshold value for rivers currently exceeding their conservation limit (CL)
Out-migrating smolt abundance	Number	No significant decline	Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (*Lepeophtheirus salmonis*)
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	Salmon spawn in clean gravels. There is restricted habitat for salmon in the Boyne and habitat rehabilitation programmes have been undertaken in sections of the catchment
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	Q values based on triennial water quality surveys carried out by the Environmental Protection Agency (EPA)

1355 Otter *Lutra lutra*

To maintain the favourable conservation condition of Otter (*Lutra lutra*) in River Boyne and River Blackwater SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. Favourable Conservation Status (FCS) target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 447.6ha along river banks/ lake shoreline/around ponds	No field survey. Areas mapped to include 10m terrestrial buffer, identified as critical for otters (NPWS, 2007), along rivers and around water bodies
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 263.3km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 31.6ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk and Moorhouse, 1991; Kruuk, 2006)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006; Reid et al., 2013)
Barriers to connectivity	Number	No significant increase	Otters will regularly commute across stretches of open water up to 500m, e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed



Legend

River Boyne and River Blackwater SAC 002299

An Roinn Tithíochta, Rialtais Áitiúil agus Oidhreachta
Department of Housing, Local Government and Heritage

MAP 1:
RIVER BOYNE AND RIVER BLACKWATER SAC
CONSERVATION OBJECTIVES
SAC DESIGNATION

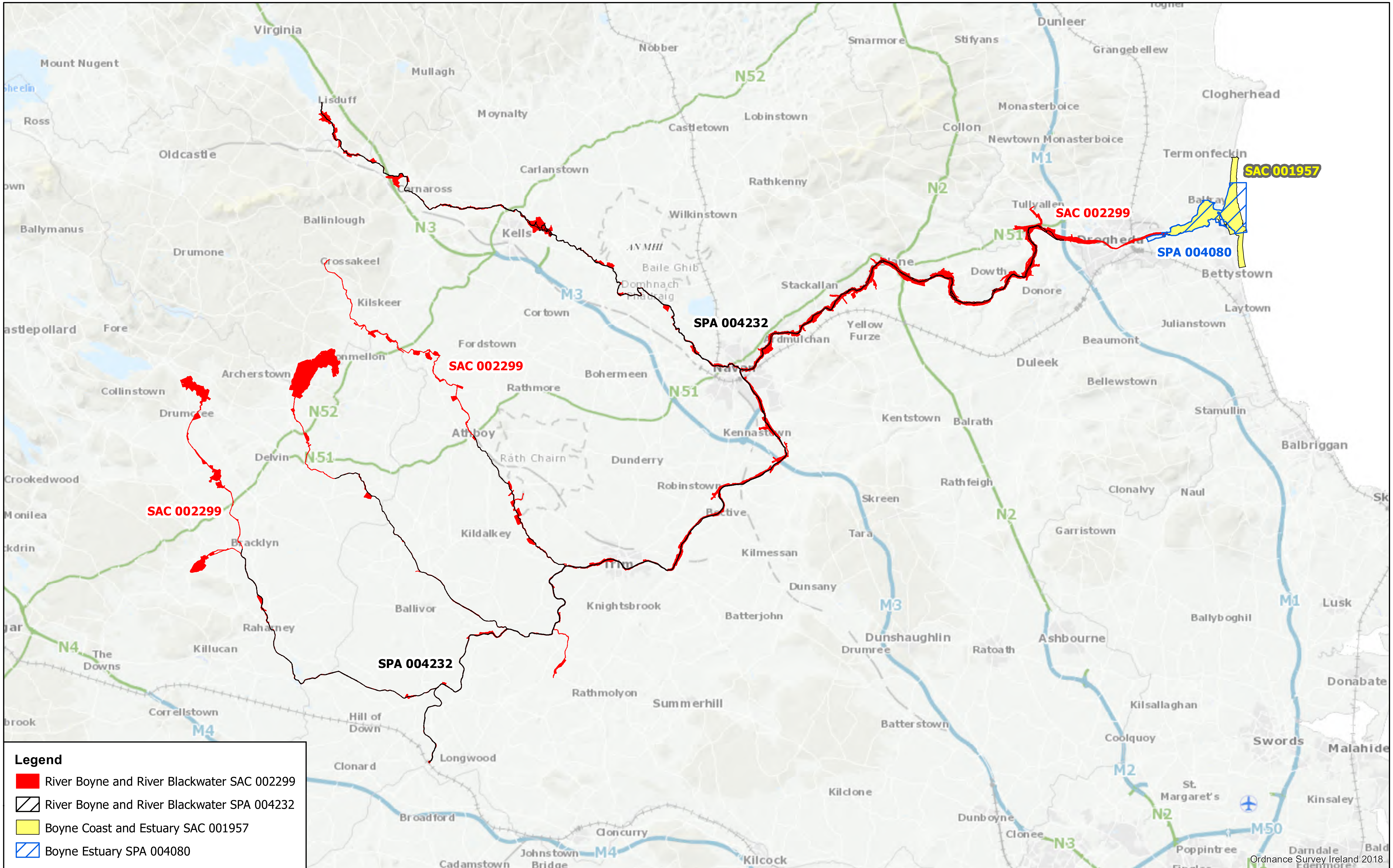
Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SAC 002299; version 3.02.
CO. CAVAN / LOUTH / MEATH / WESTMEATH

0 2 4 8 Kilometres

N

Date: January 2021


Legend
River Boyne and River Blackwater SAC 002299
River Boyne and River Blackwater SPA 004232
Boyne Coast and Estuary SAC 001957
Boyne Estuary SPA 004080
SAC 002299
SPA 004232
SAC 001957
SPA 004080
Virginia
Mount Nugent
Mullagh
Nobber
Smarmore
Stifyans
Dunleer
Grangebellew
Ross
Lisduff
Moynalty
N52
Castletown
Lobinstown
Monasterboice
Clogherhead
Oldcastle
Collon
Newtown Monasterboice
M1
Termonfeckin
Carlanstown
Rathkenny
N2
Ballinlough
Wilkinstown
Tullyallen
Ballymanus
N3
Kells
N51
Drogheda
Drumone
Crossakeel
Baile Ghib
Dowth
Bettystown
Kilskeer
Stackallan
Donore
M3
Cortown
Laytown
Julianstown
Castlepollard
Fore
Fordstown
Yellow Furze
Beaumont
Archerstown
Duleek
Bohermeen
Navan
Collinstown
Rathmore
Bellewstown
Kentstown
Balrath
Stamullin
Athboy
Kennastown
Balbriggan
Delvin
Ráth Chairn
Dunderry
Crookedwood
Robinstown
Rathfeigh
Clonalvy
Naul
Skreen
Monilea
Bective
Garristown
Kildalkey
Tara
Kilmessan
Dunsany
Knightsbrook
Ballivor
Batterjohn
Lusk
Ballyboghil
Rahareney
Dunshaughlin
Ashbourne
Killucan
Drumree
Ratoath
N4
The Downs
Rathmolyon
Summerhill
Donabate
Kilsallaghan
Correllstown
M4
Hill of Down
Batterstown
Coolquoy
Swords
Malahide
Longwood
Clonard
M2
Kilclone
St. Margaret's
Kinsaley
Broadford
Dunboyne
Cloncurry
Clonee
M50
Johnstown Bridge
Poppintree
Darndale
Cadamstown
Kilcock
Ordnance Survey Ireland 2018

An Roinn Tithíochta, Rialtais Áitiúil agus Oidhreachta
Department of Housing, Local Government and Heritage

MAP 2:
RIVER BOYNE AND RIVER BLACKWATER SAC
CONSERVATION OBJECTIVES
OVERLAPPING / ADJACENT SITES

Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SAC 002299; version 3.02.
CO. CAVAN / LOUTH / MEATH / WESTMEATH

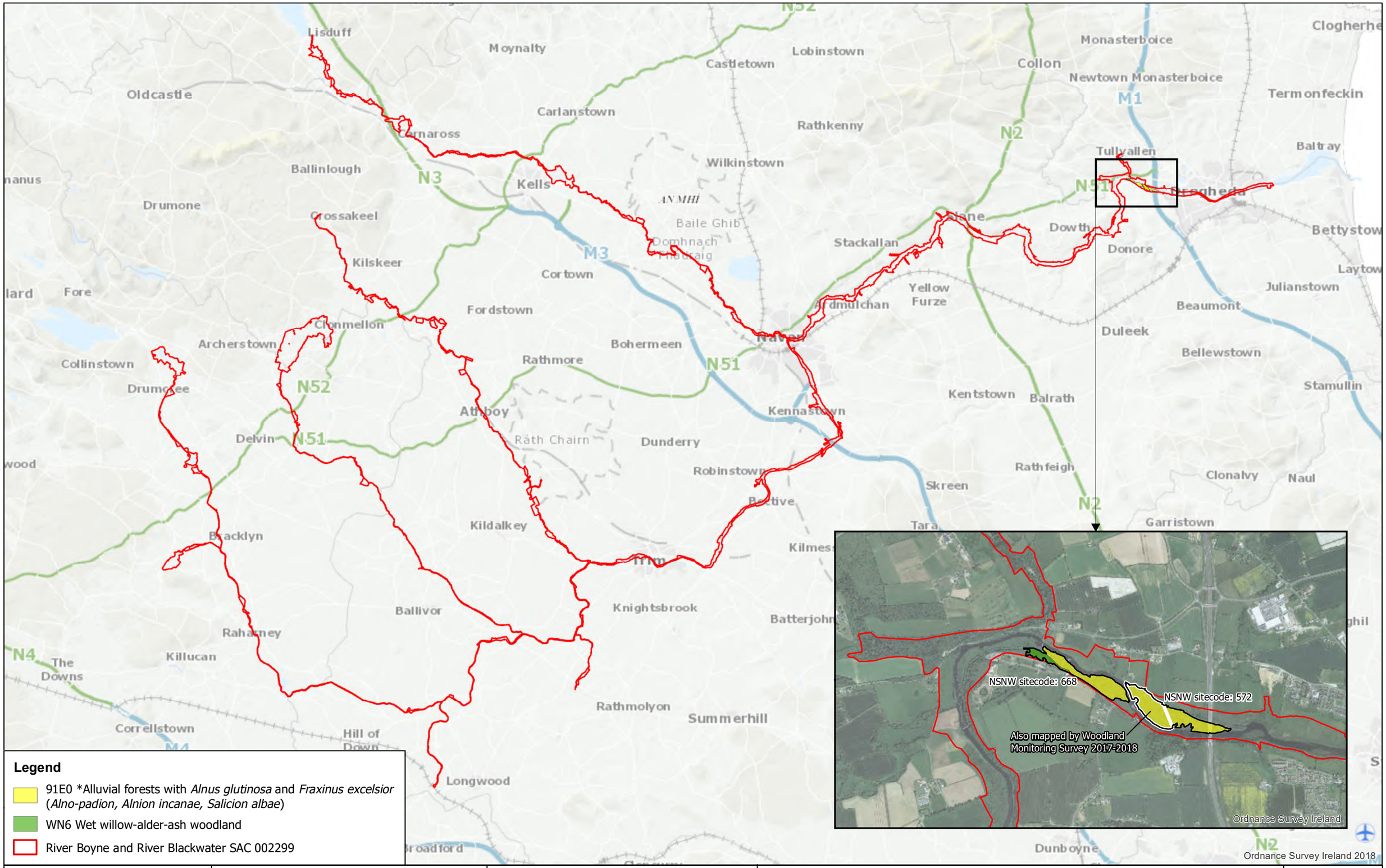
0 2.5 5 10 Kilometres

The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision.

Níl sna teorainneacha ar na léarscáileanna ach nod garshuiomhach ginearálta. Féadfar athbhreithnithe a déanamh ar theorainneacha na gceantar comharthaithe.

N

Date: January 2021



Legend

- 91E0 *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-padion, Alnion incanae, Salicion albae*)
- WN6 Wet willow-alder-ash woodland
- River Boyne and River Blackwater SAC 002299

Ordnance Survey Ireland 2018

An Roinn Tithíochta, Rialtais Áitiúil agus Oidhreachta
Department of Housing, Local Government and Heritage

MAP 3:
RIVER BOYNE AND RIVER BLACKWATER SAC
CONSERVATION OBJECTIVES
WOODLAND HABITATS

Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SAC 002299; version 3.02.
CO. CAVAN / LOUTH / MEATH / WESTMEATH

0 2 4 8 Kilometres

N

Date: January 2021

SITE SYNOPSIS

SITE NAME: BOYNE ESTUARY SPA

SITE CODE: 004080

This moderately-sized coastal site is situated west of Drogheda on the border of Counties Louth and Meath. The site comprises most of the estuary of the Boyne River, a substantial river which drains a large catchment. Apart from one section which is over 1 km wide, its width is mostly less than 500 m. The river channel, which is navigable and dredged, is defined by training walls, these being breached in places. Intertidal flats occur along the sides of the channelled river. The sediments vary from fine muds in the sheltered areas to sandy muds or sands towards the river mouth. The linear stretches of intertidal flats to the north and south of the river mouth are mainly composed of sand. One or more species of Eelgrass (*Zostera* spp.) occur in the estuary. Parts of the intertidal areas are fringed by salt marshes, most of which are of the Atlantic type, and dominated by Sea-purslane (*Halimione portulacoides*). Other species present include Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Lax-flowered Sea-lavender (*Limonium humile*) and Glasswort (*Salicornia* spp.). Common Cord-grass (*Spartina anglica*) occurs frequently on the flats and salt marshes.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Shelduck, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Sanderling, Black-tailed Godwit, Redshank, Turnstone and Little Tern. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The Boyne Estuary is the second most important estuary for wintering birds on the Louth-Meath coastline. Black-tailed Godwit occurs here in internationally important numbers (471). A further nine species of wintering waterbirds have populations of national importance, i.e. Shelduck (218), Oystercatcher (1,179), Golden Plover (6,070), Grey Plover (146), Lapwing (4,771), Knot (1,944), Sanderling (81), Redshank (583) and Turnstone (221) - all figures are mean peaks for the 5 year period 1995/96-1999/2000. Of particular note is that the site supports 6.8% of the all-Ireland population of Knot and almost 3% of the total for Golden Plover. Other species which occur include Bar-tailed Godwit (86), Cormorant (97), Brent Goose (172), Wigeon (454), Teal (230), Dunlin (498), Curlew (395), Mallard (197), Red-breasted Merganser (14), Greenshank (6), Ringed Plover (80) and Mute Swan (13). The site provides both feeding and high-tide roost areas for the birds. The estuary also attracts large numbers of gulls in winter, including Black-headed Gull (593), Common Gull (145), Herring Gull (403) and Great Black-backed Gull (160).

Little Tern have bred here since at least 1984 and a nationally important population was recorded in 1995 (14 pairs). In the intervening years breeding numbers and fledgling success has varied significantly. In 1996 approximately 20 pairs fledged 15

- 20 chicks but in 1998 and 1999 part of the shingle bank where the birds nested was washed away by storms. In 2008 35 pairs of Little Tern were recorded.

The site is of considerable ornithological importance for wintering waterfowl, with Black-tailed Godwit occurring in internationally important numbers and nine other species having populations of national importance. Of particular significance is that three species that regularly occur, Golden Plover, Bar-tailed Godwit and Little Tern are listed on Annex I of the E.U. Birds Directive. Part of the Boyne Estuary SPA is a Wildfowl Sanctuary.

ISSN 2009-4086

National Parks and Wildlife Service

Conservation Objectives Series

Boyne Estuary SPA 004080

An Roinn
Ealaíon, Oidhreachta agus Gaeltachta
Department of
Arts, Heritage and the Gaeltacht

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Department of Arts, Heritage and the Gaeltacht,

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Citation:

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Series Editor: Rebecca Jeffrey
ISSN 2009-4086

Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

**** indicates a priority habitat under the Habitats Directive***

004080	Boyne Estuary SPA
A048	Shelduck *Tadorna tadorna*
A130	Oystercatcher *Haematopus ostralegus*
A140	Golden Plover *Pluvialis apricaria*
A141	Grey Plover *Pluvialis squatarola*
A142	Lapwing *Vanellus vanellus*
A143	Knot *Calidris canutus*
A144	Sanderling *Calidris alba*
A156	Black-tailed Godwit *Limosa limosa*
A162	Redshank *Tringa totanus*
A169	Turnstone *Arenaria interpres*
A195	Little Tern *Sterna albifrons*
A999	Wetlands

Please note that this SPA overlaps with Boyne Coast and Estuary SAC (001957) and River Boyne and River Blackwater SAC (002299). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping SACs as appropriate.

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

Year :	1995
Title :	Seabird monitoring handbook for Britain and Ireland: a compilation of methods for survey and monitoring of breeding seabirds.
Author :	Walsh, P.; Halley, D.J.; Harris, M.P.; del Nevo, A.; Sim, I.M.W.; Tasker, M.L.
Series :	JNCC, Peterborough
Year :	2004
Title :	Seabird Populations of Britain and Ireland
Author :	Mitchell, P.I.; Newton, S.F.; Ratcliffe, N.; Dunn, T.E.
Series :	Poyser, London
Year :	2010
Title :	2010 report for the little tern conservation project at Baltray, Co. Louth
Author :	Reilly, M.
Series :	Unpublished report by Louth Nature Trust
Year :	2013
Title :	Seabird Monitoring Programme (SMP) Database
Author :	JNCC
Series :	http://jncc.defra.gov.uk/smp/Default.aspx
Year :	2013
Title :	BirdLife International Seabird Ecology and Foraging Range Database
Author :	BirdLife International
Series :	http://seabird.wikispaces.com
Year :	2012
Title :	Boyne Estuary SPA (site code 4080) Conservation Objectives Supporting Document V1
Author :	NPWS
Series :	Unpublished report to NPWS

Conservation Objectives for : Boyne Estuary SPA [004080]

A048 **Shelduck *Tadorna tadorna***

To maintain the favourable conservation condition of Shelduck in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by shelduck, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

A130 Oystercatcher *Haematopus ostralegus*

To maintain the favourable conservation condition of Oystercatcher in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by oystercatcher, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

A140 Golden Plover *Pluvialis apricaria*

To maintain the favourable conservation condition of Golden Plover in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of theconservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by golden plover, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

A141 Grey Plover *Pluvialis squatarola*

To maintain the favourable conservation condition of Grey Plover in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by grey plover, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

A142 Lapwing *Vanellus vanellus*

To maintain the favourable conservation condition of Lapwing in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by lapwing, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

A143 Knot *Calidris canutus*

To maintain the favourable conservation condition of Knot in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by knot, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

A144 Sanderling *Calidris alba*

To maintain the favourable conservation condition of Sanderling in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by sanderling, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

A156 Black-tailed Godwit *Limosa limosa*

To maintain the favourable conservation condition of Black-tailed Godwit in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by black-tailed godwit, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

A162 Redshank *Tringa totanus*

To maintain the favourable conservation condition of Redshank in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by redshank, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

A169 Turnstone *Arenaria interpres*

To maintain the favourable conservation condition of Turnstone in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by turnstone, other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document

A195 Little Tern *Sterna albifrons*

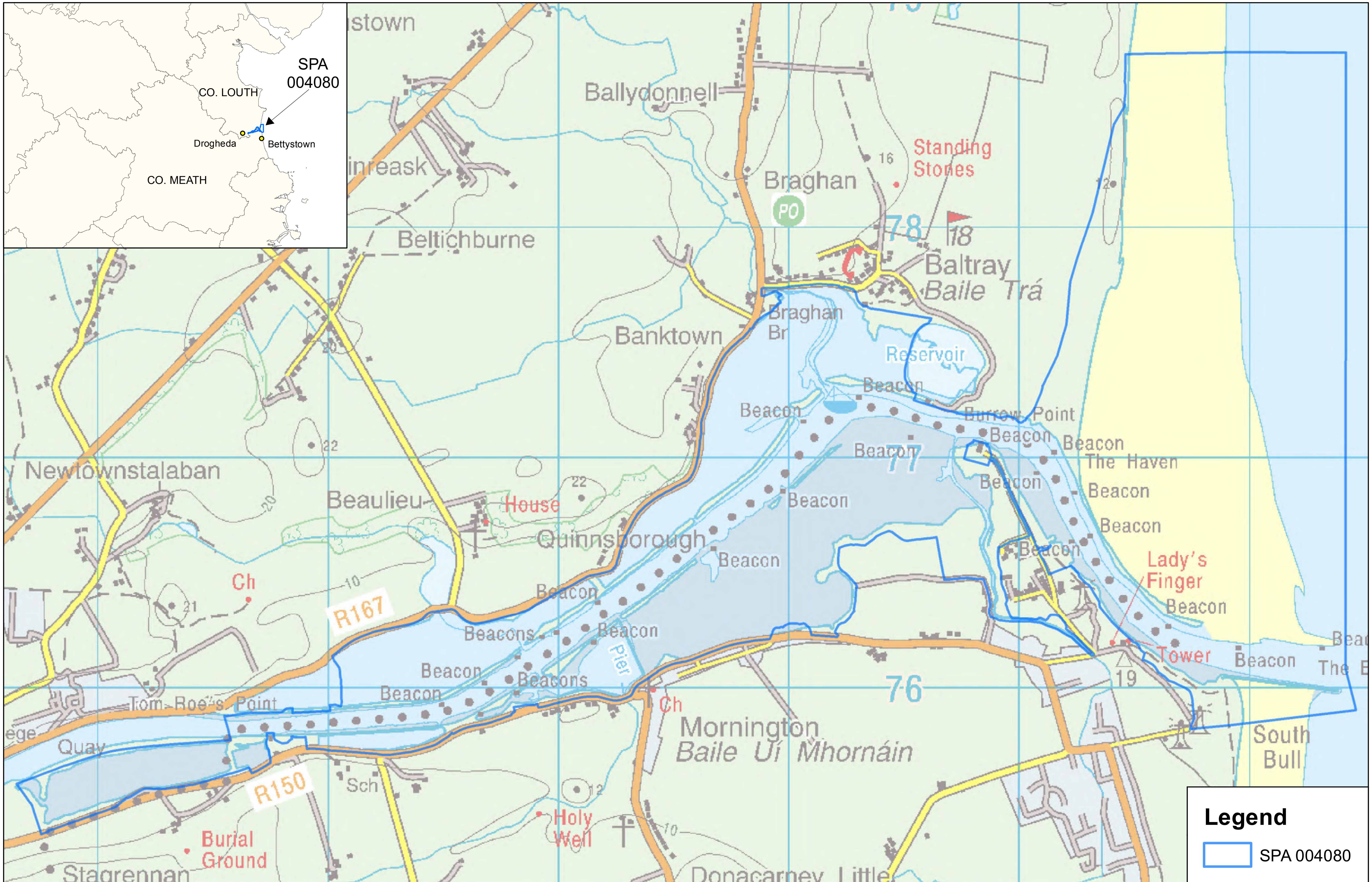
To maintain the favourable conservation condition of Little Tern in Boyne Estuary SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline	Measure based on standard tern survey methods (see Walsh et al., 1995). Mitchell et al. (2004) provides summary population information for Louth. The Seabird Monitoring Programme (SMP) also provides background data (JNCC, 2013). In 2010, 43 breeding pairs were recorded at this colony (Reilly, 2010)
Productivity rate: fledged young per breeding pair	Mean number	No significant decline	Measure based on standard tern survey methods (see Walsh et al., 1995). For 2010, an estimated productivity rate of 2.2 fledged birds per breeding pair was reported (Reilly, 2010)
Distribution: breeding colonies	Number; location; area (Hectares)	No significant decline	Little tern nest in well-camouflaged shallow scapes on sand and shingle beaches, spits or inshore islets (Mitchell et al., 2004). For a description of the area used by the colony in 2010, see Reilly (2010)
Prey biomass available	Kilogrammes	No significant decline	Key prey items: Mainly small, often juvenile, fish; invertebrates, especially crustaceans and insects. Key habitats: Very shallow water, advancing or receding tidelines, brackish lagoons and saltmarsh creeks, sand-banks close to the coast. Foraging range: Max 11km, mean max 6.94km, mean 4.14km (BirdLife International Seabird Database (Birdlife International, 2013))
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase	Seabird species can make extensive use of the marine waters adjacent to their breeding colonies. Foraging range: Max 11km, mean max 6.94km, mean 4.14km (BirdLife International Seabird Database (Birdlife International, 2013))
Disturbance at the breeding site	Level of impact	Human activities should occur at levels that do not adversely affect the breeding little tern population	Little tern nest in well-camouflaged shallow scrapes on sand and shingle beaches, spits or inshore islets (Mitchell et al., 2004)

A999 Wetlands

To maintain the favourable conservation condition of the wetland habitat in Boyne Estuary SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 594ha, other than that occurring from natural patterns of variation	The wetland habitat area was estimated as 594ha using OSi data and relevant orthophotographs. For further information see part three of the conservation objectives supporting document



MAP 1:
BOYNE ESTUARY SPA
CONSERVATION OBJECTIVES
SPA DESIGNATION

Map to be read in conjunction with the NPWS Conservation Objectives Document.

An Roinn Ealaíon, Oidhreachta agus Gaeltachta
Department of Arts, Heritage and the Gaeltacht

0 0.5 1 km

N

Boundaries of designated areas are subject to revision. Reproduced from Ordnance Survey material by permission of the Government (Permit number EN 0059208).

Féadfar athbhreithnithe a déanamh ar theorainneacha na gceantar comharthaithe. Macasamhail d'ábhar na Suirbhéarachta Ordonáis le chead ón Rialtas (Ceadunas Uimh. EN 0059208)

Site Code
SPA 004080
Version: 3

Map Version 1
Date: September 2012

SAC 001957

SPA 004080

SAC 002299

Legend

- SPA 004080 Boyne Estuary
- SAC 001957 Boyne Coast And Estuary
- SAC 002299 River Boyne And River Blackwater
- OSi Discovery Series County Boundaries

An Roinn Ealaíon, Oidhreachta agus Gaeltachta
Department of Arts, Heritage and the Gaeltacht

MAP 2:
BOYNE ESTUARY SPA
CONSERVATION OBJECTIVES
ADJOINING / OVERLAPPING DESIGNATIONS

Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SPA 004080 version 3
SAC 001957 CO. LOUTH; version 1.01, CO.MEATH; version 1.06
SAC 002299 CO. CAVAN; version 1.01, CO. LOUTH; version 1.01, CO. WESTMEATH; version 1.05, CO.MEATH; version 1.11

0 5 10 15 km

N

Map Version 1
Date: September 2012

SITE SYNOPSIS

Site Name: Boyne Coast and Estuary SAC

Site Code: 001957

Boyne Coast and Estuary SAC is a coastal site which includes most of the tidal sections of the River Boyne, intertidal sand- and mudflats, saltmarshes, marginal grassland, and the stretch of coast from Bettystown to Termonfeckin that includes the Mornington and Baltray sand dune systems.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1130] Estuaries
[1140] Tidal Mudflats and Sandflats
[1210] Annual vegetation of drift lines
[1310] *Salicornia* Mud
[1330] Atlantic Salt Meadows
[2110] Embryonic Shifting Dunes
[2120] Marram Dunes (White Dunes)
[2130] Fixed Dunes (Grey Dunes)*

The Boyne River channel, which is navigable and dredged, is defined by training walls, these being breached in places. Intertidal flats occur on the sides of the channelled river. The sediments vary from fine muds in the sheltered areas to sandy muds or sands towards the river mouth. The linear stretches of intertidal flats to the north and south of the river mouth are mainly composed of sand. One or more species of eelgrass (*Zostera* spp.) occur in the estuary.

Parts of the intertidal areas are fringed by saltmarshes, most of which are of the Atlantic type, and dominated by Sea-purslane (*Halimione portulacoides*). Other species present include Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Lax-flowered Sea-lavender (*Limonium humile*) and glassworts (*Salicornia* spp.). Common Cord-grass (*Spartina anglica*) occurs frequently on the flats and saltmarshes.

The two sand dune systems in the site, at Baltray and Mornington, are of conservation value, despite the restricted distribution of the intact areas and the high recreational pressure to which they are subjected. A gradient from embryonic dunes to Marram (*Ammophila arenaria*) dunes and then fixed dunes is shown at both systems.

The largest area of annual vegetation of drift lines within this SAC is located at Baltray, north of the estuary. The vegetation is highly representative of the habitat type, which is limited to a small number of highly specialised species that are capable of coping with harsh environmental conditions including high salinity, wind exposure, and unstable substrate and lack of soil moisture. Species present include oraches (*Atriplex* spp.), Sea Rocket (*Cakile maritima*), Prickly Saltwort (*Salsola kali*) and Sea Sandwort (*Honkenya peploides*). Embryonic dunes are particularly well-developed at Baltray where there is active accretion. Species present include Sand Couch (*Elymus farctus*), Lyme-grass (*Leymus arenarius*), Marram, Sea Sandwort and Prickly Saltwort. The embryonic dunes grade into a narrow band of shifting Marram dunes. Marram is dominant, though there are also such species as Cat's-ear (*Hypochoeris radicata*), Mouse-ear Hawkweed (*Hieracium pilosella*) and Dandelion (*Taraxacum* agg.). The areas of fixed dunes on the site have a typical diversity of species, including Marram, Red Fescue (*Festuca rubra*), Wild Carrot (*Daucus carota*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Common Restharrow (*Ononis repens*), Wild Thyme (*Thymus praecox*), Lady's Bedstraw (*Galium verum*) and Wild Pansy (*Viola tricolor*). Vegetation dominated by bryophytes and lichens is limited, though such species as *Brachythecium albicans*, *Hypnum cupressiforme*, *Peltigera canina* and *Cladonia* spp. occur. Some dune slacks may still occur at the site. A number of scarce plants such as Viper's-bugloss (*Echium vulgare*), Adder's-tongue (*Ophioglossum vulgatum*), Variegated Horsetail (*Equisetum variegatum*) and Wild Clary/Sage (*Salvia verbenaca*) have been recorded from the site in the past. The last-named species is of particular note as it is a Red Data Book species at its most northerly known Irish station.

The Boyne is the second most important estuary for wintering birds on the Louth-Meath coastline. From a recent wetland survey carried out over 4 seasons (1994/95-97/98), it is known that this site supports nationally important numbers of Shelduck (176 individuals), Golden Plover (5,338), Lapwing (4,755), Knot (1,559), Black-tailed Godwit (414), Redshank (539), Turnstone (104), Oystercatcher (922), Grey Plover (112) and Sanderling (93).

Other species of regional or local importance include Brent Goose (142), Wigeon (485), Teal (185), Mallard (160), Dunlin (627), Curlew (352) and Ringed Plover (approx. 100). An area of shingle at Baltray Dunes is also an important breeding site for Little Tern, with 14 pairs recorded in 1995. Little Tern is the rarest Irish tern species, and is listed on Annex I of the E.U. Birds Directive. Part of the estuary is a Wildfowl Sanctuary and has been designated a Special Protection Area under the E.U. Birds Directive.

This site has been somewhat modified by human activities. The river is regularly dredged to accommodate cargo ships, which causes disturbance to the bird, fish and invertebrate communities in the estuary. Several factories operate upstream from the estuary and pollution and disturbance associated with them has had an impact on the ecology of the area. There is a proposal to create a deep water facility at the north end of Mornington Dunes on the mouth of the Boyne estuary.

The site is of considerable conservation interest as a coastal complex that supports good examples of eight habitats that are listed on Annex I of the E.U. Habitats Directive, including one which is listed with priority status, and for the important bird populations that it supports.

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Conservation Objectives Series

Boyne Coast and Estuary SAC 001957

An Roinn
Ealaíon, Oidhreachta agus Gaeltachta
Department of
Arts, Heritage and the Gaeltacht

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Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

**** indicates a priority habitat under the Habitats Directive***

001957	Boyne Coast and Estuary SAC
1130	Estuaries
1140	Mudflats and sandflats not covered by seawater at low tide
1310	Salicornia and other annuals colonizing mud and sand
1330	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
1410	Mediterranean salt meadows (*Juncetalia maritimi*)
2110	Embryonic shifting dunes
2120	Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')
2130	*Fixed coastal dunes with herbaceous vegetation ('grey dunes')

Please note that this SAC overlaps with Boyne Estuary SPA (004080) and is adjacent to the River Boyne and River Blackwater SAC (002299). See map 2. The conservation objectives for this site should be used in conjunction with those for overlapping and adjacent sites as appropriate.

Supporting documents, relevant reports & publications (listed by date)

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

Title: Boyne Coast and Estuary SAC (001957). Conservation objectives supporting document - marine habitats. [Version 1]

Year: 2012

Author: NPWS

Series: Unpublished Report to NPWS

Title: Boyne Coast and Estuary SAC (001957). Conservation objectives supporting document - coastal habitats. [Version 1]

Year: 2012

Author: NPWS

Series: Unpublished Report to NPWS

Title: An intertidal soft sediment survey of the Boyne Coast and Estuary

Year: 2011

Author: ASU

Series: Unpublished Report to NPWS & MI

Title: Benthic Survey of the Boyne Coast and Estuary Special Area of Conservation and Boyne Estuary Special Protection Area

Year: 2011

Author: EcoServe

Series: Unpublished Report to NPWS & MI

Title: Saltmarsh Monitoring Report 2007-2008

Year: 2009

Author: McCorry, M.; Ryle, T.

Series: Unpublished Report to NPWS

Title: Coastal Monitoring Project 2004-2006

Year: 2009

Author: Ryle, T.; Murray, A.; Connolly, C.; Swann, M.

Series: Unpublished Report to NPWS

Title: The phytosociology and conservation value of Irish sand dunes

Year: 2008

Author: Gaynor, K.

Series: Unpublished PhD thesis, National University of Ireland, Dublin

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Spatial data sources

Year:	2010
Title:	EPA WFD transitional waterbody data
GIS operations:	Clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used for:	1130 (map 3)
Year:	Interpolated 2012
Title:	Intertidal and subtidal surveys, 2010
GIS operations:	Polygon feature classes from marine community types base data sub-divided based on interpolation of marine survey data. Expert opinion used as necessary to resolve any issues arising
Used for:	Marine community types, 1140 (maps 4 and 5)
Year:	2005
Title:	OSi Discovery series vector data
GIS operations:	High water mark (HWM) and low water mark (LWM) polyline feature classes converted into polygon feature classes and combined; EU Annex I Saltmarsh and Coastal data erased out if present
Used for:	Marine community types base data (map 5)
Year:	Revision 2010
Title:	Saltmarsh Monitoring Project 2007-2008. Version 1
GIS operations:	QIs selected; clipped to SAC boundary; overlapping regions with Coastal CO data investigated and resolved with expert opinion used
Used for:	1310, 1330 (map 6)
Year:	2009
Title:	Coastal Monitoring Project 2004-2006. Version 1
GIS operations:	QIs selected; clipped to SAC boundary; overlapping regions with Saltmarsh CO data investigated and resolved with expert opinion used
Used for:	2110, 2120, 2130 (map 7)

1130 Estuaries

To maintain the favourable conservation condition of Estuaries in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes. See map 3	Habitat area was estimated as 403ha using OSi data and the defined Transitional Water Body area under the Water Framework Directive
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community; and Subtidal fine sand dominated by polychaetes community. See map 5	Habitat structure was elucidated from intertidal and subtidal surveys undertaken in 2010 (ASU, 2011; EcoServe, 2011)

1140 Mudflats and sandflats not covered by seawater at low tide

To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes. See map 4	Habitat area was estimated using OSi data as 403ha
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community; and Fine sand dominated by bivalves community complex. See map 5	Habitat structure was elucidated from an intertidal survey undertaken in 2010 (ASU, 2011). See marine supporting document for further details

1310 Salicornia and other annuals colonizing mud and sand

To restore the favourable conservation condition of *Salicornia* and other annuals colonizing mud and sand in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Baltray- 2.91ha, Mornington- 1.14ha. See map 6	Based on data from Saltmarsh Monitoring Project (McCorry and Ryle, 2009). Habitat mapped at two sub-sites surveyed, giving a total estimated area of 4.05ha. NB further unsurveyed areas maybe present within the site. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 6 for known distritbution	Based on data from McCorry and Ryle (2009). Salicornia is an annual species, so its distribution can vary significantly from year to year. At Baltray, saltmarsh is expanding in infilled intertidal zone. Large area of Mornington saltmarsh was reclaimed in the past. See coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions	Based on data from McCorry and Ryle (2009). Sediment supply is particularly important for this pioneer saltmarsh community, as the distribution of this habitat depends on accretion rates. Sediment supply to saltmarshes at Baltray and Mornington is likely to be affected by the construction of navigation walls and dredging of the main channel. See coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry and Ryle (2009). Creeks deliver sediment throughout saltmarsh system. At Baltray and Mornington the structure is modified by drainage channels. See coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	This pioneer saltmarsh community requires regular tidal inundation. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from McCorry and Ryle (2009). At Baltray and Mornington there are zonations within the saltmarsh habitats as well as transitions to adjacent sand dune systems. See coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimeters	Maintain structural variation within sward	Based on data from McCorry and Ryle (2009). At Baltray and Mornington grazing is absent and sward height is variable. See coastal habitats supporting document for further details

1310 Salicornia and other annuals colonizing mud and sand

To restore the favourable conservation condition of *Salicornia* and other annuals colonizing mud and sand in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated	Based on data from McCorry and Ryle (2009). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover	Maintain the presence of species-poor communities with typical species listed in the Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	Based on data from McCorry & Ryle (2009). See coastal habitats supporting document for further details
Vegetation structure: negative indicator species-*Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	Based on data from McCorry & Ryle (2009). *Spartina* is well established at this site. Swards of *Spartina* are widespread at Baltray and there has been significant expansion of *Spartina* at Mornington since 2000. See coastal habitats supporting document for further details

1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

To maintain the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia*) in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Baltray- 17.67ha, Mornington- 8.76ha. See map 6	Based on data from the Saltmarsh Monitoring Project (McCorry and Ryle, 2009). Habitat mapped at two sub-sites surveyed, giveing a total estimated area of 26.43ha. NB further unsurveyed areas maybe present within the site. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 6 for known distribution	Based on data from McCorry and Ryle (2009). At Baltray there has been some extensive recent development of ASM. At Mornington the saltmarsh may have been more extensive in the past. See coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Based on data from McCorry and Ryle (2009). At Baltray and Mornington saltmarsh development likely to be affected by the construction of navigation walls in the past and dredging of the main channel. See coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry and Ryle (2009). Creek and pan structures are well-developed in some parts of Baltray and Mornington but modified in other areas by drainage channels. See coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from McCorry and Ryle (2009). At Baltray and Mornington there are zonations within the saltmarsh habitats as well as transitions to adjacent sand dune systems. See coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimeters	Maintain structural variation within sward	Based on data from McCorry and Ryle (2009). The saltmarshes at Baltray and Mornington are ungrazed by livestock and the sward height is quite variable. See coastal habitats supporting document for further details
Vegetation structure: vegetation cover	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated	See coastal habitats supporting document for further details

1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

To maintain the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia*) in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub-communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	See coastal habitats supporting document for further details
Vegetation structure: negative indicator species - *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%	Based on data from McCorry and Ryle (2009). *Spartina* is well established at this site. Swards of *Spartina* are widespread at Baltray and there has been significant expansion of *Spartina* at Mornington since 2000. See coastal habitats supporting document for further details

1410 Mediterranean salt meadows (*Juncetalia maritimi*)

The status of Mediterranean salt meadows (*Juncetalia maritimi*) as a qualifying Annex I habitat for Boyne Coast and Estuary SAC is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this habitat.

Attribute	Measure	Target	Notes

2110 Embryonic shifting dunes

To restore the favourable conservation condition of Embryonic shifting dunes in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Baltray- 2.52ha, Mornington- 0.67ha. See map 7	Based on data from the Coastal Monitoring Project (Ryle et al., 2009). Habitat is very difficult to measure in view of its dynamic nature and was recorded at both sub-sites, giving a total estimated area of 3.18ha. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 7 for known distribution	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Based on data from Ryle et al. (2009). Dunes are naturally dynamic systems that require continuous supply and circulation of sand. The training wall at the mouth of the Boyne Estuary has led to an accumulation of sand at Mornington and enhanced the development of dunes at the northern section. The dunes are accreting at the southern end of Baltray, with wide areas of embryonic dune and strandine fronting mobile and fixed dunes. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009). Both sand dune systems at Baltray and Mornington occur adjacent to extensive estuarine saltmarshes. See coastal habitats supporting document for further details
Vegetation composition: plant health of foredune grasses	Percentage cover	More than 95% of sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present)	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover	Maintain the presence of species-poor communities with typical species: sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*)	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details

2110 Embryonic shifting dunes

To restore the favourable conservation condition of Embryonic shifting dunes in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Based on data from Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled. See coastal habitats supporting document for further details

2120 Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')

To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession. For sub-sites mapped: Baltray- 2.97ha, Mornington- 1.99ha. See map 7	Habitat was mapped during the Coastal Monitoring Project (Ryle et al. 2009). Habitat was recorded at both sub-sites, giving a total estimated area of 4.97ha. Habitat is very difficult to measure in view of its dynamic nature. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 7 for known distribution	Based on data from Ryle et al. (2009). Shifting dunes were recorded at both Baltray and Mornington sub-sites. See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Marram (*Ammophila arenaria*) reproduces vegetatively and requires constant accretion of fresh sand to maintain active growth encouraging further accretion. The training wall at the mouth of the Boyne Estuary has led to an accumulation of sand at Mornington and enhanced the development of dunes at the northern section. The dunes are accreting at the southern end of Baltray, with wide areas of embryonic dune and strandine fronting mobile and fixed dunes. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Gaynor (2008) and Ryle et al. (2009). Both sand dune systems at Baltray and Mornington occur adjacent to extensive estuarine saltmarshes. See coastal habitats supporting document for further details
Vegetation composition: plant health of dune grasses	Percentage cover	More than 95% of marram (*Ammophila areanaria*) and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present)	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities dominated by marram (*Ammophila arenaria*) and/or lyme-grass (*Leymus arenarius*)	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details

2120 Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')

To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Based on data from Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled. Ragwort (*Senecio jacobaea*) was recorded from Mobile dunes at both Baltray and Mornington. See coastal habitats supporting document for further details

2130 *Fixed coastal dunes with herbaceous vegetation ('grey dunes')

To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation (grey dunes) in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area increasing, subject to natural processes including erosion and succession. For sub-sites mapped: Baltray-26.41ha; Mornington-20.46ha. See map 7	Based on data from the Coastal Monitoring Project (Ryle et al., 2009). Habitat was recorded at both sub-sites, giving a total estimated area of 46.87ha. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 7 for known distribution	Based on data from the Coastal Monitoring Project (Ryle et al., 2009). Fixed dunes recorded at both Baltray and Mornington. See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers.	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Based on data from the Coastal Monitoring Project (Ryle et al., 2009). The training wall at the mouth of the Boyne Estuary has led to an accumulation of sand at Mornington and enhanced the development of dunes at the northern section. The dunes are accreting at the southern end of Baltray, with wide areas of embryonic dune and strandine fronting mobile and fixed dunes. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009). Both sand dune systems at Baltray and Mornington occur adjacent to extensive estuarine saltmarshes. See coastal habitats supporting document for further details
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes	Based on data from Gaynor (2008) and Ryle et al. (2009). The estimated area of bare sand at Mornington currently accounts for greater than 10% of the fixed dune habitat. See coastal habitats supporting document for further details
Vegetation composition: sward height	Centimeters	Maintain structural variation within sward	Based on data from Gaynor (2008) and Ryle et al. (2009). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub-communities with typical species listed in Ryle et al. (2009)	Based on data from Gaynor (2008) and Ryle et al. (2009). The locally rare species viper's bugloss (*Echium vulgare*) was recorded in the fixed dunes at Baltray. Mornington is the most northerly known site in Ireland for wild clary (*Salvia verbenaca*). See coastal habitats supporting document for further details

2130 *Fixed coastal dunes with herbaceous vegetation ('grey dunes')

To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation (grey dunes) in Boyne Coast and Estuary SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Based on data from Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled. At both Baltray and Mornington, creeping thistle (*Cirsium arvense*), ragwort (*Senecio jacobaea*) and common nettle (*Urtica dioica*) were recorded in fixed dunes. See coastal habitats supporting document for further details
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details

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MAP 1:
BOYNE COAST AND ESTUARY SAC
CONSERVATION OBJECTIVES
SAC DESIGNATION

Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE: SAC 001957
CO.LOUTH; version 1.01, CO. MEATH; version 1.06

0 0.5 1 km

Map Version 1
Date: Sept 2012

SAC 001957

SPA 004080

SAC 002299

Legend

- SAC 001957 Boyne Estuary and Coast
- SAC 002299 River Boyne and River Blackwater
- SPA 004080 Boyne Estuary
- OSi Discovery Series County Boundaries

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MAP 2:
BOYNE COAST AND ESTUARY SAC
CONSERVATION OBJECTIVES
ADJOINING / OVERLAPPING DESIGNATIONS

Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SAC 001957 CO. LOUTH; version 1.01, CO.MEATH; version 1.06
SAC 002299 CO. CAVAN; version 1.01, CO. LOUTH; version 1.01, CO. WESTMEATH; version 1.05, CO.MEATH; version 1.11
SPA 004080 version 3

0 5 10 15 km

N

Map Version 1
Date: Sept 2012

Legend

- SAC 001957
- 1130 Estuaries
- OSi Discovery Series Coastal Boundary

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MAP 3:
BOYNE COAST AND ESTUARY SAC CONSERVATION OBJECTIVES ESTUARIES

Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE: SAC 001957
CO.LOUTH; version 1.01, CO. MEATH; version 1.06

0 0.5 1 km

N

Map Version 1
Date: Sept 2012

Legend

- SAC 001957
- 1140 Mudflats and sandflats not covered by seawater at low tide
- OSi Discovery Series Coastal Boundary

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Department of Arts, Heritage and the Gaeltacht

MAP 4:
BOYNE COAST AND ESTUARY SAC
CONSERVATION OBJECTIVES
TIDAL MUDFLATS AND SANDFLATS

Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE: SAC 001957
CO.LOUTH; version 1.01, CO. MEATH; version 1.06

0 0.5 1 km

N

Map Version 1
Date: Sept 2012

Legend

SAC 001957

OSi Discovery Series Coastal Boundary

Marine Community Types

Fine sand dominated by bivalves community complex

Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community

Subtidal fine sand dominated by polychaetes community

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MAP 5:
BOYNE COAST AND ESTUARY SAC
CONSERVATION OBJECTIVES
MARINE COMMUNITY TYPES

Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE: SAC 001957
CO.LOUTH; version 1.01, CO. MEATH; version 1.06

0 0.5 1 km

N

Map Version 1
Date: Sept 2012

SMP: 0033

SMP: 0034

Legend

SAC 001957

OSi Discovery Series Coastal Boundary

SMP: 0033 Saltmarsh Monitoring Project Site Codes

Saltmarsh Habitats

Qualifying Interests

1310 *Salicornia* and other annuals colonising mud and sand

1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

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Department of Arts, Heritage and the Gaeltacht

MAP 6:
BOYNE COAST AND ESTUARY SAC
CONSERVATION OBJECTIVES
SALTMARSH HABITATS

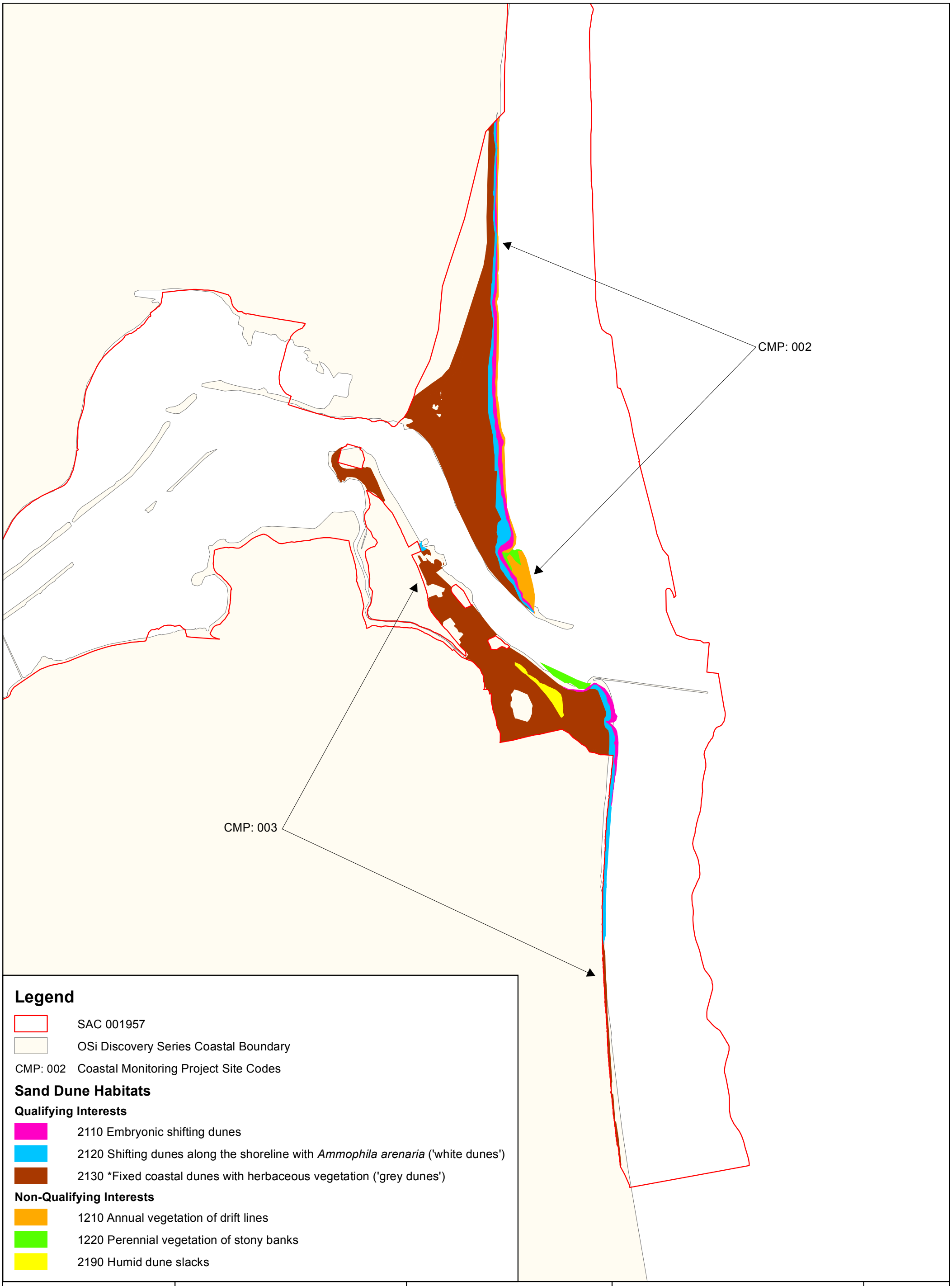
Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE: SAC 001957
CO.LOUTH; version 1.01, CO. MEATH; version 1.06

0 250 500 m

N

Map Version 1
Date: Sept 2012



Legend

SAC 001957

OSi Discovery Series Coastal Boundary

CMP: 002 Coastal Monitoring Project Site Codes

Sand Dune Habitats

Qualifying Interests

2110 Embryonic shifting dunes

2120 Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')

2130 *Fixed coastal dunes with herbaceous vegetation ('grey dunes')

Non-Qualifying Interests

1210 Annual vegetation of drift lines

1220 Perennial vegetation of stony banks

2190 Humid dune slacks

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Department of Arts, Heritage and the Gaeltacht

MAP 7:
BOYNE COAST AND ESTUARY SAC
CONSERVATION OBJECTIVES
SAND DUNE HABITATS

Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE: SAC 001957
CO.LOUTH; version 1.01, CO. MEATH; version 1.06

0 250 500 m

N

Map Version 1
Date: Sept 2012

SITE SYNOPSIS

SITE NAME: NORTH-WEST IRISH SEA cSPA

SITE CODE: 004236

The North-west Irish Sea cSPA constitutes an important resource for marine birds. The estuaries and bays that open into it along with connecting coastal stretches of intertidal and shallow subtidal habitats, provide safe feeding and roosting habitats for waterbirds throughout the winter and migration periods. These areas, along with more pelagic marine waters further offshore, provide additional supporting habitats (for foraging and other maintenance behaviours) for those seabirds that breed at colonies on the north-west Irish Sea's islands and coastal headlands. These marine areas are also important for seabirds outside the breeding period.

This SPA extends offshore along the coasts of counties Louth, Meath and Dublin, and is approximately 2,333km^2 in area. This SPA is ecologically connected to several existing SPAs in this area.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Common Scoter, Red-throated Diver, Great Northern Diver, Fulmar, Manx Shearwater, Shag, Cormorant, Little Gull, Kittiwake, Black-headed Gull, Common Gull, Lesser Black-backed Gull, Herring Gull, Great Black-backed Gull, Little Tern, Roseate Tern, Common Tern, Arctic Tern, Puffin, Razorbill and Guillemot.

The breeding seabird species listed for those SPAs, which abut the North-West Irish Sea SPA are: Fulmar (Lambay Island SPA); Cormorant (Skerries Island SPA; Ireland's Eye SPA; Lambay Island SPA); Shag (Skerries Island SPA; Lambay Island SPA); Lesser Black-backed Gull (Lambay Island SPA); Herring Gull (Skerries Island SPA; Ireland's Eye SPA; Lambay Island SPA); Kittiwake (Lambay Island SPA; Ireland's Eye SPA; Howth Head SPA); Roseate Tern (Rockabill SPA); Common Tern (Rockabill SPA;); Arctic Tern (Rockabill SPA); Little Tern (Boyne Estuary SPA); Guillemot (Lambay Island SPA, Ireland's Eye SPA); Razorbill (Lambay Island SPA, Ireland's Eye SPA); and Puffin (Lambay Island SPA). The Common Tern population that is listed for the nearby South Dublin Bay and River Tolka Estuary SPA is also likely to use this SPA as a foraging resource.

Informed by two surveys of the western Irish Sea region in 2016 an estimated 120,232 and 34,626 individual marine birds occurred in this SPA during autumn and winter respectively. Those marine bird species whose estimated abundances equalled or exceeded 1% of the total estimated size of the winter assemblage are: Red-throated Diver (538), Fulmar (506), Little Gull (391), Kittiwake (944), Black-headed Gull (508), Common Gull (2,866), Herring Gull (6,893), Great Black-backed Gull (2,096), Razorbill (4,638) and Guillemot (13,914).

The estimated 2016 summer abundance of Manx Shearwater in the North West Irish Sea SPA is 13,010 and is of international importance. The estimated 2016 autumn and winter abundances of Great Northern Diver in the North West Irish Sea SPA is 248 and 230 respectively and are of international importance. The estimated abundances of Common Scoter over parts of this SPA can reach significant numbers (e.g. 14,567 in December 2018) which is also of international importance.

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National Parks and Wildlife Service

Conservation Objectives Series

North-west Irish Sea SPA 004236

National Parks and Wildlife Service,
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Series Editors: Maria Long and Colin Heaslip
ISSN 2009-4086

Introduction

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

A site-specific conservation objective aims to define favourable conservation condition for a particular habitat or species at that site.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Notes/Guidelines:

1. The targets given in these conservation objectives are based on best available information at the time of writing. As more information becomes available, targets for attributes may change. These will be updated periodically, as necessary.
2. An appropriate assessment based on these conservation objectives will remain valid even if the targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out. It is essential that the date and version are included when objectives are cited.
3. Assessments cannot consider an attribute in isolation from the others listed for that habitat or species, or for other habitats and species listed for that site. A plan or project with an apparently small impact on one attribute may have a significant impact on another.
4. Please note that the maps included in this document do not necessarily show the entire extent of the habitats and species for which the site is listed. This should be borne in mind when appropriate assessments are being carried out.
5. When using these objectives, it is essential that the relevant backing/supporting documents are consulted, particularly where instructed in the targets or notes for a particular attribute.

Qualifying Interests

**** indicates a priority habitat under the Habitats Directive***

004236 North-west Irish Sea SPA

A001	Red-throated Diver *Gavia stellata*
A003	Great Northern Diver *Gavia immer*
A009	Fulmar *Fulmarus glacialis*
A013	Manx Shearwater *Puffinus puffinus*
A017	Cormorant *Phalacrocorax carbo*
A018	Shag *Phalacrocorax aristotelis*
A065	Common Scoter *Melanitta nigra*
A179	Black-headed Gull *Chroicocephalus ridibundus*
A182	Common Gull *Larus canus*
A183	Lesser Black-backed Gull *Larus fuscus*
A184	Herring Gull *Larus argentatus*
A187	Great Black-backed Gull *Larus marinus*
A188	Kittiwake *Rissa tridactyla*
A192	Roseate Tern *Sterna dougallii*
A193	Common Tern *Sterna hirundo*
A194	Arctic Tern *Sterna paradisaea*
A195	Little Tern *Sterna albifrons*
A199	Guillemot *Uria aalge*
A200	Razorbill *Alca torda*
A204	Puffin *Fratercula arctica*
A862	Little Gull *Hydrocoloeus minutus*

For all overlapping or adjoining SPA and SACs, see map 2

Supporting documents, relevant reports & publications

Supporting documents, NPWS reports and publications are available for download from: www.npws.ie/Publications

NPWS Documents

Year :	2018
Title :	The seasonal distribution and abundance of seabirds in the western Irish Sea 2016
Author :	Jessopp, M.; Mackey, M.; Luck, C.; Critchley, E.; Bennison, A.; Rogan, E.
Series :	Report to Department of Communications, Climate Action and Environment, and National Parks & Wildlife Service, Department of Culture, Heritage & the Gaeltacht, Ireland
Year :	2019
Title :	The status of Ireland's breeding seabirds: Birds Directive article 12 reporting 2013 – 2018
Author :	Cummins, S.; Lauder, C.; Lauder, A.; Tierney, T. D.
Series :	Irish Wildlife Manual No. 114
Year :	2021
Title :	Estimated foraging ranges of the breeding seabirds of Ireland's marine special protected area network
Author :	Power, A.; McDonnell, P; Tierney, T.D.
Series :	Unpublished NPWS report
Year :	2022
Title :	Rockabill Tern Report, 2022
Author :	Allbrook, D.; Dunne, S.; Fink, A.; Newton, S.
Series :	BirdWatch Ireland Seabird Conservation Report to NPWS
Year :	2022
Title :	Kilcoole Little Tern Conservation Project Report, 2022
Author :	Johnson, G.C.; Kavanagh, P.; Burke, B.
Series :	BirdWatch Ireland Seabird Conservation Report to NPWS
Year :	2022
Title :	Spatial utilisation of marine areas as foraging resources for Roseate and Common Terns at Rockabill SPA
Author :	Power, A.; O'Connor, I.; Tierney, T.D.
Series :	Unpublished report by NPWS and ATU
Year :	2022
Title :	Determining the use of coastal waters by breeding Little Terns in Kilcoole through boat-based visual tracking and line transects
Author :	Power, A.; O'Connor, I.; Berrow, S.; O'Meara, S.; Acampora, H.; Monaghan, J.; Clarke, D.; Tierney, T.D.
Series :	Unpublished report by NPWS and ATU
Year :	2022
Title :	Baltray Little Tern Colony Report, 2022
Author :	Louth Nature Trust
Series :	Unpublished report to NPWS

Other References

Year :	1990
Title :	The Manx Shearwater
Author :	Brooke, M.
Series :	Poyser, London

Year :	1997
Title :	The status and distribution of breeding sandwich, roseate, common, arctic and little terns in Ireland in 1995
Author :	Hannon, C.; Berrow, S.D.; Newton, S.F.
Series :	Irish Birds, 6: 1-22
Year :	1998
Title :	Flexible foraging techniques in breeding cormorants *Phalacrocorax carbo* and shags *Phalacrocorax aristotelis*: benthic or pelagic feeding?
Author :	Grémillet, D.; Argentin, G.; Schulte, B.; Culik, B.M.
Series :	Ibis, 140(1), pp.113-119
Year :	1999
Title :	Diet of the northern fulmar *Fulmarus glacialis*: reliance on commercial fisheries?
Author :	Phillips, R.A.; Petersen, M.K.; Lilliendahl, K.; Solmundsson, J.; Hamer, K.C.; Camphuysen, C.J.; Zonfrillo, B.
Series :	Marine Biology, 135 (1), pp.159-170
Year :	2003
Title :	Implications for seaward extensions to existing breeding seabird colony Special Protection Areas
Author :	McSorley, C.A.; Dean, B.J.; Webb, A.; Reid J.B.
Series :	JNCC Report No. 329
Year :	2004
Title :	Seabird populations of Britain and Ireland
Author :	Mitchell, P.I.; Newton, S.F.; Ratcliffe, N.; Dunn, T.E.
Series :	Poyser, London
Year :	2005
Title :	Generic guidelines for seaward extensions to existing breeding northern fulmar *Fulmarus glacialis* colony Special Protection Areas
Author :	McSorley, C.A.; Webb, A.; Dean, B.J.; Reid J.B.
Series :	JNCC Report No. 358
Year :	2006
Title :	Distribution and behaviour of Common Scoter *Melanitta nigra* relative to prey resources and environmental parameters
Author :	Kaiser, M.J.; Galanidi, M.; Showler, D.A.; Elliott, A.J.; Caldow, R.W.; Rees, E.I.S.; Stillman, R.A.; Sutherland, W.J.
Series :	Ibis, 148, pp.110-128
Year :	2012
Title :	Integrating Irish Marine Protected Areas: the FAME Seabird Tracking Project
Author :	Baer, J.; Newton, S.
Series :	Unpublished BirdWatch Ireland report
Year :	2015
Title :	Simultaneous multi-colony tracking of a pelagic seabird reveals cross-colony utilization of a shared foraging area
Author :	Dean, B.; Kirk, H.; Fayet, A.; Shoji, A.; Freeman, R.; Leonard, K.; Perrins, C.M.; Guilford, T.
Series :	Marine Ecology Progress Series, 538, pp.239-248
Year :	2016
Title :	Assessing the Movements and Usage of Irish Sea Birds using Innovative Technology: A report on phase 1, Seabirds
Author :	Moss, E.; Tierney, N.; Crowe, O.
Series :	Unpublished report by BirdWatch Ireland to the Sustainable Energy Authority of Ireland

Year :	2019
Title :	Desk-based revision of seabird foraging ranges used for HRA screening
Author :	Woodward, I.; Thaxter, C. B.; Owen, E.; Cook, A. S. C. P.
Series :	BTO Research Report No. 724.
Year :	2019
Title :	Visual tracking of Roseate Tern *Sterna dougallii* from Rockabill: area utilisation and sample size
Author :	Harwood, A.; Perrow, M.; Berridge R.
Series :	ECON report for RSPB
Year :	2019
Title :	Digital video aerial surveys of Common Scoter at Gormanstown: Final report for December 2018 to March 2019
Author :	Hi-Def
Series :	Report produced for Marine Institute
Year :	2019
Title :	The diet of red-throated divers (*Gavia stellata*) overwintering in the German Bight (North Sea) analysed using molecular diagnostics
Author :	Kleinschmidt, B.; Burger, C.; Dorsch, M.; Nehls, G.; Heinänen, S.; Morkūnas, J.; Žydelis, R.; Moorhouse-Gann, R.J.; Hipperson, H.; Symondson, W.O.; Quillfeldt, P.
Series :	Marine Biology, 166, pp.1-18
Year :	2020
Title :	Arctic tern (*Sterna paradisaea*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Hatch, J. J.; Gochfeld, M.; Burger, J.; Garcia, E. F. J.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Great Cormorant (*Phalacrocorax carbo*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Hatch, J.J.; Brown, K.M.; Hogan, G.G.; Morris, R.D.; Orta, J.; Garcia, E.F.J.; Jutglar, F.; Kirwan, G.M.; Boesman, P.F.D.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Black-headed Gull (*Chroicocephalus ridibundus*), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors)
Author :	Burger, J.; Gochfeld, M.; Kirwan, G. M.; Christie, D. A; Garcia, E. F. J.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Lesser Black-backed Gull (*Larus fuscus*), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors)
Author :	Burger, J.; Gochfeld, M.; Kirwan, G. M.; Christie,D. A.; de Juana, E
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Results from the first three years of monitoring post-breeding tern aggregations in Ireland
Author :	Burke, B.; Fitzgerald, N.; Boland, H.; Murray, T.; Gittings, T.; Tierney, T.D
Series :	Irish Birds 42: 35-44
Year :	2020
Title :	Great Black-backed Gull (*Larus marinus*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Good, T. P.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA

Year :	2020
Title :	Little Gull (*Hydrocoloeus minutus*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Ewins, P. J.; Weseloh, D. V.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Black-legged Kittiwake (*Rissa tridactyla*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Hatch, S. A.; Robertson, G. J.; Baird, P. H.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Razorbill (*Alca torda*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Lavers, J.; Hipfner, J. M.; G. Chapdelaine, G.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Atlantic Puffin (*Fratercula arctica*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Lowther, P. E.; Diamond, A. W.; Kress, S. W.; Robertson, G. J.; Russell, K.; Nettleship, D. N.; Kirwan, G. M.; Christie, D. A.; Sharpe, C. J.; Garcia, E. F. J.; Boesman, P. F. D.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2020
Title :	Herring Gull (*Larus argentatus*), version 1.0. In Birds of the World (S. M. Billerman, Editor)
Author :	Weseloh, D. V.; Hebert, C. E.; Mallory, M. L.; Poole, A. F.; Ellis, J. C.; Pyle, P.; Patten, M. A.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2021
Title :	Common Murre (*Uria aalge*), version 2.0. In Birds of the World (S. M. Billerman, P. G. Rodewald, and B. K. Keeney, Editors)
Author :	Ainley, D. G.; Nettleship, D. N.; Storey, A. E.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2021
Title :	Common Gull (*Larus canus*), version 1.1. In Birds of the World (S. M. Billerman, Editor)
Author :	Moskoff, W., Bevier, L. R.; Rasmussen, P. C.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2021
Title :	European Shag (*Gulosus aristotelis*), version 1.2. In Birds of the World (B. K. Keeney, Editor)
Author :	Orta, J., Garcia, E. F. J.; Jutglar, F.; Kirwan, G. M.; Boesman, P. F. D.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2021
Title :	Common Loon (*Gavia immer*), version 2.0. In Birds of the World (P. G. Rodewald and B. K. Keeney, Editors)
Author :	Paruk, J. D., Evers, D. C.; McIntyre, J. W.; Barr, J. F.; Mager, J.; Piper, W. H.
Series :	Cornell Lab of Ornithology, Ithaca, NY, USA
Year :	2022
Title :	Dublin Bay Birds Project: Dublin Port Tern Conservation Project
Author :	Boland, H.; Adcock, T.; Burke, B
Series :	Unpublished Birdwatch Ireland report

A001 Red-throated Diver *Gavia stellata*

To maintain the favourable conservation condition of red-throated diver at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Non-breeding population size	Number	No significant decline	North-west Irish Sea SPA provides essential resources for adjacent seabird colonies. Red-throated diver is a Special Conservation Interest (SCI) for this site. During the non-breeding period divers (primarily great northern and red-throated divers) in the western Irish Sea are known to concentrate in the shallower coastal areas, with a clear preference for waters of 5-20m (Jessopp et al., 2018). One series of surveys focused on waters off Gormanstown, which overlaps with this SPA, found that the numbers of red-throated diver peaked in the February survey and estimated the population to be 2,140 (±95% confidence interval of 1,429 – 2,957) individuals (HiDef, 2019); the North-west Irish Sea SPA overlaps with this area. A population of 827 individuals was estimated based on December 29th 2019 HiDef data (NPWS unpublished data analysis). Red-throated diver can be quite mobile and it is likely that there is interchange between the designated (e.g. Dundalk Bay SPA) and undesignated waters
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatio-temporal patterns of use of the habitats by the non-breeding population
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of this piscivorous diver is poorly known outside of the breeding season but one study from the German Bight indicates that red-throated diver is a generalist opportunistic feeder but pelagic schooling fish that have a high energetic value might be favoured (Kleinschmidt et al., 2019)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity and site use	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A003 Great Northern Diver *Gavia immer*

To maintain the favourable conservation condition of great northern diver at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Non-breeding population size	Number	No significant decline	During the non-breeding period divers (primarily great northern diver and red-throated diver (*Gavia stellata*)) in the western Irish Sea are known to concentrate in the shallower coastal areas, with a clear preference for waters of 5-20m (Jessopp et al., 2018). One series of surveys focused on waters off Gormanstown, which overlaps with this SPA, found that the numbers of great northern diver peaked in the March survey and estimated the population to be 1,279 (±95% confidence interval of 676 – 2,084) individuals (HiDef, 2019); the North-west Irish Sea SPA overlaps with this area. A population of 176 individuals was estimated based on December 29th 2019 HiDef data (NPWS unpublished data analysis). Great northern diver can be quite mobile and it is likely that there is interchange between the designated (e.g. Dundalk Bay SPA) and undesignated waters
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatio-temporal patterns of use of the habitats by the non-breeding population
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Largely piscivorous, foraging over the benthos as well as throughout the water column, but will also frequently eat marine invertebrates (Paruk et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity and site use	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A009 Fulmar *Fulmarus glacialis*

To restore the favourable conservation condition of fulmar in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population Size	Number	Long term SPA population trend is stable or increasing	Fulmar is present within the SPA throughout the year. Breeding fulmar is a SCI of Lambay Island SPA (004069), which declined by 36% over the period 1999-2015 to 375 pairs (Mitchell et al., 2000; and Cummins et al., 2019). These birds exploit the marine waters of the North-west Irish Sea SPA during the breeding season. As fulmar can range large distances from their nest sites during the breeding season it is likely that the North-west Irish Sea SPA does not contain all relevant foraging resources for the Lambay Island SPA breeding population (Power et al., 2021). Fulmar breeding at other colonies and non-breeding individuals may also use the North-west Irish Sea SPA during the breeding period. Fulmar winter at sea and Jessopp et al. (2018) showed a broad distribution in the winter survey. Based on Jessopp et al. (2018) data for summer, autumn and winter surveys of the western Irish Sea an estimated 214, 11,260 and 506 individuals occurred in the SPA respectively
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by fulmar. Jessopp et al. (2018) recorded fulmar throughout the western Irish Sea survey area showing a clear preference for deeper waters; a high aggregation was noted in the eastern half of the North-west Irish Sea SPA during the autumn survey. Based on several studies, Woodward et al. (2019) estimates (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) of fulmar foraging ranges from the nest site during the breeding season, which are 135; 542; and 2,736km respectively (see Power et al., 2021)
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The colonisation of Ireland and Britain by fulmar over the last two centuries has been largely attributed to their close association with fisheries, but contemporary dietary studies indicate they also feed on a wide variety of prey including sandeels, crustaceans and squid (Philips et al., 1999)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). Studies in the UK found the highest densities of fulmar performing these behaviours occurred within 2km of the breeding colony (McSorley et al., 2005)

Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Fulmar require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A013 Manx Shearwater *Puffinus puffinus*

To maintain the favourable conservation condition of manx shearwater in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number	No significant decline	Dean et al. (2015) identifies an area of marine waters near the Irish Sea front and the stratified waters of the western Irish Sea as being an important foraging resource for manx shearwater breeding in several colonies located around the periphery of the Irish Sea; the North-west Irish Sea SPA overlaps with this area. One summer aerial survey, conducted in 2016, estimated 13,010 individual manx shearwater within the SPA (Jessopp et al., 2018, NPWS unpublished data analysis). A follow up survey in September 2016 provides an estimate of 457 individuals occurring in the SPA
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by manx shearwater. Jessopp et al. (2018) noted that particularly during the summer survey manx shearwater were sighted throughout the survey area, but were not observed in the nearshore waters, instead generally being recorded at least 4km from the shore. Manx shearwaters had a clear preference for deeper waters in the survey area, with a marked absence of this species over shallow areas and sandbars with less than 20m water depth
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Primarily clupeiform fish, during the chick rearing period; outside of this period squid and other marine invertebrates may form a larger part of the manx shearwater's diet (Brooke, 1990)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non sites-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)

Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Manx shearwater require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A017 Cormorant *Phalacrocorax carbo*

To restore the favourable conservation condition of cormorant in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding Population Size	Number	Long term population trend within theSPA is stable or increasing	Breeding cormorant is a SCI of Lambay Island SPA (004069), Ireland's Eye SPA (004117) and Skerries Islands SPA (004122). These breeding populations exploit the North-west Irish Sea SPA to varying degrees. Trend analysis over the period 1999-2015 show that the estimated population of Lambay Island decreased by 58% to 282 and the Ireland's Eye population is estimated to have increased by 39% to 424. Limited recent data exists for the Skerries Island SPA population but a minimum count of 125 in 2022 indicated that the population has decreased by 78% since 1999 (NPWS unpublished data). As cormorant can range some distance from their nest sites during the breeding season it is likely that the North-west Irish Sea SPA does not contain all relevant foraging resources for the populations of the aforementioned SPAs (Power et al., 2021). Conversely, cormorant breeding at other colonies and non-breeding individuals may also use the North-west Irish Sea SPA during the breeding period
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by cormorant. Aerial surveys of the western Irish Sea (Jessopp et al., 2018) did not differentiate shag (*Phalacrocorax aristotelis*) and cormorant by eye and they were grouped together. There was a clear peak in the distribution of sightings over water depths around 10m indicating a preference for shallow waters, with very few observations occurring over water depths in excess of 20m
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The cormorant's diet consists predominantly of small benthic and pelagic fish which are captured by pursuit diving, typically over shallow (<10m) freshwater, estuarine and marine environments (Gremillet et al., 1998; Hatch et al., 2020). Based on several studies, Woodward et al. (2019) provides estimates (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) of cormorant foraging ranges from the nest site during the breeding season, which are 7, 26, and 35km respectively (see Power et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. display, bathing, preening) as defined in McSorley et al. (2003)

Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Cormorant require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A018 Shag *Phalacrocorax aristotelis*

To restore the favourable conservation condition of shag in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number	Long term SPA population trend is stable or increasing	Breeding shag is a SCI of Lambay Island SPA (004069) and Skerries Islands SPA (004122). These breeding populations exploit, to varying degrees, the adjacent marine waters of this SPA. 2015 survey results show that the estimated population of Lambay Island decreased by 58% to 469 pairs since 1999 (Cummins et al., 2019). Limited recent data exists for the Skerries Island SPA population but it is estimated that only a small number (<5 pairs) may persist from an estimated population of 100 pairs in 1999 (Mitchell et al., 2000; Cummins et al., 2019). As shag can range some distances from their nest sites during the breeding season it is likely that the North-west Irish Sea does not contain all relevant foraging resources for the populations of the aforementioned SPAs (Baer and Newton, 2012; Moss et al., 2016; Woodward et al., 2019). Conversely shag, breeding at other colonies and non-breeding individuals will use the North-west Irish Sea SPA during the breeding period
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by shag. Aerial surveys of the western Irish Sea (Jessopp et al., 2018) did not differentiate shag and cormorant by eye and they were grouped together. There was a clear peak in the distribution of sightings over water depths around 10m indicating a preference for shallow waters, with very few observations occurring over water depths in excess of 20m. Baer and Newton (2012) and Moss et al. (2016) provide telemetry based foraging information of this species relevant to this particular area
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of shag is almost exclusively fish, taken chiefly near sea bed or at intermediate depths, and principally of the families Ammodytidae (sandeels), Gadidae, Clupeidae, Cottidae and Labridae, but a wide range of species taken, perhaps opportunistically (Orta et al., 2021). Based on several studies, Woodward et al. (2019) provides provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for shag, which are 9, 13, and 46km respectively (see Power et al., 2021). Baer and Newton (2012) and Moss et al. (2016) provide telemetry based foraging information of this species relevant to this particular area

Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)
Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Shag require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A065 Common Scoter *Melanitta nigra*

To maintain the favourable conservation condition of common scoter at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Non-breeding population size	Number	No significant decline	Common scoter utilise the shallow nearshore coastal waters of the wider North-west Irish sea region across the non-breeding period (Jessopp et al., 2018). One series of surveys focused on waters off Gormanstown, which overlaps with this SPA, found that the numbers of common scoter peaked in the second part of December and estimated the population to be 14,612 (±95% confidence interval of 1,038 – 39,694) individuals (HiDef, 2019); the North-west Irish Sea SPA overlaps with this area. A population of 14,567 individuals was estimated based on December 29th 2019 HiDef data (NPWS unpublished data analysis). Common scoter flocks can be quite mobile and it is likely the that there is interchange between the designated (e.g. Dundalk Bay SPA (004026)) and undesignated waters
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatio-temporal patterns of use of the habitats by the non-breeding population
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Common scoter is a diving duck that feed on prey species that live upon or within the upper few centimetres of the substratum. Common scoter diet primarily comprises of bivalve molluscs with other species (e.g. crabs, small fishes and gastropods) incorporated less frequently (Kaiser et al., 2006)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity and site use	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A179 Black-headed Gull *Chroicocephalus ridibundus*

To maintain the favourable conservation condition of black-headed gull at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Non-breeding population size	Number	No significant decline	Jessopp et al. (2018) undertook surveys across the western Irish Sea during summer, autumn and winter with black-headed gull occurring in all three seasons. Jessopp et al. (2018) noted that there was no association between black-headed gull and ocean depth profile. Based on Jessopp et al. (2018) it is estimated that 508 individuals occurred in the SPA in winter (NPWS unpublished data analysis). Non-breeding black-headed gull are a SCI for Dundalk Bay SPA (004026) and North Bull Island SPA (004006)
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatio-temporal patterns of use of the habitats by the non-breeding population. HiDef aerial surveys (2018, 2019) were conducted from December to March and the survey area overlaps with the SPA. Peak observations of this species were recorded in the second December survey and distribution patterns were coastal in all surveys, always south of Dundalk Bay
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Diet varies by location and season. Birds foraging in marine environments feed on fish and marine invertebrates (Moskoff et al., 2021).The diet of black-headed gull is extremely broad and opportunistic. Coastal birds may feed on marine invertebrates and to lesser extent on fish, sometimes following fishing vessels (Burger et al., 2020). HiDef aerial surveys showed the distribution patterns were coastal in all surveys, always south of Dundalk Bay
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity and site use	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A182 Common Gull *Larus canus*

To maintain the favourable conservation condition of common gull at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Non-breeding population size	Number	No signifcant decline	Jessopp et al. (2018) undertook aerial surveys during summer, autumn and winter of the western Irish Sea in 2016. Common and herring gulls could not be differentiated and were grouped together for the purposes of analysis. However, winter aerial surveys conducted by HiDef in a similar area did differentiate between species and indicates that while common gull numbers are significant in the winter herring gull (*Larus argentatus*) is the more abundant species. Based on Jessopp et al. (2018) and using HiDef to approximate the proportion of individual species populations it is estimated that 2,866 common gull individuals occurred in the SPA in the winter (NPWS unpublished data analysis). Non-breeding common gull is a SCI for Dundalk Bay SPA (004026)
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatio-temporal patterns of use of the habitats by the non-breeding population. HiDef aerial surveys (2018, 2019) were conducted from December to March and the survey area overlaps with the SPA. Peak observations of this species were recorded in the second December survey and concentrations were mainly in coastal habitats
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Diet varies by location and season. Birds foraging in marine environments feed on fish and marine invertebrates (Moskoff et al., 2021).The diet of black-headed gull is extremely broad and opportunistic. Coastal birds may feed on marine invertebrates and to lesser extent on fish, sometimes following fishing vessels (Burger et al., 2020). HiDef surveys showed that concentrations of this species were mainly in coastal habitats
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution

Barriers to connectivity and site use	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A183 Lesser Black-backed Gull *Larus fuscus*

To maintain the favourable conservation condition of lesser black-backed gull in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number	No significant decline	Breeding lesser black-backed gull is a SCI of Lambay Island SPA. This population exploits the surrounding marine waters of North-west Irish Sea SPA during the breeding season. The breeding lesser black-backed gull population is estimated to have increased by 12% over the period 1999-2015 from 309 to 345 pairs (Mitchell et al., 2000; NPWS unpublished data). As lesser black-backed gull can range large distances from their nest sites during the breeding season it is likely that the North-west Irish Sea SPA does not contain all relevant foraging resources for the Lambay Island SPA breeding population (Moss et al., 2016; Power et al., 2021; Woodward et al., 2019). Conversely lesser black-backed gull, breeding at other colonies and non-breeding individuals will use the North-west Irish Sea SPA during the breeding period
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by lesser black-backed gull. Sightings of black-backed gulls by Jessopp et al. (2018) were normally of single individuals with some larger groups observed. Black-backed gulls showed no clear water depth preference although relatively more observations of lesser black-backed gulls occurred over shallower depths
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of lesser black-backed gull is diverse and opportunistic. This species can forage over both terrestrial and aquatic habitats. Frequent prey items include small fish, aquatic invertebrates, birds' eggs and chicks, trawler discards, rodents and berries (Burger et al., 2020). Based on several studies, Woodward et al. (2019) provides provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for lesser black-backed gull, which are 43km, 127km, and 533km respectively (see Power et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)

Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Lesser black-backed gull require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A184 Herring Gull *Larus argentatus*

To restore the favourable conservation condition of herring gull in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population size	Number	Long term SPA population trend is stable or increasing	Herring gull is present within the North-west Irish Sea SPA throughout the year. Breeding herring gull is a SCI for Lambay Island, Ireland's Eye and Skerries Islands SPAs. Over the period 1999-2015, the herring gull breeding population are estimated to have decreased by 50% to 906 pairs at Lambay and increased by 29% to 318 pairs on Ireland's Eye (Cummins et al., 2019). The population was estimated to be 300 pairs in 1999. As herring gull can range large distances from their nest sites during the breeding season it is likely that this SPA does not contain all relevant foraging resources for the aforementioned SPAs' breeding populations (Power et al., 2021). Herring gull, breeding at other colonies and non-breeding individuals will use the North-west Irish Sea SPA during the breeding period. Based on survey data of Jessopp et al. (2018) and by HiDef (2019) it is estimated that 6,893 herring gull individuals occurred in the SPA in the winter
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatio-temporal patterns of use of the habitats by herring gull. Jessopp et al. (2018) survey of the western Irish Sea did not distinguish between common gull and herring gull – these gulls occurred across the range of available water depths in the survey area but more observations were noted in depths less than 50m. Winter HiDef aerial surveys (2018, 2019) were conducted from December to March and the survey area overlaps with the SPA. This survey showed that herring gull was mainly concentrated along the coast south of Dundalk Bay
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Herring gull is a generalist and opportunistic feeder and can forage over both terrestrial and aquatic habitats. Its diet includes fish, fish offal, bivalves, gastropods, crustaceans, squid, insects, other seabirds, small landbirds, small mammals, terrestrial insects, earthworms, berries, carrion, and a wide variety of human refuse (Weseloh et al., 2020). Based on several studies, Woodward et al. (2019) provides estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of herring gull foraging ranges from the nest site during the breeding season, which are 15, 59, and 92km respectively (see Power et al., 2021)

Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)
Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Herring gull require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A187 Great Black-backed Gull *Larus marinus*

To maintain the favourable conservation condition of great black-backed gull at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Non-breeding population size	Number	No significant decline	Jessopp et al. (2018) undertook an aerial survey of the western Irish Sea in 2016. Not all sightings of great black-backed gulls and lesser black-backed gulls (*Larus fuscus*) could be differentiated and were grouped together for the purposes of analysis. However, winter aerial surveys conducted by HiDef (2019) in a similar area did differentiate between species and indicates that great black-backed gull was significantly more abundant than lesser black-backed gull in the winter. Based on Jessopp et al. (2018) and using HiDef to approximate the proportion of individual species populations it is estimated that 2,096 great black-backed gull individuals occurred in the SPA in the winter (NPWS unpublished analysis)
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatio-temporal patterns of use of the habitats by the non-breeding population. Sightings of black-backed gulls by Jessopp et al. (2018) were normally of single individuals with some larger groups observed. HiDef aerial surveys (2018, 2019) were conducted from December to March and the survey area overlaps with the SPA. Peak observations for great black-backed gull were recorded in early December, the spatial distribution was varied in surveys in December and January but more concentrated in the north of the survey area in February and March
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The great black-backed gull is a generalist predator that feeds on fish, both pelagic and intertidal marine invertebrates, mammals, insects, seabirds and waterfowl as well as their eggs and chicks. Great black-backed gulls also scavenge on fish, carrion, human refuse and will follow fishing vessels in search of fisheries discard. Great black-backed gulls will forage in widely scattered groups at sea and join other groups when concentrations of prey are located (Good, 2020). HiDef surveys detected more concentrated numbers of this species the north of the survey area in February and March
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution

Barriers to connectivity and site use	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A188 Kittiwake *Rissa tridactyla*

To restore the favourable conservation condition of kittiwake in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population size	Number	Long term SPA population trend is stable or increasing	Kittiwake is present within the North-west Irish Sea SPA throughout the year. Breeding kittiwake is a SCI for Lambay Island (004069), Howth Head (004113) and Ireland's Eye (004117) SPAs; all of which declined over the period 1999-2015 (19% to 3,320 pairs; 22% to 1,773 pairs; 52% to 455 pairs respectively) (Cummins et al., 2019). It is likely that this SPA does not contain all relevant foraging resources for all of the aforementioned SPAs (Baer and Newton, 2012; Moss et al., 2016; Power et al., 2021). Conversely kittiwake, breeding at other colonies and non-breeding individuals may use the North-west Irish Sea SPA during the breeding period. Based on Jessopp et al. (2018) data for summer, autumn and winter surveys of the western Irish Sea 1,632, 2,858, and 944 individuals are estimated to have occurred in the SPA, respectively
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by kittiwake. Jessopp et al. (2018) noted that sightings occurred throughout the western Irish Sea survey area, however, there was a distinct change in the distribution of sightings between the summer breeding season and the subsequent autumn and winter periods. In contrast to other gull species, and in all three seasons, areas of high sightings density occurred some distance from the coast. Based on several studies, Woodward et al. (2019) provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for kittiwake, which are 55km, 156km, and 770km respectively (see Power et al., 2021)
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Kittiwake is a surface feeding seabird and primarily piscivorous (e.g. sandeels, herring, gadoids) with some invertebrates (e.g. euphausids, amphipods) in the diet also recorded (Hatch et al., 2020)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)

Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Kittiwake require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A192 Roseate Tern *Sterna dougallii*

To maintain the favourable conservation condition of roseate tern in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number	No significant decline	Breeding roseate tern is also a SCI of Rockabill SPA. Since 1995 the Rockabill population has increased by 231% to 1,834 pairs (Allbrook et al., 2022; Hannon et al., 1997). Studies indicate that the waters of Rockabill SPA and the North-west Irish Sea SPA contain the majority of the foraging habitat for the Rockabill population (Power et al., 2022; Harwood et al., 2019; Power et al., 2021). At the latter stages of breeding season, and prior to migration, tern species can form large aggregations at terrestrial and intertidal roost sites along the coast (Burke et al., 2020). Notable concentrations have been recorded at South Dublin Bay and River Tolka Estuary SPA (004024) and Dalkey Islands SPA (004172) and are a SCI for these SPAs. More recent work has identified further areas along the east coast (Burke et al., 2020)
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by roseate tern. Boat based, visual tracking of roseate terns nesting on Rockabill showed terns feeding immediately around Rockabill Island, along coastal areas of north County Dublin, Louth and Meath as well as coastal areas from Skerries (immediately west of Rockabill Island) south to Donabate. Additionally, during the fledging period roseate terns foraged in deeper water offshore, immediately east of the colony (Harwood et al., 2019; Power et al., 2022)
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Roseate Tern is largely piscivorous; studies from Rockabill SPA show that sandeels (*Ammodytes* spp) along with clupeids and, to a lesser extent, gadoids can form important prey bases (e.g. Allbrook et al., 2022). Breeding birds forage over marine waters often some distance from the colony (see Harwood et al., 2019; Power et al., 2021; Power et al., 2022)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). At latter stages of the breeding season tern species form large aggregations at terrestrial and intertidal roost sites along the coast (Burke et al., 2020)

Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Roseate tern require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A193 Common Tern *Sterna hirundo*

To maintain the favourable conservation condition of common tern in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number	No significant decline	Breeding common tern is also a SCI of two other SPAs. Between 1995-2022 the populations has increased by 328% to 1,503 pairs at Rockabill SPA (004014) and by 45% to 138 on the ESB Dolphin nesting platform (part of South Dublin and River Tolka Estuary SPA (004024)) by 45% to 138 pairs with a further 417 pairs located nearby on two structures outside of the SPA (Boland et al., 2022). Common tern can range up to 30km from nest sites it is likely that Rockabill SPA and the North-west Irish Sea SPA contain the majority of foraging habitat for the Rockabill population but a significantly lesser proportion for the Dublin Port colony (Power et al., 2021). Towards the end of the breeding season, and prior to migration, tern species form large aggregations at roost sites along the coast (Burke et al., 2020). Notable concentrations have been recorded at South Dublin Bay and River Tolka Estuary SPA and Dalkey Islands SPA (004172) and common tern is listed as an SCI for these SPAs
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by common tern. Aerial surveys of the western Irish Sea (Jessopp et al., 2018) did not differentiate common and Arctic tern by eye and they were grouped together. While sightings occurred across a large range of sea depths, they occurred more frequently over shallow areas of sea in the central transects of the survey area during the summer breeding season, with some sightings also concentrated further south
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Common tern are largely piscivorous. Studies from Rockabill SPA show that sandeels (*Ammodytes* spp) along with Clupeidae (herrings) and, to a lesser extent, Gadidae (cods, pollocks) can form important prey bases (e.g. Allbrook et al., 2022). Breeding birds forage over marine waters often some distance from the colony (see Power et al., 2021, Power et al., 2022)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). At latter stages of the breeding season tern species form large aggregations at terrestrial and intertidal roost sites along the coast (Burke et al., 2020)

Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Common tern require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A194 Arctic Tern *Sterna paradisaea*

To maintain the favourable conservation condition of Arctic tern in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number	No significant decline	Breeding Arctic tern is a SCI for Rockabill SPA (004014). Population size at Rockabill has fluctuated over the years. However, the population size in 2022 (estimate of 49 - 60 pairs), was similar to that in 1995 (49 pairs) (Allbrook et al., 2022; Hannon et al., 1997). Arctic tern can range up to 46km from their nest sites during the breeding season, so it is likely that Rockabill SPA and the North-west Irish Sea SPA contain the majority of the foraging habitat for this population (Power et al., 2021; Woodward et al., 2019). Towards the end of the breeding season, and prior to migration, tern species form large aggregations at roost sites along the coast (Burke et al., 2020). Notable concentrations have been recorded at South Dublin Bay and River Tolka Estuary SPA (004024) and Dalkey Islands SPA (004172) and Arctic tern is listed as an SCI for these SPAs
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by Arctic tern. Aerial surveys of the western Irish Sea (Jessopp et al., 2018) did not differentiate common and Arctic tern by eye and so they were grouped together. While sightings occurred across a large range of sea depths, they occurred more frequently over shallow areas of sea in the central transects of the survey area during the summer breeding season, with some sightings also concentrated further south
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Arctic tern are largely piscivorous. Most frequent fish prey are small, schooling species commonly caught in open water, at tide rips, and over predators (e.g. jellyfish and marine mammals). These are usually 1- or 2-year-old fish, including from the Clupeidae (herrings), Gadidae (cods, pollocks) and Ammodytidae (sandeels) families (Hatch et al., 2020). Based on several studies, Woodward et al. (2019) provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) for Arctic tern, which are 6, 26, and 46km respectively (see Power et al., 2021)

Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). At latter stages of the breeding season tern species form large aggregations at terrestrial and intertidal roost sites along the coast (Burke et al., 2020)
Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Arctic tern require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A195 Little Tern *Sterna albifrons*

To maintain the favourable conservation condition of little tern in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Breeding population size	Number	No significant decline	Breeding little tern is a SCI of Boyne Estuary SPA (004080). Population size at Baltray, Co. Louth has fluctuated over the years but the 2022 estimate of 84 pairs represents an increase of some 500% from the 1995 All-Ireland Tern Survey (Moënner and Hartigan, 2022; Hannon et al., 1997). The foraging range of breeding little tern from the colony is relatively small and therefore it is likely that all feeding resources for this colony during the breeding season are included within the Boyne Estuary SPA and North-west Irish Sea SPA (Woodward et al., 2019; Power et al., 2021; Power et al., 2022). However there is likely to be interchange of birds from other colonies around the Irish Sea during the breeding season and on passage
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by little tern. Breeding birds forage over marine and brackish waters quite close (<5km) to the colony (see Power et al., 2021; Power et al., 2022)
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Little tern are largely piscivorous. Studies from a more southerly Irish colony show that sandeels (*Ammodytes* spp.) along with clupeids and, to a lesser extent, gadoids can form important prey bases (Johnson et al., 2022). Breeding birds forage over marine and brackish waters quite close (<5km) to the colony (see Power et al., 2021; Power et al., 2022)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). At latter stages of the breeding season tern species form large aggregations at terrestrial and intertidal roost sites along the coast (Burke et al., 2020)

Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Little tern require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A199 Guillemot *Uria aalge*

To maintain the favourable conservation condition of guillemot in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population size	Number	No significant decline	Guillemot occur in the SPA throughout the year. Breeding guillemot is a SCI of Lambay Island and Ireland's Eye SPAs. From 1999-2015, individual population estimates at Lambay of 59,983 remained stable (-1%), and Ireland's Eye increased by 101% to 4,410 (Cummins et al., 2019). These birds exploit this SPA during the breeding season. As birds can range large distances from the colony during the breeding season it is likely that this SPA does not contain all relevant foraging resources for these populations (Baer and Newton, 2012; Power et al., 2021). Guillemot from other colonies and non-breeding individuals may also use this SPA during the breeding period. Jessopp et al. (2018) undertook summer, autumn and winter surveys of the western Irish Sea; razorbill (*Alca torda*) and guillemot were categorised together. Based on this 18,621, 93,191, and 18,553 individuals are estimated to have occurred in the SPA respectively; it is likely that guillemot formed the majority of these
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat may vary through time. This will affect the spatio-temporal patterns of use of the habitats by the guillemot. Jessopp et al. (2018) noted that during the summer, guillemot/razorbill sightings concentrated around the central transect lines, while during autumn surveys, large numbers of sightings occurred in the northernmost transects. There was no obvious association between the occurrence of razorbills/guillemots and bathymetric features. HiDef (2019) undertook surveys off Gormanstown and noted that most areas were used regularly by guillemot, but were present at the highest density in the east of the study area. Woodward et al. (2019) provides estimates (i.e. mean, mean of max distances across all studies, and max distance) of guillemot movements from the colony, which are 33, 73, and 338km respectively
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of guillemot consists of micronektonic prey, 2–25cm in length (mainly 6–10cm), including fish, euphausiids, large copepods, and squid. In summer mainly fish, especially when feeding chicks, in contrast to a more diverse diet during non-breeding period, with euphausiids in particular more important (Ainley et al., 2021). Based on several studies, Woodward et al. (2019) provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for guillemot, which are 33, 72, and 338km respectively (see Power et al., 2021)

Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). Studies in the UK found the highest densities of guillemot performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Guillemot require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A200 Razorbill *Alca torda*

To maintain the favourable conservation condition of razorbill in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population size	Number	No significant decline	Razorbill occur in the SPA throughout the year. Breeding razorbill is a SCI of Lambay Island and Ireland's Eye SPAs. From 1999-2015, individual population estimates at Lambay of 7,353 increased by 70%, and Ireland's Eye increased by 207% to 1,600 (Cummins et al., 2019). These birds exploit this SPA during the breeding season. As birds can range large distances from the colony during the breeding season it is likely that this SPA does not contain all relevant foraging resources for these populations (Baer and Newton, 2012; Power et al., 2021). Razorbill from other colonies and non-breeding individuals may use this SPA during the breeding period. Jessopp et al. (2018) undertook summer, autumn and winter surveys of the western Irish Sea; razorbill and guillemot were categorised together. Based on this 18,621, 93,191, and 18,553 individuals are estimated to have occurred in the SPA respectively; it is likely that razorbill formed a significant minority of these
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat may vary through time. This will affect the spatio-temporal patterns of use of the habitats by razorbill. Jessopp et al. (2018) noted that during the summer, guillemot/razorbill sightings were concentrated around the central transect lines, while during autumn surveys, large numbers of sightings occurred in the northernmost transects. There was no obvious association between the occurrence of razorbills/guillemots and bathymetric features. HiDef (2019) undertook surveys off Gormanstown and noted that razorbill varied across the survey area, with most areas being used, except the most coastal of habitats. Woodward et al. (2019) provides estimates (i.e. mean, mean of max distances across all studies, and max distance) of razorbill movements from the colony, which are 61km, 89km, and 313km respectively
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of razorbill comprises schooling fish including herring and sandeel. Crustaceans and polychaetes may also be important in adult diets (Lavers et al., 2020). Based on several studies, Woodward et al. (2019) provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for razorbill, which are 61km, 89km, and 313km respectively (see Power et al., 2021)

Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). Studies in the UK found the highest densities of razorbill performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Razorbill require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A204 Puffin *Fratercula arctica*

To restore the favourable conservation condition of puffin in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

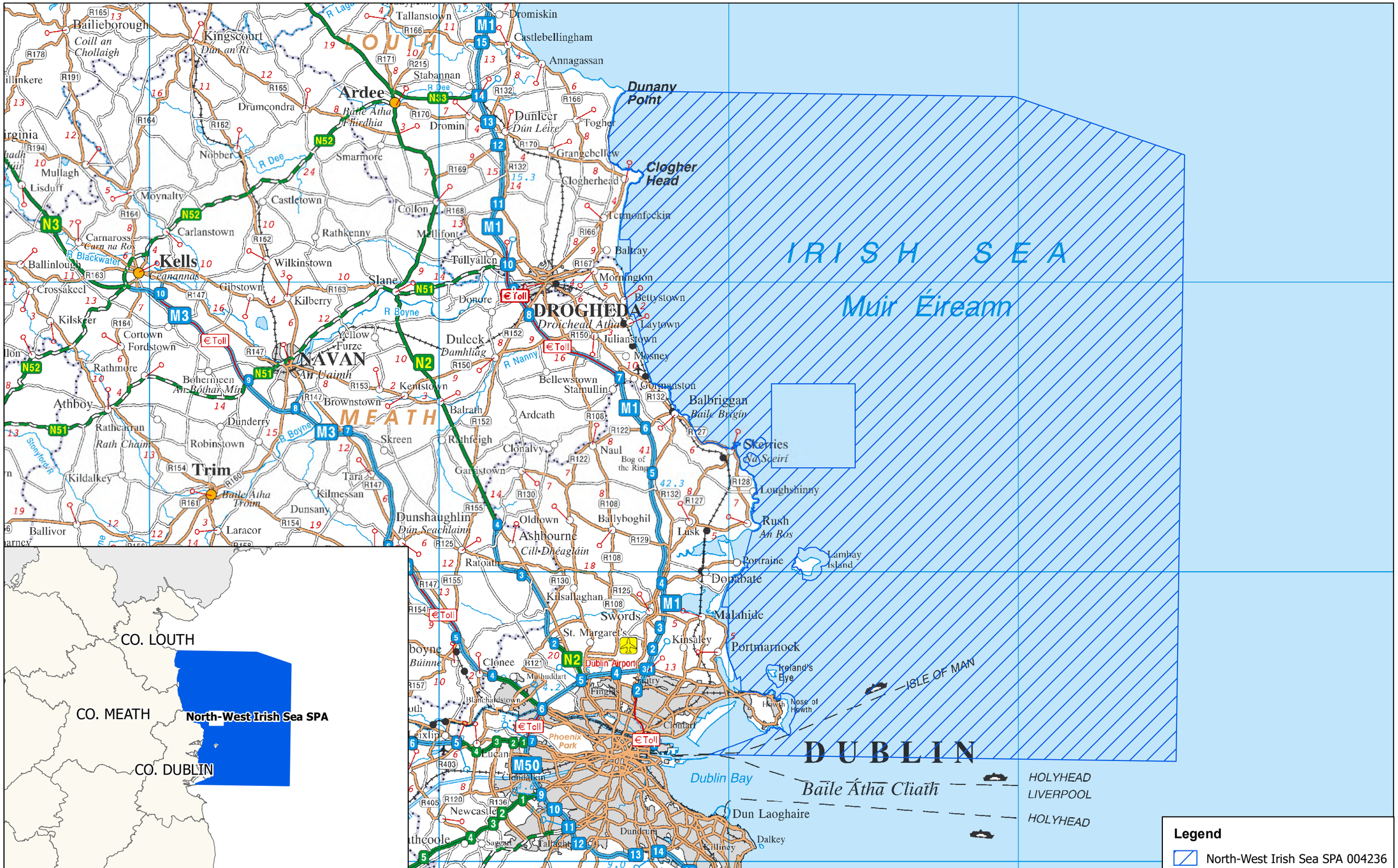
Attribute	Measure	Target	Notes
Breeding population size	Number	Long term SPA population trend is stable or increasing	Breeding puffin is also a SCI of Lambay Island SPA (004069). This breeding population exploits the surrounding marine waters of North-west Irish Sea SPA during the breeding season. The breeding puffin population is estimated to have declined by 68% over the period 1999-2015 from 265 to 158 individuals (Mitchell et al., 2000; NPWS unpublished data). As puffin can range large distances from their nest sites during the breeding season it is likely that the North-west Irish Sea does not contain all relevant foraging resources for the Lambay Island SPA breeding population (Power et al., 2021). Also conversely non-breeding individuals will use the North-west Irish Sea SPA during the breeding period
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by puffin
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of puffin predominately consists of small to mid-sized (5 – 15cm) schooling midwater fish including sprat (*Sprattus sprattus*) sandeel (*Ammodytes* spp) and herring (*Clupea harengus*) (Lowther et al., 2020). Based on several studies, Woodward et al. (2019) provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for puffin, which are 62km, 137km, and 383km respectively (see Power et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). Studies in the UK found that the highest densities of puffin performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003)

Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA	Puffin require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

A862 Little Gull *Hydrocoloeus minutus*

To maintain the favourable conservation condition of little gull at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Non-breeding population size	Number	No significant decline	Jessopp et al. (2018) noted that little gull occurred over a wide range of depths across the western Irish Sea, although there were no sightings over waters deeper than 80m. Based on Jessopp et al. (2018) it is estimated that 391 individuals occurred in the SPA area in winter (NPWS unpublished data analysis)
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the non-breeding population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatio-temporal patterns of use of the habitats by the non-breeding population
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	A primarily aquatic forager that feed on flying insects, small fish and aquatic invertebrates typically at the water surface (Ewins and Weseloh, 2020). Little is known of the winter diet of this species
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity	Number; location; shape; area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors



NPWS An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra National Parks and Wildlife Service

MAP 1:
NORTH-WEST IRISH SEA SPA
CONSERVATION OBJECTIVES
SPA DESIGNATION

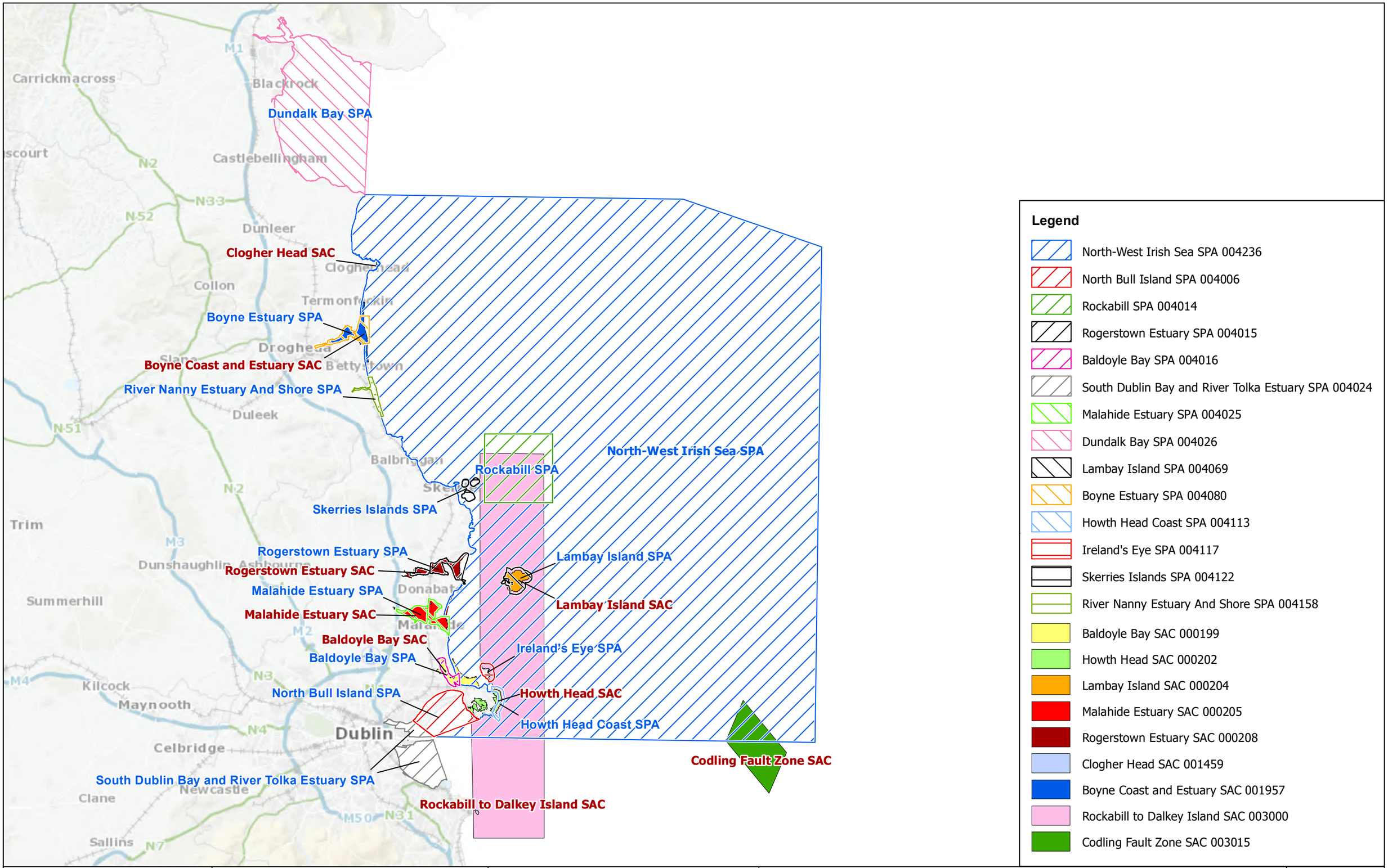
Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SPA 004236; version 3

0 2.5 5 10 Kilometres

N

Map version 1
Date: September 2023



Legend

- North-West Irish Sea SPA 004236
- North Bull Island SPA 004006
- Rockabill SPA 004014
- Rogerstown Estuary SPA 004015
- Baldoyle Bay SPA 004016
- South Dublin Bay and River Tolka Estuary SPA 004024
- Malahide Estuary SPA 004025
- Dundalk Bay SPA 004026
- Lambay Island SPA 004069
- Boyne Estuary SPA 004080
- Howth Head Coast SPA 004113
- Ireland's Eye SPA 004117
- Skerries Islands SPA 004122
- River Nanny Estuary And Shore SPA 004158
- Baldoyle Bay SAC 000199
- Howth Head SAC 000202
- Lambay Island SAC 000204
- Malahide Estuary SAC 000205
- Rogerstown Estuary SAC 000208
- Clogher Head SAC 001459
- Boyne Coast and Estuary SAC 001957
- Rockabill to Dalkey Island SAC 003000
- Codling Fault Zone SAC 003015

NPWS An tSeirbhís Páirceanna Náisiúnta agus Fiadhúlra National Parks and Wildlife Service

MAP 2:
NORTH-WEST IRISH SEA SPA
CONSERVATION OBJECTIVES
OVERLAPPING AND ADJACENT SITES

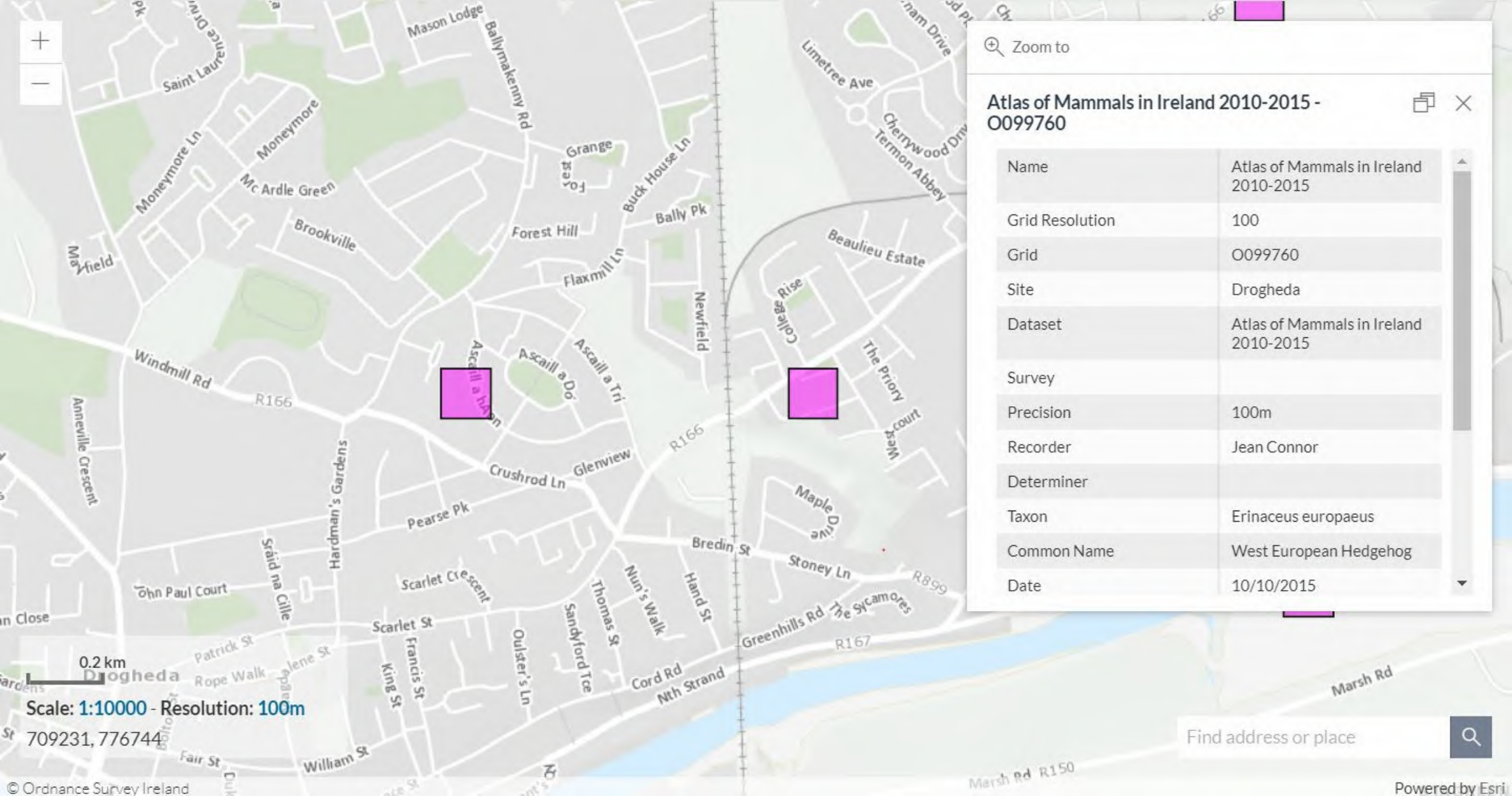
Map to be read in conjunction with the NPWS Conservation Objectives Document

SITE CODE:
SPA 004236; version 3

0 2.5 5 10 Kilometres

N

Map version 1
Date: September 2023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Grid Resolution | 100
Grid | O099760
Site | Drogheda
Dataset | Atlas of Mammals in Ireland 2010-2015
Survey |
Precision | 100m
Recorder | Jean Connor
Determiner |
Taxon | Erinaceus europaeus
Common Name | West European Hedgehog
Date | 10/10/2015
0.2 km
Scale: 1:10000 - Resolution: 100m
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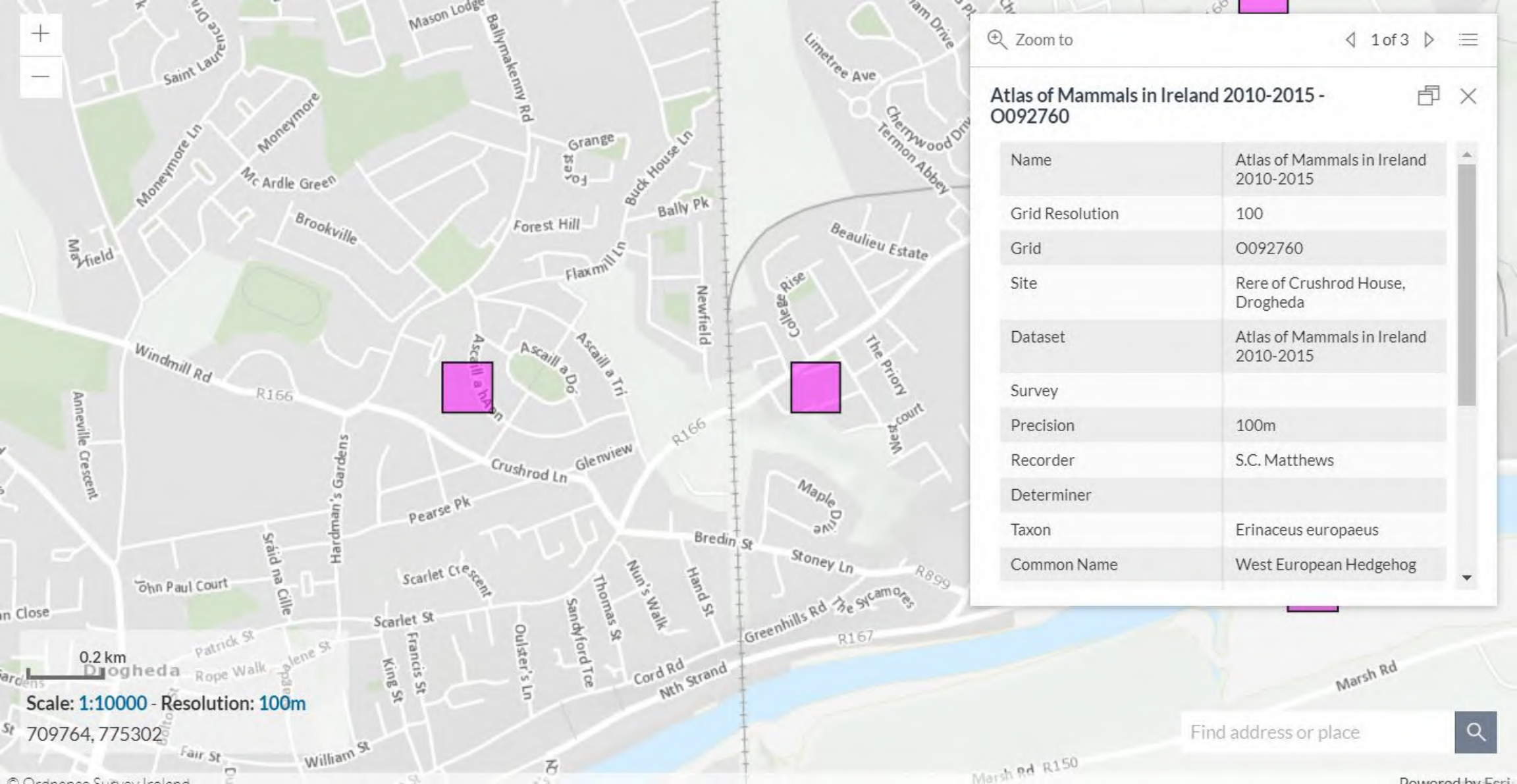
Find address or place
© Ordnance Survey Ireland
Powered by Esri


Zoom to
1 of 3
Atlas of Mammals in Ireland 2010-2015 - O092760
Name | Atlas of Mammals in Ireland 2010-2015
Grid Resolution | 100
Grid | O092760
Site | Rere of Crushrod House, Drogheda
Dataset | Atlas of Mammals in Ireland 2010-2015
Survey |
Precision | 100m
Recorder | S.C. Matthews
Determiner |
Taxon | Erinaceus europaeus
Common Name | West European Hedgehog
Mason Lodge
Ballymakenny Rd
Saint Laurence Dr
Moneymore
Moneymore Ln
Mc Ardle Green
Brookville
Mayfield
Grange Park
Buck House Ln
Forest Hill
Bally Pk
Flaxmill Ln
Newfield
Limetree Ave
Cherrywood Dr
Termon Abbey
Beaulieu Estate
College Rise
The Priory
Priory Court
Windmill Rd
R166
Ascaill a Dó
Ascaill a Tri
Crushrod Ln
Glenview
Pearse Pk
Anneville Crescent
Hardman's Gardens
Sráid na Cille
John Paul Court
Scarlet Crescent
Scarlet St
Maple Drive
Bredin St
Stoney Ln
R899
Greenhills Rd
The Sycamores
R167
Thomas St
Nun's Walk
Hand St
Sandyford Tce
Oulster's Ln
Francis St
King St
Cord Rd
Nth Strand
Marsh Rd
R150
Patrick St
Rope Walk
Magdalene St
Fair St
William St
Drogheda
0.2 km
Scale: 1:10000 - Resolution: 100m
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Find address or place
© Ordnance Survey Ireland
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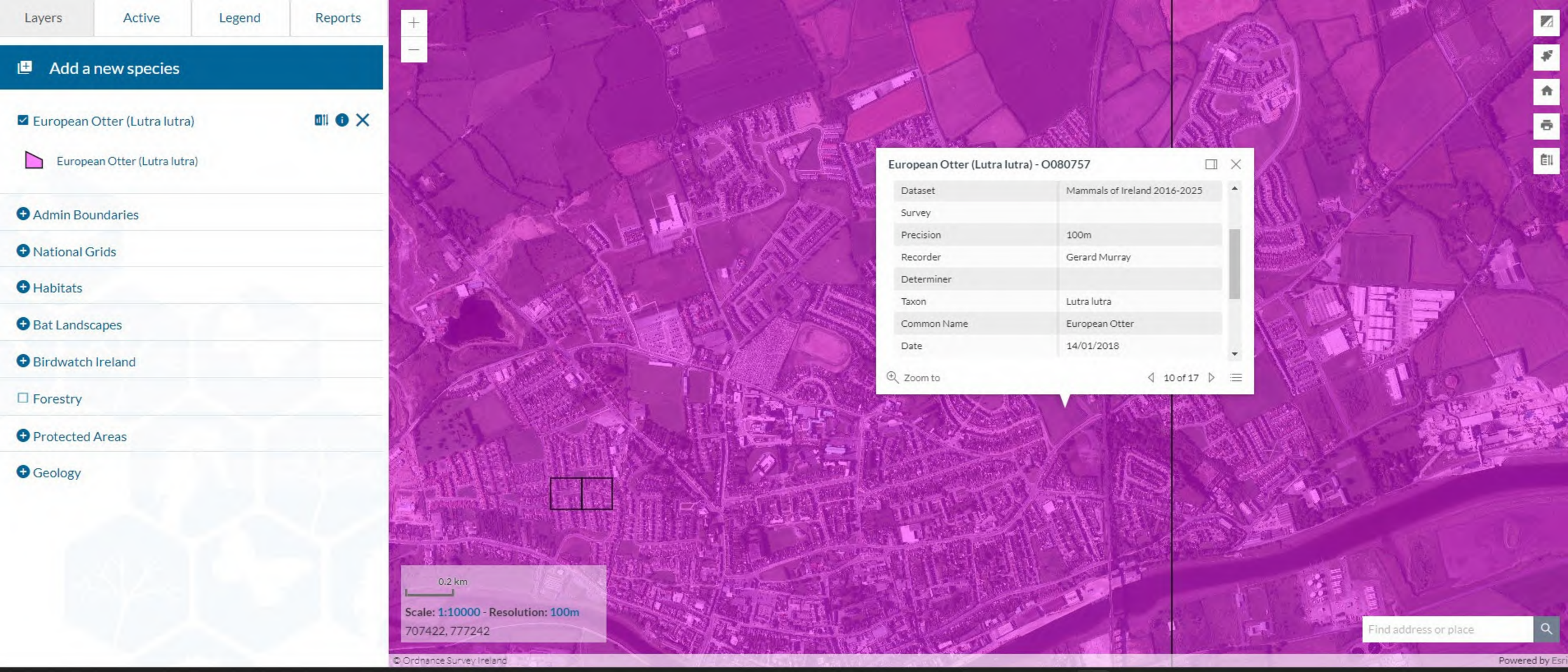
Layers
Active
Legend
Reports
Add a new species
European Otter (Lutra lutra)
European Otter (Lutra lutra)
Admin Boundaries
National Grids
Habitats
Bat Landscapes
Birdwatch Ireland
Forestry
Protected Areas
Geology
European Otter (Lutra lutra) - O080757
Dataset
Mammals of Ireland 2016-2025
Survey
Precision
100m
Recorder
Gerard Murray
Determiner
Taxon
Lutra lutra
Common Name
European Otter
Date
14/01/2018
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Find address or place
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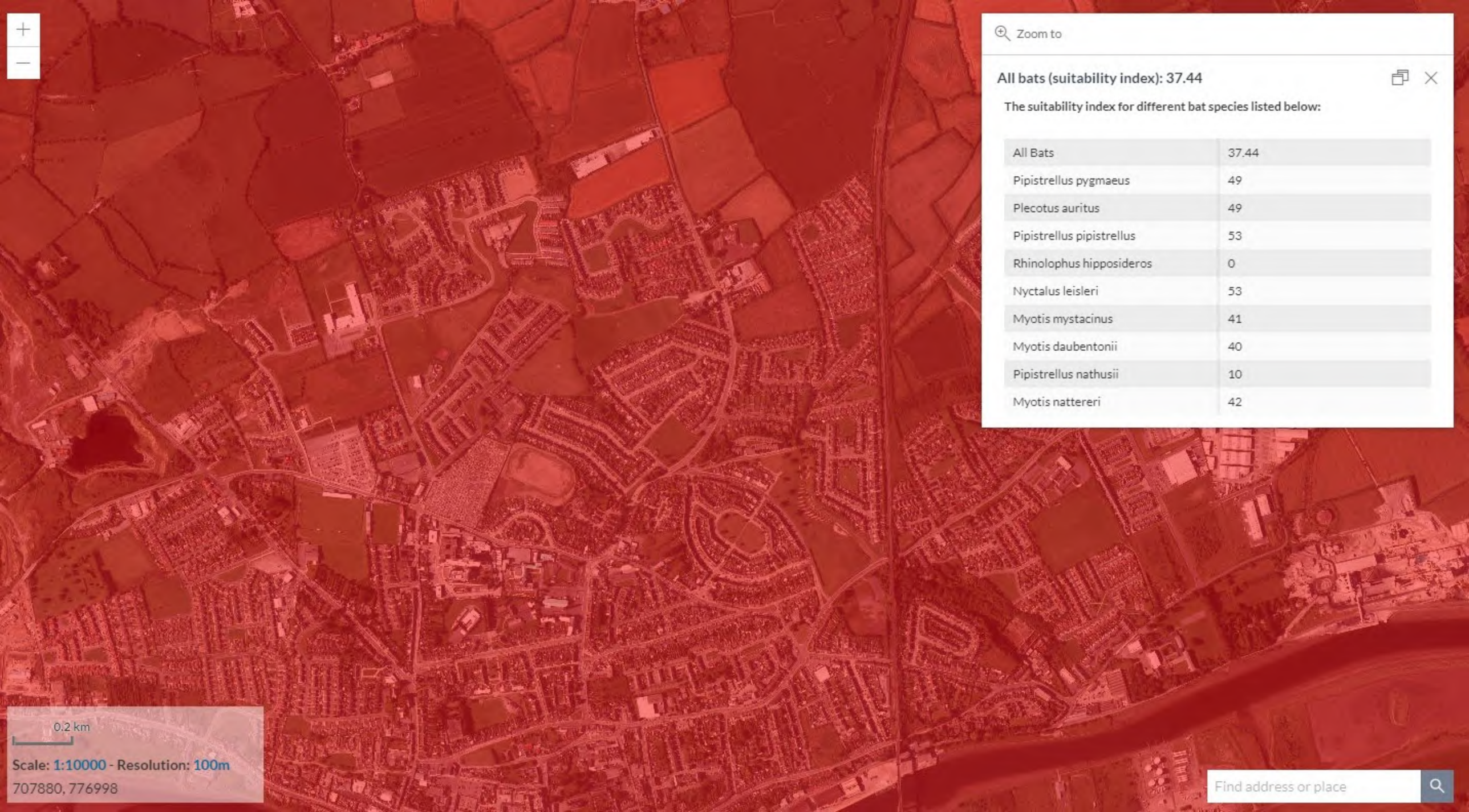
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All bats (suitability index): 37.44
The suitability index for different bat species listed below:
All Bats 37.44
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Plecotus auritus 49
Pipistrellus pipistrellus 53
Rhinolophus hipposideros 0
Nyctalus leisleri 53
Myotis mystacinus 41
Myotis daubentonii 40
Pipistrellus nathusii 10
Myotis nattereri 42
0.2 km
Scale: 1:10000 - Resolution: 100m
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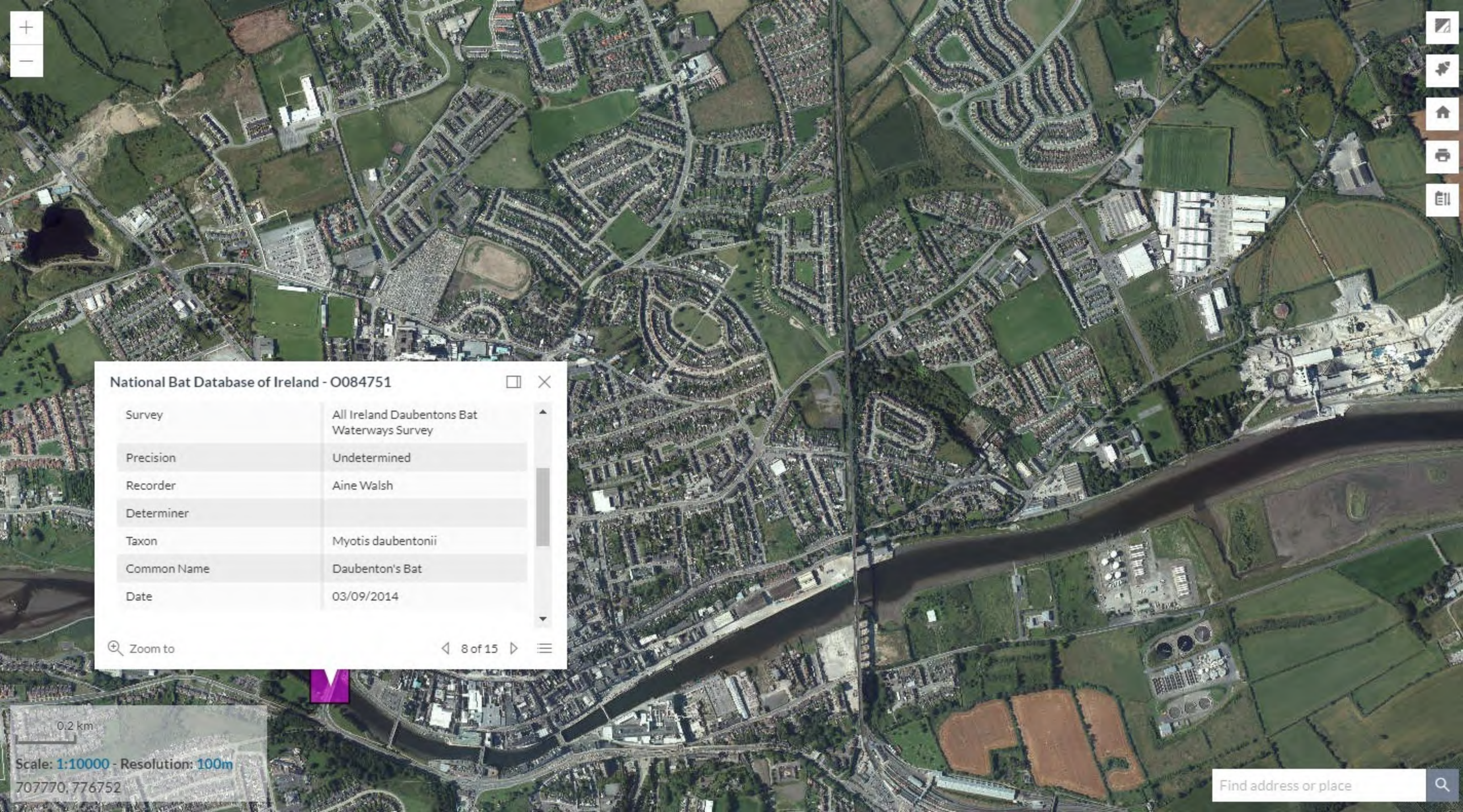
Find address or place


National Bat Database of Ireland - O084751
Survey
All Ireland Daubentons Bat Waterways Survey
Precision
Undetermined
Recorder
Aine Walsh
Determiner
Taxon
Myotis daubentonii
Common Name
Daubenton's Bat
Date
03/09/2014
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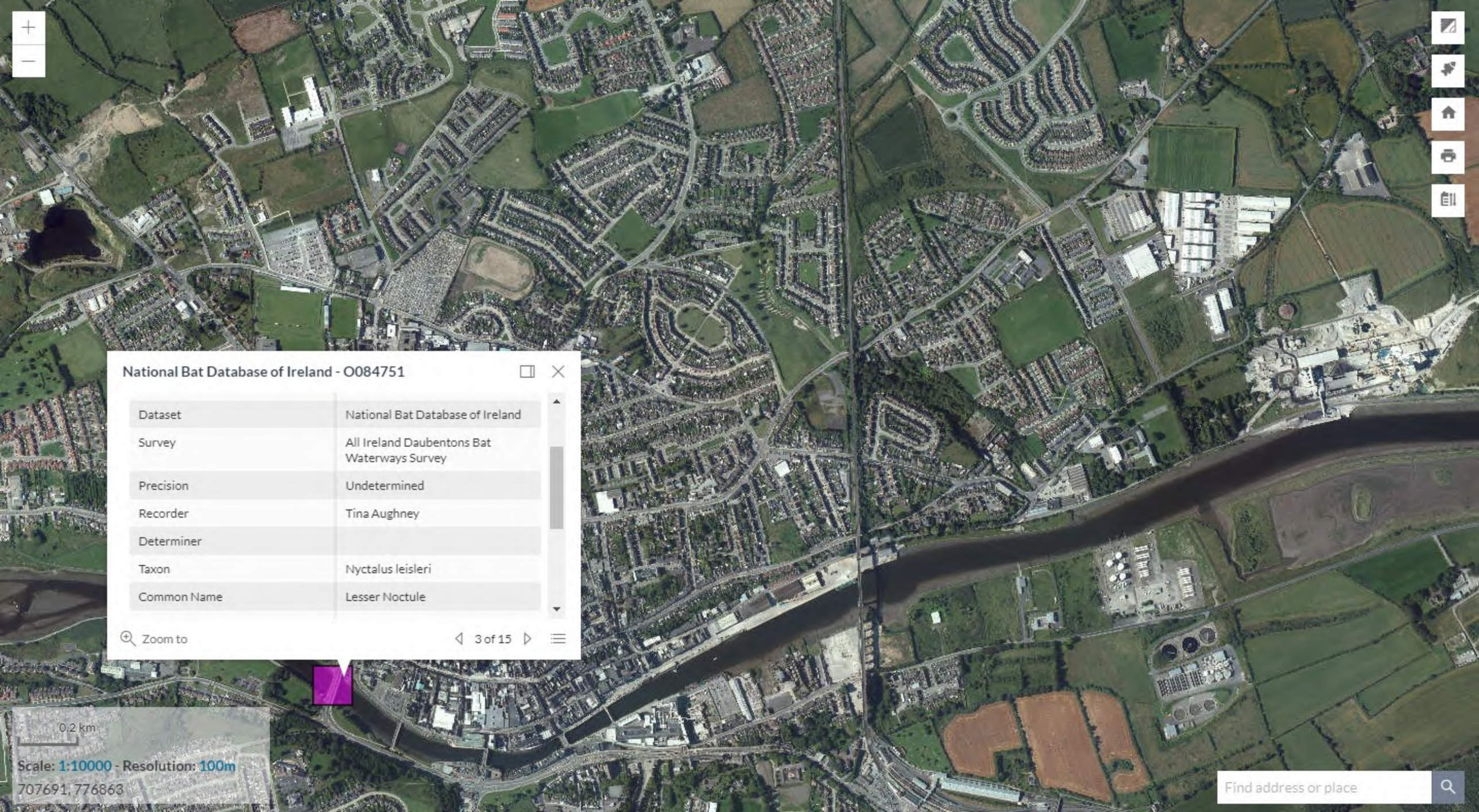
Find address or place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Dataset
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Survey
All Ireland Daubentons Bat Waterways Survey
Precision
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Recorder
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Determiner
Taxon
Nyctalus leisleri
Common Name
Lesser Noctule
Zoom to
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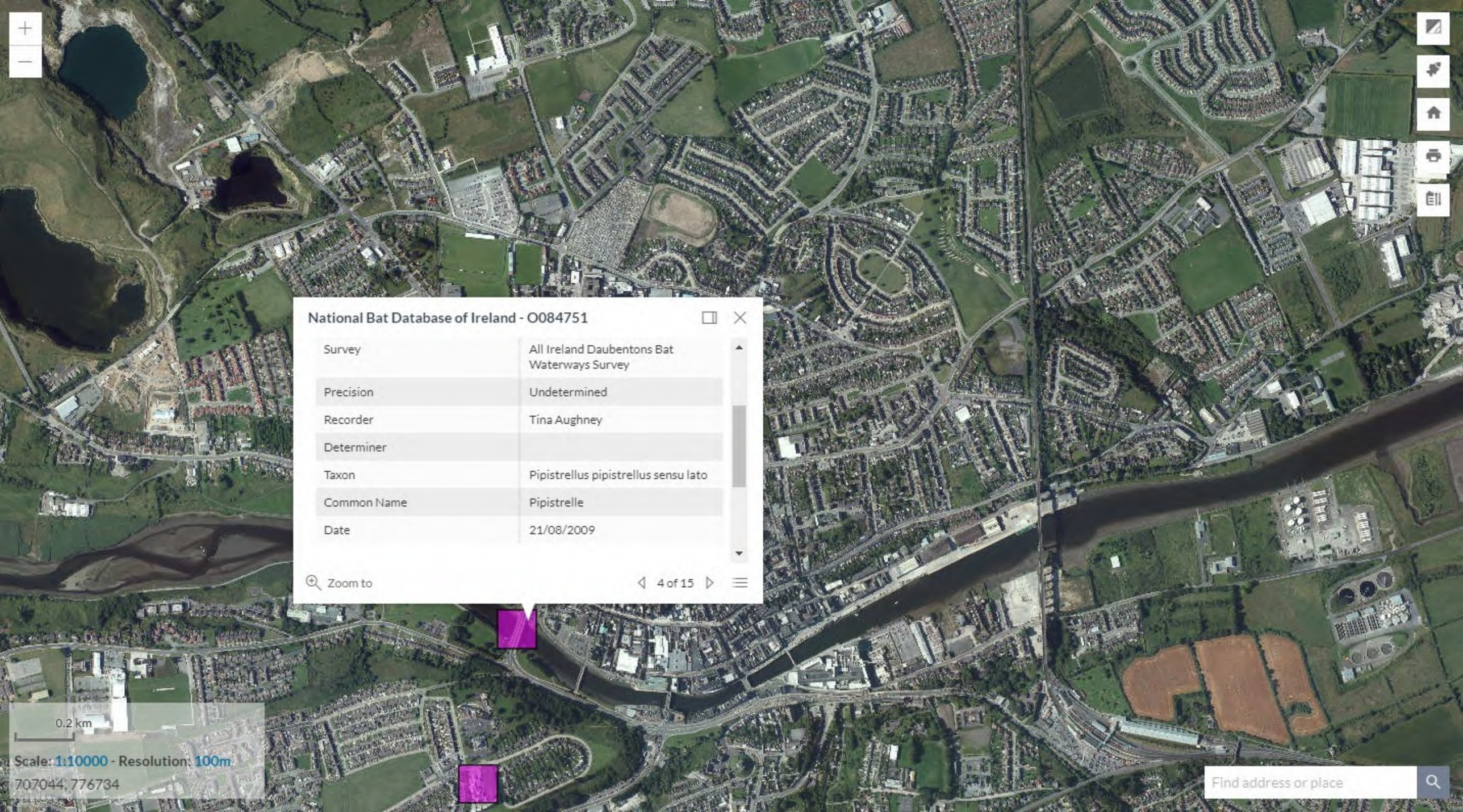
National Bat Database of Ireland - O084751
Survey
All Ireland Daubentons Bat Waterways Survey
Precision
Undetermined
Recorder
Tina Aughney
Determiner
Taxon
Pipistrellus pipistrellus sensu lato
Common Name
Pipistrelle
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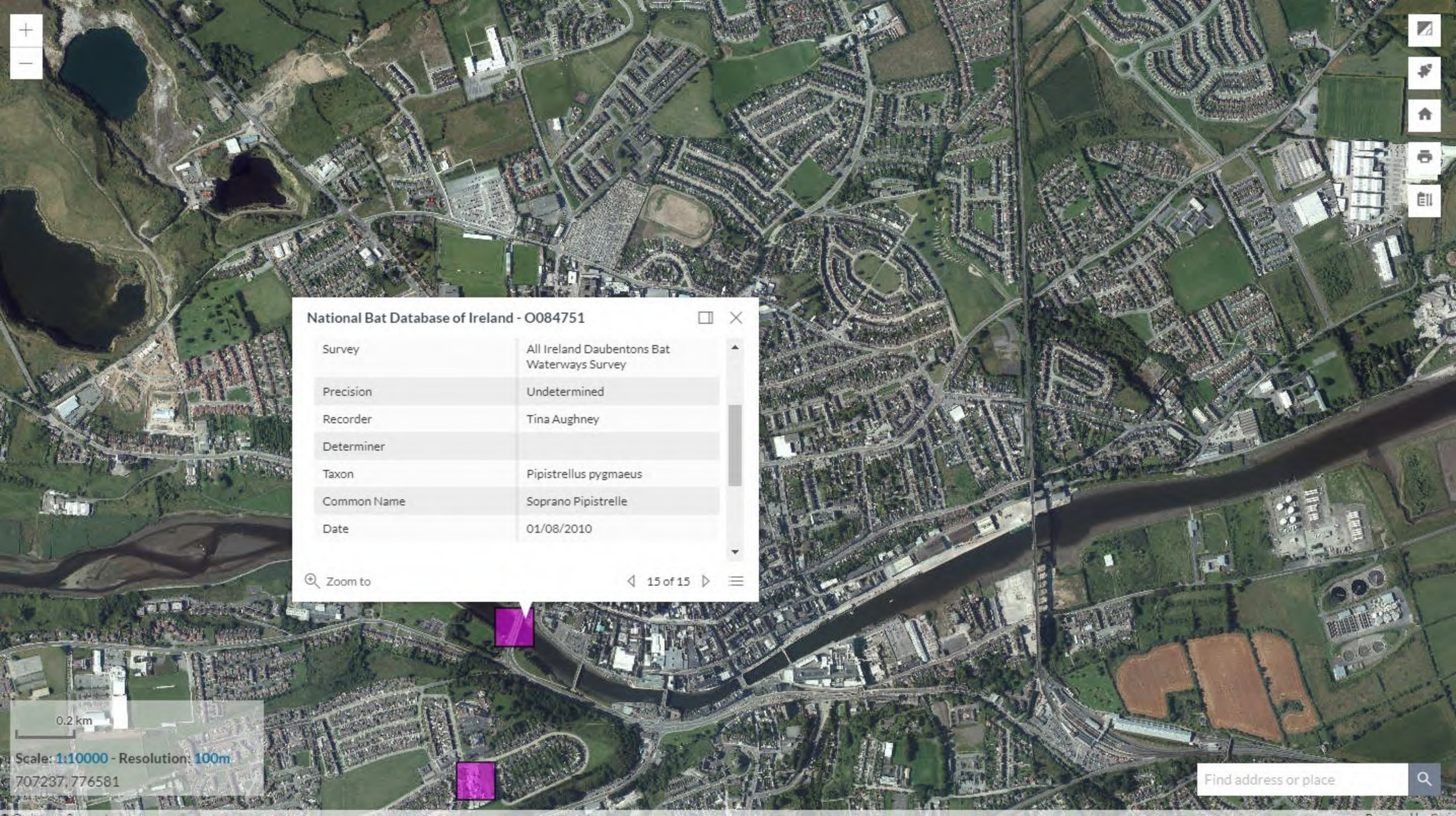
Find address or place


National Bat Database of Ireland - O084751
Survey
All Ireland Daubentons Bat Waterways Survey
Precision
Undetermined
Recorder
Tina Aughney
Determiner
Taxon
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Common Name
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01/08/2010
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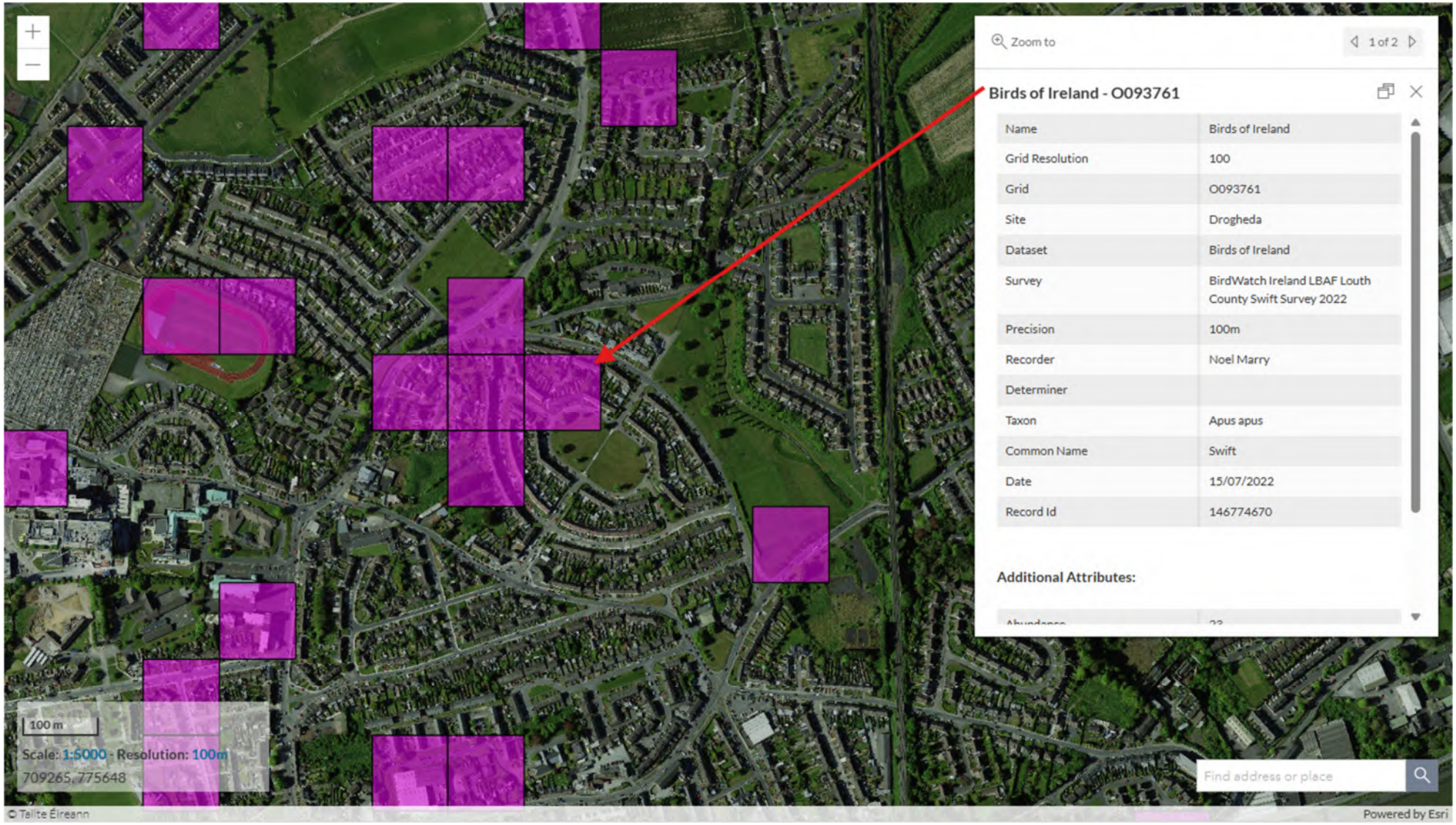
Find address or place


Zoom to
1 of 2
Birds of Ireland - O093761
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Birds of Ireland
Grid Resolution
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Grid
O093761
Site
Drogheda
Dataset
Birds of Ireland
Survey
BirdWatch Ireland LBAF Louth County Swift Survey 2022
Precision
100m
Recorder
Noel Marry
Determiner
Taxon
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Common Name
Swift
Date
15/07/2022
Record Id
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Additional Attributes:
100 m
Scale: 1:5000 - Resolution: 100m
709265, 775648
Find address or place
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Species list for O0975

Quality of information

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To assist the Centre in the provision of high quality information, should you identify an error in any of the information provided, please notify the Centre and every effort will be made to rectify the error.

Species group	Species name	Record count	Date of last record	Title of dataset	Designation
Bird	Blackbird (Turdus merula)	1	10/12/2015	eBIRD Bird Records for Ireland	
Bird	Black-headed Gull (Chroicocephalus ridibundus)	1	31/08/2021	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Common Tern (Sterna hirundo)	1	10/07/2016	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Cormorant (Phalacrocorax carbo)	2	26/04/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Grey Heron (Ardea cinerea)	1	26/04/2023	eBIRD Bird Records for Ireland	

Bird	Herring Gull (Larus argentatus)	7	26/04/2023	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Hooded Crow (Corvus cornix)	2	26/04/2023	eBIRD Bird Records for Ireland	
Bird	Jackdaw (Coloeus monedula)	3	26/04/2023	eBIRD Bird Records for Ireland	
Bird	Lesser Black-backed Gull (Larus fuscus)	1	31/08/2021	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Magpie (Pica pica)	1	03/06/2016	eBIRD Bird Records for Ireland	
Bird	Mute Swan (Cygnus olor)	1	26/04/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Oystercatcher (Haematopus ostralegus)	1	30/11/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

Bird	Pied Wagtail (Motacilla alba yarrellii)	2	16/01/2021	Birds of Ireland	
Bird	Pied Wagtail (Motacilla alba)	3	26/04/2023	eBIRD Bird Records for Ireland	
Bird	Robin (Erithacus rubecula)	1	26/04/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts
Bird	Rock Dove (Columba livia)	5	26/04/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Bird	Rook (Corvus frugilegus)	5	26/04/2023	eBIRD Bird Records for Ireland	
Bird	Starling (Sturnus vulgaris)	2	26/04/2023	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Stock Dove (Columba oenas)	1	10/12/2015	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

Bird	Swallow (Hirundo rustica)	3	31/08/2021	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Swift (Apus apus)	14	02/08/2023	Swifts of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Woodpigeon (Columba palumbus)	2	26/04/2023	eBIRD Bird Records for Ireland	
Bird	Wren (Troglodytes troglodytes)	1	31/08/2021	eBIRD Bird Records for Ireland	
Chromist	Horned Wrack (Fucus ceranoides)	1	09/07/2016	General Biodiversity Records from Ireland	
Flowering plant	Alexanders (Smyrnium olusatrum)	2	12/03/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Beech (Fagus sylvatica)	1	02/05/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

Flowering plant	Japanese Knotweed (Fallopia japonica)	1	04/08/2016	National Invasive Species Database	Invasive Species: EU Invasive Alien Species Regulation No. 1143/2014 || Invasive Species: Regulation S.I. 477/2011 (Ireland) || Invasive Species: High Risk Invasive Species (2013 Report) || Invasive Species: Regulation S.I. 374/2024 (Ireland) || Invasive Species: The Wildlife (Northern Ireland) Order 1985
Flowering plant	Lesser Celandine (Ficaria verna)	1	02/05/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Primrose (Primula vulgaris)	1	12/05/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Ramsons (Allium ursinum)	1	12/05/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Winter Heliotrope (Petasites fragrans)	2	12/03/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Harvestman (Opiliones)	Leiobunum blackwalli	1	19/07/1995	Harvestmen (Opiliones) of Ireland	
Harvestman (Opiliones)	Mitopus morio	1	19/07/1995	Harvestmen (Opiliones) of Ireland	
Harvestman (Opiliones)	Oligolophus tridens	1	19/07/1995	Harvestmen (Opiliones) of Ireland	
Harvestman (Opiliones)	Paroligolophus agrestis	1	19/07/1995	Harvestmen (Opiliones) of Ireland	
Harvestman (Opiliones)	Phalangium opilio	1	19/07/1995	Harvestmen (Opiliones) of Ireland	
Insect - beetle (Coleoptera)	2-spot Ladybird (Adalia bipunctata)	1	14/11/2021	Ladybirds of Ireland	

Insect - butterfly	Holly Blue (Celastrina argiolus)	1	18/04/2020	Butterflies of Ireland pre-2022	
Insect - butterfly	Orange-tip (Anthocharis cardamines)	1	04/05/2019	Butterflies of Ireland pre-2022	
Insect - butterfly	Small Tortoiseshell (Aglais urticae)	1	02/05/2018	Butterflies of Ireland pre-2022	
Insect - caddis fly (Trichoptera)	Halesus radiatus	1	31/12/1910	Caddisflies (Trichoptera) of Ireland	
Insect - flea (Siphonaptera)	a bat flea [Ischnopsyllus octactenus] (Ischnopsyllus (Ischnopsyllus) octactenus)	1	31/12/1947	Fleas (Siphonaptera) of Ireland	
Insect - flea (Siphonaptera)	Ctenophthalmus (Ctenophthalmus) nobilis subsp. vulgaris	1	31/12/1964	Fleas (Siphonaptera) of Ireland	
Insect - hymenopteran	Red-tailed Bumblebee (Bombus lapidarius)	1	21/06/2019	Bees of Ireland	Threatened Species: Near threatened
Insect - moth	Vapourer (Orgyia antiqua)	1	13/08/2021	Moths Ireland	
Spider (Araneae)	Amaurobius	1	12/07/2020	Citizen Science Spider Records for Ireland	
Terrestrial mammal	Hedgehog (Erinaceus europaeus)	2	25/05/2021	Hedgehogs of Ireland	Protected Species: Wildlife Acts

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Species list for O0976

Quality of information

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Species group	Species name	Record count	Date of last record	Title of dataset	Designation
Bird	Blackbird (Turdus merula)	22	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Blackcap (Sylvia atricapilla)	2	03/01/2021	Birds of Ireland	
Bird	Blue Tit (Cyanistes caeruleus)	25	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Bullfinch (Pyrrhula pyrrhula)	1	21/06/2020	Birds of Ireland	
Bird	Buzzard (Buteo buteo)	2	22/10/2021	Birds of Ireland	
Bird	Chaffinch (Fringilla coelebs)	10	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Chiffchaff (Phylloscopus collybita)	1	21/04/2019	Birds of Ireland	
Bird	Coal Tit (Periparus ater)	16	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Collared Dove (Streptopelia decaocto)	8	01/05/2023	eBIRD Bird Records for Ireland	
Bird	Common Gull (Larus canus)	6	26/04/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Common Redpoll (Acanthis flammea)	1	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Dunnock (Prunella modularis)	12	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Goldcrest (Regulus regulus)	2	09/01/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Bird	Goldfinch (Carduelis carduelis)	14	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Great Tit (Parus major)	25	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Greenfinch (Chloris chloris)	2	06/04/2020	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Grey Heron (Ardea cinerea)	1	20/05/2021	Birds of Ireland	
Bird	Herring Gull (Larus argentatus)	5	14/08/2023	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Hooded Crow (Corvus cornix)	3	09/01/2024	eBIRD Bird Records for Ireland	
Bird	House Martin (Delichon urbicum)	1	14/08/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	House Sparrow (Passer domesticus)	29	09/01/2024	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Jackdaw (Coloeus monedula)	9	09/01/2024	eBIRD Bird Records for Ireland	

Bird	Kestrel (Falco tinnunculus)	1	21/06/2020	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Linnet (Linaria cannabina)	5	09/01/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Long-tailed Tit (Aegithalos caudatus)	2	09/01/2023	eBIRD Bird Records for Ireland	
Bird	Magpie (Pica pica)	1	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Mediterranean Gull (Ichthyaetus melanocephalus)	1	03/01/2021	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Pied Wagtail (Motacilla alba yarrellii)	1	03/01/2021	Birds of Ireland	
Bird	Robin (Erithacus rubecula)	23	09/01/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts

Bird	Rock Dove (Columba livia)	1	11/07/2019	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Bird	Rook (Corvus frugilegus)	11	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Siskin (Spinus spinus)	1	03/03/2019	Birds of Ireland	
Bird	Song Thrush (Turdus philomelos)	6	28/04/2023	eBIRD Bird Records for Ireland	
Bird	Sparrowhawk (Accipiter nisus)	3	14/08/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts
Bird	Starling (Sturnus vulgaris)	20	09/01/2024	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Swallow (Hirundo rustica)	2	14/08/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Swift (Apus apus)	17	09/07/2023	Swifts of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Woodpigeon (Columba palumbus)	18	22/09/2023	eBIRD Bird Records for Ireland	
Bird	Wren (Troglodytes troglodytes)	3	25/04/2023	eBIRD Bird Records for Ireland	

Bird	Yellowhammer (Emberiza citrinella)	1	21/04/2019	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Flowering plant	Greater Celandine (Chelidonium majus)	1	27/04/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Insect - beetle (Coleoptera)	7-spot Ladybird (Coccinella septempunctata)	3	25/03/2022	Ladybirds of Ireland	
Insect - beetle (Coleoptera)	Common Cockchafer (Melolontha melolontha)	1	02/06/2021	Citizen Science Beetle Records For Ireland	
Insect - butterfly	Comma (Polygonia c-album)	1	19/07/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Green-veined White (Pieris napi)	1	28/04/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Holly Blue (Celastrina argiolus)	7	30/07/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Large White (Pieris brassicae)	4	10/08/2021	Butterflies of Ireland pre-2022	
Insect - butterfly	Meadow Brown (Maniola jurtina)	1	21/06/2020	Butterflies of Ireland pre-2022	
Insect - butterfly	Orange-tip (Anthocharis cardamines)	4	05/05/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Painted Lady (Vanessa cardui)	1	21/06/2020	Butterflies of Ireland pre-2022	
Insect - butterfly	Peacock (Aglais io)	2	10/08/2021	Butterflies of Ireland pre-2022	
Insect - butterfly	Small Tortoiseshell (Aglais urticae)	5	25/08/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Small White (Pieris rapae)	2	10/08/2021	Butterflies of Ireland pre-2022	

Insect - butterfly	Speckled Wood (Pararge aegeria)	1	26/04/2021	Butterflies of Ireland pre-2022	
Insect - dragonfly (Odonata)	Banded Demoiselle (Calopteryx splendens)	1	16/07/2021	Dragonfly Ireland 2019 to 2024	
Insect - dragonfly (Odonata)	Large Red Damselfly (Pyrrhosoma nymphula)	1	01/05/2023	Dragonfly Ireland 2019 to 2024	
Insect - hymenopteran	Common Carder Bee (Bombus pascuorum)	2	21/06/2020	Bees of Ireland	
Insect - hymenopteran	Gypsy Cuckoo Bee (Bombus bohemicus)	1	06/06/2012	Bees of Ireland	Threatened Species: Near threatened
Insect - hymenopteran	Red-tailed Bumblebee (Bombus lapidarius)	1	24/04/2023	Bees of Ireland	Threatened Species: Near threatened
Insect - moth	Bright-line Brown-eye (Lacanobia oleracea)	1	16/08/2022	Moths Ireland	
Insect - moth	Ghost Moth (Hepialus humuli)	1	16/06/2022	Moths Ireland	
Insect - moth	Humming-bird Hawk-moth (Macroglossum stellatarum)	1	14/08/2022	Moths Ireland	
Insect - moth	Large Yellow Underwing (Noctua pronuba)	2	08/08/2023	Moths Ireland	
Insect - moth	Willow Beauty (Peribatodes rhomboidaria)	1	16/08/2022	Moths Ireland	
Insect - true bug (Hemiptera)	Green Shieldbug (Palomena prasina)	1	29/03/2022	True Bugs (Heteroptera) of Ireland	
Insect - true fly (Diptera)	Marmalade Hoverfly (Episyrphus balteatus)	1	24/04/2023	Hoverflies (Syrphidae) of Ireland	
Terrestrial mammal	Brown Rat (Rattus norvegicus)	1	03/01/2012	Atlas of Mammals in Ireland 2010-2015	Invasive Species: High Risk Invasive Species (2013 Report)
Terrestrial mammal	Hedgehog (Erinaceus europaeus)	3	06/09/2022	Hedgehogs of Ireland	Protected Species: Wildlife Acts
Terrestrial mammal	House Mouse (Mus musculus)	1	06/03/2011	Atlas of Mammals in Ireland 2010-2015	Invasive Species: High Risk Invasive Species (2013 Report)

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Species list for O07X

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Amphibian	Common Frog (Rana temporaria)	1	09/03/2003	Irish National Frog Database	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Amphibian	Smooth Newt (Lissotriton vulgaris)	1	04/07/2013	Newt Survey 2010-2014	Protected Species: Wildlife Acts
Bird	Alpine Swift (Tachymarptis melba)	1	23/03/2010	Rare birds of Ireland	
Bird	Blackbird (Turdus merula)	5	13/06/2024	eBIRD Bird Records for Ireland	
Bird	Black-headed Gull (Chroicocephalus ridibundus)	4	13/08/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Blue Tit (Cyanistes caeruleus)	2	08/05/2021	eBIRD Bird Records for Ireland	
Bird	Bullfinch (Pyrrhula pyrrhula)	1	08/05/2021	eBIRD Bird Records for Ireland	
Bird	Buzzard (Buteo buteo)	1	31/12/2011	Bird Atlas 2007 - 2011	
Bird	Chaffinch (Fringilla coelebs)	1	31/12/2011	Bird Atlas 2007 - 2011	
Bird	Coal Tit (Periparus ater)	1	08/05/2021	eBIRD Bird Records for Ireland	
Bird	Collared Dove (Streptopelia decaocto)	3	08/05/2021	eBIRD Bird Records for Ireland	
Bird	Common Gull (Larus canus)	1	23/06/2020	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern

					>> Birds of Conservation Concern - Amber List
Bird	Common Tern (Sterna hirundo)	1	10/07/2016	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Cormorant (Phalacrocorax carbo)	3	26/04/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Dunnock (Prunella modularis)	1	08/05/2021	eBIRD Bird Records for Ireland	
Bird	Goldcrest (Regulus regulus)	1	13/11/2016	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Bird	Great Tit (Parus major)	2	03/02/2023	Birds of Ireland	
Bird	Greenfinch (Chloris chloris)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Grey Heron (Ardea cinerea)	2	26/04/2023	eBIRD Bird Records for Ireland	
Bird	Grey Wagtail (Motacilla cinerea)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Herring Gull (Larus argentatus)	12	13/08/2024	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Hooded Crow (Corvus cornix)	2	26/04/2023	eBIRD Bird Records for Ireland	
Bird	House Martin (Delichon urbicum)	1	14/08/2012	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Bird	House Sparrow (Passer domesticus)	6	08/05/2021	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Jackdaw (Coloeus monedula)	5	13/06/2024	eBIRD Bird Records for Ireland	
Bird	Laughing Gull (Leucophaeus atricilla)	1	07/12/1991	Rare birds of Ireland	
Bird	Lesser Black-backed Gull (Larus fuscus)	2	31/08/2021	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Long-tailed Tit (Aegithalos caudatus)	1	31/12/2011	Bird Atlas 2007 - 2011	
Bird	Magpie (Pica pica)	3	08/05/2021	eBIRD Bird Records for Ireland	
Bird	Mallard (Anas platyrhynchos)	1	06/09/2012	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Bird	Mute Swan (Cygnus olor)	2	26/04/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Oystercatcher (Haematopus ostralegus)	1	30/11/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Peregrine (Falco peregrinus)	1	31/08/2021	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
Bird	Pied Wagtail (Motacilla alba yarrellii)	2	16/01/2021	Birds of Ireland	
Bird	Pied Wagtail (Motacilla alba)	5	26/04/2023	eBIRD Bird Records for Ireland	
Bird	Robin (Erithacus rubecula)	3	26/04/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts
Bird	Rock Dove (Columba livia)	7	13/06/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Bird	Rook (Corvus frugilegus)	7	13/06/2024	eBIRD Bird Records for Ireland	
Bird	Rose-coloured Starling (Pastor roseus)	1	28/05/2012	Rare birds of Ireland	

Bird	Ruddy Shelduck (Tadorna ferruginea)	1	31/12/1892	Rare birds of Ireland	
Bird	Starling (Sturnus vulgaris)	4	26/04/2023	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Stock Dove (Columba oenas)	1	10/12/2015	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Swallow (Hirundo rustica)	4	31/08/2021	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Swift (Apus apus)	44	25/07/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Woodpigeon (Columba palumbus)	6	13/06/2024	eBIRD Bird Records for Ireland	
Bird	Wren (Troglodytes troglodytes)	1	31/08/2021	eBIRD Bird Records for Ireland	
Chromist	Horned Wrack (Fucus ceranoides)	1	09/07/2016	General Biodiversity Records from Ireland	

Fern	Hart's-tongue (Phyllitis scolopendrium)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Fern	Maidenhair Spleenwort (Asplenium trichomanes)	3	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Fern	Wall-rue (Asplenium ruta-muraria)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Alder (Alnus glutinosa)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Alexanders (Smyrnium olusatrum)	3	12/03/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	American Willowherb (Epilobium ciliatum)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Annual Meadow-grass (Poa annua)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Atlantic Ivy (Hedera hibernica)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Autumn Hawkbit (Scorzoneroides autumnalis)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Barren Brome (Bromus sterilis)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Beaked Hawk's-beard (Crepis vesicaria)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Beech (Fagus sylvatica)	1	02/05/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Bittersweet (Solanum dulcamara)	2	19/06/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Black Medick (Medicago lupulina)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Blackthorn (Prunus spinosa)	2	14/04/2025	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Bramble (Rubus fruticosus agg.)	4	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Bread Wheat (Triticum aestivum)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	

Flowering plant	Broad-leaved Dock (Rumex obtusifolius)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Bush Vetch (Vicia sepium)	2	06/05/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Butterfly-bush (Buddleja davidii)	4	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Medium Risk Invasive Species (2013 Report)
Flowering plant	Callitriche aggregate	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Cat's-ear (Hypochaeris radicata)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Celery-leaved Buttercup (Ranunculus sceleratus)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Charlock (Sinapis arvensis)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Cleavers (Galium aparine)	2	06/05/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Clustered Dock (Rumex conglomeratus)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Cock's-foot (Dactylis glomerata)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Coltsfoot (Tussilago farfara)	4	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Common Bent (Agrostis capillaris)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Common Chickweed (Stellaria media)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Common Couch (Elytrigia repens)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Common Dog-violet (Viola riviniana)	1	06/05/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Common Knapweed (Centaurea nigra sens. lat. (=nigra/debeauxii))	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Common Mouse-ear (Cerastium fontanum)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	

Flowering plant	Common Nettle (Urtica dioica)	4	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Common Orache (Atriplex patula)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Common Ragwort (Jacobaea vulgaris)	3	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Common Ramping-fumitory (Fumaria muralis)	1	06/05/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Common Sallow (Salix cinerea)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Common Sorrel (Rumex acetosa subsp. acetosa)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Common Spotted-orchid (Dactylorhiza fuchsii)	1	15/08/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Common Vetch (Vicia sativa subsp. segetalis)	1	06/05/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Cow Parsley (Anthriscus sylvestris)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Creeping Bent (Agrostis stolonifera)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Creeping Buttercup (Ranunculus repens)	3	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Creeping Cinquefoil (Potentilla reptans)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Creeping Thistle (Cirsium arvense)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Crested Dog's-tail (Cynosurus cristatus)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Cuckooflower (Cardamine pratensis)	2	14/04/2025	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Cut-leaved Crane's-bill (Geranium dissectum)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	

Flowering plant	Cymbalaria muralis subsp. muralis	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Daisy (Bellis perennis)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Dove's-foot Crane's-bill (Geranium molle)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Elder (Sambucus nigra)	5	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Fairy Flax (Linum catharticum)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	False Oat-grass (Arrhenatherum elatius)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Festuca rubra agg.	3	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Field Forget-me-not (Myosotis arvensis)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Field Madder (Sherardia arvensis)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Field Scabious (Knautia arvensis)	1	18/10/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Flax (Linum usitatissimum)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Glaucous Sedge (Carex flacca)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Goat Willow (Salix caprea)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Gorse (Ulex europaeus)	1	14/04/2025	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Great Bindweed (Calystegia sepium subsp. sepium)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Great Mullein (Verbascum thapsus)	1	10/10/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Great Willowherb (Epilobium hirsutum)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	

Flowering plant	Greater Plantain (Plantago major)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Greater Pond-sedge (Carex riparia)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Greater Stitchwort (Stellaria holostea)	1	06/05/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Groundsel (Senecio vulgaris)	4	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Hairy Tare (Vicia hirsuta)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Hawthorn (Crataegus monogyna)	3	10/10/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Hedge Mustard (Sisymbrium officinale)	3	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Hedge Woundwort (Stachys sylvatica)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Hedgerow Crane's-bill (Geranium pyrenaicum)	1	06/05/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Hemlock Water-dropwort (Oenanthe crocata)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Herb-Robert (Geranium robertianum)	2	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Himalayan Cotoneaster (Cotoneaster simonsii)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Hoary Willowherb (Epilobium parviflorum)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Hogweed (Heracleum sphondylium)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Ivy (Hedera helix)	1	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Ivy-leaved Toadflax (Cymbalaria muralis)	3	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

Flowering plant	Japanese Knotweed (Fallopia japonica)	9	26/04/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: EU Invasive Alien Species Regulation No. 1143/2014 || Invasive Species: Regulation S.I. 477/2011 (Ireland) || Invasive Species: High Risk Invasive Species (2013 Report) || Invasive Species: Regulation S.I. 374/2024 (Ireland) || Invasive Species: The Wildlife (Northern Ireland) Order 1985
Flowering plant	Keeled Garlic (Allium carinatum)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Knotgrass (Polygonum aviculare)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Lapsana communis subsp. communis	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Lesser Celandine (Ficaria verna)	6	12/03/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Lesser Hawkbit (Leontodon saxatilis)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Meadow Buttercup (Ranunculus acris)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Meadow Vetchling (Lathyrus pratensis)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Meadowsweet (Filipendula ulmaria)	1	15/08/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Mugwort (Artemisia vulgaris)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Oat (Avena sativa)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Opposite-leaved Golden-saxifrage (Chrysosplenium oppositifolium)	1	15/08/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

Flowering plant	Oxeye Daisy (Leucanthemum vulgare)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Pellitory-of-the-wall (Parietaria judaica)	3	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Perennial Rye-grass (Lolium perenne)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Perennial Sow-thistle (Sonchus arvensis)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Pineappleweed (Matricaria discoidea)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Prickly Sow-thistle (Sonchus asper)	3	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Primrose (Primula vulgaris)	3	12/03/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Procumbent Pearlwort (Sagina procumbens)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Ramsons (Allium ursinum)	1	12/05/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Red Bartsia (Odontites vernus)	2	20/08/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Red Clover (Trifolium pratense)	4	15/08/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Red Dead-nettle (Lamium purpureum)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Red Valerian (Centranthus ruber)	3	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Redshank (Persicaria maculosa)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Reed Canary-grass (Phalaris arundinacea)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Ribwort Plantain (Plantago lanceolata)	3	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Rough Meadow-grass (Poa trivialis)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	

Flowering plant	Rumex crispus subsp. crispus	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Rumex crispus subsp. littoreus	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Sea Aster (Aster tripolium)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Sea Club-rush (Bolboschoenus maritimus)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Sea Mayweed (Tripleurospermum maritimum)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Sea Plantain (Plantago maritima)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Selfheal (Prunella vulgaris)	2	15/08/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Shepherd's-purse (Capsella bursa-pastoris)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Short-fruited Willowherb (Epilobium obscurum)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Silverweed (Potentilla anserina)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Smooth Sow-thistle (Sonchus oleraceus)	1	06/05/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Soft-rush (Juncus effusus)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Spear Thistle (Cirsium vulgare)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Sun Spurge (Euphorbia helioscopia)	1	06/05/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Sweet Vernal-grass (Anthoxanthum odoratum)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Sycamore (Acer pseudoplatanus)	4	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Invasive Species: Medium Risk Invasive Species (2013 Report)
Flowering plant	Taraxacum agg.	3	19/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	

Flowering plant	Timothy (Phleum pratense)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Tufted Vetch (Vicia cracca)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Two-rowed Barley (Hordeum distichon)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Water-cress (Rorippa nasturtium-aquaticum)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Wavy Bitter-cress (Cardamine flexuosa)	1	06/05/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	White Clover (Trifolium repens)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	White Dead-nettle (Lamium album)	1	10/10/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Wild Angelica (Angelica sylvestris)	2	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Wild Carrot (Daucus carota)	1	15/08/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Wild Celery (Apium graveolens)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Wild-oat (Avena fatua)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Wilson's Honeysuckle (Lonicera nitida)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Winter Heliotrope (Petasites fragrans)	5	12/03/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Yarrow (Achillea millefolium)	3	27/09/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Flowering plant	Yellow Iris (Iris pseudacorus)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Flowering plant	Yorkshire-fog (Holcus lanatus)	1	12/07/2014	Irish Vascular Plant Data - Paul Green	
Harvestman (Opiliones)	Leiobunum blackwalli	1	19/07/1995	Harvestmen (Opiliones) of Ireland	

Harvestman (Opiliones)	Mitopus morio	1	19/07/1995	Harvestmen (Opiliones) of Ireland	
Harvestman (Opiliones)	Oligolophus tridens	1	19/07/1995	Harvestmen (Opiliones) of Ireland	
Harvestman (Opiliones)	Paroligolophus agrestis	1	19/07/1995	Harvestmen (Opiliones) of Ireland	
Harvestman (Opiliones)	Phalangium opilio	1	19/07/1995	Harvestmen (Opiliones) of Ireland	
Horsetail	Water Horsetail (Equisetum fluviatile)	1	30/04/2006	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Insect - beetle (Coleoptera)	14-spot Ladybird (Propylea quattuordecimpunctata)	1	31/05/2021	Ladybirds of Ireland	
Insect - beetle (Coleoptera)	22-spot Ladybird (Psyllobora vigintiduopunctata)	1	09/07/2023	Ladybirds of Ireland	
Insect - beetle (Coleoptera)	2-spot Ladybird (Adalia bipunctata)	1	14/11/2021	Ladybirds of Ireland	
Insect - beetle (Coleoptera)	Agabus bipustulatus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Agabus guttatus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Colymbetes fuscus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Common Red Soldier Beetle (Rhagonycha fulva)	1	07/07/2023	Citizen Science Beetle Records For Ireland	
Insect - beetle (Coleoptera)	Enochrus testaceus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Haliplus fulvus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Haliplus obliquus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Haliplus ruficollis	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Helophorus brevipalpis	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Hydraena riparia	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Hydrobius fuscipes/rottenbergii/subrotundus agg.	1	22/05/1909	Water Beetles of Ireland	

Insect - beetle (Coleoptera)	Hydroporus discretus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Hydroporus palustris	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Hydroporus pubescens	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Hydroporus striola	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Hydroporus tessellatus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Hygrotus impressopunctatus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Hygrotus inaequalis	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Laccobius bipunctatus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Laccobius minutus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Laccophilus minutus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Lily Beetle (Lilioceris lilii)	1	15/04/2022	Citizen Science Beetle Records For Ireland	
Insect - beetle (Coleoptera)	Ochthebius marinus	1	22/05/1909	Water Beetles of Ireland	Threatened Species: Near threatened
Insect - beetle (Coleoptera)	Ochthebius minimus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Ochthebius punctatus	1	22/05/1909	Water Beetles of Ireland	
Insect - beetle (Coleoptera)	Oedemera lurida	1	03/07/2023	False Blister Beetles (Oedemeridae) of Ireland	
Insect - butterfly	Comma (Polygonia c-album)	1	03/07/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Common Blue (Polyommatus icarus)	1	25/08/2021	Butterflies of Ireland pre-2022	
Insect - butterfly	Holly Blue (Celastrina argiolus)	2	11/07/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Orange-tip (Anthocharis cardamines)	1	04/05/2019	Butterflies of Ireland pre-2022	
Insect - butterfly	Red Admiral (Vanessa atalanta)	2	06/09/2019	Butterflies of Ireland pre-2022	

Insect - butterfly	Small Tortoiseshell (Aglais urticae)	1	02/05/2018	Butterflies of Ireland pre-2022	
Insect - caddis fly (Trichoptera)	Halesus radiatus	1	31/12/1910	Caddisflies (Trichoptera) of Ireland	
Insect - flea (Siphonaptera)	a bat flea [Ischnopsyllus octactenus] (Ischnopsyllus (Ischnopsyllus) octactenus)	1	31/12/1947	Fleas (Siphonaptera) of Ireland	
Insect - flea (Siphonaptera)	Ctenophthalmus (Ctenophthalmus) nobilis subsp. vulgaris	1	31/12/1964	Fleas (Siphonaptera) of Ireland	
Insect - hymenopteran	Ancistrocerus trifasciatus	1	09/07/2023	Wasps of Ireland	
Insect - hymenopteran	Bare-saddled Colletes (Colletes similis)	1	03/07/2023	Bees of Ireland	Threatened Species: Near threatened
Insect - hymenopteran	Brown-footed Leafcutter Bee (Megachile versicolor)	1	07/07/2023	Bees of Ireland	
Insect - hymenopteran	Buff-tailed Bumblebee (Bombus terrestris)	2	13/01/2024	Bees of Ireland	
Insect - hymenopteran	Common Carder Bee (Bombus pascuorum)	3	23/03/2025	Bees of Ireland	
Insect - hymenopteran	Common Wasp (Vespula vulgaris)	2	03/07/2023	Wasps of Ireland	
Insect - hymenopteran	Common Yellow-face Bee (Hylaeus communis)	2	05/07/2023	Bees of Ireland	
Insect - hymenopteran	Ectemnius continuus	2	09/07/2023	Wasps of Ireland	
Insect - hymenopteran	Pristiphora rufipes	1	02/07/2023	Sawflies of Ireland	
Insect - hymenopteran	Red-tailed Bumblebee (Bombus lapidarius)	2	04/05/2021	Bees of Ireland	Threatened Species: Near threatened
Insect - hymenopteran	Western Honey Bee (Apis mellifera)	1	14/11/2025	Bees of Ireland	
Insect - hymenopteran	Yellow-legged Furrow Bee (Halictus rubicundus)	1	03/07/2023	Bees of Ireland	
Insect - moth	Common Grass-veneer (Agriphila tristella)	1	29/08/2018	Moths Ireland	
Insect - moth	Common Nettle-tap (Anthophila fabriciana)	2	29/08/2018	Moths Ireland	
Insect - moth	Common Plume (Emmelina monodactyla)	1	29/08/2018	Moths Ireland	

Insect - moth	Latticed Heath (Chiasmia clathrata)	1	10/06/1965	Moths Ireland	
Insect - moth	Red Underwing (Catocala nupta)	1	03/08/2006	Moths Ireland	
Insect - moth	Silver Grass-miner (Elachista argentella)	1	03/07/1983	Moths Ireland	
Insect - moth	Silver Y (Autographa gamma)	1	29/08/2018	Moths Ireland	
Insect - moth	Six-spot Burnet (Zygaena filipendulae)	1	08/08/2019	Moths Ireland	
Insect - moth	Vapourer (Orgyia antiqua)	1	13/08/2021	Moths Ireland	
Insect - moth	White-headed Grass-miner (Elachista albifrontella)	1	03/07/1983	Moths Ireland	
Insect - true bug (Hemiptera)	Anthocoris confusus	1	30/09/1931	True Bugs (Heteroptera) of Ireland	
Insect - true bug (Hemiptera)	Common Damselbug (Nabis (Nabis) rugosus)	1	08/09/1931	True Bugs (Heteroptera) of Ireland	
Insect - true bug (Hemiptera)	Hairy Shieldbug (Dolycoris baccarum)	1	07/04/2020	True Bugs (Heteroptera) of Ireland	
Insect - true bug (Hemiptera)	Juniper Shieldbug (Cyphostethus tristriatus)	1	10/10/2018	True Bugs (Heteroptera) of Ireland	
Insect - true fly (Diptera)	Marmalade Hoverfly (Episyrphus balteatus)	1	09/07/2023	Hoverflies (Syrphidae) of Ireland	
Insect - true fly (Diptera)	Syritta pipiens	1	03/07/2023	Hoverflies (Syrphidae) of Ireland	
Insect - true fly (Diptera)	Volucella pellucens	1	02/07/2023	Hoverflies (Syrphidae) of Ireland	
Marine mammal	Bottle-nosed Dolphin (Tursiops truncatus)	1	22/04/2021	IWDG Casual Cetacean Sightings	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Reptile	Common Lizard (Zootoca vivipara)	3	11/09/1976	Reptiles and Amphibians Distribution Atlas 1978 (An Foras Forbartha)	Protected Species: Wildlife Acts
Spider (Araneae)	Amaurobius	1	12/07/2020	Citizen Science Spider Records for Ireland	

Spider (Araneae)	Steatoda nobilis	2	20/07/2020	Citizen Science Spider Records for Ireland	
Terrestrial mammal	Badger (Meles meles)	4	26/01/2007	Road Kill Survey	Protected Species: Wildlife Acts
Terrestrial mammal	Common Pipistrelle (Pipistrellus pipistrellus sensu stricto)	4	25/06/2013	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Terrestrial mammal	Daubenton's Bat (Myotis daubentonii)	25	26/08/2020	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Terrestrial mammal	Hedgehog (Erinaceus europaeus)	13	01/08/2023	Hedgehogs of Ireland	Protected Species: Wildlife Acts
Terrestrial mammal	Leisler's Bat (Nyctalus leisleri)	3	21/08/2009	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Terrestrial mammal	Otter (Lutra lutra)	3	14/01/2018	Mammals of Ireland 2016-2025	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Terrestrial mammal	Pine Marten (Martes martes)	1	02/12/2020	Mammals of Ireland 2016-2025	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts

Terrestrial mammal	Rabbit (Oryctolagus cuniculus)	2	02/01/2007	Road Kill Survey	Invasive Species: Medium Risk Invasive Species (2013 Report)
Terrestrial mammal	Red Fox (Vulpes vulpes)	1	01/09/2015	Atlas of Mammals in Ireland 2010-2015	
Terrestrial mammal	Soprano Pipistrelle (Pipistrellus pygmaeus)	6	01/08/2010	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts

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Species list for O07Y

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Species group	Species name	Record count	Date of last record	Title of dataset	Designation
Bird	Blackbird (Turdus merula)	26	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Blackcap (Sylvia atricapilla)	3	25/01/2021	Birds of Ireland	
Bird	Black-headed Gull (Chroicocephalus ridibundus)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Blue Tit (Cyanistes caeruleus)	26	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Bullfinch (Pyrrhula pyrrhula)	3	21/06/2020	Birds of Ireland	
Bird	Buzzard (Buteo buteo)	7	22/10/2021	Birds of Ireland	
Bird	Chaffinch (Fringilla coelebs)	12	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Chiffchaff (Phylloscopus collybita)	3	28/05/2019	Birds of Ireland	
Bird	Coal Tit (Periparus ater)	16	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Collared Dove (Streptopelia decaocto)	10	18/05/2023	eBIRD Bird Records for Ireland	
Bird	Common Gull (Larus canus)	6	26/04/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Common Redpoll (Acanthis flammea)	1	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Dunnock (Prunella modularis)	12	09/01/2024	eBIRD Bird Records for Ireland	

Bird	Goldcrest (Regulus regulus)	4	09/01/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Goldfinch (Carduelis carduelis)	16	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Great Tit (Parus major)	26	09/01/2024	eBIRD Bird Records for Ireland	
Bird	Greenfinch (Chloris chloris)	3	06/04/2020	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Grey Heron (Ardea cinerea)	2	18/05/2023	eBIRD Bird Records for Ireland	
Bird	Grey Wagtail (Motacilla cinerea)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List

Bird	Hen Harrier (Circus cyaneus)	1	15/03/2020	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Herring Gull (Larus argentatus)	7	14/08/2023	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Hooded Crow (Corvus cornix)	3	09/01/2024	eBIRD Bird Records for Ireland	
Bird	House Martin (Delichon urbicum)	2	14/08/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	House Sparrow (Passer domesticus)	30	09/01/2024	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Jackdaw (Coloeus monedula)	9	09/01/2024	eBIRD Bird Records for Ireland	

Bird	Kestrel (Falco tinnunculus)	2	20/03/2024	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Lapwing (Vanellus vanellus)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Linnet (Linaria cannabina)	6	09/01/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Little Egret (Egretta garzetta)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
Bird	Long-tailed Tit (Aegithalos caudatus)	3	09/01/2023	eBIRD Bird Records for Ireland	
Bird	Magpie (Pica pica)	3	09/01/2024	eBIRD Bird Records for Ireland	

Bird	Mediterranean Gull (Ichthyaetus melanocephalus)	1	03/01/2021	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Oystercatcher (Haematopus ostralegus)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Peregrine (Falco peregrinus)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
Bird	Pied Wagtail (Motacilla alba yarrellii)	1	03/01/2021	Birds of Ireland	
Bird	Pied Wagtail (Motacilla alba)	1	31/12/2011	Bird Atlas 2007 - 2011	
Bird	Robin (Erithacus rubecula)	25	09/01/2024	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts
Bird	Rock Dove (Columba livia)	1	11/07/2019	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Bird	Rook (Corvus frugilegus)	12	09/01/2024	eBIRD Bird Records for Ireland	

Bird	Siskin (Spinus spinus)	1	03/03/2019	Birds of Ireland	
Bird	Song Thrush (Turdus philomelos)	9	28/04/2023	eBIRD Bird Records for Ireland	
Bird	Sparrowhawk (Accipiter nisus)	4	14/08/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts
Bird	Starling (Sturnus vulgaris)	23	09/01/2024	eBIRD Bird Records for Ireland	Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Stonechat (Saxicola rubicola)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts
Bird	Swallow (Hirundo rustica)	3	14/08/2023	eBIRD Bird Records for Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Swift (Apus apus)	24	09/07/2023	Swifts of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Bird	Willow Warbler (Phylloscopus trochilus)	1	04/08/2018	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Bird	Woodpigeon (Columba palumbus)	22	22/09/2023	eBIRD Bird Records for Ireland	

Bird	Wren (Troglodytes troglodytes)	4	25/04/2023	eBIRD Bird Records for Ireland	
Bird	Yellowhammer (Emberiza citrinella)	4	07/06/2019	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Flowering plant	Greater Celandine (Chelidonium majus)	1	27/04/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
Insect - beetle (Coleoptera)	14-spot Ladybird (Propylea quattuordecimpunctata)	1	17/05/2024	Ladybirds of Ireland	
Insect - beetle (Coleoptera)	7-spot Ladybird (Coccinella septempunctata)	8	08/07/2025	Ladybirds of Ireland	
Insect - beetle (Coleoptera)	Common Cockchafer (Melolontha melolontha)	1	02/06/2021	Citizen Science Beetle Records For Ireland	
Insect - butterfly	Comma (Polygonia c-album)	1	19/07/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Green-veined White (Pieris napi)	1	28/04/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Holly Blue (Celastrina argiolus)	8	30/07/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Large White (Pieris brassicae)	4	10/08/2021	Butterflies of Ireland pre-2022	
Insect - butterfly	Meadow Brown (Maniola jurtina)	1	21/06/2020	Butterflies of Ireland pre-2022	
Insect - butterfly	Orange-tip (Anthocharis cardamines)	4	05/05/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Painted Lady (Vanessa cardui)	1	21/06/2020	Butterflies of Ireland pre-2022	
Insect - butterfly	Peacock (Aglais io)	2	10/08/2021	Butterflies of Ireland pre-2022	
Insect - butterfly	Small Tortoiseshell (Aglais urticae)	8	25/08/2023	Butterflies of Ireland post 2021	
Insect - butterfly	Small White (Pieris rapae)	2	10/08/2021	Butterflies of Ireland pre-2022	
Insect - butterfly	Speckled Wood (Pararge aegeria)	2	15/06/2022	Butterflies of Ireland post 2021	
Insect - dragonfly (Odonata)	Banded Demoiselle (Calopteryx splendens)	1	16/07/2021	Dragonfly Ireland 2019 to 2024	
Insect - dragonfly (Odonata)	Large Red Damselfly (Pyrrhosoma nymphula)	1	01/05/2023	Dragonfly Ireland 2019 to 2024	

Insect - hymenopteran	Anoplius nigerrimus	1	15/06/2022	Wasps of Ireland	
Insect - hymenopteran	Bombus lucorum agg.	1	08/07/2025	Bees of Ireland	
Insect - hymenopteran	Buff-tailed Bumblebee (Bombus terrestris)	3	31/03/2022	Bees of Ireland	
Insect - hymenopteran	Common Carder Bee (Bombus pascuorum)	5	08/07/2025	Bees of Ireland	
Insect - hymenopteran	Gypsy Cuckoo Bee (Bombus bohemicus)	1	06/06/2012	Bees of Ireland	Threatened Species: Near threatened
Insect - hymenopteran	Orange-tailed Mining Bee (Andrena haemorrhoa)	1	15/06/2022	Bees of Ireland	
Insect - hymenopteran	Red-tailed Bumblebee (Bombus lapidarius)	3	08/07/2025	Bees of Ireland	Threatened Species: Near threatened
Insect - hymenopteran	Small Garden Bumblebee (Bombus hortorum)	1	08/07/2025	Bees of Ireland	
Insect - hymenopteran	Turquoise Furrow Bee (Lasioglossum cupromicans)	1	17/05/2024	Bees of Ireland	
Insect - hymenopteran	Yellow-legged Furrow Bee (Halictus rubicundus)	1	17/05/2024	Bees of Ireland	
Insect - moth	Bright-line Brown-eye (Lacanobia oleracea)	1	16/08/2022	Moths Ireland	
Insect - moth	Ghost Moth (Hepialus humuli)	1	16/06/2022	Moths Ireland	
Insect - moth	Humming-bird Hawk-moth (Macroglossum stellatarum)	1	14/08/2022	Moths Ireland	
Insect - moth	Large Yellow Underwing (Noctua pronuba)	2	08/08/2023	Moths Ireland	
Insect - moth	Willow Beauty (Peribatodes rhomboidaria)	1	16/08/2022	Moths Ireland	
Insect - true bug (Hemiptera)	Green Shieldbug (Palomena prasina)	1	29/03/2022	True Bugs (Heteroptera) of Ireland	
Insect - true fly (Diptera)	Eristalis arbustorum	1	15/06/2022	Hoverflies (Syrphidae) of Ireland	
Insect - true fly (Diptera)	Eristalis tenax	3	15/06/2022	Hoverflies (Syrphidae) of Ireland	
Insect - true fly (Diptera)	Marmalade Hoverfly (Episyrphus balteatus)	2	24/04/2023	Hoverflies (Syrphidae) of Ireland	
Insect - true fly (Diptera)	Nephrotoma quadrifaria	1	15/06/2022	Citizen Science Cranefly Records For Ireland	

Insect - true fly (Diptera)	Platycheirus albimanus	1	31/03/2022	Hoverflies (Syrphidae) of Ireland	
Terrestrial mammal	Brown Rat (Rattus norvegicus)	1	03/01/2012	Atlas of Mammals in Ireland 2010-2015	Invasive Species: High Risk Invasive Species (2013 Report)
Terrestrial mammal	Hedgehog (Erinaceus europaeus)	5	11/11/2023	Hedgehogs of Ireland	Protected Species: Wildlife Acts
Terrestrial mammal	House Mouse (Mus musculus)	1	06/03/2011	Atlas of Mammals in Ireland 2010-2015	Invasive Species: High Risk Invasive Species (2013 Report)
Terrestrial mammal	Rabbit (Oryctolagus cuniculus)	1	22/08/2015	Atlas of Mammals in Ireland 2010-2015	Invasive Species: Medium Risk Invasive Species (2013 Report)

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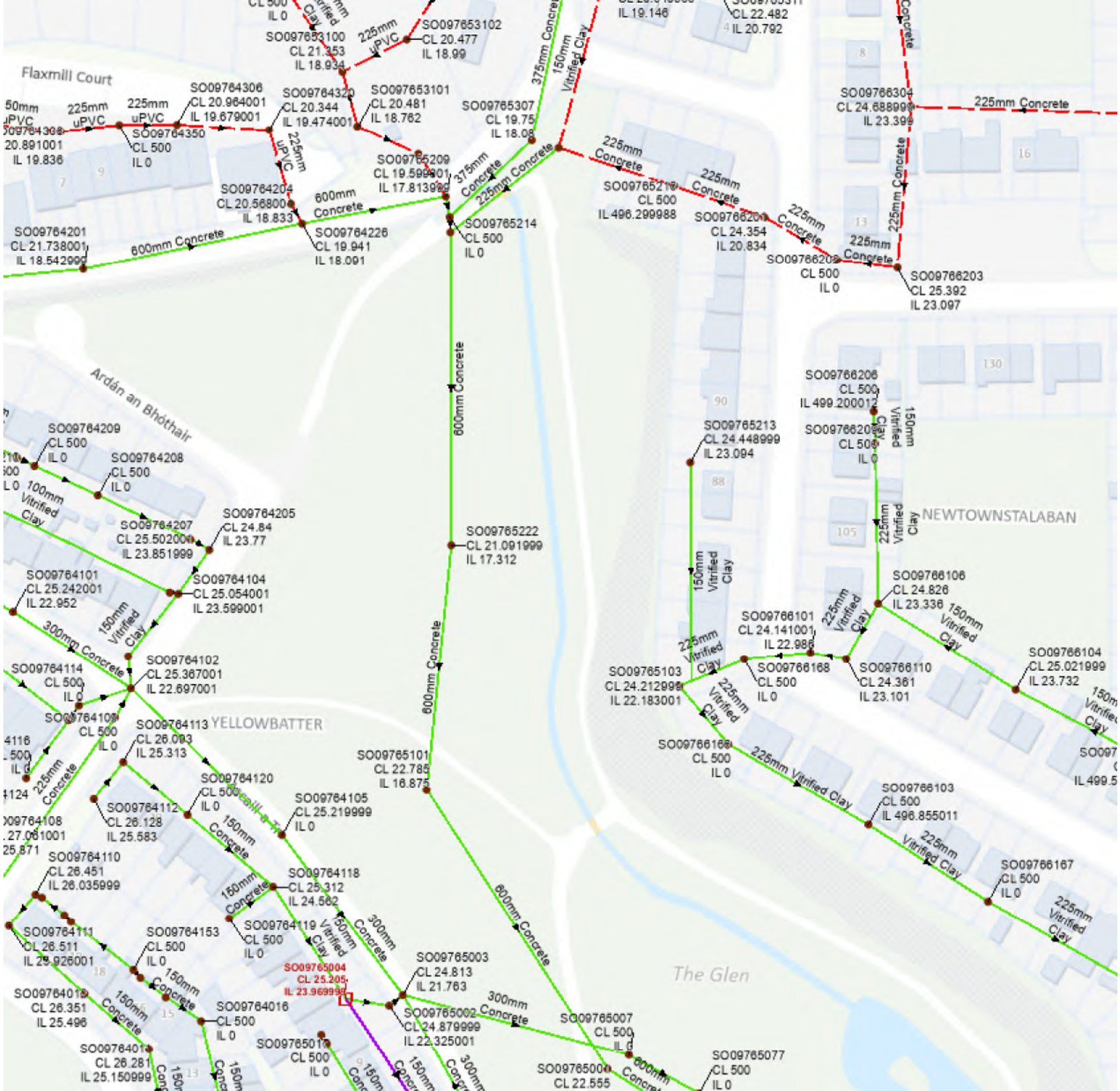
APPENDIX 3

STORMWATER DRAINAGE AND FOULWATER DRAINAGE DRAWINGS FOR DROGHEDA IN THE VICINITY OF THE SITE


Flaxmill Court
Ardán an Bhóthair
YELLOWBATTER
NEWTOWNSTALABAN
The Glen
SO09764306 CL 20.964001 IL 19.679001
SO09764320 CL 20.344 IL 19.474001
SO09764350 CL 500 IL 0
SO09764308 CL 20.891001 IL 19.836
SO09653100 CL 21.353 IL 18.934
SO09653102 CL 20.477 IL 18.99
SO09653101 CL 20.481 IL 18.762
SO09765209 CL 19.599901 IL 17.813999
SO09765307 CL 19.75 IL 18.08
SO09764204 CL 20.568001 IL 18.833
SO09764226 CL 19.941 IL 18.091
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SO09766202 CL 500 IL 0
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SO09764118 CL 25.312 IL 24.562
SO09764119 CL 500 IL 0
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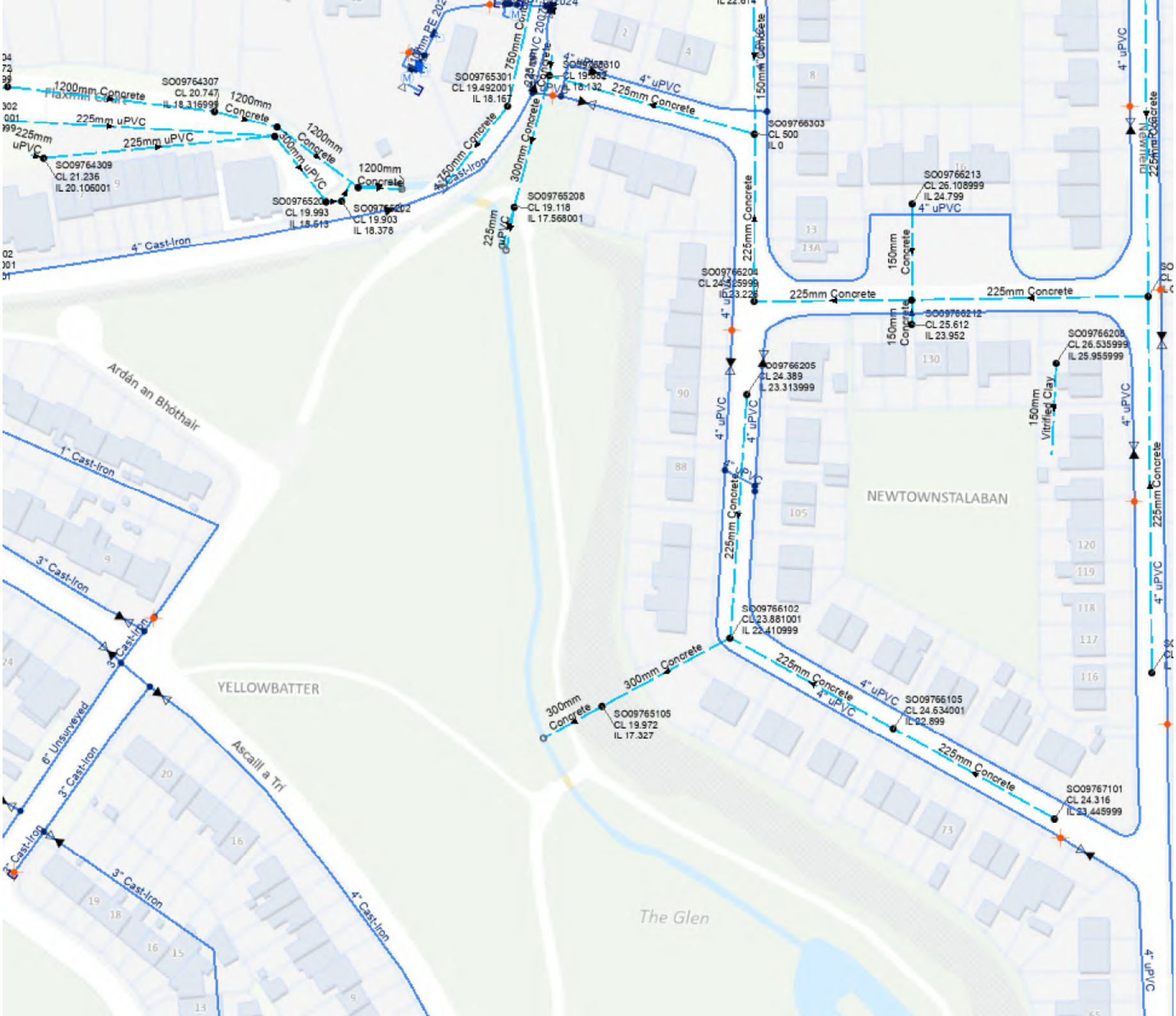
SO09765004 CL 25.205 IL 23.969999
SO09765003 CL 24.813 IL 21.763
SO09765002 CL 24.879999 IL 22.325001
SO09764016 CL 500 IL 0
SO09764017 CL 26.351 IL 25.496
SO09765007 CL 500 IL 0
SO09765077 CL 500 IL 0
SO09765000 CL 22.555
SO09765213 CL 24.448999 IL 23.094
SO09766206 CL 500 IL 499.200012
SO09766205 CL 500 IL 0
SO09766106 CL 24.826 IL 23.336
SO09766101 CL 24.141001 IL 22.986
SO09765103 CL 24.212999 IL 22.183001
SO09766168 CL 500 IL 0
SO09766110 CL 24.361 IL 23.101
SO09766104 CL 25.021999 IL 23.732
SO09766166 CL 500 IL 0
SO09766103 CL 500 IL 496.855011
SO09766167 CL 500 IL 0
375mm Concrete
150mm Vitrified Clay
225mm uPVC
225mm Concrete
600mm Concrete
300mm Concrete
100mm Vitrified Clay
150mm Concrete
225mm Vitrified Clay


1200mm Concrete
SO09764307
CL 20.747
IL 18.316999
225mm uPVC
SO09764309
CL 21.236
IL 20.106001
SO09765202
CL 19.903
IL 18.378
4" Cast-Iron
SO09765301
CL 19.492001
IL 18.167
SO09765208
CL 19.118
IL 17.568001
SO09766303
CL 500
IL 0
SO09766213
CL 26.108999
IL 24.799
SO09766204
CL 24.325999
IL 23.226
SO09766212
CL 25.612
IL 23.952
SO09766205
CL 24.389
IL 23.313999
SO09766208
CL 26.535999
IL 25.955999
SO09766102
CL 23.881001
IL 22.410999
SO09765105
CL 19.972
IL 17.327
SO09766105
CL 24.634001
IL 22.899
SO09767101
CL 24.316
IL 23.445999
Ardán an Bhóthair
YELLOWBATTER
NEWTOWNSTALABAN
Ascaill a Trí
The Glen