



County Louth Wetland Survey II

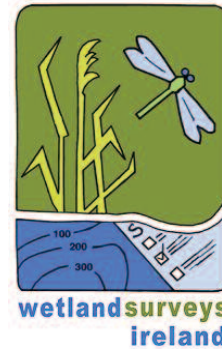
Part 1: Main Report

**Report prepared for Louth County
Council & The Heritage Council**

**An Action of the County Louth
Heritage Plan**

**by Peter Foss, Patrick Crushell,
Barry O'Loughlin & Faith Wilson**

on behalf of Wetland Surveys Ireland



www.wetlandsurveysireland.com



An Chomhairle Oidhreachta
The Heritage Council



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Louth Wetland Survey II

The aim of the Louth Wetland Survey II was to identify all remaining wetlands within the county, outside of those identified during the initial Louth Wetland Identification Survey 2011.

The 2012 project involved three main elements:

- *a desktop literature review to identify all known wetlands in county Louth and gather background data on those sites identified;*
- *a desktop analysis of aerial photography and other GIS datasets to identify and map potential wetlands which had not been previously reported;*
- *a field survey of 90 potential freshwater wetlands identified during the desktop studies aimed at determining the ecological characteristics and conservation value of these sites.*

This report presents a summary of the results of the 2012 study and includes detailed site descriptions and habitat maps for the 90 wetlands surveyed. The information gathered during both the desktop study and field survey are recorded in a revised Louth Wetland Survey Database and associated Lough Wetland Map GIS.

1 Acknowledgements

The County Louth Wetland Survey II (LWS II) was made possible through the financial support of Louth County Council and The Heritage Council. The project is an action of the County Louth Heritage Plan 2007-2011.

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Larry Magnier;
Mairéad Glennon, Tellus Border Project;
Mark McCorry, Ecologist;
Mark O'Callaghan, LCC;
Maurice Eakin, NPWS;
Michael Wyse-Jackson, NPWS;
Naomi Kingston NPWS;
Neil Lockhart, NPWS;
Vincent Toner, LCC.

2 Executive Summary

1. The aim of the Louth Wetland Survey II (LWS II) was to advance the inventory of wetlands in county Louth that commenced in 2011 as part of the Louth Wetland Identification Survey.
2. The 2012 project involved three main elements:
 - a desktop literature review to identify all known wetlands in county Louth and gather background data on these sites;
 - an analysis of aerial photography and other GIS datasets to identify and map potential wetlands which had not been previously reported;
 - a field survey of 90 potential freshwater wetlands with the aim of reporting on their ecological characteristics and conservation interest.
3. Following the completion of the LWS II the Louth Wetland Survey site database and associated GIS hold information on 307 potential freshwater wetland sites (and sub-sites) in the county (see Appendix 10).
4. During the 2011 Louth Wetland Identification Survey, 108 of these wetlands were surveyed and individual site reports were prepared (see Foss et al. 2011).
5. During the LWS II, a further 90 wetland sites were surveyed and individual site reports prepared for each. The sites surveyed during the LWS II are listed in Appendix 6. The total area covered by these sites is 1204 ha.
6. Habitats within and surrounding each wetland site were classified according to the *Guide to Habitats in Ireland* (Fossitt 2000).
7. The LWS II focused on determining whether any of the following 35 wetland habitat types (25 are listed in Annex 1 of the EU Habitats Directive, see below) occur within the newly identified sites in county Louth.

Fossitt Level 3 Habitat Code and Name	Fossitt Level 3 Habitat Code and Name
FL1 Dystrophic lakes *	HH3 Wet heath *
FL2 Acid oligotrophic lakes *	PB1 Raised bogs * & **
FL3 Limestone/marl lakes *	PB2 Upland blanket bog **
FL4 Mesotrophic lakes	PB3 Lowland blanket bog * & **
FL5 Eutrophic lakes *	PB4 Cutover bog *
FL6 Turloughs **	PB5 Eroding blanket bog
FL7 Reservoirs	PF1 Rich fen and flush * & **
FL8 Other artificial lakes and ponds	PF2 Poor fen and flush
FW1 Eroding/upland rivers *	PF3 Transition mire and quaking bog *
FW2 Depositing/lowland rivers *	WN4 Wet pedunculate oak-ash woodland **
FW3 Canals	WN5 Riparian woodland**
FW4 Drainage ditches	WN6 Wet willow-alder-ash woodland**
FP1 Calcareous springs **	WN7 Bog woodland **
FP2 Non-Calcareous springs	WS1 Scrub *
FS1 Reed and large sedge swamps	CW1 Lagoons and saline lakes **
FS2 Tall herb swamps *	CW2 Tidal rivers *
GS4 Wet grassland *	CD5 Dune slacks *
GM1 Marsh *	LWS unknown wetland type

* May correspond with EU Habitats Directive listed Annex 1 habitat;

** May correspond with EU Habitats Directive Priority habitat.

8. Threats and damage to the sites surveyed were recorded and an estimate of the severity of damage was made.
9. The information collected during the LWS II is recorded in the revised LWS Database and associated GIS dataset.

10. A complete list of all wetland 307 sites recorded in the LWS II Site database is presented in Appendix 10.
11. Detailed site survey reports were prepared for the 90 sites which were surveyed during 2012. The site reports are presented in Appendix 9.
12. The LWS II recorded the following wetland habitat types on the 90 sites surveyed:

Fossitt Habitat Code & Name	Number of sites recorded in LWS site database*	Area (ha) / Length (km) of each wetland habitat recorded in the LWS GIS dataset**
FL1 Dystrophic lakes	2	0.6
FL2 Acid oligotrophic lakes	-	-
FL3 Limestone/marl lakes	-	-
FL4 Mesotrophic lakes	5	3.4
FL5 Eutrophic lakes	6	1.1
FL6 Turloughs	-	-
FL7 Reservoirs	5	15.4
FL8 Other artificial lakes and ponds	6	3.5
FW1 Eroding/upland rivers	4	-
FW2 Depositing/lowland rivers	9	4.1 km
FW3 Canals	-	-
FW4 Drainage ditches	34	2.2 km
FP1 Calcareous springs	1	-
FP2 Non-Calcareous springs	-	-
FS1 Reed and large sedge swamps	30	22.2
FS2 Tall herb swamps	2	1.3
GS4 Wet grassland	29	55.7
GM1 Marsh	20	44.9
HH3 Wet heath	3	0.8
PB1 Raised bogs	-	-
PB2 Upland blanket bog	-	-
PB3 Lowland blanket bog	-	-
PB4 Cutover bog	4	74.0
PB5 Eroding blanket bog	-	-
PF1 Rich fen and flush	3	2.0
PF2 Poor fen and flush	1	2.0
PF3 Transition mire and quaking bog	13	33.8
WN4 Wet pedunculate oak-ash	-	-
WN5 Riparian woodland	-	-
WN6 Wet willow-alder-ash woodland	17	18.1
WN7 Bog woodland	5	19.5
WS1 Scrub	60	25.4
CW1 Lagoons and saline lakes	1	1.4
CW2 Tidal rivers	-	-
CD5 Dune slacks	-	-

Notes: *Number of sites surveyed was extracted from LWS Site database.

**Area (ha) extracted from LWS GIS dataset.

In the case of mosaic habitats, the area was applied to the dominant habitat.

13. 17 sites of county importance or greater were identified during the LWS II field surveys.
14. Results from the LWS II desktop studies indicate that approximately 83 significant wetland sites (approximately 400 ha in extent) remain un-surveyed throughout the county. Further field surveys of these sites are required to complete the inventory.

3 Introduction and Background

In 2009 the National Parks and Wildlife Service (NPWS) provided Louth County Council (LCC) with a GIS dataset of 108 potential wetlands in the county (Brophy 2009). Following on from this, in 2011 LCC and The Heritage Council funded a survey of these 108 sites to determine their ecological characteristics and conservation value (see Foss, Crushell, O'Loughlin & Wilson 2011).

The main output of the 2011 study was the *LWS site database* and associated *LWS Geographic Information System (GIS)* which each hold information relating to the 108 sites surveyed in 2011. One of the main outcomes of the 2011 study was that there were additional wetland sites throughout the county that were not included within the provisional list compiled by Brophy (2009).

The aim of the Louth Wetland Survey II 2012 (LWS II) project was to determine the full extent of wetlands in County Louth. This involved a three phase approach to the identification of wetlands:

1. a **desktop literature review** to identify all known wetlands in county Louth (from published sources and known to groups and individuals) and gather background data on these sites (see Appendix 2);
2. a **desktop analysis of Aerial Photography and other GIS datasets** to identify and document potential wetlands which had not been previously reported;
3. a **field survey** of 90 potential freshwater wetlands (identified during the desktop studies) aimed at determining the ecological characteristics and conservation value of these sites

Following the survey, the sites were ranked in terms of their conservation/ecological importance to assist Louth County Council in its obligations to protect the most important wetlands within the county and to inform future conservation policies in relation to the wetland resource of county Louth.

All survey data recorded during the 2012 project are held in the revised and updated LWS site database, and associated LWS GIS dataset which should help guide spatial planning and development management by Louth County Council.

3.1 Project Summary

This LWS II project was undertaken over a six month period from the start of May 2012. The following is a summary of the main elements of the project, further details of which are provided in the Materials and Methods section (see Section 4).

LWS II Desktop Study

- A desktop literature review of published and un-published reports on wetlands in County Louth. This review included consultation with professional groups and individuals that may hold data on the wetland resource of the county (see Appendix 1 & 2 for groups and data sources consulted).
- A desktop analysis of Aerial Photography and other GIS datasets to help identify additional potential wetlands (sub soils data; area liable to flood etc.).
- The desktop studies identified a further 197 potential wetlands within the county.
- Following a review of the newly identified sites, 90 were selected for detailed field survey in 2012.

LWS II Field Survey

- A newly developed field survey recording system (using Filemaker Go and iGIS software packages operating on an Apple iPad) was used to record site data directly in digital format. This increased survey efficiency and reduced the likelihood of errors associated with the transfer of data from paper survey forms (see Appendix 5).
- A paper based wetland survey recording card was also designed in case of failure of the electronic recording system (see Appendix 5).
- The LWS site database, created in 2011 to hold background and survey information on sites, was updated (see Appendix 4). Once survey data was entered into the LWS site database, a complete site report was produced for each of the 90 sites surveyed (see Appendix 9).
- The field survey was undertaken in July 2012 by a team of four wetland ecologists. In total 90 sites were surveyed and detailed site reports prepared (see Appendix 6 & 9). Following the site survey a conservation evaluation of the sites was undertaken and they were ranked in terms of their local, national or international conservation value.

LWS II Outputs

- The final LWS II report was prepared. The report includes a review of the wetland resource of County Louth together with detailed site reports for each of the 90 sites surveyed. Each individual site report includes: a site description; flora and fauna lists; habitat map; conservation evaluation; and conservation recommendations.
- An analysis of the wetland resource in Louth is presented and recommendations are made with regards the future conservation of the wetland resource.
- A CD containing digital copies of the updated LWS site database and associated GIS dataset accompanies this report.

The project depended on the co-operation and assistance of the many groups and individuals who provided data to the project (see Appendix 1 for a list of groups and individuals consulted).

4 Materials & Methods

As outlined above the LWS II comprised a comprehensive **desktop study** aimed at identifying the entire wetland resource of County Louth and documenting it in a LWS site database and associated GIS. Following this, a targeted **field survey** of 90 wetland sites of potential wetland interest that were identified during the desktop study was undertaken.

4.1 Louth Wetland Survey II - Desktop Study

The data collection period for information on new sites and those already held within the LWS site database and GIS was undertaken from the start of May 2012 to the end of June 2012. See Appendix 1 & 2 for details of data sources used during the project period and Appendix 3 for the methodologies used in importing site data.

The methodology employed during the course of the study is illustrated in Figure 4.1. The main stages involved were: data acquisition; development and revisions to the *LWS site database* and *GIS datasets*; site identification and background research; data entry (and mapping) and data transfer between databases; data analysis and result presentation.

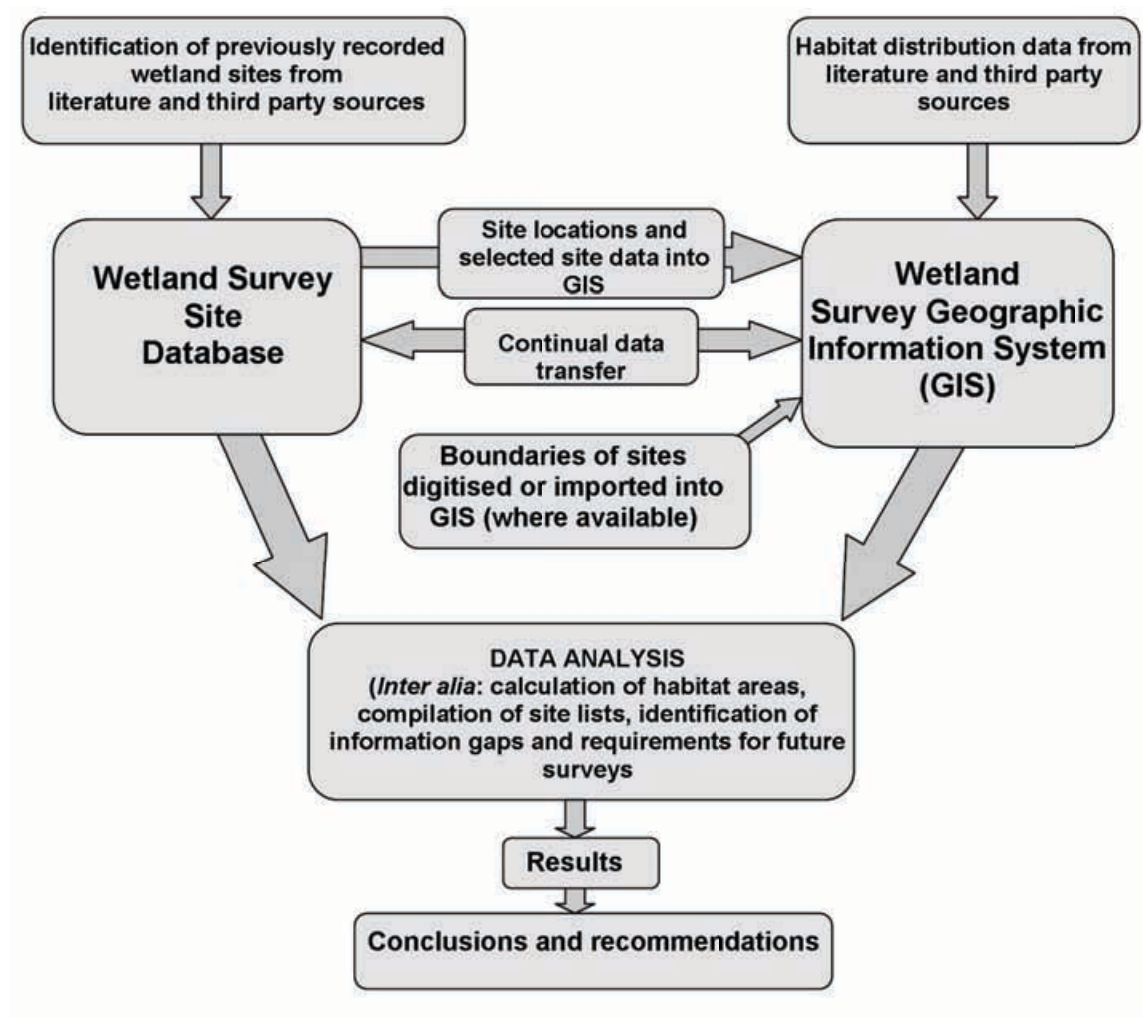


Figure 4.1. Flow chart illustrating the various steps undertaken during the course of the Louth Wetland Survey project 2012.

4.1.1 Data acquisition

The first stage of the LWS II project involved identifying potential wetland site data sources which included

published literature, unpublished reports, scientific publications, digital data-sets, and information held by State agencies, non-governmental organisations and ecological practitioners.

Data acquisition involved gathering published and unpublished literature and requesting data from as wide a range of relevant third parties as possible. The list of data sources consulted in the compilation of the county Louth wetland site list is provided in Appendix 1.

The requested information was held in a variety of formats including GIS data sets, habitat and site records in databases and spreadsheets, and in published reports, surveys and scientific publications.

Within these sources wetlands have often been identified and assigned to a particular wetland category using a variety of classification schemes, including the Annex 1 Habitats Directive system; Fossitt classification system; the CORINE wetland classification system; together with other classification systems used in relation to specific habitat studies (e.g. NHA survey, fens & flushes, fen classification system of Crushell 2000).

4.1.2 LWS Site Database – structure and content

A *LWS site database* was created at the outset of this project to hold data on the wetland sites recorded during the study. The database was created in Filemaker Pro Version 11.0 which runs on both PC and Mac platforms. Site information from the database is readily exported to Microsoft Excel spreadsheets.

In summary, the main core *LWS site database* holds information including: site name and code, site provenance, size (area in ha or length in km), third party site name and code codes, national grid reference, site conservation designations, habitat information on the specific wetland vegetation type(s) present and the area of each (or an estimate where no accurate data was available), information on rare species of note, and a list of published reports holding information on the site and the nature of same, and a site description.

This information is stored in the *LWS site database* within a series of database fields thus enabling searches, data-examination and creation of site lists during the data analysis stage of the study. An overview of the data fields and database structure used to record information in the *LWS site database* is provided in Appendix 4. Data collected during the LWS field survey is recorded within *LWS site survey database* site survey database which is related to the main core LWS site database.

4.1.3 LWS Literature Review – Site Identification

On project commencement an extensive literature review was carried out on the amalgamated datasets with the aim of identifying previously reported wetland sites throughout county Louth. Following the literature review each new site found to contain, or believed to contain one or more of the 32 wetland types being recorded in this study, was added to the LWS site database, or in some cases where a site record already existed additional site information on was added. Basic site data (county, grid reference etc.) and data relating to the occurrence and extent of one or more of the wetland types was entered into the database for each new site added.

Where more than one individual site occurred within a larger NHA or SAC complex, a record was created for both the site complex (the main site) and the individual sub-sites within the main site recognised by previous researchers (see Appendix 4 for further details).

Further information on the data recorded in the LWS site database is presented in Appendix 4.

4.1.4 LWS GIS - Site Identification

ArcView 10 GIS software package on a Windows Operating System was used throughout the LWS for all mapping purposes. During the same period as the site database was being developed, GIS data-sources were incorporated into the LWS Geographical Information System (GIS). Following the acquisition of the relevant base-maps and aerial photography from Louth County Council other data-sets were added as they became available (see Appendix 2 for list of all GIS datasets used during the LWS). See Appendix 3 for further details of methodology employed in compiling the GIS.

Soon after commencement of the study it became apparent that the literature review would mainly identify sites that had been previously surveyed or reported in any detail. Therefore, GIS data compilation work concentrated on identifying sites that may occur outside of the existing network of designated sites (which are a major proportion of previously reported sites). The county was systematically surveyed on a 10km x 10km basis using the OS series of 6 Inch Maps in combination with Colour Aerial Photography (Ordnance

Survey of Ireland, 2005 series) and other datasets, avoiding areas within existing designated sites and known lakes and rivers (which were contained in data-sources obtained from the EPA). As new sites were identified, a new site record was created in the *LWS II Site Locations* (point) GIS file and a boundary drawn in the *LWS II Site Boundaries* (polygon) GIS file. Following this a site name was applied (usually the townland where site occurs), grid co-ordinates recorded and area calculated. This information was subsequently exported to the LWS site database.

In general, it is relatively straight-forward to identify wetlands from non-wetland habitats based on aerial photography in combination with six inch mapping, the parent material (sub-soil) dataset and topographical mapping. Digitising was undertaken at a scale of 1:2000 and the feature being digitised either traced an underlying vector or followed the centre of the feature in the underlying raster (usually either aerial photography).

It is important to note that aerial photographic surveying is a relatively crude exercise and should not be used for any more than identifying 'potential' wetland types. Habitats can only be assigned (especially to level 3 of Fossitt) by field survey and ground-truthing.

Datasets added from third party sources were transformed where necessary (and possible) to comply with the Fossitt classification. Details on how these datasets were dealt with and incorporated into the GIS are presented in Appendix 3 and 4.

4.1.5 Data Transfer and Mapping of LWS Database sites

The sites identified from the literature review were exported from the site database and imported into the GIS as individual points by using the grid co-ordinates reported in the literature. Each of the sites was examined in the GIS and the exact location confirmed. This took considerable time as many of the reported grid references were inaccurate, therefore, other means such as townland searches had to be used to aid in the identification of site locations. Once sites were confirmed, corrected data was exported back into the LWS site database. Following this, boundaries of LWS sites were identified. In the case of many sites, boundaries previously drawn by the relevant third party were used (e.g. NPWS in the case of designated sites), however where boundaries were not available from other sources, draft boundaries were drawn around the area that appeared to contain the wetland site in question (see Appendix 3 for further details).

Where existing digital habitat map data was acquired from third party sources for identified sites, this was incorporated into the GIS. Desktop habitat mapping of sites was not undertaken during the LWS II. The main source of habitat mapping is from the Louth Wetland Identification Study (Foss et al. 2011) and the results of the field survey of sites undertaken as part of the LWS II (see Section 4.2 below). The results of both these surveys are incorporated into both the LWS site database and the LWS GIS datasets.

4.2 Louth Wetland Survey II – Field Survey

4.2.1 Site Selection

Following the completion of site identification as described in Section 4.1 above, a total of 90 sites were proposed for survey during 2012. These sites were selected on the basis that they would be likely to contain wetlands of interest, or because significant data on them was lacking. The location of the sites selected for survey within the county is shown in Figure 4.2 below and in more detail on the OS Discovery maps presented in Appendix 7.

4.2.2 Data Management

4.2.2.1 Field Survey Data

The LWS II used a newly developed field survey recording system (utilising 'Filemaker Go' software operating on the Apple iPad) to record site survey data (see 4.5 below) directly in digital format (see Appendix 5). The data recorded in the field was directly exported to the *LWS site survey database*.

4.2.2.2 Survey Photographs

All survey photographs were geotagged using the 'Geotag Photos Pro' software package thereby allowing the latitude and longitude of where photos were taken to be attached to the photo and displayed within GIS applications.

4.2.2.3 Habitat Mapping and Target Notes

Digital mapping was undertaken in the field using the iGIS software package (Version 5.1.3) running on the Apple iPad. The software displays shapefiles using satellite imagery from Google Maps as the basemap and allows editing of point, polygon and polyline shapefiles in the field.

Prior to the commencement of surveys, a series of shapefiles (designated site boundaries, LWS II site boundary file, and a LWS target note file) were pre-loaded into the iGIS Application. During each site visit notes were recorded as points in the LWS target note shapefile. Habitat information, features of note, damage and boundary issues were all recorded as target notes. Following completion of the survey the shapefiles were used to produce site habitat maps and populate relevant fields in the LWS site database.

4.2.3 Field Survey Methodology

Field surveys were undertaken during the period 15th to 21st of July 2012. During each site visit, the following was undertaken:

- The general ecological characteristics of the site were noted
- Site photographs of notable features were taken
- Target notes of features of interest within the site were recorded using iGIS software operating on the iPad
- Habitats within and immediately adjoining the site were identified according to Fossitt (2000)
- Notes were taken on the correspondence of any habitats to those listed under Annex I of the EU Habitats Directive
- An assessment of threats/damaging activities occurring at the site including their severity and location on site
- Species of both flora and fauna were recorded
- Landowner comments were recorded
- Site descriptions were prepared

Plant identification followed Webb *et al* (1996), and species nomenclature follows Scannell & Synnott (1987). Searches for rare or protected species of plants (Curtis & Mc Gough 1988) was not the focus of this study but where these were observed note was taken for inclusion in the database.

Mammals observed were recorded using nomenclature in Sterry (2004) and birds were identified using Ferguson-Lee *et al.* (1983). Any reptiles, amphibians or (readily identifiable) invertebrates were also noted.

Following the survey, sites were given an evaluation rating using the NRA 'Guidelines for Assessment of Ecological Impacts of National Road Schemes' as outlined in Appendix 8.

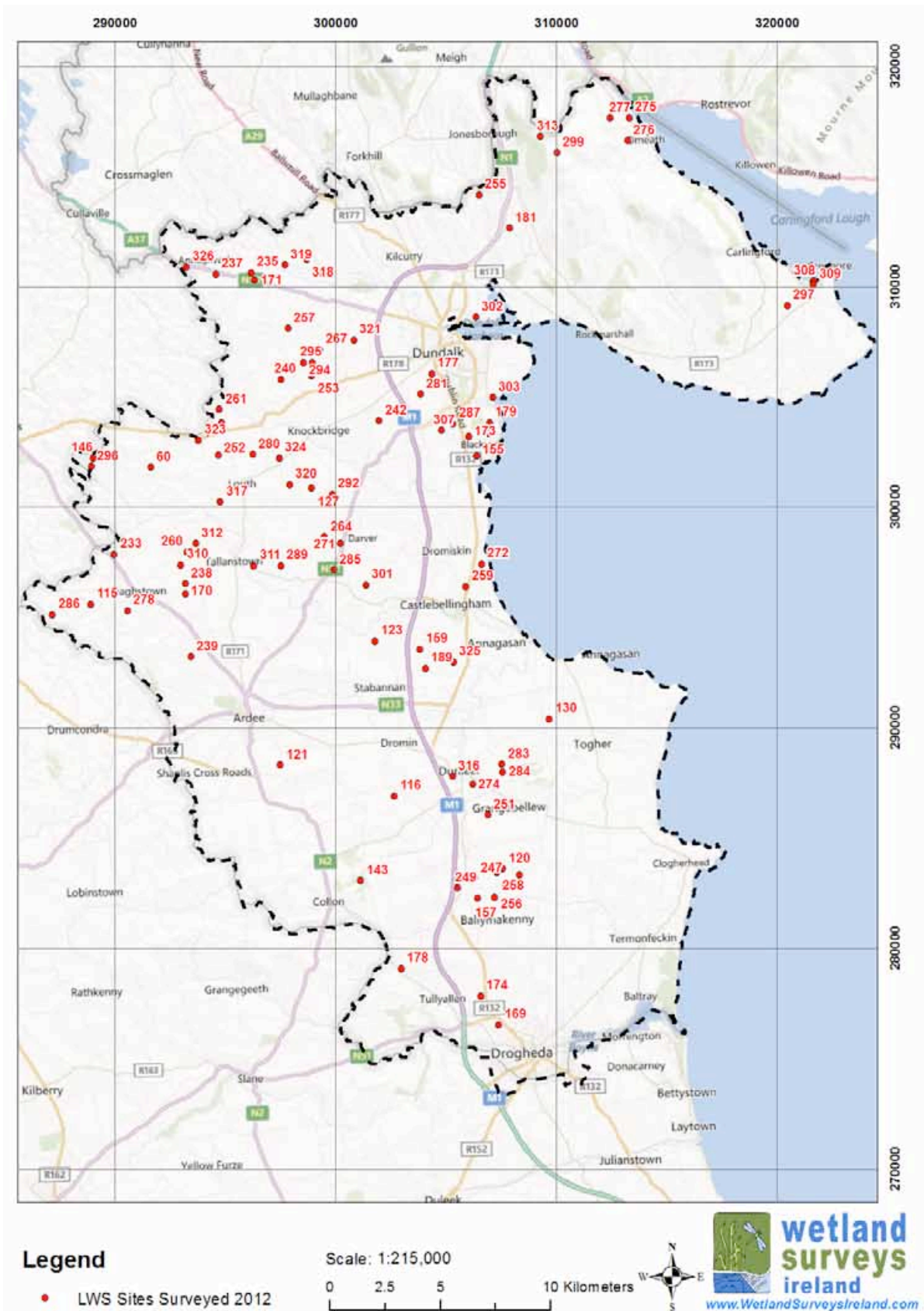


Figure 4.2. The location of sites surveyed during the 2012 Louth Wetland Survey II. For detailed location maps of the sites see Appendix 7 in this report.

4.2.4 Consultation with Landowners

Where possible, landowners were identified by calling to the house nearest to the wetland, and permission was sought for access to the site. Discussions with landowners typically included an explanation of the project often followed by an informal conversation about the particular wetland site and its past and recent management. If landowners could not be identified land was surveyed from the nearest publicly accessible point. All identified landowners encountered provided access to their lands. A letter outlining the purpose of the survey prepared by the Heritage Office of Louth County Council was shown to all landowners and displayed in survey vehicles.

4.2.5 Habitat Classification

As outlined above the habitats within and surrounding each wetland site were classified according to Fossitt (2000) '*A Guide to Habitats in Ireland*'.

Guidance in determining whether or not a habitat type present within a wetland may correspond to an Annex I habitat type was sought from a variety of sources including:

- Interpretation Manual of European Habitats (Ramao 1996),
- Guidelines for a National Fen Survey of Ireland – Survey Manual (Foss & Crushell 2008a)
- NPWS Study of the extent and conservation status of springs, fens and flushes in Ireland in 2007 (Foss 2007)
- The Status of EU Protected Habitats and Species in Ireland (NPWS 2008) as well as Fossitt (2000)

4.2.6 Survey Constraints

The presence of bulls, security fencing, high barbed wire fencing, high water levels and wide deep drainage ditches hindered field work by preventing safe access to parts of some of the sites. Such areas were assessed using binoculars. Areas that were inaccessible were marked in the GIS using target notes.

4.3 Data Analysis and Presentation of Results

Once data from the LWS II field survey was incorporated into the LWS site database and GIS, data analysis was undertaken. Various site lists and tables were drawn up using a combination of the LWS site database and the associated GIS. This together with the area data allowed a provisional assessment to be made of the diversity and extent of different wetland habitats in county Louth. Other details of sites were summarised using the LWS site database based on the fields such as damage, threats and conservation status thus allowing overall conclusions to be drawn concerning the status of the wetland resource in county Louth.

Maps were drawn showing the distribution of wetland sites throughout the county. The GIS shapefiles emanating from the survey were converted into MapInfo Format as required by Louth County Council. Both ESRI shape-file and MapInfo files are included on the CD accompanying this report.

5 Results

5.1 Louth Wetland Survey II – Desktop Study

During the course of the LWS 2012 a total of 307 potential or known wetlands were identified in Louth, based on literature reports, recommendations from local contacts and from a detailed examination of aerial photography and other GIS datasets. Information on these sites are held within the LWS site database and GIS. The information stored on each site reflects whether targeted ecological surveys have been carried out in the past. Detailed wetland survey data is stored on 198 sites as a result wetland surveys undertaken during 2011 and 2012 (108 of these wetlands (Brophy 2009, Foss et al. 2011) were surveyed and described in 2011 while a further 90 sites were surveyed and described in 2012) (see Section 5.2 below).

The remaining 109 sites have not yet been surveyed during the LWS. A number of these sites (ca 16) have been adequately surveyed as part of other ecological surveys and may therefore not require a full wetland survey. However, little information is available on the ecological importance of the remaining sites (approximately 83 wetland sites covering an area of ca 400 ha). It is recommended that a wetland survey of these sites be carried out in order to determine the habitats present and to assess their conservation value (see Figure 5.1).

Once this is completed the data held within the LWS site database and GIS should represent a full inventory of all freshwater wetlands in county Louth.

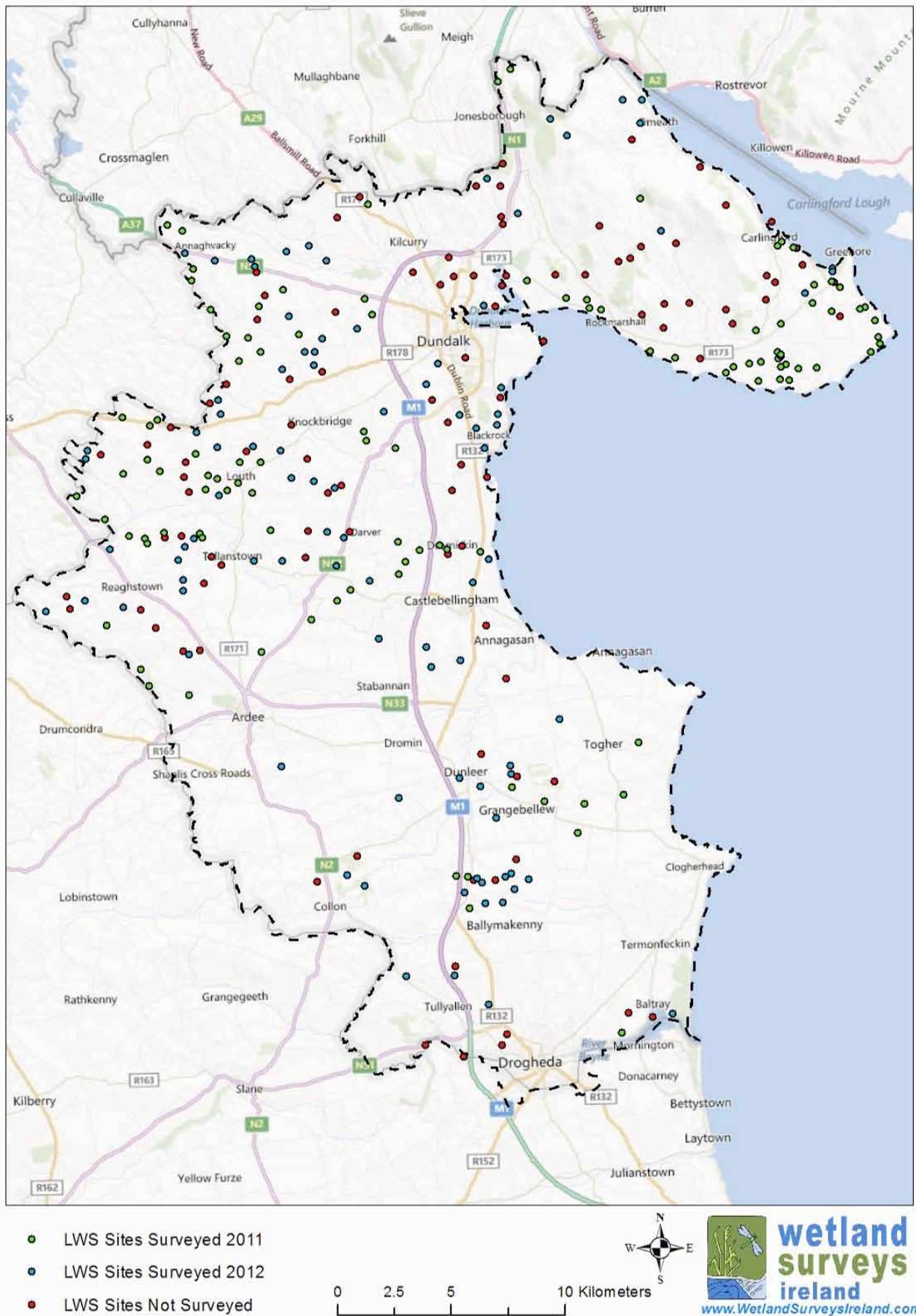


Figure 5.1. The location of sites surveyed during the 2011 and 2012 Louth Wetland Surveys, and those sites not yet surveyed.

5.2 Louth Wetland Survey II – Field Survey

Of the 90 sites initially selected for survey as part of the LWS II, all were visited during the field survey and described in detail, habitat maps were produced and conservation assessments were undertaken. The list of sites surveyed in 2012 is presented in Appendix 6.

A map showing the location of the sites surveyed in 2012 is presented in Figure 5.2, and in more detail on the OSI Discovery Series Maps presented in Appendix 7.

A detailed report of each site (sorted according to site name) together with habitat maps, is presented in Part 2 of the final report of the project (see Appendix 9).

5.2.1 Wetland Types Recorded

Ninety sites were surveyed during the LWS II. The habitats present (both wetland and non-wetland) within and surrounding each wetland site were recorded using Fossitt (2000) based on field survey observations. Summary findings of the LWS II are presented in the following sections.

The main wetland habitat types observed and the number of sites these were recorded on during the 2012 survey are summarised in Table 5.1. A detailed report of habitats on each site, is presented in the individual site reports (see Appendix 9).

The most commonly recorded wetland habitats on the LWS was scrub (WS1), which was found in 60 of the 90 sites surveyed (total area of 25.4 ha). In many of the sites scrub is dominated by Willow and Alder and is a common feature within reedbeds, at the edges of many wetland sites, bogs and areas of poor fen. Gorse dominated scrub is also a feature on many of the drier areas of cutover bogs.

The next most common habitat type encountered was drainage ditches (FW4) which were recorded on 34 of the 90 sites surveyed (total length of 2.2 km).

Reed and large sedge swamps (FS1) were recorded at 30 of the 90 sites (total area of 22.2 ha). This habitat type can form large uniform stands in low lying hollows or can form a marginal reed bed zone around smaller lakes and ponds.

Transition mire (PF3) was recorded on 13 of the 90 sites surveyed (total area of 33.8 ha). Transition mires have sometimes developed on areas of old cutover bog, whereas on other sites large areas of former lakes are naturally infilling with a quaking mat of vegetation.

Marsh communities were recorded on 20 of the 90 sites surveyed (total area of 44.9 ha).

Wet willow-alder-ash woodland was recorded on 17 of the 90 sites surveyed (total area of 18.1 ha). It is a common feature adjoining lakes and along watercourses but can also occur on the edge of marsh or transition mire areas.

Rich fen and flush (PF1) was found on just three of the 90 sites surveyed. The habitats on these sites all correspond to the Annex I habitat "7230 Alkaline fens" or "*Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* 7210" (an EU Priority Habitat).

Table 5.1. The main wetland habitats recorded on the 90 sites surveyed as part of the Louth Wetland Survey II.

Fossitt Habitat Code & Name	Number of sites recorded in LWS 2012 Database	Area (ha) / Length (km) of each wetland habitat recorded in LWS GIS dataset
FL1 Dystrophic lakes	2	0.6
FL2 Acid oligotrophic lakes	-	-
FL3 Limestone/marl lakes	-	-
FL4 Mesotrophic lakes	5	3.4
FL5 Eutrophic lakes	6	1.1
FL6 Turloughs	-	-
FL7 Reservoirs	5	15.4
FL8 Other artificial lakes and ponds	6	3.5
FW1 Eroding/upland rivers	4	-
FW2 Depositing/lowland rivers	9	4.1 km
FW3 Canals	-	-
FW4 Drainage ditches	34	2.2 km
FP1 Calcareous springs	1	-
FP2 Non-Calcareous springs	-	-
FS1 Reed and large sedge swamps	30	22.2
FS2 Tall herb swamps	2	1.3
GS4 Wet grassland	29	55.7
GM1 Marsh	20	44.9
HH3 Wet heath	3	0.8
PB1 Raised bogs	-	-
PB2 Upland blanket bog	-	-
PB3 Lowland blanket bog	-	-
PB4 Cutover bog	4	74.0
PB5 Eroding blanket bog	-	-
PF1 Rich fen and flush	3	2.0
PF2 Poor fen and flush	1	2.0
PF3 Transition mire and quaking bog	13	33.8
WN4 Wet pedunculate oak-ash woodland	-	-
WN5 Riparian woodland	-	-
WN6 Wet willow-alder-ash woodland	17	18.1
WN7 Bog woodland	5	19.5
WS1 Scrub	60	25.4
CW1 Lagoons and saline lakes	1	1.4
CW2 Tidal rivers	-	-
CD5 Dune slacks	-	-

5.2.2 Priority Habitats Recorded

A number of sites contain examples of habitats which correspond to those listed under Annex I of the EU Habitats Directive; however many are small in extent. These include areas of transition mire, alkaline fen, *Cladium* fen, tufa springs, dystrophic lakes and pools, bog woodland, and coastal lagoons (modified). A summary of the number of sites with these habitats is presented in Table 5.2 below. Appendix 6 shows the specific sites on which these EU habitat types were recorded.

Table 5.2. Wetland sites surveyed in 2012, which contain examples of habitats, listed under Annex I of the EU Habitats Directive (**EU Priority Habitats*)

Annex 1 Habitat present	Number of sites
7230 Alkaline fens	1
7210 *Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	1
7140 Transition mires and quaking bogs	11
3160 Natural dystrophic lakes and ponds	2
91D0 *Bog woodland	1
7220 *Petrifying springs with tufa formation (<i>Cratoneurion</i>)	1

5.2.3 Floral Observations

Floral observations and records made on the sites surveyed are included in the LWS II site database. For the sites surveyed the species recorded are presented in the individual site descriptions presented in Appendix 9.

On two of the sites surveyed during the 2012 survey interesting county records for plants (based on current distribution maps available from the National Biodiversity Data Centre) and mosses were recorded.

At BURREN (LWS Site 251), *Pyrola rotundifolia*, Round-leaved Wintergreen was recorded on an area of open bog woodland with transition mire. This is a rare plant which is protected under the Flora Protection Order 1999. It would appear this is only the second record for the plant in County Louth which has its headquarters in the midlands (Westmeath in particular). Maurice Eakin of the NPWS also conducted a second visit to the Burren site following the LWS2011 and recorded a total of 20 bryophyte species on the site, including a possible site record for *Sphagnum teres* which has only been recorded by him on one other site in Louth (M. Eakin *pers. comm.*).

At LIBERTIES OF CARLINGFORD AND MILLGRANGE (LWS Site 297) *Epipactis palustris*, Marsh Helleborine was recorded in an area of *Schoenus nigricans* fen, which is only the second county record for the species in Louth. The first county record for this species was made in 2011 by the NPWS survey of the Greenore Wetland Locra (see Section 5.2.7 below).

5.2.4 Faunal Observations

Fauna associated with wetland habitats, that were observed during the field survey are recorded in the LWS II site database. Species recorded on the sites are listed in the individual site reports presented in Appendix 9.

5.2.5 Damage to County Louth wetlands

The majority of, if not all, Irish wetland sites, and by extension those in county Louth, have been subject to some degree of human impact, damage or modification from their natural state in the past, and continue to be threatened and decline in abundance due to such activities (NPWS 2008; Foss & Crushell 2007; Foss 2007; Foss, Crushell, O'Loughlin & Wilson 2011). A summary table of impacts and the wetland types most affected is presented in Table 5.3 below.

Wetlands, (bog, fen and marsh areas in particular) have historically been regarded as less productive than adjacent agricultural land and measures have been taken to 'improve' their quality for agriculture. The principal method of land improvement usually involved some form of drainage, infill or soil redistribution, burning or the addition of nutrients so as to facilitate the removal of peat, the planting of trees, or the creation of new grazing areas, pasture or arable farmland.

A more recent trend has been the use of wetlands as areas to dispose of building rubble, rubbish and landfill materials (Monaghan County Council 2006; Foss & Crushell 2007; Anonymous 2009; Foss et al. 2011).

Reclamation and drainage works are ongoing agricultural management techniques which affect the hydrology of wetland habitats. But which are now subject to Environmental Assessment under legislation introduced in September 2011.

The 2008 NPWS report on the conservation status of EU Protected Habitats and Species (NPWS 2008), many of which are associated with wetlands, reported that the conservation status of these habitats is far

from satisfactory. In fact the overall assessment for wetland habitat types listed under the EU Habitats Directive found that only four habitats were in favourable conservation status, while seven were poor and 16 habitat types were deemed to have a bad conservation status overall.

Included in the latter bad conservation status category were habitats such as Oligotrophic and Hard water lakes, Blanket bog, Wet heath, Transition mire, Alkaline fen and Alluvial wet woodland; while habitats found to be in poor conservation status included Tall herb swamps, Marsh and Bog woodland. These habitats account for a significant part of the wetland habitat resource in county Louth.

Table 5.3. Natura 2000 Impacts and Activities which are likely to have a negative effect on wetlands, and the wetland type most likely to be affected by these activities.

Natura 2000 Impacts and Activities Main Code	Impacts and Activities Category with brief description	Wetland habitat types most at threat or likely to be affected from Impacts and Activities
A	Agriculture Including cultivation, fertilisation, and over grazing	Fens, Marsh, Bog, Wet heath, Reed Swamp, Lake and Lake margins, Wet grassland, Wet woodland, Bog woodland, Turlough, Rivers
B	Sylviculture, forestry Including fertilisation, planting and re-planting, forestry practices	Fens, Marsh, Bog, Wet heath, Reed Swamp, Lake and Lake margins, Wet grassland, Wet woodland, Bog woodland, Turlough, Rivers
C	Mining, extraction of materials and energy production Including quarry activities, turbary and peat removal	Bog, Dystrophic lake, Bog woodland
D	Transportation and service corridors Including road construction, power transmission	All wetland types
E	Urbanisation, residential and commercial development Including Urban and industrial development, discharges and waste disposal	Fen, Bog, Marsh, Wet Grassland, Scrub
F	Biological resource use other than agriculture & forestry Including leisure fishing, hunting	Lake, Fen, Marsh, River, Bog
G	Human intrusions and disturbances Including recreational facilities, outdoor leisure activities, littering, trampling overuse	Bog, Fen, Marsh, Reed Swamp, Wet Grassland
H	Pollution Including surface and groundwater water pollution, air pollution	Oligotrophic Lake, River, Marsh, Fen
I	Invasive, other problematic species and genes Including invasive species, genetic pollution	Oligotrophic Lake, River, Marsh, Fen
J	Natural System modifications Including landfill, drainage, drain maintenance, water abstraction, burning	Fen, Marsh, Bog, Reed Swamp, Lake margins, Wet grassland, River
K	Natural biotic and abiotic processes (without catastrophes) Including organic material accumulation	Fen, Marsh, Bog, Wet woodland

During the course of the LWS II, past and existing damage to wetlands were noted, and an overall assessment of the severity was undertaken where information was available. The individual site reports presented in Appendix 9 describe all specific threats or damage and the severity of this on each of the wetland sites surveyed. In many cases more than one threat was recorded on an individual site.

It is likely that the information recorded on site activities, impacts and damage represents a minimum, and that additional sites have been negatively affected by human operations which have not been documented in the LWS database. The LWS site database does however provide a tool for recording such damage on sites in the future, and provides an indication of the types of activities which have affected wetland habitats to date.

If those sites identified as being of ecological importance during the LWS are to be conserved, management measures will be required to prevent further damaging activities and in some cases to restore damaged habitats.

5.2.6 Site Conservation Assessment

On completion of the LWS II fieldwork, sites were reviewed and given a site conservation rating using the criteria presented in Appendix 8. The site conservation rating for sites surveyed is illustrated in Figure 5.2 and presented in presented in Table 5.4.

Of the 90 sites surveyed in detail, 17 are deemed to be of county importance of greater.

Just seven of these sites had previously been recognised as being of conservation interest being listed as proposed Natural Heritage Areas or Special Areas of Conservation by the National Parks and Wildlife Service:

COLLON - MELLIFONT ABBEY WOODS cNHA	RATHESCAR WOOD cNHA
KILDEMOCK MARSH cNHA	REAGHSTOWN MARSH cNHA
DRUMSHALBON LOUGH cNHA	STABANNAN / BRAGANSTOWN cNHA
CARTANSTOWN LOUGH cNHA	

The remaining 10 sites identified as being of county importance of greater, represent a significant, previously un-recognised, conservation resource which should be listed for protection.

A Rated Sites (International Ecological Importance):

Two sites (BURREN and STABANNAN / BRAGANSTOWN cNHA/SPA) have been rated as of international conservation importance (see Table 5.4). Stabannan / Braganstown was rated as an A site due to its designation as an Special Protection Area for wintering birds, rather than for the wetlands that occur within the site.

The Burren (LH251) has been identified as containing habitats of conservation value that correspond to those listed on Annex I of the EU Habitats Directive. In addition the site was found to contain *Pyrola rotundifolia*, only the second known location for this species in the county. The EU Annex I habitats recorded on the site include the following:

- (7140) Transition mires and quaking bogs
- (7230) Alkaline fens
- (3160) Natural dystrophic lakes and ponds
- (91D0) *Bog woodland

B Rated Sites (National Ecological Importance):

Nine sites have been rated as being of national conservation importance (see Table 5.4).

These sites have been identified as containing habitats of conservation value that may correspond to those listed on Annex I of the EU Habitats Directive including:

- (7210) *Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (EU Priority Habitat)
- (7220) *Petrifying springs with tufa formation (Cratoneurion)
- (7140) Transition mires and quaking bogs

C+ Rated Sites (County Value):

Six sites have been rated as of county conservation importance (see Table 5.4).

These sites have been identified as containing habitats of conservation value that may correspond to those listed on Annex I of the EU Habitats Directive. These include the following Annex I habitat types:

- (7140) Transition mires and quaking bogs
- (3160) Natural dystrophic lakes and ponds

C Rated Sites (High Value, Locally Important):

Fourteen sites have been rated as being of Local conservation value (high value) (see Table 5.4).

Some of these sites have been identified as containing habitats of conservation value that may

correspond to those listed on Annex I of the EU Habitats Directive. These include the following Annex I habitat types:

(7140) Transition mires and quaking bogs

The remaining sites have been given a lower conservation value based on the type and quality of habitat present (see Table 5.4).

The sites, as summarised in Table 5.4, are currently undesignated (with the exception of the seven sites designated as pNHA or SPA) and are also not listed as candidate Natural Heritage Areas in the NPWS sites database. It is recommended that those sites deemed to be of County value or greater (A, B and C+ importance) should as a priority be submitted to the National Parks and Wildlife Service for inclusion on their list of sites for consideration as NHAs. These sites should also be listed in future county development and biodiversity plans as sites of highest conservation value.

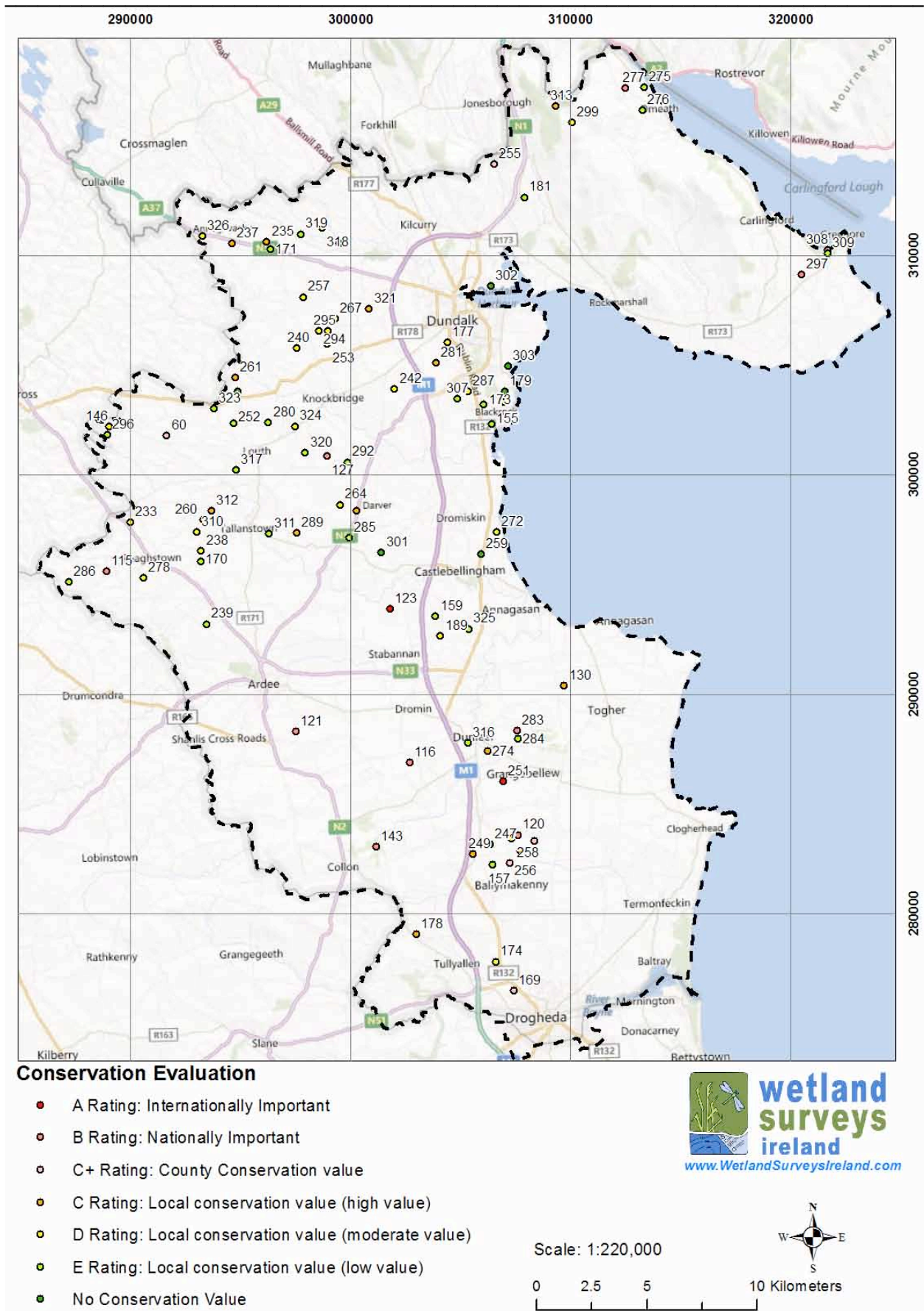


Figure 5.2. Map showing the distribution of 2012 LWS II sites according to conservation value.

Table 5.4. Conservation Assessment and ranking of sites surveyed in County Louth during the 2012 LWS II.

Ranking: A Rating: Internationally Important; B Rating: Nationally Important; C+ Rating: County Conservation value; C Rating: Local conservation value (high value); D Rating: Local conservation value (moderate value); E Rating: Local conservation value (low value)

Site name	Site Code	Centre Easting	Centre Northing	Conservation Ranking After Survey
BURREN	251	306919	286027	A Rating
STABANNAN / BRAGANSTOWN cNHA/SPA	123	301800	293900	A Rating
CARTANSTOWN LOUGH cNHA	120	307595	283586	B Rating
KILDEMOCK MARSH cNHA	121	297511	288289	B Rating
KILLINCOOLE MARSH	127	298930	300855	B Rating
REAGHSTOWN MARSH cNHA	115	288903	295587	B Rating
DRUMULLA AND LISLEA	277	312471	317621	B Rating
COLLON - MELLIFONT ABBEY WOODS cNHA	143	301151	283037	B Rating
LIBERTIES OF CARLINGFORD AND MILLGRANGE	297	320489	309114	B Rating
RATHESCAR WOOD cNHA	116	302676	286891	B Rating
GALLAGH	283	307550	288331	B Rating
DRUMSHALBON LOUGH cNHA	119	308339	283316	C+ Rating
MELL LAKES	169	307413	276508	C+ Rating
ROOTATE	60	291628	301789	C+ Rating
MULLATEE AND GREENORE	308	321688	310232	C+ Rating
CARRICKANEENA AND FEDE	255	306520	314152	C+ Rating
CARRICKNASHANAGH	256	307224	282308	C+ Rating
BEGRATH (TULLYALLEN)	178	302985	279062	C Rating
CARTANSTOWN	180	307730	282878	C Rating
KEENAN'S CROSS POND	130	309700	290370	C Rating
ANNAVACKY WEST	237	294593	310538	C Rating
RAVENSDALE PARK	313	309295	316786	C Rating
DARVER WETLAND	271	300248	298356	C Rating
DRUMIN (ED DUNLEER)	274	306224	287411	C Rating
TANKARDSROCK AND DONAGHMORE	321	300841	307559	C Rating
ANNAGHVACKY	235	296184	310617	C Rating
CHANONROCK	261	294739	304415	C Rating
RATHNEESTIN WEST	312	293680	298338	C Rating
FAIRHILL	281	303871	305103	C Rating
KILCRONEY SOUTH	289	297537	297333	C Rating
BAWNTAAFFE	249	305561	282726	C Rating
BALMER'S BOG (DUNDALK)	177	304380	306020	D Rating
BOLIES QUARRY	189	304070	292580	D Rating
HAMILTON MARSH (BLACKROCK)	153	306975	303316	D Rating
KILLINEER RESERVIOR	174	306591	277819	D Rating
LANNAT	146	298152	302305	D Rating
LISLEA	299	310048	316052	D Rating
ASH BIG	240	297544	305775	D Rating
CARRICKALLAN	253	298937	305958	D Rating
CARRICKROBIN	257	297855	308091	D Rating
KILLYCRONEY	294	298550	306545	D Rating
KILLYCRONEY AND CORTIAL	295	298957	306545	D Rating
SHORTSTONE EAST	318	298701	311224	D Rating
HAGGARDSTOWN AND MULLAGHARLIN	287	305334	303777	D Rating
ACLINT	233	289987	297841	D Rating

Site name	Site Code	Centre Easting	Centre Northing	Conservation Ranking After Survey
BALLYBARRACK	242	301994	303894	D Rating
CAVANROBERT	260	293295	297947	D Rating
EDMONDSTOWN	278	290577	295298	D Rating
ARTHURSTOWN POND	238	293202	296516	D Rating
DROMISKIN EAST	272	306621	297397	D Rating
WHITECROSS	324	297463	302206	D Rating
RATHBODY	310	292995	297375	D Rating
CARTANSTOWN WEST	258	307317	283425	D Rating
CORTIAL	267	299289	307114	D Rating
CHRISTIANSTOWN	264	299519	298630	D Rating
RASSAN	326	293250	310894	D Rating
AGHNASKEAGH RESERVOIR	181	307898	312633	E Rating
ANNAGHVACKY (HACKBALLSCROSS)	171	296354	310286	E Rating
ARTHURSTOWN	170	293196	296031	E Rating
BRAGANSTOWN BOG	159	303853	293552	E Rating
HAGGARDSTOWN	173	306052	303183	E Rating
KIRCOCK	157	306442	282250	E Rating
SPRINGFIELD MARSH (BLACKROCK)	155	306416	302292	E Rating
DRUMMULLAGH SOUTH	276	313244	316599	E Rating
CARNALUGHOGE	252	294690	302354	E Rating
KILLINCOOLE	292	299859	300570	E Rating
MULLAGHARLIN	307	304832	303453	E Rating
MULLATEE EAST	309	321680	310079	E Rating
ARTNALEVERY AND COOKSTOWN	239	293460	293197	E Rating
DRUMMULLAGH	275	313328	317631	E Rating
SHORTSTONE WEST	319	297716	310961	E Rating
SHAMROCKHILL	316	305326	287777	E Rating
LANNAT AND TULLYDRUM	296	288941	301827	E Rating
WILLIAMSTOWN	325	305353	292970	E Rating
TOOMES AND BALLYKELLY	323	293796	303014	E Rating
EMLAGH AND COOLCREEDAN	280	296258	302378	E Rating
RATHBRIST	311	296298	297324	E Rating
GILBERTSTOWN	285	299932	297133	E Rating
SUMMERHILL	320	297936	300996	E Rating
GALLAGH AND BALLYNAGRENA	284	307612	287956	E Rating
SHEEPWALK	317	294781	300228	E Rating
GREATWOOD	286	287182	295103	E Rating
BIRCH'S LANE (BLACKROCK)	179	307000	303802	No Conservation Value
KNOCKAGH	172	299470	310540	No Conservation Value
MARSH NORTH	302	306368	308586	No Conservation Value
MARSH SOUTH AND HAGGARDSTOWN	303	307144	304953	No Conservation Value
MANSFIELDSTOWN	301	301396	296463	No Conservation Value
CHANONROCK	263	294850	303804	No Conservation Value
CASTLEBELLINGHAM	259	305915	296393	No Conservation Value
BANKERSTOWN	247	306318	283160	No Conservation Value

5.2.7 NPWS Greenore Wetlands cNHA

During the course of the LWS 2012 Dr. Michael Wyse-Jackson of the National Parks and Wildlife Service indicated that based on the 2011 Louth Wetland Identification Survey (Foss et al. 2011), a series of sites in the Greenore area were being proposed as a Natural Heritage Area (cNHA), due to their habitat and species diversity.

In total the NPWS had proposed 7 discrete wetland sites for inclusion in the Greenore Wetlands cNHA (see below) which occurred within 4 of the sites surveyed as part of the LWS 2011, and 2 sites surveyed during the LWS II. A further site, Nootka (an wet alder woodland site) has to date not been surveyed as part of the Louth Wetland Survey.

Details of the sites are shown in Table 5.5 below, while the site locations are illustrated in Figure 5.3 and 5.4.

Table 5.5. Sites located within the Greenore Wetlands cNHA.

Site Name	Site Code	Discrete sites within this unit	Conservation Proposed by NPWS	Year Surveyed	Site Rating	Habitats/Species of note
Millgrange	LH54	1	Yes	LWS2011	C+	Alkaline fen; Cladium fen
GREENORE	LH53	1	Yes	LWS2011	C	Alkaline fen; Cladium fen
Mullatee	LH56	5	Yes	LWS2011	B	Alkaline fen; Cladium fen; <i>Epipactis palustris</i> ; <i>Pyrola rotundifolia</i>
Muchgrange	LH51	1	Yes	LWS2011	C+	Alkaline fen; Cladium fen; <i>Dactylorhiza sp.</i>
LIBERTIES OF CARLINGFORD AND MILLGRANGE	LH297	1	Yes	LWS2012	B	Cladium fen; Petrifying Springs; <i>Epipactis palustris</i>
MULLATEE AND GREENORE	LH308	1	Yes	LWS2012	C+	Lagoons and saline lakes (modified)
NOOTKA	LH328	1	Yes	-	-	Alder woodland

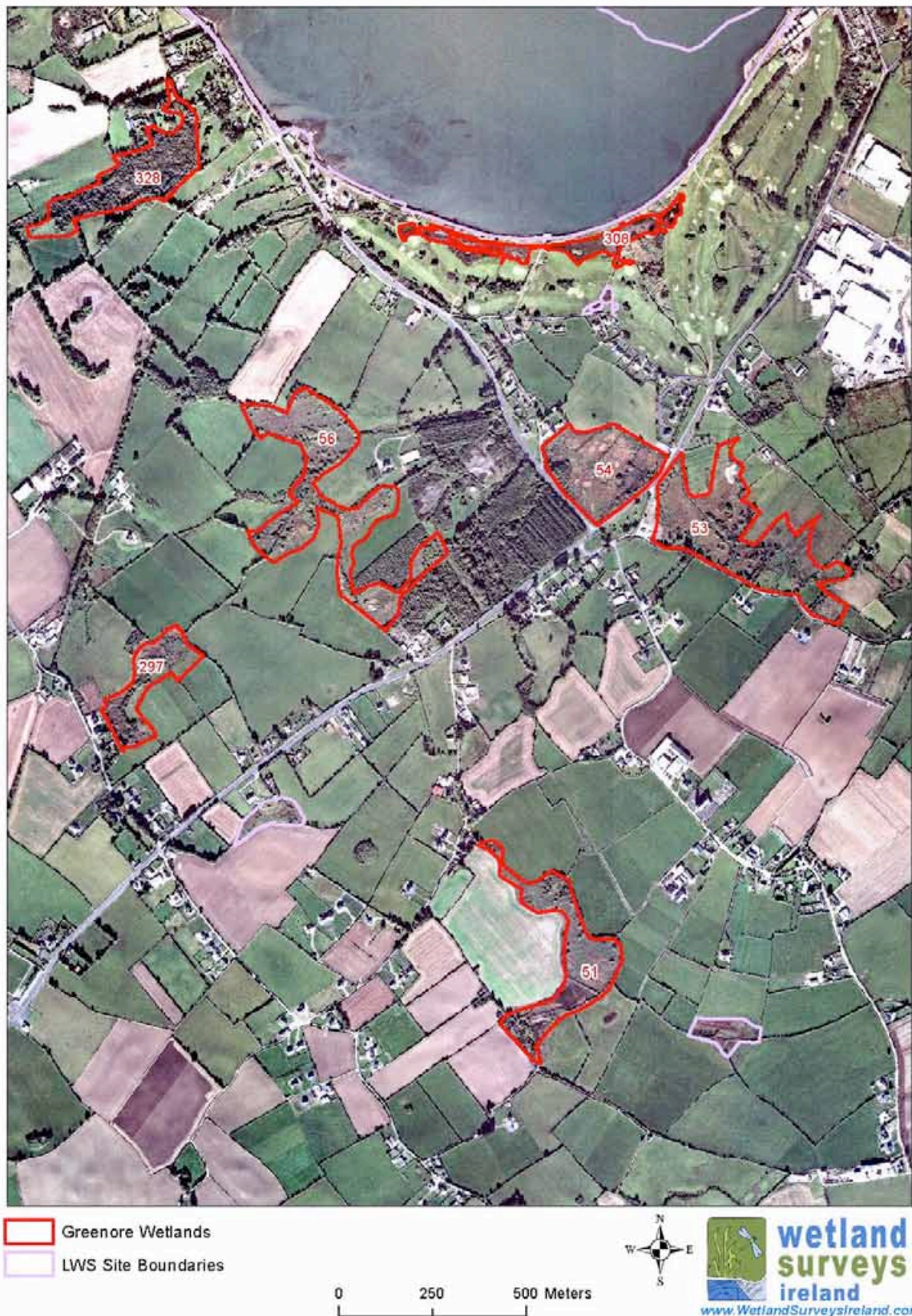


Plate 5.1. Aerial photograph showing the distribution of sites within the proposed Greenore Wetlands cNHA.

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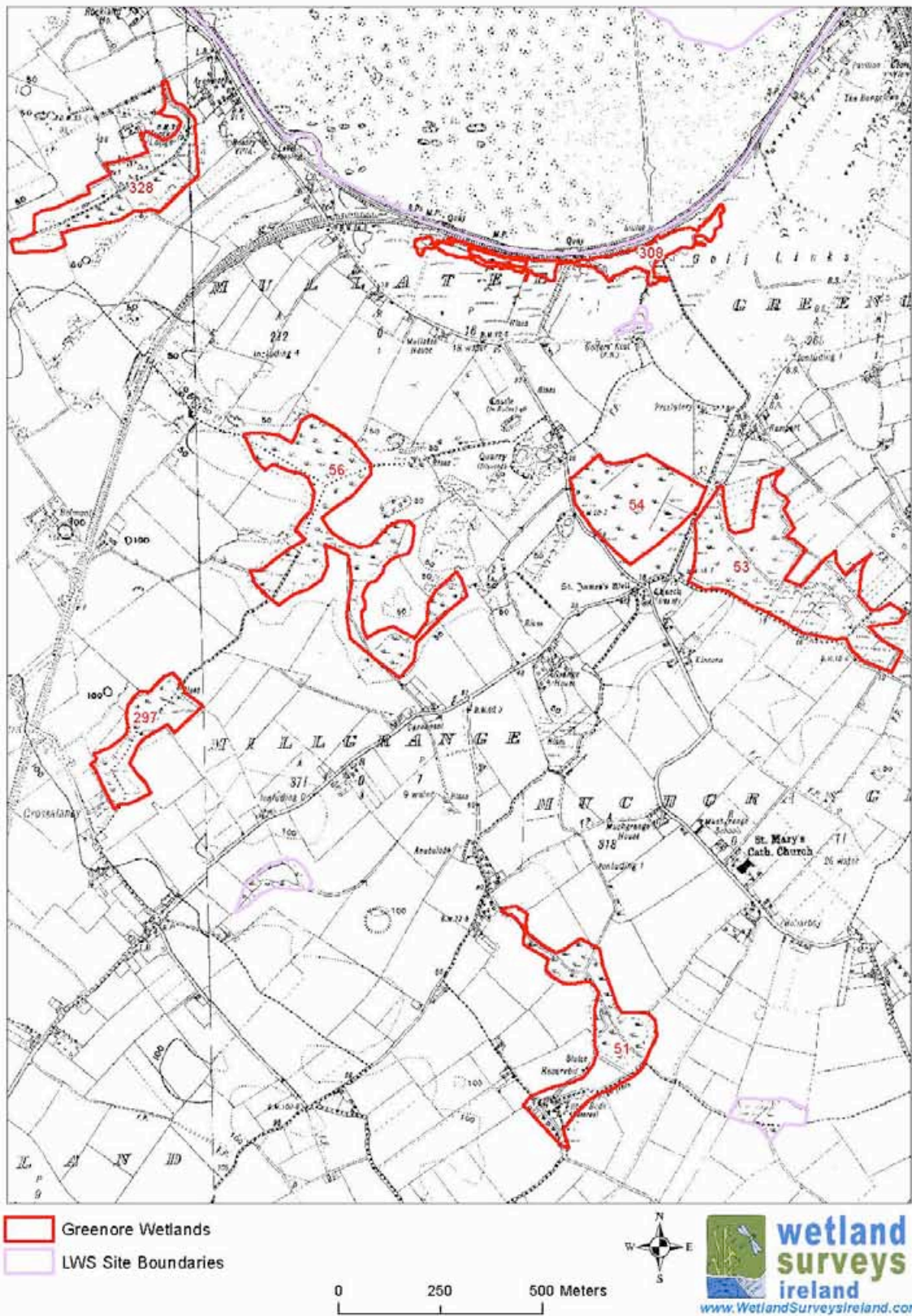


Plate 5.2. Map showing the distribution of sites within the proposed Greenore Wetlands cNHA

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6 Louth Wetland Recommendations

6.1 Site Designations

It is recommended that all wetland sites, which have been identified in this survey, and rated as either A, B or C+ (of international, national or county importance) are forwarded to the National Parks and Wildlife Service (NPWS) for inclusion on their list of sites for survey and designation.

These sites should be listed as candidate Natural Heritage Areas and objectively assessed by NPWS for designation as Natural Heritage Areas. Such recommendations for assessment should be made on a regular basis as further information on the wetland resource of county Louth becomes known.

6.2 Planning Controls

Sites which are listed as being of *county importance (C+)* or of *higher value, local importance (C)* and of *moderate value, local importance (D)* should be highlighted and included in any recommendations made under the County Biodiversity Action Plan or included in local area plans, county development plans or other planning strategies. Again, such recommendations for recognition and listing of sites should be made on a regular basis as further information on the wetland resource of county Louth becomes known.

It is recommended that council staff should be aware of a variety of issues regarding wetlands when assessing development proposals and planning applications. These include:

- The need for an appropriate buffer zone surrounding wetland sites. This is often already provided in REPS plans (or similar agri-environmental schemes), where, for example, landowners are required to leave a buffer zone around a wetland when spreading slurry
- The importance of hydrology in how wetland sites function and how indirect impacts on a wetland system can be caused by activities occurring at some distance from the wetland
- The damaging cumulative effect of seemingly isolated losses of wetland habitats across the county on the overall county resource
- The loss of wetland habitats as a result of fragmentation of sites and impacts on wetland hydrology
- The ecological value of wetland habitats adjacent to, and fringing lakes and ponds
- The ecological value of large areas of reed and tall sedge swamps, rivers and river flood plains in controlling and reducing the impacts of flooding events
- The wetland fauna, some of which are listed on Annex II of the Habitats Directive found in the county's wetlands and the potential impacts on these species as well as their habitats
- The limited coverage provided in the initial NPWS NHA survey – this was never a comprehensive survey of the entire county – many sites of high nature conservation value remain undesignated
- The potential value of wetland sites which are outside statutorily-designated areas and the need for adoption of a precautionary approach when assessing applications that may impact on same
- The role that the wetland resource plays in combating global warming. It is likely that the wetlands of County Louth act as a major sink of carbon.

6.3 Completion of the LWS wetland inventory

As described in Section 5 above, there are a number of wetland sites that have not been surveyed and little is known. These sites should be prioritised for survey in order to complete the LWS wetland inventory. The results of the survey should be incorporated into the LWS site database and GIS.

6.4 Further Survey & Assessment of Wetland Sites

A hydrological assessment of all sites which have been given a rating of A, B or C+ rating should be commissioned in order to assist in our understanding of how these wetlands function hydrologically. The National Fen Survey manual (Foss (2008)) also recommends that a hydro-chemical analysis is conducted.

In addition a number of sites examined in 2012 have been identified (see site reports in Appendix 9) which may contain important vertebrate and invertebrate assemblages. Surveys of these groups could be undertaken within the county to increase knowledge of the biodiversity value of these wetlands (e.g. Newts, Dragonfly & Damselfly survey; Marsh Fritillary survey *inter alia*).

More detailed botanical surveys of some of the sites examined during the LWS II have also been recommended on sites listed as of A, B, or C+ conservation value (see site reports in Appendix 9).

6.5 Management of Louth Wetland Sites

Many of the landowners of wetland sites are likely to be members of the Rural Environmental Protection Scheme (REPS) or similar replacement agri-environmental schemes. Where landowners are not members of REPS they should be contacted to make sure that management is sensitive to the requirements of wetland areas, such as the need for an adequate buffer zone around the wetland.

REPS planners based in county Louth should be briefed on the value of wetland habitats and suitable management practices for these sites. Management of agricultural runoff and other measures to prevent water pollution should be discussed and agreed on. These measures will also assist the local authority in meeting its requirements under both the EU Nitrates Directive and the EU Water Framework Directive.

The Department of Agriculture should be informed that their regulations to remove non-agricultural land from area aid packages is prompting some farmers to reclaim wetlands to the detriment of Louth's biodiversity.

For further information on best practice management guidelines for many of the wetland habitats listed, the reader is referred to "The Living Farmland – A Guide to Farming for Nature in Clare" (Anonymous 2008c) which provides practical advice on habitat maintenance and improvement for landowners and farmers. In addition, the NPWS website (www.npws.ie) provides a range of guidelines to help with the protection, management and wise use of conservation-worthy habitats and protected species, including information on the Rural Environment Protection Scheme (REPS), Farm Plan Schemes, Notifiable actions *inter alia*. Furthermore the Irish Peatland Conservation Council has published a Management Handbook for Peatland, which provides practical advice on habitat restoration (see www.ipcc.ie).

Restoration of threatened and degraded wetland habitats should be encouraged, such as of the highly modified bogs. Funding opportunities for such initiatives should be investigated and pursued.

Newly proposed regulations requiring certain agricultural activities to go through the EIA process is a positive development and should aid the protection of wetlands throughout the county and country.

6.6 Enforcement of Fines for Illegal Dumping and Infill

Infilling and reclamation of wetland is an ongoing threat to the wetland resource in county Louth. This practice should be dissuaded through both education on the value of wetlands and the enforcement of suitably deterring fines. Article 10(1)(y) of the EPA Guidance Manual Waste Facility Permit and Registration Regulations requires that an application for a waste facility permit or certificate of registration contain details of the biodiversity of the land and specifically details wetlands within same.

The protection of Louth's diverse wetland resource depends on strict enforcement of national conservation legislation by the NPWS, and planning and waste laws by the County Council to ensure unauthorised damaging activities are prevented.

6.7 Control of Invasive Species in Wetlands

It is important that invasive species are controlled and eradicated within wetland sites as they have the potential to cause serious nuisance and can be very costly and difficult to remove once they become established. Typical species affecting wetlands include Rhododendron (*Rhododendron ponticum*), Japanese knotweed (*Fallopia japonica*) and Indian balsam (*Impatiens glandulifera*). It is recommended that all records of invasive species in County Louth are submitted to the Invasive Species Ireland database (<http://www.invasivespeciesireland.com/sighting/>) where advice on control and removal is also available.

6.8 Local Authority Wetlands Policy

A review of the statutory provisions that govern the management of wetlands in County Louth (such as the Habitats Directive, Wildlife Act, Water Framework Directive, Environmental Liability Directive, Nitrates Directive, Planning Act, etc.) should be conducted and the role of the Local Authority in this regard should be examined. This review could be done in collaboration with other Local Authorities.

Increased co-ordination between agencies in their policy and operative approaches to wetlands need to be strengthened.

6.9 Water Framework Directive

As a member of the European Union, Ireland must, as of the 22nd December 2000 implement the Water Framework Directive (2000/60/EC). This directive provides a consolidated, strengthened framework for the protection and improvement of all of our waters - rivers, lakes, marine and groundwaters, and of our water-dependent habitats and species. The aim of the Water Framework Directive is to prevent any deterioration in the existing status of our waters, including the protection of good and high status where it exists, and to ensure that all waters are restored to at least good status by 2015.

The objectives of the WFD are:

- to protect and enhance the status of aquatic ecosystems (and terrestrial ecosystems and wetlands directly dependent on aquatic ecosystems)
- to promote sustainable water use based on long-term protection of available water resources
- to provide for sufficient supply of good quality surface water and groundwater as needed for sustainable, balanced and equitable water use
- to provide for enhanced protection and improvement of the aquatic environment by reducing / phasing out of discharges, emissions etc.
- to contribute to mitigating the effects of floods and droughts
- to protect territorial and marine waters
- to establish a register of 'protected areas' e.g. areas designated for protection of habitats or species

Clearly the identification of wetland habitats in County Louth assists in fulfilling not only our obligations under the EU Habitats Directive and the National Biodiversity Plan but also in implementing the Water Framework Directive.

6.10 Public Information and Interpretation Measures

Public awareness about the importance of the wetlands in county Louth should be developed through a series of targeted measures. **On-going public awareness campaigns** should be undertaken to inform the people of Louth of the value of the county's wetland resource and the valuable ecosystem services they provide.

These could include:

- Information aimed specifically at landowners and farmers to explain the value of wetlands on their land should be developed
- Specific events county-wide as part of 'National Heritage Week which takes place annually in September. Further details are available from <http://www.heritageweek.ie/>
- A series of school visits celebrating local wetlands – co-ordinated through the Heritage in Schools Scheme
- Public display boards and signage at popular wetland sites should be developed to inform the public of their biodiversity value and the ecosystem services such wetlands play
- A workshop on wetland management for landowners should be held
- A colour leaflet should be produced to illustrate the beauty and importance of wetland within the County and their conservation importance. A similar leaflet was produced in County Monaghan (MCC 2008).

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8 Appendices

In the report appendices which follow, the PDF layouts (produced from Excel or Word files) have been formatted and reduced to allow printing of tables at A4 page size. The original Excel spreadsheets from which some of these PDFs were created are included on the CD ROM that accompanies this report.

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Appendix 1: Groups and individuals contacted in the compilation of site data for the LWS II

** Sorted by organisation*

Individual	Organisation
Brendan McSherry	Heritage Officer, Louth County Council
Helen Divilly	IT Section, Louth County Council
Mark O'Callaghan	Senior Engineer, Water Section, Louth County Council
Maurice Eakin	National Parks and Wildlife Service
Michael Wyse-Jackson	National Parks and Wildlife Service
Jochen Roller	National Parks and Wildlife Service
Naomi Kingston	National Parks and Wildlife Service
Neil Lockhart	National Parks and Wildlife Service
Vincent Toner	Senior Executive Engineer, Transportation Office, Louth County Council
Declan MacMahon	Senior Executive Engineer, Enforcement Section, Louth County Council
Dermott Hanratty	Irish Wildlife Trust
Breffni Martin	North Louth BirdWatch Ireland
Sean Convery	Farming and Wildlife Advisory Group NI
Mark McCorry	Ecologist

Appendix 2: Reports & information sources consulted during the compilation of the LWS II GIS & Site Database

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- 670 NPWS (2008) NPWS Control files containing Fossitt and EU habitats, and EU species on all NPWS recognised sites (NHAfullcontrol form NLv4_7.xls & NHA Review 2 Habitats and Species.xls Date: 04.02.2008). (Digital Dataset). National Parks & Wildlife Service, Dublin.
- 736 NPWS (NA) NPWS On-line site descriptions for conservation worthy sites (NHA, SPA and SAC). See www.npws.ie. National Parks and Wildlife Service, Ireland.
- 803 NPWS (2009) National Parks and Wildlife Service Conservation Statement 2009: Dundalk Bay SAC (455) / SPA (4026) Co. Louth. National Parks and Wildlife Service.
- 819 NPWS (2012) On-line List of Wildlife Sanctuaries from OPW Wildlife Service Report (1990). NPWS Website.
- 881 NPWS (2012) NPWS (2012) Various digital habitat maps originating from regional and national ecological surveys carried out by NPWS, Dublin submitted to Louth Wetland Survey. (GIS dataset). National Parks and Wildlife Service, Dublin.
- 21 Ó Críodáin, C. (1988) Parvocaricetea in Ireland. Ph.D. Thesis, National University of Ireland.
- 805 Partridge, K. (2009) Drogheda Landfill Site, Mell, Drogheda. Report on Ecological Monitoring, 2008-09. Report for Drogheda Borough Council.
- 484 Perrin, P.M., Martin, J.R., Barron, S.J., O'Neill, F. McNutt, K. & Delaney, A. (2008) National Survey of Native Woodland in Irelands 2003-2008. Vol. I: Main Report. Report for National Parks & Wildlife Service, Dublin, pp. 177.
- 681 Roe, J. & Merne, O. (2006) The Ecology of Blackrock. An Ecological Survey of Blackrock, Co. Louth. Blackrock Tidy Towns Committee. pp. 85.
- 551 Various (2010) Orchid Ireland Survey - selected site reports for fen locations in Counties Dublin, Meath, Westmeath, Kildare, Kilkenny, Kerry, Limerick, and Louth. National Museums of Northern Ireland.
- 804 Wyse-Jackson, M. (2012) NPWS data submission on proposed Greenore Wetland Complex cNHA. NPWS. pp. 2

2. GIS data sources examined in determining wetland sites in County Louth

Source title and author	LWS Bibliography Code	Information type	Data Content Comments
GSI National Bedrock Map of Ireland 1:500,000 Scale (GSI)	246	GIS Dataset	Used to determine the underlying solid geology of sites
EPA (2006) Lakes and Ponds Dataset. EPA, Wexford (EPA)	253	GIS Dataset	Used to determine the location of lake, pond and reservoir sites
EPA (1997) Catchments All Island. EPA, Wexford (EPA)	255	GIS Dataset	Used as base-map in site and habitat mapping and wetland site identification.
OSI Color orthophotos (OSI)	258	GIS Dataset	Used as base-map in site and habitat mapping and wetland site identification
EPA Corine Land-cover in Ireland (CLC2000) (OSI)	259	GIS Dataset	Used in the production of habitat and site maps
OSI 1:5000 OS vector maps (OSI)	261	GIS Dataset	Used as base-map in site and habitat mapping and wetland site identification
OSI 6 Inch Map series (OSI)	262	GIS Dataset	Used as base-map in site and habitat mapping and wetland site identification
OSI 1:50000 Discovery series (OSI)	331	GIS Dataset	Used as base-map in site and habitat mapping and wetland site identification
OSI Townlands (OSI)	332	GIS Dataset	Used as base-map to identify townlands
Teagasc (2006) National Subsoils Data (EPA)	333	GIS Dataset	Identification of subsoil types
NPWS (2011) pNHA Boundaries (NPWS)	711	GIS Dataset	Used in site and habitat mapping and wetland site identification
NPWS (2011) NHA Boundaries (NPWS)	710	GIS Dataset	Used in site and habitat mapping and wetland site identification
NPWS (2011) SAC Boundaries (NPWS)	712	GIS Dataset	Used in site and habitat mapping and wetland site identification
NPWS (2011) SPA Boundaries (NPWS)	713	GIS Dataset	Used in site and habitat mapping and wetland site identification
Teagasc (2006) National Soils Data (EPA)	345	GIS Dataset	Identification of soil types
NPWS (2011) Various Digital habitat maps originating from regional and national ecological surveys carried out by NPWS, Dublin submitted to WWM	689	GIS Datasets	Used in the production of habitat and site maps
See additional information below			
BirdWatch Ireland I-WeBS Sites (2011)	487	GIS dataset derived from records	Used in determining potential wetland locations

3. NPWS Individual Data Sets Received in 2012 and included under data source code 881 above. Source code 881 is referenced in the source attribute field of the polygon habitat shapefile in the LWS GIS.

NPWS Survey / Habitat Type	Shape-file Name
Lakes	3110_3130_lwseg_0207_clip 3140_lwseg_0207_clip
Raised Bogs	7110_7120_rb_unsurv_indesign_othersources
Fens & Petrifying Springs	FEN_complete_clip
NPWS Indicative Habitat Mapping – Conservation Planning Unit	CPU_Habitats_March_2012_clip
National Survey of Native Woodlands	native_woodland_clip Woodland_relevés_2010 NSNW_Woodland_Habitats_2010_clip
Irish Semi-natural Grassland Survey	ISGS_2009_clip
National Lagoon Survey	Inventory_of_Irish_Coastal_Lagoons_2011_polygons_clip Inventory_of_Irish_Coastal_Lagoons_2011_Sampling_Station_points_clip
National Shingle Beach Survey	1210_1220_Moore_and_Wilson1999_Bleasdale_etal_1996_clip
Commonage Framework Plan	4010_CFP_commonageland_2006_clip 7130_CFP_commonageland_2006_clip Commonage_Base_Plan_2011_National_v02_clip Commonage_Base_Station_2011_National_clip Commonage_Base_SU_2011_National_clip
Coillte – 6230 Species-rich Nardus Grassland	6230_Coillte_GS3_2007_clip
Conservation Status Assessment – 1130 Estuaries	map_distribution_1130_poly_clip
National Saltmarsh Monitoring Survey	Saltmarsh_Curtis_Sheehy_Skeffington_1998_clip Saltmarsh_quad_Wymer_1984_clip smp_national_sm_resource_revised_GIS_2011_clip.prj
Coastal Monitoring Survey	Coastal_Monitoring_Project_2004_2006_clip.prj
Sea Cliff Survey	seacliffs_Browne_2005_cliff_sites_clip seacliffs_Cliff_section_clip seacliffs_Cliff_site_clip seacliffs_Relevés_clip seacliffs_Swath_clip seacliffs_Vantage_clip seacliffs_Undocumented_sites_cleaned_M_clip
Upland Habitats	Upland_habitats_Mar2012

Appendix 3: Data import methodology for the LWS II Site Database and GIS

A variety of data sources were used in the compilation of the list of sites included within the Louth Wetland Survey Core Wetland database. The full list of published and electronic data sources consulted is listed in Appendix 2.

The initial site data held within the LWS II database related to the 108 sites surveyed as part of the 2011 Louth Wetland Identification Survey (Foss et al. 2011). All further site and data additions to the LWS Core Wetland database were undertaken manually. Listed below are the larger data sets which helped in the creation of the complete LWS II wetland dataset.

In the case of single sites provided by individuals or groups (not emanating from a documented source), data was entered directly from the information provided to the LWS database.

The following import methodologies were applied to the import of site information from more extensive electronic data sets and published reports.

1 LWS Wetland Database

1.1 NPWS Fen Study Database (Version 2.4)

An electronic list of the sites held in the NPWS Fen Study Database (Foss 2007) was imported directly into the respective data fields created within the LWS database.

Allowing for sites with multiple records created by the occurrence of sub sites within larger conservation worthy sites a total of 9 unique site records were imported.

Imported data included (*inter alia*): Site name, Site Source, Fen types present on sites; Scientific interest on sites (Botanical; Zoological etc.); Previous reports and survey holding site related information; Site designation; Grid reference data; Fossitt habitats present on sites; and Site descriptions.

1.2 Foras Forbartha ASI Site Lists for County Louth

Site data from both of the AFF Preliminary ASI County Report (Fahy 1972) and the final report on Areas of Scientific Interest in Ireland (1981) were abstracted for sites listed within the LWS database.

The data for 18 sites was imported manually from the published reports.

Imported data included: Scientific interest on sites (Botanical; Zoological etc.); Previous reports and survey holding site information; Grid reference data where this data was missing on sites; a provisional list of Fossitt habitats present on sites were added to database on any sites lacking Fossitt data.

1.3 Natural Heritage Area & Special Area of Conservation NPWS Site Data and Fossitt habitat types

An electronic list of the sites provided by NPWS containing all recognised NHA, cNHA, SAC, cSAC and SPA sites was supplied by Dr. Neil Lockhart of NPWS and dated July 2008. The site list included the Fossitt habitat types present on the majority of the sites, together with site designation information.

The data for 31 sites provided was imported manually from a series of Excel spreadsheets.

Imported data included: Site code number; Site name; Site designation; Fossitt habitats present on sites; National Grid reference E & N.

1.4 Other reports holding wetland information on Louth

A series of other reports holding information on wetland sites in County Louth were consulted. A full list of these reports, studies and surveys is presented in Appendix 2.

In the case of each report, the sites listed in County Louth were screened against the existing sites in the LWS database. If a site was not located within the LWS database, a new database site record was created.

In the case where sites already existed in the database the information provided in the additional reports was screened and new information was added to the existing site record.

In the case of both new and existing site records, data on the scientific interest present on the site, previous research sources, habitats present, and basic site information was recorded within the LWS database.

The data for these sites was imported manually from the various published reports.

2 LWS GIS Datasets

2.1 Sites from LWS site database

A point shapefile (*LWS II Site Locations*) was created from a Microsoft Excel spreadsheet exported from the LWS site database. This dataset contained point information showing the location of each LWS site recorded from the extensive literature search and input from third parties.

Each point denoting a site had basic site information (originating from LWS site database) recorded in various attribute fields including site name, site code, data source etc. The location of each point was subsequently checked using GIS to ensure that grid references were correct (the majority were not and required manual correction). The point locations were then used to determine the townland(s), underlying soils and geology, corine land cover category, and river catchment for the site and this and the corrected grid references (easting and northing) were then re-imported into the LWS site database.

Digital site boundaries already existed for the 108 sites surveyed during the 2011 Louth Wetland Identification Survey (Foss et al. 2011). For the remaining LWS sites, boundaries were either imported from existing digital datasets (see below) or generated using GIS. Site boundaries were stored in a polygon shapefile (*LWS II Site Boundaries*).

2.2 Designated sites – NHA/SAC/SPA

Site boundary files for all existing NHA, SAC and SPA sites in County Louth were obtained from NPWS and directly imported into the LWS GIS. These boundary files were subsequently used to denote the boundaries of many LWS sites (those lying within designated sites). Where a LWS site was found to lie within a designated site, the complete boundary of the appropriate designated site was imported into the *LWS II Site Boundaries* file (see below).

2.3 LWS II Site Boundaries

In many cases, LWS sites had no existing boundaries associated with them especially in the cases where: they lay within a large designated site complex; or sites that had never been previously mapped (including many cNHA's). In the case where sites were contained within much larger designated sites, individual boundaries were not drawn, but the sub-sites were recorded in the attributes of the larger boundary.

In the case where sites were outside of existing boundaries, a boundary was generated based on visual interpretation of the aerial photograph and other base-maps such as soils or lakes which indicated the likely extent of the site. A wide range of third party GIS datasets were used in identifying LWS II wetland sites as listed in Appendix 2. The analysis of Aerial Photography and these other datasets throughout the county identified additional LWS II sites that were not identified during the literature review. Site records were created for these sites in the *LWS II Site Locations* (point shapefile) and the *LWS Site Boundaries* (polygon shapefile) and attributed appropriately with a site name, grid reference and other basic site data. These sites were subsequently exported to the *LWS II Site Database* where site codes were generated.

The *LWS II Site Boundaries* shapefile has a number of attributes including; LWS Site Code(s), Site Name, source of the data, source of the polygon boundary, and calculated area (m² and Ha).

2.4 Habitat type datasets

Some existing datasets which contain habitat information (as listed in Appendix 2) were imported directly into the LWS GIS. Each habitat unit was then exported from its source into a *LWS II Habitats Polygon* shapefile. This shapefile has a number of attribute fields associated with it including; Site Code, Site Name, survey method, date of survey (if known), dominant and additional habitats recorded (as per the alpha numeric code assigned by Fossitt (2000), data source, EU Annex I Habitat Type present (as per EU Habitats Directive Codes), EU Habitat Name, and calculated area (ha). The GIS attributes were developed essentially using the criteria as proposed in the Heritage Council Guidelines for Habitat Mapping (Smith *et al.* 2011).

Due to the different sources of the data it was often necessary to convert the habitat data from another format into an appropriate Fossitt category.

In the case of linear habitats (rivers, drainage ditches, hedgerows and treelines etc.) data was extracted from sources and imported into the LWS II Habitats Linear dataset.

Appendix 4: Database suite structure and data fields used on the Louth Wetland Survey (LWS) Database and GIS datasets

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1. Introduction

As part of the Louth Wetland Identification Survey 2011 project (LWS) two main database suites were used to hold site information, namely the (LWS) Wetland Site Database (version 1.0) and the Louth Wetland Survey (LWS) GIS.

On commencing the 2012 LWS II project the structure of the LWS site database was re-designed. This was done to allow digital recording of field survey data on the iPad and to facilitate better data transfer and integration of results into the GIS system used by Louth County Council via the export of data from the LWS site database into Excel, Access and SQL formats.

As illustrated in Figure 1 below there are two main databases associated with the LWS, the **LWS Core Wetland Database (Version 2)** and the **LWS Core Site Survey Database (Version 2)**. The revised structure of the LWS site database suite developed and used throughout the LWS II project is outlined below.

The relationship of the LWS Core Wetland Database and LWS Core Site Survey Database suites (i.e. the main database elements and the sub-databases that make up the *Louth Wetland Database*) is presented in Figure 1 below. The fields held within each database and sub-database are explained in the table presented in Section 2.1 below.

The LWS Core Wetland Database holds all basic site data obtained from an extensive search of various literature sources. This database is linked (via a unique site record number) to the LWS Core Site Survey Database which holds all of the detailed data gathered during the field surveys undertaken as part of the Louth Wetland Survey (2011 and 2012). Therefore by accessing the LWS Core Wetland Database, the user is able to access all data relating to each site contained in the database including detailed survey data (habitat maps, species lists etc) where the site in question has been the subject to a detailed targeted wetland field survey.

The files associated with the LWS II GIS are described in Section 5 below.

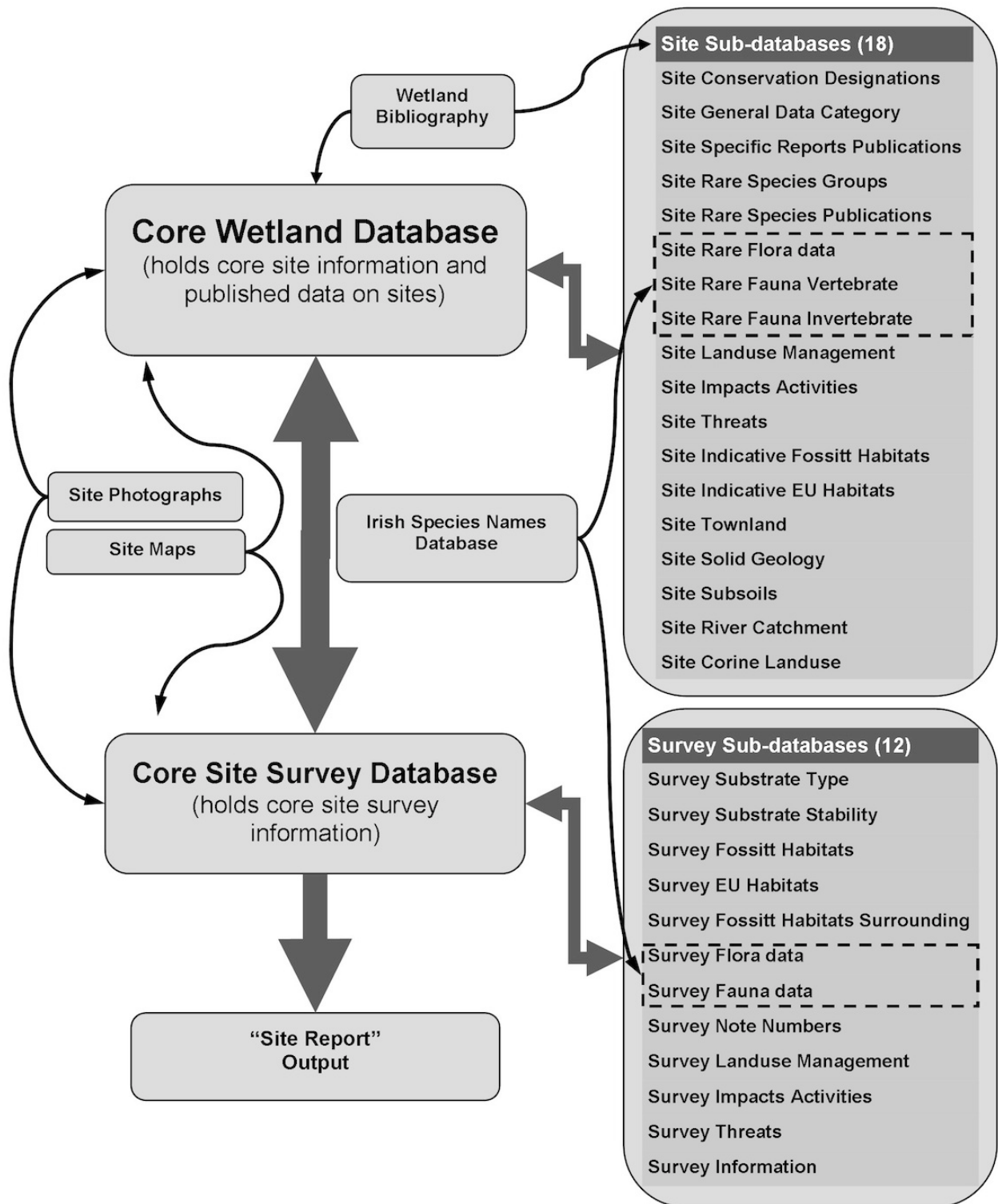


Figure 1. Relationship structure of the Louth Wetland Map (LWM) and Louth Wetland Survey (LWS) 2012 databases and associated sub-databases.

2. Louth Core Wetland Database (LWS) suite version 2.0

The **LWS Core Wetland Database** (Filemaker Pro 11.0 software package) holds basic site information on all the wetland sites recognised in county Louth.

This database suite holds some of the information in the GIS database, but allows for easier sorting and display of site records as well as data analysis. In addition this database and the associated sub-databases (18 in total) hold more detailed information on sites than is possible within the GIS for certain data fields (e.g. site descriptions, rare species recorded from the site, survey history etc.), and allows site photographs and maps to be relating to each site to be stored.

The LWS Wetland database displays site data via a series of layouts. These layouts are used when adding or reviewing data on a site. These layouts are accessed via the green or yellow link buttons along the top of the LWS database window.

The main Louth Core Wetland database amalgamates the appropriate site data from a series of 18 sub-databases to compile a complete site report (see Report Part 2). The sub-databases and the data they contain are detailed below.

2.1 Data fields held in the LWS Core Wetland database suite (version 2.0)

An explanation of the data fields used in the LWS Wetland database suite is provided below.

Table 4.1 Louth Core Wetland (LWS) database and sub-database files and the record data held within each database for individual sites.

** Name in bold is the name applied to database fields as seen when accessing the database in browse/operating mode; the underlined name is the actual field name assigned within the database (used when exporting data, performing calculations etc.).*

Database name <i>(sub database names are italicised)</i>	Field name *	Comment
Database Fields Common to the Core Wetland Database (LWS) and all associated sub-databases listed here		
	Site Code (<u>Site Code UACC</u>)	Unique site code for the site as assigned in Core Wetland database (LWS) and used by each of the sub-databases to relate site record information. Auto generated.
	Database Record number (<u>Database Record number</u>)	Unique record number for each record entry within each database and sub-database. Auto generated.
	Created by (<u>Created by</u>)	Name of person who created record within each database and sub-database. Auto generated.
	Date Created (<u>Date Created</u>)	Date record was created within each database and sub-database. Auto generated.
	Modified by (<u>Modified by</u>)	Name of person who last modified record within each database and sub-database. Auto generated.
	Date modified (<u>Date modified</u>)	Date record was last modified

Database name <i>(sub database names are italicised)</i>	Field name *	Comment
		within each database and sub-database. Auto generated.
	Time modified (<i>Time modified</i>)	Time record was last modified within each database and sub-database. Auto generated.
Core Wetland Database (LWS)		Wetland database holding information on wetlands identified within the county.
	Site Name (<i>Site Name UACC</i>)	The name of the wetland site, based on the most widely used name for site proposed by third party sources and adopted for the project. (see also Other Groups Site Name below). <i>Where a site record occurs as a subsite within a larger site complex, the specific subsite name is followed by the name of the main site preceded by a - (e.g. DUMMYS LOUGH - KILROOSKY LOUGH CLUSTER SAC, here Dummys Lough, a subsite occurs within the Kilroosky Bog Cluster SAC, the main site).</i>
	Designated Site Code (<i>Designated Site Code UACC</i>)	NPWS Site Code number for NHA, SAC and SPA.
	Other Groups Site Name (<i>Other Group Site Name UACC</i>)	Alternative site name applied to site by other reports or publications (for reference). <i>(When trying to locate a site within the database it is essential that this field is also searched in the case where the site cannot be found under the Site Name field above).</i>
	Other Groups Site Code (<i>Other Group Site Code UACC</i>)	Site code applied by other groups (for reference).
	Site area (ha) from literature (<i>Total Site Area (ha) from literature UACC</i>)	
	Site area (ha) from GIS (<i>Total Site area (ha) from GIS UACC</i>)	Calculated site area from GIS dataset.
	Total Site Length (km) from literature (<i>Total Site Length (km) from literature UACC</i>)	
	Total Site Length (km) from GIS (<i>Total Site Length (km) from GIS UACC</i>)	Calculated site length from GIS dataset.
	Easting Centre (<i>Easting Centre UACC</i>)	The grid reference of the E coordinate of the site is recorded, where this is given in the new format of a 6 digit number.
	Northing Centre (<i>Northing Centre UACC</i>)	The grid reference of the N coordinate of the site is recorded, where this is given in the new format of a 6 digit number.
	Grid Reference (<i>Grid Ref Old UACC</i>)	Grid reference previously reported from literature. The grid reference of the site is recorded, where this

Database name <i>(sub database names are italicised)</i>	Field name *	Comment
		<p>is given in the old format of a letter followed by 4 or 6 digit number.</p> <p><i>(It should be noted that this grid reference, based on information provided in published reports, should be interpreted with care, and in many cases may be found to be inaccurate. In relation to site location the Easting and Northing co-ordinates above are considered the more reliable when locating the site in question).</i></p>
	Year last reported field Survey <i>(Date of last survey UACC)</i>	4 digit year for the last reported survey of site.
	First Noted in <i>(Site Source UACC)</i>	Report or Bibliography reference to where site was first reported in literature source.
	County <i>(County Name UACC and County Name UACC text string)</i>	Two fields to record county; the first a check box selection; the second producing county names in which site occurs as a text string.
	Wetland areas on site <i>(Wetland areas on site UACC)</i>	<p>Check box system to record whether a wetland type occurred on site, was likely to occur or was absent. Check box selection, only 1 choice to be selected.</p> <ul style="list-style-type: none"> • YES • No wetland present • No Data - wetland possible • No Data - wetland unlikely
	Site type <i>(Site type UACC)</i>	<p>Check box allowing a site record to be characterised, i.e. whether the database record is for a discrete site or a subsite, a smaller part (e.g. lake) within a larger site complex. A subsite record was generally created where specific site data related to the subsite.</p> <p><i>(Example: RAMAGES LOUGH (KILROOSKY LOUGH CLUSTER) - here Ramages Lough has a unique data record, while the inclusion of the Kilroosky Lough Cluster in the site name allows the relationship to the larger main site (an SAC) to be maintained and recognised).</i></p> <p>Check box selection, only 1 choice to be selected.</p> <ul style="list-style-type: none"> • Main Site • Sub-site
	Comment Box <i>(Comment Box UACC)</i>	Text field to hold temporary comments on site, queries on site etc. Used during data compilation phase of the project.
	Temporary flag record <i>(Temporary flag record UACC)</i>	Check box allowing the temporary flagging of selected site records.

Database name <i>(sub database names are italicised)</i>	Field name *	Comment
		Used during data compilation or data abstraction phase of the project.
	Annex Species Present – EU Birds or Habitats Directive <i>(Species Annex species Present EU Birds Habitats Directive UACC)</i>	Yes No option for the reported occurrence of EU Habitats or Birds Directive Annex species on site.
	Red Data Book Species Present <i>(Species Red Data Book Species Present UACC)</i>	Yes No option for the reported occurrence of Red species on site.
	Comment/Notes on rare species groups <i>(Species comments on rare groups UACC)</i>	Comment box.
	Damaging Operations/ Threats on site comments <i>(Damaging operations comments UACC)</i>	Comment box.
	Site description and source <i>(Previous site description UACC)</i>	Text box holding site description as reported by third party source(s).
	Comment on Previous surveys <i>(Comment box previous surveys UACC)</i>	Comment box.
<i>Site Conservation Designations</i>		Sub database holding information on the conservation status of a site.
	Site Designation <i>(Site designations MACC)</i>	<p>If the site has or was designated under one of the various conservation initiatives the appropriate designation was recorded.</p> <p>Choose from:</p> <ul style="list-style-type: none"> • NHA - Natural Heritage Area with legal protection • cNHA - candidate Natural Heritage Area no legal protection • pNHA - proposed Natural Heritage Area as advertised in 1995 some legal protection • SAC - Special Area of Conservation with legal protection • cSAC - candidate Special Area of Conservation open to appeal/ transmitted to EU • pcSAC - proposed candidate Special Area of Conservation open to appeal/ not yet transmitted to EU • SPA - Special Protection Area • cSPA - candidate Special Protection Area • NP - National Park with legal protection • WHS - World Heritage Site • NNR - National Nature Reserve with legal protection • BIO - Unesco Biosphere Reserve • RAM - Ramsar Site • ESA - Environmentally Sensitive

Database name <i>(sub database names are italicised)</i>	Field name *	Comment
		Area <ul style="list-style-type: none"> • EDS - Eurodiploma Site • ASI - Area of Scientific Interest • BGR - Berne Convention Biogenetic Reserve • COR - Corine site • WS - Wildfowl Sanctuary • RFF - Refuge for Flora or Fauna • CBA - Coillte Biodiversity Area • CFP - Coillte Forest Park • Undesignated site - no known designation
<i>Site General Data Category</i>		Sub database holding a list of information categories under which data has been recorded on the site in previous reports or data sources.
	General information available on site (<u>General information available on site MACC</u>)	Choose from: <ul style="list-style-type: none"> • Vegetation Type - relevé data recorded from site • Species Data - recorded for general and/or on rare species • Habitat Data - habitat data in Fossitt format available for all or part of site • Habitat Map - map data of variable quality available (may include GIS habitat map) • Hydrochemical Data - water chemistry data available on site • Site Size - from published source • Ownership Data - owner information available on site • Detailed Site Description - detailed description of available in published report • Site Management - site management recommendations have been made in published report • Conservation Designation - site conservation recommendations have been made in published report • iWeBS Site - site is listed as a location for bird recording as part of the Irish Wetlands Birds Survey Scheme • Visitor & Recreation Facilities - wetland site with visitor and recreational facilities i.e. parking, walks and trails, picnic areas, seating, viewing platforms etc., other than angling facilities • Angling Lake - lake or river is used or managed as a location for angling, with or without angling facilities
<i>Site Specific Reports Publications</i>		Sub database holding a list of reports and publications which refer to site; uses Wetland Bibliography database to get full

Database name <i>(sub database names are italicised)</i>	Field name *	Comment
		citation.
	Reference Code (<u>Reference Code</u>)	Unique bibliography reference code.
	Amalgamated Reference (<u>Amalgamated ref</u>)	Full report or publication citation as text string; lookup from Wetland Bibliography database.
<i>Site Rare Species Groups</i>		Sub database holding information as reported from literature on groups recorded on site (e.g. rare plants, animals, EU spp etc.)
	Species rare groups present on site (<u>Species rare groups present on site MACC</u>)	Choose from: <ul style="list-style-type: none"> • Botanical • Higher Plant • Fern • Bryological • Lichen • Algae • Fungi • Zoological • Invertebrates • Invertebrates Mollusc • Invertebrates Insect • Invertebrates Arachnid • Invertebrates Crustacean • Vertebrates • Birds • Mammals • Bats • Amphibian • Fish • Reptile
<i>Site Rare Species Publications</i>		Sub database holding a list of reports and publications which refer to rare species on a site; sub database uses Wetland Bibliography database to get full citation.
	Reference Code (<u>Reference Code</u>)	Unique bibliography reference code.
	Amalgamated Reference (<u>Amalgamated ref</u>)	Full report or publication citation; lookup from Wetland Bibliography database.
<i>Site Rare Flora Data</i>		Sub database holding information as reported from literature on rare flora recorded on site.
	Rare flora name Latin (<u>Rare flora Latin site list MACC</u>)	Drop down list of Latin wetland plant species names.
	Rare flora name English (<u>Rare flora name English</u>)	Sub database uses Irish Species database to get related English name.
<i>Site Rare Fauna Vertebrate</i>		Sub database holding information as reported from literature on rare vertebrate fauna recorded on site
	Rare vertebrate fauna English name (<u>Rare vertebrate fauna English site list MACC</u>)	Drop down list of English wetland invertebrate fauna species names.
	Latin Name (<u>Rare vertebrate</u>)	Sub database uses Irish Species

Database name <i>(sub database names are italicised)</i>	Field name *	Comment
	<u>fauna Latin site list MACC</u>	database to get related latin name.
<i>Site Rare Fauna Invertebrate</i>		Sub database holding information as reported from literature on rare vertebrate fauna recorded on site.
	Rare invertebrate fauna Latin name (<u>Rare invertebrate fauna site list MACC</u>)	Drop down list of English wetland Invertebrate fauna species names.
	English name (<u>Rare invertebrate fauna English site list MACC</u>)	Sub database holding information as reported from literature on rare invertebrate fauna recorded on site.
<i>Site Landuse Management</i>		Sub database holding a list of landuse management options occurring on site.
	Landuse Management on site (<u>Landuse Management on site MACC</u>)	NPWS list of landuse options. Drop down options list.
	Frequency Landuse Management (<u>Frequency Landuse Management on site MACC</u>)	Drop down options list. Scale: 1 Rare (<5%) 2 Occasional (5-20%) 3 Frequent (21-50%) 4 Dominant (>50%)
<i>Site Impacts Activities</i>		Sub database holding a list of impacts and activities influencing the conservation status of the site and the intensity and impact these are having on the site.
	Impact & Activities Influencing Conservation Status of site (<u>Damaging operations on site MACC</u>)	List of EU Natura 2000 site impacts and activities updated by NPWS in 2009. Drop down options list.
	Intensity (<u>Damage intensity on site MACC</u>)	Drop down options list. Intensity of the influence of an activity is rated as <ul style="list-style-type: none"> • A = high, • B = medium, • C = low influence • D = unknown
	Impact (<u>Damage Impact on site MACC</u>)	Drop down options list. Impact rating scale: Impact is rated as <ul style="list-style-type: none"> • -2 = irreparable negative influence • -1 = reparable negative influence • 0 = neutral • +1= natural positive influence • +2 = strongly managed positive influence • Unknown
<i>Site Threats</i>		Sub database holding a list of threats to site.
	Threats on site (<u>Threats on site MACC</u>)	List of EU Natura 2000 site impacts and activities updated by NPWS in 2009. Drop down

Database name <i>(sub database names are italicised)</i>	Field name *	Comment
		options list.
<i>Site Indicative Fossitt Habitats</i>		Sub database holding a list of Fossitt habitats reported in published sources as occurring on the site.
	Habitats Present on site full Fossitt name (<u>Habitats present on site full Fossitt name MACC</u>)	List of Fossitt (2000) Irish habitat types. Drop down options list.
	Habitats Present on site Fossitt code only (<u>Habitats Present on site Fossitt code only MACC</u>)	Calculation results the Fossitt habitat code entered into data field is based on full Fossitt habitat name entered in field above.
<i>Site Indicative EU Habitats</i>		Sub database holding a list of EU habitats reported in published sources as occurring on the site.
	EU Directive Habitats on site (<u>Habitats EU Directive Habitats on site MACC</u>)	List of EU Habitats Directive habitat types. Drop down options list.
<i>Site Townlands</i>		Sub database holding a list of townlands occurring on the site.
	Site Townland (<u>Site Townlands MACC</u>)	Data imported from GIS. <i>(In the case of a main site (see definition below), all townland(s) recorded within the site polygon mapped are provided. For subsites only the townland directly at the grid reference point location is provided. Similar rules apply to information provided for site Solid Geology, Subsoil Type, River Catchment & Corine Landuse).</i>
<i>Site Solid Geology</i>		Sub database holding a list of rock types occurring on the site.
	Site Solid Geology (<u>Site Solid Geology MACC</u>)	Data imported from GIS.
<i>Site Subsoils</i>		Sub database holding a list of Sub-soil types occurring on the site.
	Site Subsoils (<u>Site Subsoils MACC</u>)	Subsoil (quaternary deposit) underlying the site. Obtained from the GIS. Code - Parent Material A - Alluvium undifferentiated AcEsk - Clayey esker sands and gravel BktPt - Blanket peat Cut - Cutover peat FenPt - Fen peat GDCSs- Sandstone sands and gravels (Devonian/Carboniferous) GLPSsS - Sandstone and shale sands and gravels (Lower Palaeozoic) GLs - Limestone sands and gravels (Carboniferous) KaRck - Karstified limestone bedrock at surface L - Lake sediments

Database name <i>(sub database names are italicised)</i>	Field name *	Comment
		undifferentiated Made - Made ground Rck - Bedrock at surface TDCSs - Sandstone till (Devonian/Carboniferous) TDCSsS - Sandstone and shales till (Devonian/Carboniferous) TLs - Limestone till (Carboniferous) Water - Open water at the surface
<i>Site River Catchment</i>		Sub database holding a list of River Catchments occurring on the site.
	Site River Catchment (<u>Site River Catchment MACC</u>)	Data imported from GIS.
<i>Site Corine Habitats</i>		Sub database holding information on Corine habitats recording on a site.
	Site Corine Landuse (<u>Site Corine Landuse MACC</u>)	Data imported from GIS.

3. Louth Core Site Survey (LWS) database suite version 2.0

To hold data from the 2012 survey the Louth Wetland Survey (LWS) database was re-designed. This **Louth Site Survey (LWS) Database** (version 2.0) was linked to the LWS Core Wetland database via a unique **site record number** (e.g. LH122) and the **survey record number** (e.g. LWS2012).

Details of the data fields (name as it appears in operational mode within various database layouts; and in brackets the field name within database) in the Louth Site Survey (LWS) database are provided below.

Once survey information has been incorporated into the LWS survey database, and by selecting the "Show complete site report" button, a full survey report for the site can be viewed on screen. By selecting the "Create final PDF of complete site report - description, maps and habitat map" button a PDF of the complete site report, as included in the final report of the 2012 survey, is created and can be saved to a PDF file.

A series of database layouts, containing site survey information, form the main structure and content of the LWS survey database. These layouts were used when adding or reviewing survey data on a site. These layouts are accessed via the green or yellow link buttons along the top of the LWS database window.

An explanation of the data fields used in the survey database is provided below. The appearance of the various iPad field survey layouts in the LWS survey database is presented in Appendix 5.

3.1 **Data fields held in the LWS Core Site Survey database suite (version 2.0)**

* Name in bold is the name applied to database fields as seen when accessing the database in browse/operating mode; the underlined name is the actual field name assigned within the database (used when exporting data, performing calculations etc.).

Database name <i>(sub database names are italicised)</i>	Field name *	Comment
Database Fields Common to the Core Site Survey		

Database (LWS) and all associated sub-databases listed here		
	Site Code (<u>Site Code UACC</u>)	Unique site code for the site as assigned in Core Site database and used by the Core Site Survey database each of the sub-databases to relate site records.
	Database Record number (<u>Database Record number</u>)	Unique record number for each record entry within each database and sub-database.
	Survey Code Number (<u>Survey Code number</u>)	Unique survey code number as assigned in Core Site database and used by the Core Site Survey database each of the sub-databases to relate site records for a particular survey.
	Created by (<u>Created by</u>)	Name of person who created record within each database and sub-database.
	Date Created (<u>Date Created</u>)	Date record was created within each database and sub-database.
	Modified by (<u>Modified by</u>)	Name of person who last modified record within each database and sub-database.
	Date modified (<u>Date modified</u>)	Date record was last modified within each database and sub-database
	Time modified (<u>Time modified</u>)	Time record was last modified within each database and sub-database.
Core Site Survey Database (LWS)		Site Survey database holding information on wetlands where a detailed field survey has been undertaken. Only data fields held within the database are described here, lookups of fields from related databases or sub-databases are described elsewhere.
	Site Name (<u>Site Name UACC</u>)	Name as provided in the Core Site database.
	Survey full title (<u>Survey full title UACC</u>)	Full title of survey (with year). Drop down menu selection.
	Survey code (<u>Survey code UACC</u>)	Abbreviated code for field survey (includes the year survey was undertaken). Drop down menu selection.
	Date of wetland survey (<u>Date of Field Survey UACC</u>)	Date detailed field survey undertaken. Format dd/mm/yyyy.
	Name of Wetland Surveyors (<u>Name of Wetland Surveyors UACC</u>)	Name of field surveyors who surveyed site. Drop down menu selection.
	Survey photographic no. (<u>Survey Photographic Numbers UACC</u>)	Photographic image code from survey together with initials of photographer.
	Conservation Ranking following Survey (<u>Conservation Ranking after survey UACC</u>)	Conservation ranking for site based on results of field survey and subsequent conservation assessment. One check box option to be selected following

		<p>survey.</p> <ul style="list-style-type: none"> • A Rating: Internationally Important • B Rating: Nationally Important • C+ Rating: County Conservation value • C Rating: Local conservation value (high value) • D Rating: Local conservation value (moderate value) • E Rating: Local conservation value (low value) • F Rating: Unknown value - survey required • No conservation value
	Altitude (<u>Site altitude mOD UACC</u>)	Altitude of site meters above Ordnance datum.
	Water table (cm) (<u>Water table depth cm UACC</u>)	Water table depth within wetland site. Recorded in cm.
	Substrate depth (cm) (<u>Site substrate depth UACC</u>)	Substrate depth under wetland area recorded in cm.
	Damaging Operations/ Threats on site comments (<u>Damaging operations comments UACC</u>)	Comment box.
	Site location (<u>Report Survey Site location UACC</u>)	In this field include information on the location of the site relative to nearest town etc. Text field with maximum character allowance of 250.
	Survey site description with reference to wetlands present (<u>Report Site description UACC</u>)	In this field include general site description, and/or comment on habitats present, substrate type, stability, depth and water table. Text field with maximum character allowance of 250.
	Comments on potential occurrence of EU habitats on site (<u>Report Survey Site EU habitats comments UACC</u>)	EU Habitats Directive habitats recorded for the site; EU rare species information etc. Text field with maximum character allowance of 250.
	Management recommendations following survey (<u>Report Management recommendations UACC</u>)	Wetland enhancement or management recommendations for site following survey. Text field with maximum character allowance of 250.
	Future survey recommendations (<u>Report Future Survey recommendations UACC</u>)	Additional survey recommendations for site following survey. Text field with maximum character allowance of 250.
	Landowner information comments (<u>Report Landowner information comments UACC</u>)	Comments provided by landowners on site history, ownership, management etc. Text field with maximum character allowance of 250.
<i>Survey Substrate Type</i>		Sub database holding a list of soil types on the site observed during survey.
	Site Substrate Type (<u>Site substrate type MACC</u>)	Drop down list options: <ul style="list-style-type: none"> • Mineral Soil • Clay

		<ul style="list-style-type: none"> • Silt • Alluvial deposit • Bedrock • Loose Rock • Rocky Till • Peat • Tufa • Made Ground • Other
<i>Survey Substrate Stability</i>		Sub database holding a list of substrate stability options observed during survey.
	Site Substrate Stability (<u>Site substrate stability MACC</u>)	Drop down list options: <ul style="list-style-type: none"> • Very firm • Firm • Some quaking • Quaking • Floating mat
<i>Survey Fossitt Habitats</i>		Sub database holding a list of Fossitt habitats as occurring on the site following survey.
	Habitats Present on site full Fossitt name (<u>Habitats present on site full Fossitt name MACC</u>)	List of Fossitt (2000) Irish habitat types. Drop down menu list.
	Fossitt code (<u>Habitats Present on site Fossitt code only MACC</u>)	Calculation results the Fossitt habitat code entered into data field is based on full Fossitt habitat name entered in field above.
<i>Survey Fossitt Habitats Surrounding</i>		Sub database holding a list of Fossitt habitats as occur surrounding the site following survey.
	Habitats Present surrounding site full Fossitt name (<u>Habitats present surrounding site full Fossitt name MACC</u>)	List of Fossitt (2000) Irish habitat types. Drop down menu list.
	Fossitt code (<u>Habitats Present surrounding site Fossitt code only MACC</u>)	Calculation which results in Fossitt habitat code being entered into data field based on full habitat name.
<i>Survey Flora Data</i>		Sub database holding a list of flora species recorded during the survey.
	Species Flora (Latin name) (<u>Species Flora site list MACC</u>)	List of flora recorded on site. Higher and lower plants, mosses and lichens. Drop down menu list.
	English name (<u>English Flora species name</u>)	Sub database uses Irish Species database to get related English name.
	Species temporary survey comment box (<u>Species temporary survey comment box</u>)	Comment box for use on field survey or to allow recording of DAFOR species abundance.
<i>Survey Fauna Data</i>		Sub database holding a list of flora species recorded during the survey.
	Species Fauna site list (<u>Species Fauna English name site list MACC</u>)	List of fauna (vertebrates and invertebrates) recorded on site. Drop down menu list.
	Species Fauna latin name (<u>Species Fauna latin name site list</u>)	Sub database uses Irish Species database to get related Latin

	MACC)	name.
	Species temporary survey comment box (<u>Species temporary survey comment box</u>)	Comment box for use on field survey or to allow recording of species abundance information.
<i>Survey Note Numbers</i>		Sub database holding survey note number, note type and descriptive data.
	Note Number (Report target notes numbers MACC)	Drop down menu selection. N1, N2 etc.
	Note Category (Report target notes category MACC)	Drop down menu selection: <ul style="list-style-type: none"> • Habitat • Damage • Boundary • Relevé • Hydrology • Flora • Fauna • Ownership • Management • Photograph • General
	Note (Report target notes MACC)	Text field with maximum character allowance of 250.
<i>Survey Landuse Management</i>		Sub database holding a list of landuse management options occurring on site as observed during survey
	Landuse Management on site (<u>Landuse Management on site MACC</u>)	NPWS list of landuse options. Drop down list.
	Frequency Landuse Management (<u>Frequency Landuse Management on site MACC</u>)	Drop down list options. Scale: <ul style="list-style-type: none"> 1 Rare (<5%) 2 Occasional (5-20%) 3 Frequent (21-50%) 4 Dominant (>50%)
<i>Survey Impacts Activities</i>		Sub database holding a list of impacts and activities influencing the conservation status of the site and the intensity and impact these are having on the site, as observed during survey.
	Impact & Activities Influencing Conservation Status of site (<u>Damaging operations on site MACC</u>)	List of EU Natura 2000 site impacts and activities updated by NPWS in 2009. Drop down list.
	Intensity (<u>Damage intensity on site MACC</u>)	Intensity of the influence of an activity is rated as: <ul style="list-style-type: none"> • A = high, • B = medium, • C = low influence • D = unknown
	Impact (<u>Damage Impact on site MACC</u>)	Impact rating scale: <ul style="list-style-type: none"> • -2 = irreparable negative influence • -1 = reparable negative influence • 0 = neutral • +1= natural positive influence • +2 = strongly managed positive influence

		<ul style="list-style-type: none"> Unknown
<i>Survey Threats</i>		Sub database holding a list of threats to site, as observed during the survey.
	Threats on site (<u>Threats on site MACC</u>)	List of EU Natura 2000 site impacts and activities updated by NPWS in 2009. Drop down list.
<i>Survey Information</i>		Sub database holding a list of information categories for the site.
	Site survey information (<u>Site field survey information MACC</u>)	Editable drop down list options: <ul style="list-style-type: none"> Detailed site survey undertaken Limited site inspection only No survey yet undertaken Additional Survey may be required NHA Ranger Survey exists NHA Ecologists Survey exists Site boundary defined Releve data collected Water chemistry samples collected Etc.

4. Other related databases used by the LWM and LWS databases

In addition to the two main databases (LWM & LWS) used to hold site related data, a number of secondary databases, holding a list of publications and references, Irish flora and fauna species names, Site Photographs and Site Maps (habitat, aerial photographs etc.) complete the suite of databases used in the preparation of site reports and data storage for the LWM and LWS database suites. These are explained in more detail below.

Database name	Comment
Wetland Bibliography	Secondary database containing a list of publication and report citations. Linked to Site Rare Species Publications and Site Specific Reports and Publications sub-database via the unique bibliography code number.
Site Photography	<p>Secondary database containing site photographs from the field survey and associated photograph captions. Linked to LWS and LWM database via the unique site code number and unique site survey code number.</p> <p>Site Photographs 1, 2 & 3 (<u>Survey Site Photograph 1, 2 & 3</u>) Layout allows 3 site photographs to be imported to represent wetlands on site.</p> <p>Site Photograph Captions 1, 2 & 3 (<u>Survey Site Photograph Caption 1, 2 & 3 UACC</u>). Layout allows 3 site photograph captions to be recorded.</p>
Site Maps and Airphoto	Secondary database containing 3 site maps produced and exported from the LWM GIS dataset after survey was completed (Locations map showing site on OS Discovery Map; Aerial photograph showing site boundary and Habitat Map of the site. Linked to LWS and LWM database via the unique site code number and unique site survey code number.

	<p>Site location Discovery Map (Survey Site locations map image) Layout allows image of wetland site location map based on OS Discovery map to be imported. A caption field for the map is also included (Site Discovery Map Caption UACC).</p> <p>Air photograph site location (Air aerial photograph image) Layout allows image of wetland site location map based on Aerial photograph to be imported. A caption field for the photograph is also included (Site Aerial Photograph Caption UACC).</p> <p>Site Habitat Map (Site habitat map image) Layout allows image of wetland habitat map to be imported. A caption field for the habitat map is also included (Site habitat map image caption UACC).</p> <p>All three of the above can be viewed as enlarged images by selecting the appropriate “Go to enlarged layout” button.</p>
Site Maps Key and Airphoto Copyright	Secondary database with key to habitat maps; OS copyright permission for use of aerial photographs and maps on project and overall site locations map for the survey. Linked to LWS database via the unique site survey code number.
Irish Species Names	Secondary database holding a list of Irish Flora and Fauna names, in English and Latin, used in the compilation of species records from sites and in the compilation of final site reports. Linked to Site Rare Flora , Site Rare Fauna Vertebrate and Site Rare Fauna Invertebrate sub-databases (used by LWM database) and the Survey Fauna and Survey Flora sub-databases (used by LWS database).

5. Louth Wetland Survey II GIS Dataset

The **LWS II GIS Dataset 2012** (ArcView 10.0 GIS software package) holds site related information on each polygon, point or linear feature mapped.

This dataset was revised and updated as part of the LWS II project. Fields in the GIS dataset are similar to those used in Foss et al. (2011) with some minor adjustments. A detailed explanation of the various GIS files and associated attribute fields are presented in the readme document accompanying the GIS files on the final LWS 2012 project CD.

The shapefiles created during the project were converted into MapInfo format for use by Louth County Council. Both ArcGIS and MapInfo versions of the final GIS files are included on the CD submitted with the final LWS II report. A description of the various files that make up the GIS is presented below along with a description of the various data fields attached to each file.

5.1 LWS GIS dataset– files and associated data fields

In all, five different GIS shape-files relating to the distribution and extent of freshwater wetland habitats in County Louth were produced as summarised in table 1 below. Further details of attributes and data associated with each of the five GIS files are presented below.

Table 2: LWS II GIS shapefiles produced during the Wetland Identification Survey 2011.

LWS II Site Locations	This file shows point locations of all 108 LWS sites surveyed during 2011. The site locations originate from Brophy (2009).
LWS II Site Boundaries	This file shows the boundaries of all LWS sites surveyed during 2011, as originally drawn by Brophy (2009).
LWS II Target Notes	This file shows point locations of particular interest within each LWS site surveyed during 2011. The attributes of the point features include the note number (eg. N1, N2 N3 etc.), type or category of each note (e.g. damage, habitat etc), a brief descriptive note of the feature of interest and a photo reference where relevant.
LWS II Polygon Habitats	Polygon shapefile showing the extent of habitats throughout wetland sites surveyed in County Louth as part of the LWS 2011.
LWS II Linear Habitats	Linear shapefile showing the distribution of linear habitats (drainage ditches, hedgerows and treelines) within wetland sites surveyed during the LWS 2011.

5.1.1 LWS II Site Locations

This file shows point locations of all LWS sites identified during the LWS II. The various attribute fields associated with this file include:

OBJECT_ID	Unique numeric identifier for each polygon in the dataset.
Site_Name	This contains the site name as recorded in the LWS site database.
Site_Code	The site code according to that recorded in the LWS site database.
X_Coord	Y coordinate (Northing) of the point location.
Y_Coord	X coordinate (Easting) of the point location.
SiteDescri	Site description written following the completion of LWS 2011 field survey.
ConsEvalua	Site conservation evaluation according to NRA (2009) guidelines.
SurveyDate	Date on which field survey was undertaken.
PhotoRef	Reference to the name of site photograph taken during field survey. These photos are included within a folder submitted with the LWS 2011 and LWS II final reports.

5.1.2 LWS II Site Boundaries

This file shows the boundaries of all LWS sites identified during the LWS II. The boundaries from LWS 2011, are included as they were originally drawn by Brophy (2009). The various attribute fields associated with this file are as follows:

OBJECT_ID	Unique numeric identifier for each polygon in the dataset.
Site_Name	This contains the site name as recorded in the LWS site database.
Site_Code	The site code according to that recorded in the LWS site database.
X_Coord	Y coordinate (Northing) of the point location.
Y_Coord	X coordinate (Easting) of the point location.
ConsEvalua	Site conservation evaluation according to NRA (2009) guidelines.
SurveyDate	Date on which field survey was undertaken.
PolygSource	This refers to the source dataset of the polygon. In most cases site boundaries were drawn during the LWS II.
Area (ha)	A calculation field which automatically calculates the area covered by the site polygon.

5.1.3 LWS II Target Notes

This file shows point locations of particular interest within each LWS site surveyed during 2011 and 2012. The attributes of the point features include the note number (e.g. N1, N2 N3 etc.), type or category of each note (e.g. damage, habitat etc.), a brief descriptive note of the feature of interest and a photo reference where relevant.

The attribute fields associated with this file include:

OBJECT_ID	Unique numeric identifier for each polygon in the dataset.
SiteCode	The site code according to that recorded in the LWS site database.
NoteNumber	This relates to the number of the note in relation to each site. During 2012, the note numbers were all unique and not related to particular sites.
NoteType	Each not is assigned to a particular category of note depending on its subject. Categories include: habitat, boundary, survey, damage and management etc.
NoteText	A brief note describing the particular feature of interest.
PhotoRef	This may include a reference to the name of a photograph taken during field survey of the particular feature of interest. These photos are included within a photographic folder submitted with the LWS final report.
Timestamp	Date and time that the note was created.

5.1.4 LWS II Polygon Habitats

This file shows the distribution and extent of the habitats recorded during the LWS II. Guidance on the format and structure of the dataset follows that recommended by Smith et al. (2011). The following attributes are associated with this file:

OBJECT_ID	Unique numeric identifier for each polyline in the dataset.
FOSSITT_NA	Full name and code of habitat according to Fossitt (2000). There is an additional category 'unknown wetland type', where it was possible to identify a wetland but not possible to assign it to a Fossitt category.
FOSSITT_CD	Alphanumeric code according to Fossitt (2000) to level 3.
ANNEX_CODE	Where applicable, EU Habitat Directive Annex I habitat code.
SURVEY_MET	An indication of field data quality or survey method. Coded according to Smith et al (2011) ¹ .
SURVEY_DAT	Date of field survey as proposed for use by Smith et al (2011).
AREA	A calculation field which automatically calculates the area in ha covered by the habitat polygon.
SOURCE	Text field indicating whether the source of the data.

¹GIS Data Quality (Survey Method)

Data quality classification scheme as proposed in the Heritage Council's 2011, Best Practice Guidance for Habitat Survey and Mapping (Smith et al. 2011).

- S** = Field data have been collected by *walkover survey* where the habitat has been walked through by the field ecologist, allowing relatively detailed inspection of habitat structure and species composition
- V** = Data have been *field validated* where the habitat has been viewed in the field in less detail, such as a quick look over the hedge or inspection through binoculars from a distance
- DA** = Habitat information is from a *desktop* source that provides *recent* (i.e. within 10-15 years), *high quality* data that permit a confident identification of habitat type and other data, such as a previous survey carried out as part of a research project or EclA or information from a trusted third-party
- DB** = Habitat information is from a *desktop* source that provides *older* (i.e. greater than 10-15 years old), *high quality* data that permit a confident identification of habitat type and other data
- DC** = Habitat information is derived from *desktop* interpretation of *aerial photography* supplemented by additional data sources of good quality, such as those listed in Appendix C
- DD** = Habitat information is derived from *desktop* interpretation of *aerial photography only*.

5.1.5 LWS II Linear Habitats

Linear habitats including rivers, drainage ditches, hedgerows and treelines. Guidance on the format and structure of the dataset follows that recommended by Smith et al. (2011). The following attribute fields are attached to the file:

OBJECT_ID	Unique numeric identifier for each polyline in the dataset.
FOSSITT_NA	Full name and code of habitat according to Fossitt (2000). There is an additional category 'unknown wetland type', where it was possible to identify a wetland but not possible to assign it to a Fossitt category.
FOSSITT_CD	Alphanumeric code according to Fossitt (2000) to level 3.
ANNEX_CODE	Where applicable, EU Habitat Directive Annex I habitat code.
SURVEY_MET	An indication of field data quality or survey method. Coded according to Smith et al (2011) ¹ .
SURVEY_DAT	Date of field survey as proposed for use by Smith et al (2011).
LENGTH	A calculation field which automatically calculates the length (in metres) of the feature.
SOURCE	Text field indicating whether the source of the data.

Appendix 5: Field Survey Card used during the LWS II Paper Survey Card & Digital iPad Survey card

1. Field Card

Louth Wetland Survey 2012 - Survey Card

Detailed Site Survey Preliminary site inspection *New wetland site not in GIS*

Site Name		Altitude (m)	
County: Louth	Site Code:	Survey Date	
Grid Ref		Photos	
Surveyor(s)		Water Table ±(cm)	
Substrate type	<input type="checkbox"/> Min Soil <input type="checkbox"/> Clay <input type="checkbox"/> Silt <input type="checkbox"/> Bedrock <input type="checkbox"/> Loose rock <input type="checkbox"/> Rocky till <input type="checkbox"/> Peat <input type="checkbox"/> Tufa		Depth
Stability	<input type="checkbox"/> Very Firm <input type="checkbox"/> Firm <input type="checkbox"/> Some quaking <input type="checkbox"/> Quaking <input type="checkbox"/> Floating mat		
Adjacent habitats (Fossitt codes)			
Conservation Assessment	<input type="checkbox"/> A International <input type="checkbox"/> B National <input type="checkbox"/> C+ County <input type="checkbox"/> C High Local <input type="checkbox"/> D Moderate Local <input type="checkbox"/> E Low Local <input type="checkbox"/> F Unknown – need survey		
Wetland on site:	Fossitt Habitats within site (EU Pr Hab bold / EU Hab Affinities Italic)		
Present:	<input type="checkbox"/> FL1 <i>Dystrophic lakes</i> <input type="checkbox"/> FL2 <i>Acid oligotrophic lakes</i> <input type="checkbox"/> FL3 <i>Limestone/marl lakes</i> <input type="checkbox"/> FL4 Mesotrophic lakes <input type="checkbox"/> FL5 Eutrophic lakes (<i>natural</i>) <input type="checkbox"/> FL6 Turloughs <input type="checkbox"/> FL7 Reservoirs <input type="checkbox"/> FL8 Other artificial lakes and ponds		
Not wetland:	<input type="checkbox"/> WN6 Wet willow-alder-ash woodland <input type="checkbox"/> WN7 Bog woodland <input type="checkbox"/> WD1 (Mixed) broadleaved woodland <input type="checkbox"/> WD2 Mixed broadleaved/conifer wood <input type="checkbox"/> WD3 Yew woodland <input type="checkbox"/> WD4 Conifer plantation <input type="checkbox"/> WD5 Scattered trees and parkland		
Future Survey needed:	<input type="checkbox"/> WS1 Scrub <input type="checkbox"/> WS2 Immature woodland <input type="checkbox"/> WS3 Ornamental/non-native shrub <input type="checkbox"/> WS4 Short rotation coppice <input type="checkbox"/> WS5 Recently-felled woodland <input type="checkbox"/> WL1 Hedgerows <input type="checkbox"/> WL2 Treelines		
Yes:	<input type="checkbox"/> ER1 <i>Exposed siliceous rock</i> <input type="checkbox"/> ER2 <i>Exposed calcareous rock</i> <input type="checkbox"/> ER3 <i>Siliceous scree and loose rock</i> <input type="checkbox"/> ER4 <i>Calcareous scree and loose rock</i>		
No:	<input type="checkbox"/> ED1 Exposed sand, gravel or till <input type="checkbox"/> ED2 Spoil and bare ground <input type="checkbox"/> ED3 Recolonising bare ground <input type="checkbox"/> ED4 Active quarries and mines <input type="checkbox"/> ED5 Refuse and other waste		
Suggestion:	<input type="checkbox"/> BC1 Arable crops <input type="checkbox"/> BC2 Horticultural land <input type="checkbox"/> BC3 Tilled land <input type="checkbox"/> BC4 Flower beds and borders <input type="checkbox"/> BL1 Stone walls and other stonework <input type="checkbox"/> BL2 Earth banks <input type="checkbox"/> BL3 Buildings and artificial surfaces		
General / Landowner /EU Habs Comments:	<input type="checkbox"/> PB1 Raised bogs <input type="checkbox"/> PB2 Upland blanket bog <input type="checkbox"/> PB3 Lowland blanket bog <input type="checkbox"/> PB4 Cutover bog <input type="checkbox"/> PB5 Eroding blanket bog <input type="checkbox"/> PF1 Rich fen/flush (Cladium/Alkaline) <input type="checkbox"/> PF2 Poor fen and flush <input type="checkbox"/> PF3 <i>Transition mire & quaking bog</i> <input type="checkbox"/> WN1 <i>Oak-birch-holly woodland</i> <input type="checkbox"/> WN2 Oak-ash-hazel woodland <input type="checkbox"/> WN3 Yew woodland <input type="checkbox"/> WN4 Wet pedunc oak-ash wood <input type="checkbox"/> WN5 Riparian woodland		
	<input type="checkbox"/> CW1 Lagoons and saline lakes <input type="checkbox"/> CW2 <i>Tidal rivers</i> <input type="checkbox"/> CM1 <i>Lower salt marsh</i> <input type="checkbox"/> CM2 <i>Upper salt marsh</i> <input type="checkbox"/> CB1 <i>Shingle and gravel banks</i> <input type="checkbox"/> CD1 <i>Embryonic dunes</i> <input type="checkbox"/> CD2 <i>Marram dunes</i> <input type="checkbox"/> CD3 Fixed dunes <input type="checkbox"/> CD4 <i>Dune scrub and woodland</i> <input type="checkbox"/> CD5 <i>Dune slacks</i> <input type="checkbox"/> CD6 Machair		

	Aneura ping		Sphag ripar		Cirsium dis		Juncus bulb		Potamo perfol
	Aulocom pal		Sphag squarr		Cirsium pal		Juncus cong		Potamo poly
	Brachy riv		Sphag subnit		Cladium mar		Juncus eff		Pot erecta
	Bry pseudo		Sphag subsec		Dactylor incar		Juncus subn		Pot palust
	Call glg		Thuid tamar		Dactylor macu		Lemna min		Ranunc flam
	Call stram		Toment nit		Dactylor maj		Lemna tri		Ranunc ling
	Call cusp		Agros can		Dactylor glom		Leont autum		Rhynch alba
	Calyp muell		Agrost stol		Descha caes		Littor unifl		Rorrip amph
	Camp stell		Alisma plan aq		Drosera rot		Lotus ulig		Rorrip palus
	Cinc font		Alnus glut		Dryopt affin		Luzula camp		Rumex atosa
	Cladop fluit		Alop genic		Dryopt carth		Luzula mult		Rumex cong
	Clim dend		Anag tenella		Dryopt fx-ma		Lynchnis flos		Rumex hydro
	Craton filicin		Angel sylv		Eleoch mult		Lycopus eu		Salix aur
	Ctenid moll		Anthox od		Eleoch pal		Lysimac nem		Salix cin
	Dicran scop		Apium inunda		Eleoch quin		Lythrum sal		Salix frag
	Drep cosson		Apium nodi		Elodea can		Mentha aq		Salix rep
	Drep revolv		Berula erec		Epilob hirs		Menyanthes		Salix vim
	Euclad vertic		Betula pub		Epilob obscur		Molinia		Saxifrag aizo
	Eurhyn prae		Bidens cer		Epilob palu		Myosot laxa		Schoeno lac
	Fiss adian		Bidens tripar		Epilob parvi		Myosot secu		Schoenus
	Font anti		Briza med		Epipactis pal		Myosot scor		Senecio aq
	Hamat verni		Callitrich stag		Equis fluv		Myrica gale		Sparg erec
	Hyloc splend		Calluna vul		Equis pal		Myrioph alter		Sparg min
	Palust comm		Caltha pal		Equis varie		Myrioph spic		Stellar gram
	Palust c v c		Cardam pra		Erica tet		Narth ossi		Stellar pal
	Palust co v fa		Carex curta		Erioph ang		Nastur off		Stellar ulig
	Pellia epi		Carex diand		Erioph lat		Nuphar lut		Succisa prat
	Philon calc		Carex dioic		Erioph vag		Nymph alba		Thelyp pal
	Plagio aff		Carex disti		Eupat cann		Oenanth aq		Trigloc pal
	Plagio ellip		Carex echin		Fest arund		Oenanth croc		Typh ang
	Pleur schre		Carex flac		Fest rub		Parnassia pal		Typha latif
	Polyt comm		Carex hos		Filipend ulm		Pedic palust		Utric austral
	Scleropo pur		Carex lasio		Galium pal		Phalar arund		Utric inter
	Rhizo punc		Carex limosa		Galium sax		Phragmites		Utric minor
	Rhytid squar		Carex nigra		Galium ulig		Pinguic vul		Utric vulg
	Rhytid triq		Carex panic		Glyceria fluit		Plantago lan		Vaccin oxy
	Scorp scorp		Carex pancl		Glyceria not		Poa prat		Valeria offic
	Sphag fimb		Carex pulica		Hippuris		Poa triv		Veron an-aq
	Sphag angus		Carex ros		Holcus lan		Polygala serp		Veron becca
	Sphag capil		Carex brach		Hydrocot vul		Polygo amph		Veron caten
	Sphag cusp		Carex oed		Hyperic elod		Polygo hydro		Veron scutel
	Sphag dent		Carex virid		Hyperic tetrap		Potamo berc		Vicia cracca
	Sphag fallax		Cent nigra		Hypoch rad		Potamo color		Viola pal
	Sphag pal		Cerast font		Iris psuedo		Potamo crisp		Algae
	Sphag papil		Chara spp		Juncus acuti		Potamo lucen		
	Sphag recurv		Cicuta viro		Juncus artic		Potamo obtus		

DAFOR Scale: D - Dominant; A - Abundant; F - Frequent; O - Occasional; R - Rare

Site Description (and faunal records)

2. iPad Digital recording forms - Introduction

Wetland Field Survey Database

Designed by Peter Foss

The layouts which follow include fields to hold data captured as part of a full wetland field survey of a given site. The seven layouts were created and formatted for the iPad so that field survey data can be recorded directly in digital format during the site survey. An eighth layout contains aerial photograph of the site and the selected survey boundary for reference during the survey. To move between layouts during the survey simply click on the various layout buttons along the top of each layout window.

The data recorded feeds into the appropriate fields within the main site database, and when completed, allow a detailed site report to be generated. The layout are as follows:

- SDetail** - General site details including site name, grid ref, date of survey, surveyors, photographs and conservation assessment following survey.
- Soils** - Information on the site substrate and water table.
- SurHa** - List of Fossitt (level 3) habitats recorded within a 200m radius surrounding the site boundary.
- HoS** - List of Fossitt (level 3) habitats recorded within the site boundary.
- Threat** - Landuse on site; Impact & Activities affecting conservation value of site and threats to site recorded during the survey.
- Com** - Site location and site description, target notes, landowner information and recommendations from the field survey.
- Spp** - Flora and Fauna species recorded during the field survey.
- Air Ph** - Air photograph of site and survey boundary for reference during survey.

[ENTER IPAD FIELD SURVEY CARD](#)

Site Details

Login

Site name MOYLAN LOUGH
Site code MN8

Survey Code Number MFS2007

SDetail
Soils
SurHa
HoS
Threat
Com
Spp
Air Ph

Site Type	Wetland Areas on the Site	County Name	Site designation
<input checked="" type="checkbox"/> Main Site <input type="checkbox"/> Sub-site <small>(Choose one option)</small>	<input checked="" type="checkbox"/> YES <small>(Choose one option)</small> <input type="checkbox"/> No wetland present <input type="checkbox"/> No Data - wetland possible <input type="checkbox"/> No Data - wetland unlikely <input type="checkbox"/> Other...	MO	cNHA
Date of wetland survey <input style="width: 100%;" type="text" value="24/05/2007"/>			
Survey Full Title <input style="width: 100%;" type="text" value="Monaghan Fen Survey 2007"/>			
Name of wetland surveyors <input style="width: 100%;" type="text" value="Peter Foss & Patrick Crushell"/>			
Easting Centre <input style="width: 100%;" type="text" value="285429"/>	Northing Centre <input style="width: 100%;" type="text" value="308863"/>	Altitude (mOD) <input style="width: 100%;" type="text"/> <small>(format: 20; 50 etc from GPS)</small>	
Survey Photographic Numbers <input style="width: 100%;" type="text" value="DSC 145-161"/>			
<small>(format: initials of photographer followed by photo numbers e.g. dsc 001-005)</small>			
Conservation ranking following survey <small>(Choose one option following survey)</small>			
<input checked="" type="checkbox"/> A Rating: Internationally Important <input type="checkbox"/> B Rating: Nationally Important <input type="checkbox"/> C+ Rating: County Conservation value <input type="checkbox"/> C Rating: Local conservation value (high value) <input type="checkbox"/> D Rating: Local conservation value (moderate value) <input type="checkbox"/> E Rating: Local conservation value (low value) <input type="checkbox"/> F Rating: Unknown value - survey required <input type="checkbox"/> No Conservation Value			

Field Type Colour Coding Convention on all Layouts

Pink fields are variable character fields (UACC) type/enter what u like or select 1 option from available lists/ pull down menus

Blue fields are filled from pre set value lists in a related survey sub database (MACC)

Yellow fields are lookups from the Core Site database

Soils Layout

Survey Card - Site Soils (Soils)

Site name Site code

Survey Code Number

Water table (cm) (format: 0=surface; -20; > -50 etc)

Substrate type (Choose from drop down list)

Clay

Silt

Substrate depth (cm) (format: 20; >150 etc)

Substrate stability (Choose from drop down list)

Surrounding Habitats

Survey Card - Surrounding Habitats (SurHa)

Site name **AGHAVILLA SPRING** Site code **MN527**
Survey Code Number **MWS2011**

SDetail **Soils** **SurHa** **HoS** **Threat** **Com** **Spp** **Air Ph**

Habitats Present Around Site Fossitt (Choose from drop down list)

Add **Change**

B Cultivated & built land
BL Built land
BL3 Buildings and artificial surfaces
G Grassland & Marsh
GA Improved Grassland
GA1 Improved agricultural grassland
GS Semi-Natural Grassland
GS2 Dry meadows and grassy verges
W Woodland and scrub
WS Scrub/transitional woodland
WS2 Immature woodland

Habitats on Site

Survey Card - Habitats on Site (HoS)

Site name MOYLAN LOUGH Site code MN8

Survey Code Number MFS2007

SDetail

Soils

SurHa

HoS

Threat

Com

Spp

Air Ph

Main Fossitt Habitat(s) Present on Site full name <small>(Choose from drop down list)</small>	EU Habs see below ↓
<input style="margin-right: 10px;" type="button" value="Add"/> <input type="button" value="Change"/>	
B Cultivated & built land	FP1
BL Built land	GA1
BL3 Buildings and artificial surfaces	WL1
F Freshwater	BL3
FL Lakes & Ponds	GS4
FL6 Turloughs	FL6
FP Springs	B
FP1 Calcareous springs	BL
G Grassland & Marsh	F
GA Improved Grassland	FL
GA1 Improved agricultural grassland	FP
GS Semi-Natural Grassland	G
GS4 Wet grassland	GA
W Woodland and scrub	GS
WL Linear woodland/scrub	W
WL1 Hedgerows	WL

Landuse Impacts & Threats

Survey Card - Landuse Impacts Threats (Threat)

Site name MOYLAN LOUGH Site code MN8

Survey Code Number MFS2007

SDetail
Soils
SurHa
HoS
Threat
Com
Spp
Air Ph

Add
Change

Landuse / Management Activity on site	Frequency of use

Impact & Activities Influencing Conservation Status of site

Intensity of the influence of an activity is rated as A = high, B = medium, C = low influence and D unknown.

Impact is rated as -2 = irreparable negative influence, -1 = reparable negative influence, 0 = neutral, +1= natural positive influence and +2 = strongly managed positive influence, unknown

Impact & Activities quick guide:

- Drainage - J02.05
- Drainage agriculture - J02.06
- Enrichment - H04.02
- Pollution - H01.01 / .05
- Grazing - A04

- Infill - J02.01.03
- Dumping - E03 / .01 to .03
- Peat Extraction - C01.03
- Reclamation - A10 / A10.01
- Invasive species - I01
- Afforestation - B01.02

(Choose from drop down list)

Add
Change

Activity code & title	Intensity	Impact

Threats to site

Add
Change

Damaging Operations / Threats on site Comments (250 character max.)

Description

Survey Card - Descriptions

Site name MOYLAN LOUGH Site code MN8
 Survey Code Number MFS2007

SDetail
Soils
SurHa
HoS
Threat
Com
Spp
Air Ph

See below for further information on how to complete this section of card - all fields set to 250 character length maximum.

Site Location

Moylan Lough turlough is located 5 km north of Carrickmacross.

Survey site description with reference to wetlands present

Turlough site with large spring and channel leading into the lake on the north western corner. There is little lake shore vegetation fringing the lake, presumably due to the large fluctuations in water level indicated likely to be in the range 5-8 m. Most of the area is covered in bare mud with a

Comments on potential occurrence of EU habitats on site

Turlough site.

Management Recommendations following Survey

Grazing and other agricultural pressures should be addressed.

Future Survey Recommendations

Landowner Information Comments

Survey Target Notes Select note number; note category and type up comments

Add
Change

Formatting note: If the intention is to take target notes into GIS then text should not exceed 250 characters.

No.	Category	Note

Air Photograph

Survey Card - Air Photograph

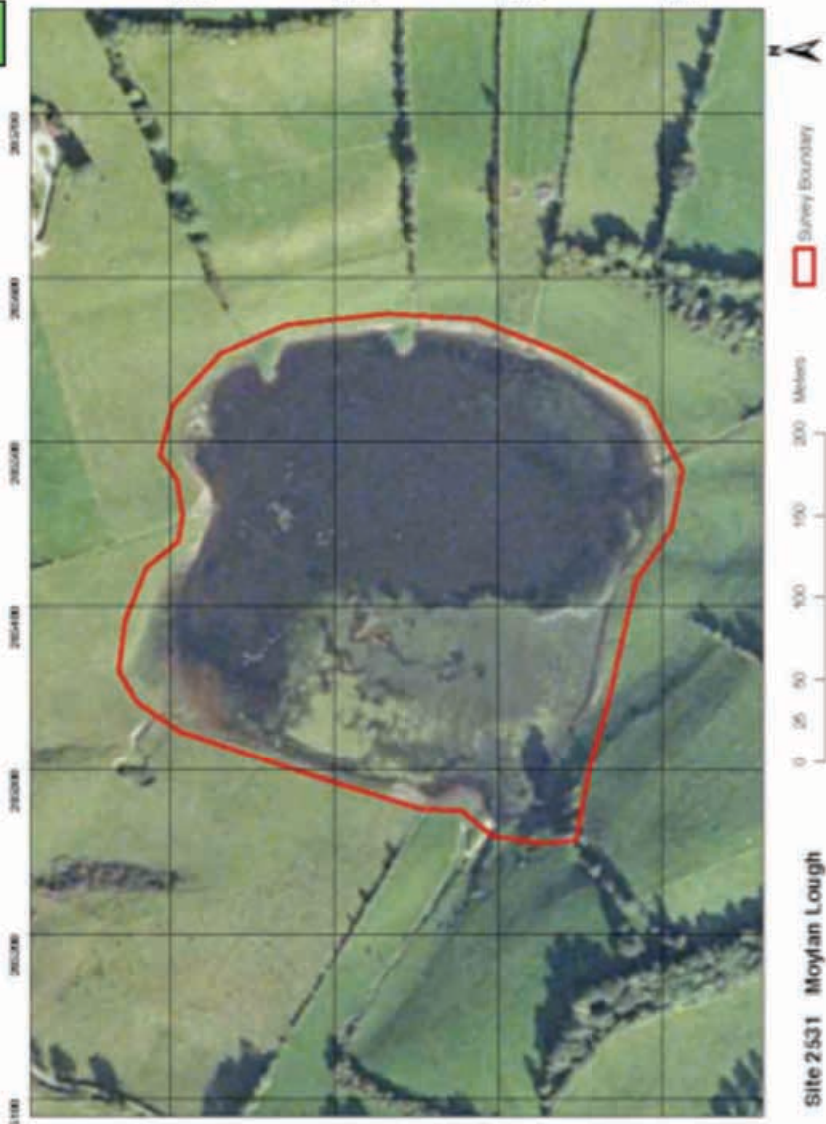
Site name **MOYLAN LOUGH** Site code **MN8**

Survey Code Number **MFS2007**

SDetail **Soils** **SurHa** **HoS** **Threat** **Com** **Spp** **Air Ph**

Zoom In

100%



Site 2531 Moylan Lough

Appendix 6: Louth Wetland Survey II

List of Sites Surveyed in 2012

The list is sorted alphabetically by site name and formatted so as to print on A4 page.

Data presented for each site includes: Site code, Site name, Grid reference, summary site description, EU habitats on site comments and conservation ranking following survey. (An Excel file version of this table is included on the final project CD that accompanies this report).

Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
233	ACLINT	289986	297840	Area of mature bog woodland dominated by Birch, Ash and Willow. Ground vegetation dominated by Brambles. Birch mature trees to 15m tall.	Although the site contains bog woodland with Birch this does not conform to the Habitats Directive priority habitat type.	D Rating: Local conservation value (moderate value)
181	AGHNASKEAGH RESERVOIR	307898	312633	Entire area is an open water reservoir with steep sides and no wetland vegetation. Narrow band of immature willow alder and ash surrounds the open water. An earthen berm with grassland surrounds reservoir.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
235	ANNAGHVACKY	296184	310617	Wet woodland site with adjacent wet grassland, and open water areas under trees. Sparse stands of <i>Carex rostrata</i> under trees. Rich epiphytic moss and lichen growth on willow tree trunks.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C Rating: Local conservation value (high value)
171	ANNAGHVACKY (HACKBALLSCROSS)	296354	310286	Small Alder ash woodland adjacent to N53. Site dry under foot with Bramble layer. Infilling and silage storage at north west end.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
237	ANNAVACKY WEST	294592	310537	Area of transition mire on former cutover with a shallow layer of underlying peat. Groundwater influence evident. Cutover hags with acid heath vegetation remain at western end of site.	The transition mire on the site corresponds to habitat type 7140 Transition mires and quaking bogs.	C Rating: Local conservation value (high value)
170	ARTHURSTOWN	293196	296031	Wetland area consists of small mesotrophic lake surrounded by wet woodland and degraded marsh which is dominated by grasses and has	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)

Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
				affinities to GS2.		
238	ARTHURSTOWN POND	293202	296516	Small area of open water surrounded by tall herb swamp. Surrounding lands intensively used. Pond looks quite eutrophic.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
239	ARTNALEVERY AND COOKSTOWN	293459	293197	Species poor wet grassland with <i>Carex rostrata</i> and <i>Juncus articulatus</i> dominant occurs to the southern part of the site which extends into field of Barley. Northern part of site is separated by a drainage ditch and comprises willow woodland and scrub.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
240	ASH BIG	297544	305774	Small reedbed in natural depression in landscape. Bounded by farm access track to south and rising ground to north.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
242	BALLYBARRACK	301994	303894	Linear depression surrounded by intensive agricultural farmland. Habitat on site is species poor reed swamp with <i>Phragmites australis</i> .	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
177	BALMER'S BOG (DUNDALK)	304380	306020	Dense stand of <i>Phragmites</i> reed swamp which is rather species poor. Main interest ornithological. Location in town does provide a valuable biodiversity area in otherwise built up urban environment.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
247	BANKERSTOWN	306317	283160	Small basin with grassland. May have had more wetland interest in the past but drainage of site has occurred.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	No Conservation Value
249	BAWNTAAFFE	305561	282726	Area of quaking transition mire dominated by <i>Phragmites</i> and <i>Carex disticha</i> .	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C Rating: Local conservation value (high value)
178	BEGRATH (TULLYALLEN)	302985	279062	Freshwater marsh, scrub and wet grassland site that is used to graze horses.	It is not thought any of the habitats present correspond to any of the habitats	C Rating: Local conservation value (high

Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
				Southern part is wet grassland which gradually grades into Iris and Filipendula marsh to north. Very wet underfoot and relatively species rich.	listed under Annex I of the EU Habitats Directive.	value)
179	BIRCH'S LANE (BLACKROCK)	307000	303802	No wetland interest. Area of disturbed ground where builders rubble and spoil have been discarded. Habitats include recolonising bare ground, scrub and dry neutral grassland.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	No Conservation Value
189	BOLIES QUARRY	304070	292580	A small lake surrounded by species poor reed swamp adjacent to abandoned quarry. Infill with recolonising bare ground surrounds the site (abandoned quarry). Discolouration of water suggests eutrophic conditions.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
159	BRAGANSTOWN BOG	303853	293552	This willow dominated woodland is dry underfoot with a bramble dominated understory. A single open area comprises dense bramble with sparse Phragmites and Filipendula. The site is surrounded by deep drain with Apium nodiflorum.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
251	BURREN	306918	286027	Very intact site dominated by transition mire with Phragmites and bog woodland at margins. Areas of deep open water at east end. Centre and western end has groundwater influence with Pyrola and Schoenus fen respectively. Alkaline fen at western end.	Four habitats on the site correspond to EU habitat type 7140 Transition mires and quaking bogs, 91D0 Bog Woodland (priority habitat type), 7230 Alkaline Fen and (3160) Natural dystrophic lakes and ponds.	A Rating: Internationally Important
252	CARNALUGHOGE	294689	302353	Wet grassland site with pockets of wet alder woodland, scrub and drainage ditches. Site has been affected by agricultural reclamation works.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
253	CARRICKALLAN	298937	305958	Small reedbed in natural depression in landscape. Large area of recolonised infill on the north western side.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I	D Rating: Local conservation value (moderate

Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
					of the EU Habitats Directive.	value)
255	CARRICKANEENA AND FEEDÉ	306520	314151	Large area of marsh in broad valley bottom, a rare habitat in the county. Marginal areas grade into wet grassland and either Willow or Gorse scrub. The section north of the road has higher abundance of trees.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C+ Rating: County Conservation value
256	CARRICKNASHAN AGH	307223	282308	Small intact Carex diandra transition mire between two rocky ridges with Gorse scrub. Wet and quaking. Fence and old infilled drain runs through centre of site. Site shows natural transition from mire to adjacent farmland and scrub.	The transition mire on the site corresponds to habitat type 7140 Transition mires and quaking bogs.	C+ Rating: County Conservation value
257	CARRICKROBIN	297854	308091	Small wetland in landscape depression, dominated by marsh at eastern end grading into transition mire at the west end.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
180	CARTANSTOWN	307730	282878	Wetland occurring in a basin alongside semi-improved grassland and gorse on undulating rocky terrain. The site very wet with water table above surface. Vegetation is mostly dominated by rushes with small area of open water and scrub at eastern end.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C Rating: Local conservation value (high value)
120	CARTANSTOWN LOUGH cNHA	307595	283586	A linear valley mire, located between rock ridges. Center of site dominated by Cladium reed swamp and willow scrub. This grades into species rich transition mire with ground water influences in places. Natural zonation from mire to grassland.	The transition mire on the site corresponds to habitat type 7140 Transition mires and quaking bogs.	B Rating: Nationally Important
258	CARTANSTOWN WEST	307317	283424	Two man made ponds with wooded islands, constructed along a previous drain. Private house development has been abandoned. Some exotic tree planting has occurred	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)

Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
				in what should have been developed as gardens of house.		
259	CASTLEBELLINGHAM	305914	296392	Field containing improved pasture with some Rush patches and Willow scrub.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	No Conservation Value
260	CAVANROBERT	293295	297947	Small natural depression in landscape bisected by small watercourse. Western side is drier and dominated by marsh, eastern side is dominated by Phragmites reed swamp and willows.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
261	CHANONROCK	294739 .2896	304415 .183	Small basin transition mire surrounded by improved agricultural grassland and marginal scrub. Mire is quaking throughout with complete moss layer with good species diversity.	The transition mire on the site corresponds to habitat type 7140 Transition mires and quaking bogs.	C Rating: Local conservation value (high value)
263	CHANONROCK	294850	303803	Site has been reclaimed in the last 6 months and lost all conservation value. Extensive drainage and scrub removal. Scrub clearings dumped in abandoned quarry to the north of the wetland. The quarry did not hold any wetland interest.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	No Conservation Value
264	CHRISTIANSTOWN	299519	298630	The site comprises transition mire with scrub along margins. Common spotted orchid present. Infilling along southern margins of site. Willow and gorse scrub occurs in parts.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
143	COLLON - MELLIFONT ABBEY WOODS cNHA	301151	283037	Two areas of open water separated by a floating reed swamp which surrounds all of the open water areas. The lake has extensive aquatic and floating vegetation.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	B Rating: Nationally Important
267	CORTIAL	299289	307114	Small transition mire in depression surrounded by a narrow fringe of wet grassland. Equal area of both habitats on	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I	D Rating: Local conservation value (moderate

Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
				the site.	of the EU Habitats Directive.	value)
271	DARVER WETLAND	300248	298356	The site comprises reed swamp and marsh. The dominant plant species include <i>Iris pseudacorus</i> and <i>Phalaris</i> . Area to north comprises recently felled woodland.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C Rating: Local conservation value (high value)
272	DROMISKIN EAST	306621	297396	Small lake and adjacent reed swamp surrounded by intensive tillage. Small lake appears to have been excavated and drained in the past. Drains lead from lake.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
274	DRUMIN (ED DUNLEER)	306223	287410	Site comprises steam and historic mill. River intercepted by active mill. Dry grassy vegetation occurs along bank. Small pocket of wet woodland.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C Rating: Local conservation value (high value)
275	DRUMMULLAGH	313328	317631	Artificial lake that has little wetland interest. The lake is deep and has steep margins with no fringing wetland vegetation.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
276	DRUMMULLAGH SOUTH	313243	316599	Linear site with wet grassland occurring either side of a small river. Site has been drained and is likely to have formerly been of more wetland interest. Hydrologically linked to site 277	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
119	DRUMSHALBON LOUGH cNHA	308339	283316	The site comprises a mesotrophic lake with surrounding <i>Schoenoplectus</i> fringe which grades into a narrow band of transition mire. Wet grassland and marsh occur to the west of site. Isolated small sedge fen adjacent to road.	The transition mire on the site corresponds to habitat type 7140 Transition mires and quaking bogs.	C+ Rating: County Conservation value
277	DRUMULLA AND LISLEA	312470	317620	Extensive area of uniform open transition mire with <i>Menyanthes</i> , <i>Equisetum</i> , <i>Carex rostrata</i> and <i>Potentilla palustris</i> . A natural transition between the fen and surrounding dry grassland to east and river to west. Wet	The transition mire on the site corresponds to habitat type 7140 Transition mires and quaking bogs.	B Rating: Nationally Important

Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
				Heath and wet woodland also occur.		
278	EDMONDSTOWN	290576	295297	Diverse wetland mosaic in large natural basin. Principal habitats include marsh, reedbed, wet woodland and eutrophic lake.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
280	EMLAGH AND COOLCREEDAN	296258	302378	Small basin wetland dominated by Phragmites reed swamp with mature Salix around the margin. Illegal dumping is threatening the site.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
281	FAIRHILL	303870	305102	Small isolated site with Phragmites dominated reed swamp, with Typha latifolia. Scrub and a small ash dominated woodland also occurs within the site.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C Rating: Local conservation value (high value)
283	GALLAGH	307549	288331	Area of wet grassland grading into poor fen and transition mire. Reed swamp was also recorded.	The transition mire on the site corresponds to habitat type 7140 Transition mires and quaking bogs.	B Rating: Nationally Important
284	GALLAGH AND BALLYNAGRENA	307612	287956	Small wet hollow with willow scrub and marsh elements. Some planting of conifers.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
285	GILBERTSTOWN	299931	297132	Area of willow scrub and marsh. A river is present within site which shows signs of enrichment.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
286	GREATWOOD	287182	295103	Degraded area of marsh in small landscape hollow surrounded by scrub and wet willow woodland. Drainage has strongly influenced site in the past. Infilling of marsh in recent times.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
173	HAGGARDSTOWN	306052	303183	Area of former marsh that has been heavily impacted by infill and drainage. Small remnants of wetland vegetation restricted to drainage ditches and a small degraded marsh area in southern part.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)

Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
287	HAGGARDSTOWN AND MULLAGHARLIN	305334	303776	Eutrophic lake with floating aquatic vegetation. Lake is surrounded by narrow Typha reed swamp along the northern margins. Small willow woodland adjoins southern part of site.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
153	HAMILTON MARSH (BLACKROCK)	306975	303316	Eastern part of site is freshwater marsh with Typha latifolia, Equisetum fluviatile and Iris pseudacorus. Site grades into wet grassland to the west. Site used as amenity - signage has been erected and a well maintained path borders northern side.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
130	KEENAN'S CROSS POND	309700	290370	The reservoir has been constructed possibly from an old gravel pit and has banks and margins lined with stone facing and scarce marginal vegetation.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C Rating: Local conservation value (high value)
289	KILCRONEY SOUTH	297536	297333	Site comprises wet wood & reed swamp - water saturated substrate with pockets of Cladium. Surrounded by habitats managed for intensive agriculture, including improved grassland and arable crops.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C Rating: Local conservation value (high value)
121	KILDEMOCK MARSH cNHA	297511	288289	Western area comprises wet willow woodland. Phragmites reed swamp occurs elsewhere with scattered willow. Iris dominated marsh occurs on margins.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	B Rating: Nationally Important
292	KILLINCOOLE	299859	300570	Small Phalaris reedbed in hollow in landscape. Surrounded by intensively farmed land, used primarily for arable crops (barley). Some dumping of felled trees and soil occurs on site.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
127	KILLINCOOLE MARSH	298930	300855	Wooded site occurs in landscape hollow surrounded by intensively farmed land. Central area comprises good example of transition mire with scattered willow and	The transition mire on the site corresponds to habitat type 7140 Transition mires and quaking bogs.	B Rating: Nationally Important

Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
				Phragmites.		
174	KILLINEER RESERVIOR	306591	277819	Reservoir used as water source and amenity fishery, with narrow Phalaris reed swamp margin. Embankment planted with a mixture of conifers species.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
294	KILLYCRONEY	298549	306544	Site consists of a small hollow dominated by a reedbed dominated by Phragmites.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
295	KILLYCRONEY AND CORTIAL	298956	306544	Northern end of site dominated by reed bed with Phragmites. Significant infill and dumping along eastern margin. Southern end if site is marsh with Iris and Phalaris. Central area us used as dump site for manure.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
157	KIRCOCK	306442	282250	Former wetland now extensively drained and reverted to wet grassland.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
172	KNOCKAGH	299470	310540	Area of former drain with narrow reed bed which now consists of just a drain. Contains a reasonably good range of wetland plants. No wetland value.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	No Conservation Value
146	LANNAT	298152	302305	Area of cutaway bog with mature bog woodland. This does not however, correspond to the EU bog woodland habitat type. Central areas remains somewhat open with Molinia and Calluna persisting in ground layer. Birch encroachment throughout.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
296	LANNAT AND TULLYDRUM	288940	301826	Area of cutover bog on peat. Surface of site is dry with dominance of Salix cinerea and occasional birch. Canopy height is less than 5 m. No wetland present.	NA	E Rating: Local conservation value (low value)
297	LIBERTIES OF	320488	309114	This is an area of	This is an excellent	B Rating:

Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
	CARLINGFORD AND MILLGRANGE			Cladium fen with reed swamp and willow scrub. The site is very intact with no obvious drainage. The eastern end of the site has a strong calcareous groundwater influence with Schoenus and tufa deposits.	example of Cladium mariscus fen (priority habitat 7210) and some of the springs on site are tufa forming (priority habitat 7220).	Nationally Important
299	LISLEA	310047	316051	Area of old cutover upland blanket bog reverting to wet Heath and becoming invaded by conifers. Some invasive Rhododendron present.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive. Quality not good enough.	D Rating: Local conservation value (moderate value)
301	MANSFIELDSTOWN	301396	296463	Woodland area, with no wetland interest. Mixture of pure young conifer plantation, older conifers with deciduous species and some stands of birch bog woodland.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	No Conservation Value
302	MARSH NORTH	306367	308585	Site consists of a series of Juncus wet grassland areas. No wetland value.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	No Conservation Value
303	MARSH SOUTH AND HAGGARDSTOWN	307143	304953	No wetland interest at this site. Area of dry unmanaged grassland that may be occasionally grazed or cut for hay.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	No Conservation Value
169	MELL LAKES	307413	276508	Former quarry site with exposed cliffs and lake. No aquatic vegetation in flooded quarry floor. Only a preliminary survey of the site was undertaken during the 2012 Louth wetland survey.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C+ Rating: County Conservation value
307	MULLAGHARLIN	304831	303453	Eutrophic lake with band of Phragmites reed swamp. Lake is surrounded by arable crops with abrupt edge containing a thicket of <i>Urtica dioica</i> .	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
308	MULLATEE AND GREENORE	321688	310232	Site is a modified Coastal lagoon located on the landward side of a coastal embankment. Some brackish water influences.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C+ Rating: County Conservation value

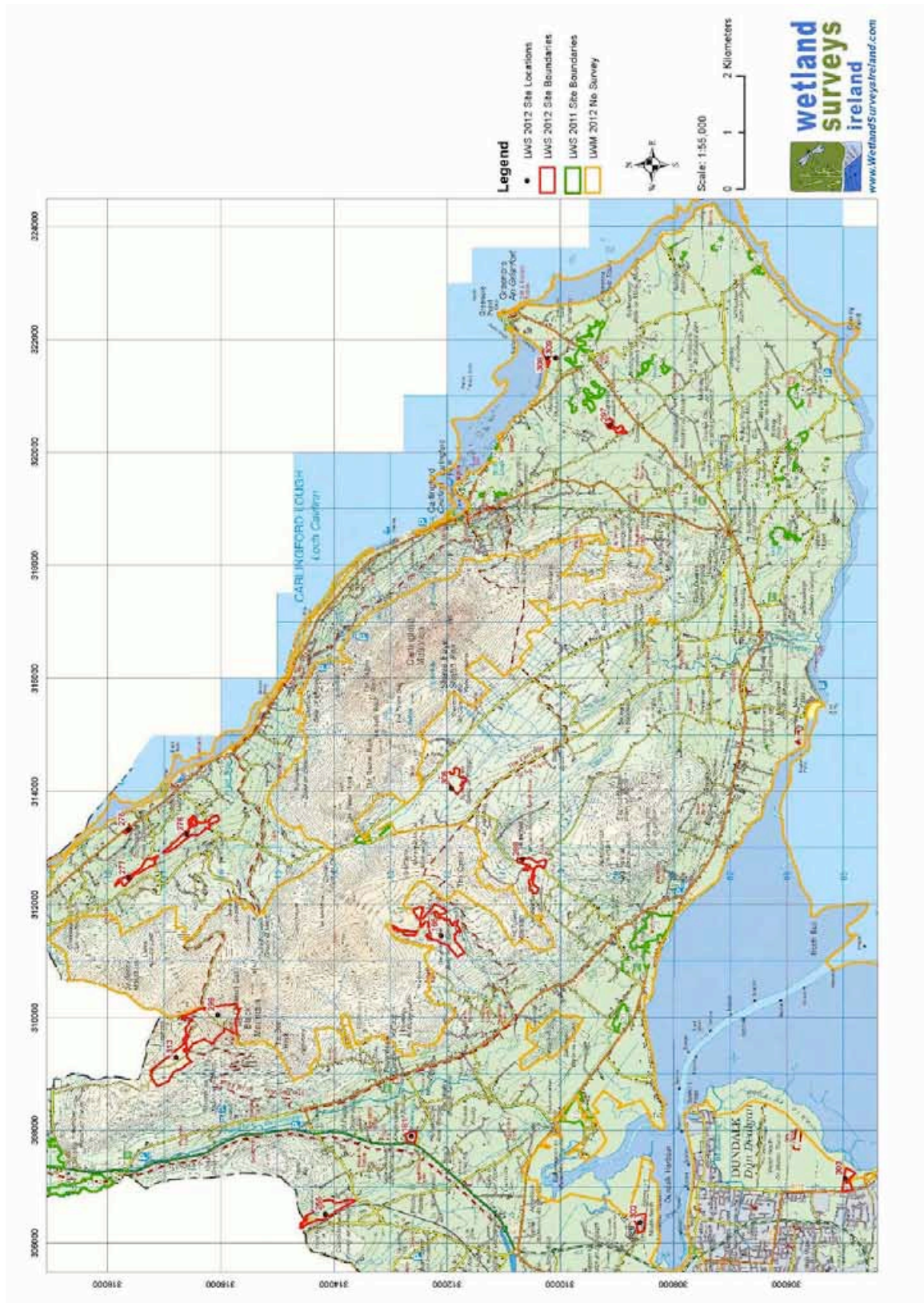
Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
309	MULLATEE EAST	321680	310078	Small man made ponds with floating macrophytes and submerged aquatics. Small stand of Typha and Schoenoplectus lacustris.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
326	RASSAN	293250	310894	Small transition mire surrounded by improved agricultural land adjacent to the N53. Scrub woodland with Willow occurs at the western end of the site.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
310	RATHBODY	292994	297374	Small linear wetland along floodplain of river in shallow depression in the landscape. Areas of willow scrub and Phragmites and Phalaris dominated reed swamp.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
311	RATHBRIST	296298	297324	Small eutrophic pond in shallow landscape depression surrounded by arable crops.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
116	RATHESCAR WOOD cNHA	302676	286891	This small artificial wetland occurs in mature mixed broad-leaved woodland with beech and oak. A series of paths occur on site which is used for amenity purposes. The water levels are controlled by a sluice gate. Areas of reed swamp have developed.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	B Rating: Nationally Important
312	RATHNEESTIN WEST	293680	298338	Area of wet woodland and reed swamp in natural basin / depression surrounded by grassland and recolonising bare ground. Alder - ash woodland dominates.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	C Rating: Local conservation value (high value)
313	RAVENSDALE PARK	309295	316786	This is a cutover blanket bog site has been cut and drained in historic times. Heath vegetation now occurs across site on an undulating topography, with wetter communities in hollows.	Wet Heath has established on cutover, does not correspond to EU Habitats Directive Annex habitat.	C Rating: Local conservation value (high value)
115	REAGHSTOWN MARSH cNHA	288903	295587	Lake located in natural landscape basin surrounded by low	It is not thought any of the habitats present correspond to	B Rating: Nationally Important

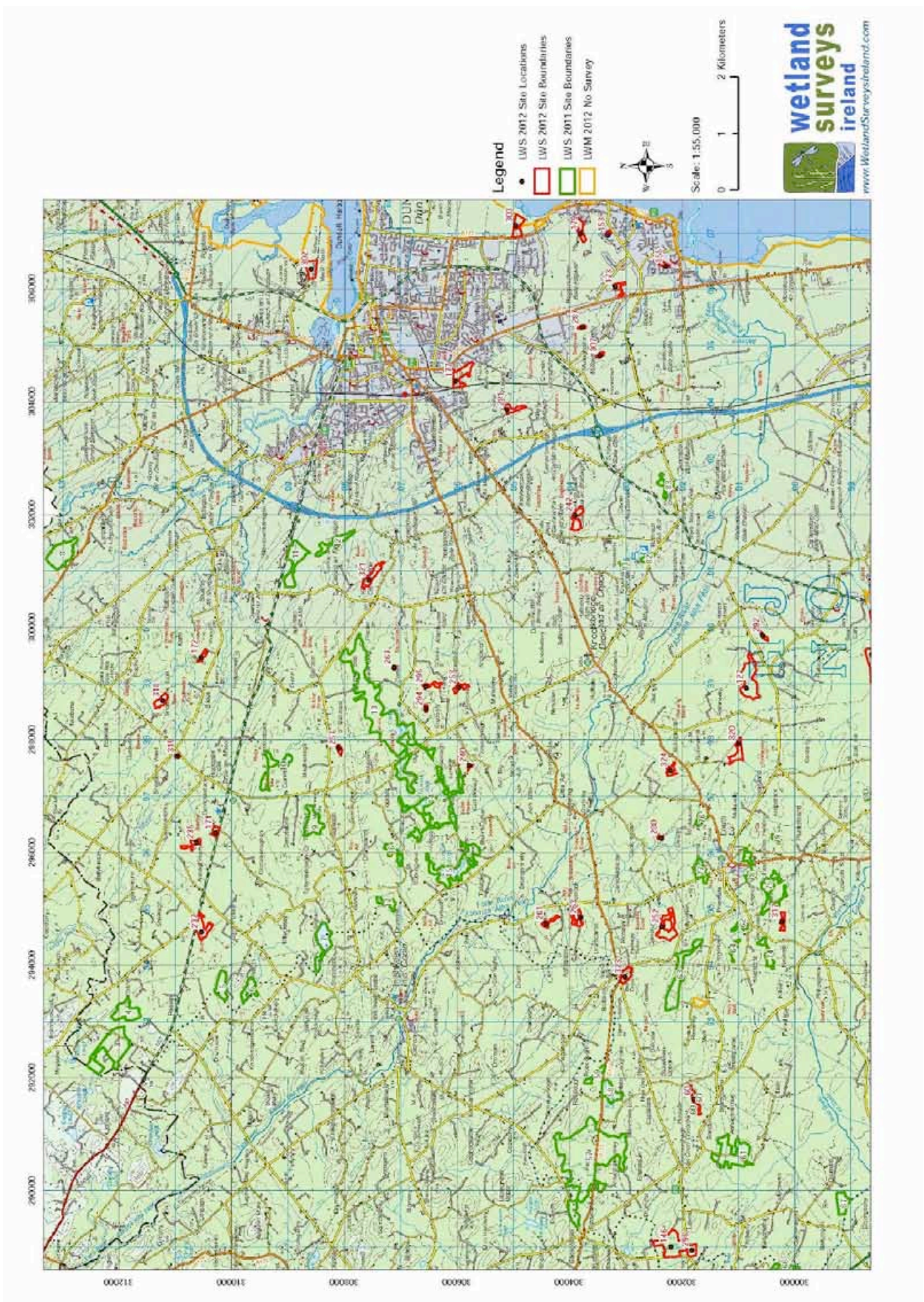
Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
				intensity agricultural used for cattle grazing. Reed bed with Cladium on lake, together with willow scrub in parts. Marsh occurs along western side of lake.	any of the habitats listed under Annex I of the EU Habitats Directive.	
60	ROOTATE	291628	301789	Valley mire wetland in depression among agricultural land. Central area contains dystrophic pools. Extensive floating mats occur which are sedge rich, and often dominated by one sedge species.	The transition mire on the site corresponds to habitat type 7140 Transition mires and quaking bogs.	C+ Rating: County Conservation value
316	SHAMROCKHILL	305326	287777	Man made reservoir with fence surrounding it. Site has little wetland interest.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
317	SHEEPWALK	294781	300228	High modified small reed bed in natural depression, surrounded by hedgerows and scrub with arable land beyond. Modified by drainage. Remainder of site planted with immature conifer and broadleaved woodland.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
318	SHORTSTONE EAST	298701	311224	Tall herb swamp with marginal drains surrounded by elevated improved pasture. In central area mature birch bog woodland occurs, with reclaimed grassland in south. Recent infill recorded.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
319	SHORTSTONE WEST	297716	310961	Small lake fenced off from adjacent improved grassland below house. Managed as amenity wetland, with ducks and swans on site. Numerous dead standing alder trees.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
155	SPRINGFIELD MARSH (BLACKROCK)	306416	302292	There is only a small isolated remnant wetland area remaining which comprise Phragmites australis reed swamp and Typha latifolia reedswamp. Elsewhere a mosaic of dry meadow and recolonising bare ground has established on areas of spoil.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)

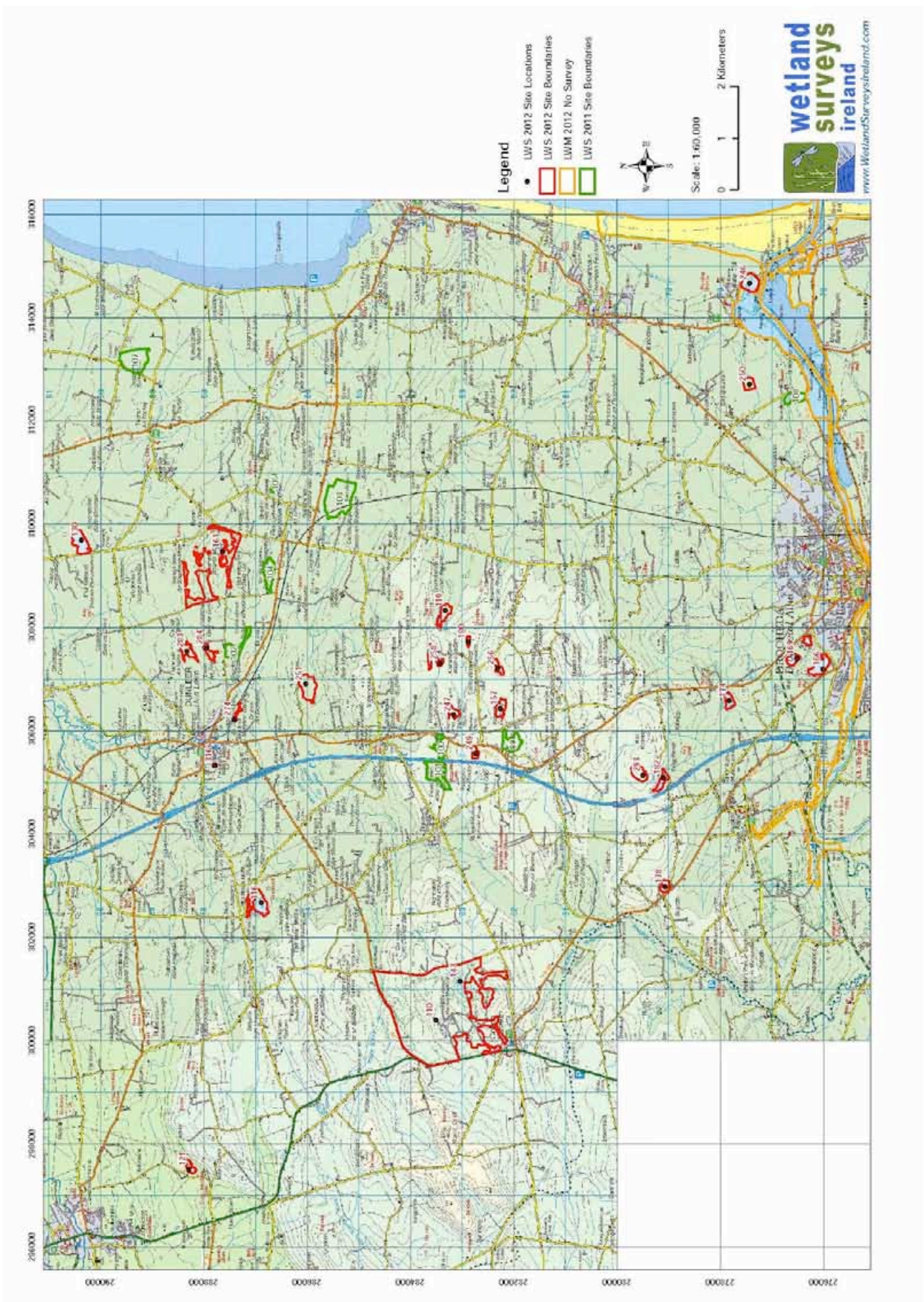
Site Code	Site name	Easting	Northing	Site Description	Survey site EU habitat comments	Conservation Ranking After Survey
123	STABANNAN / BRAGANSTOWN cNHA	301800	293900	Site consists of intensively managed agricultural land with only the River Glyde being of wetland interest. This shows wooded sections as well as parts where only grassy bank vegetation occurs.	Site is a designated site for birds, and does not appear to contain any EU Habitats Directive habitats present.	A Rating: Internationally Important
320	SUMMERHILL	297936	300996	Area of former wetland degraded due to drainage. Site now comprises Arrhenatherum dominated grassland to east of drain, with marsh to west of drain. This is main wetland interest on site.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
321	TANKARDSROCK AND DONAGHMORE	300841	307559	Carex diandra transition mire area which has been infilled at several locations and is losing its wildlife value.	The transition mire on the site corresponds to habitat type 7140 Transition mires and quaking bogs.	C Rating: Local conservation value (high value)
323	TOOMES AND BALLYKELLY	293796	303014	Low lying wet grassland and marsh site with an area of Ulex scrub. Large drainage ditch bisects the site. Marsh occurs either side of this drain. ESB substation to south of site. Three power lines cross site to substation.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)
324	WHITECROSS	297463	302206	Small open transition mire dominated by Equisetum fluviatile, Carex diandra and Typha. Marsh has developed around edges where drainage has impacted site. Southern half of site in better condition.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	D Rating: Local conservation value (moderate value)
325	WILLIAMSTOWN	305353	292970	This site has been heavily degraded due to drainage, infill and agricultural reclamation. Extensive stands of Japanese Knotweed occurs in western part. Elsewhere scrub and occasional willow occurs. No longer of wetland interest.	It is not thought any of the habitats present correspond to any of the habitats listed under Annex I of the EU Habitats Directive.	E Rating: Local conservation value (low value)

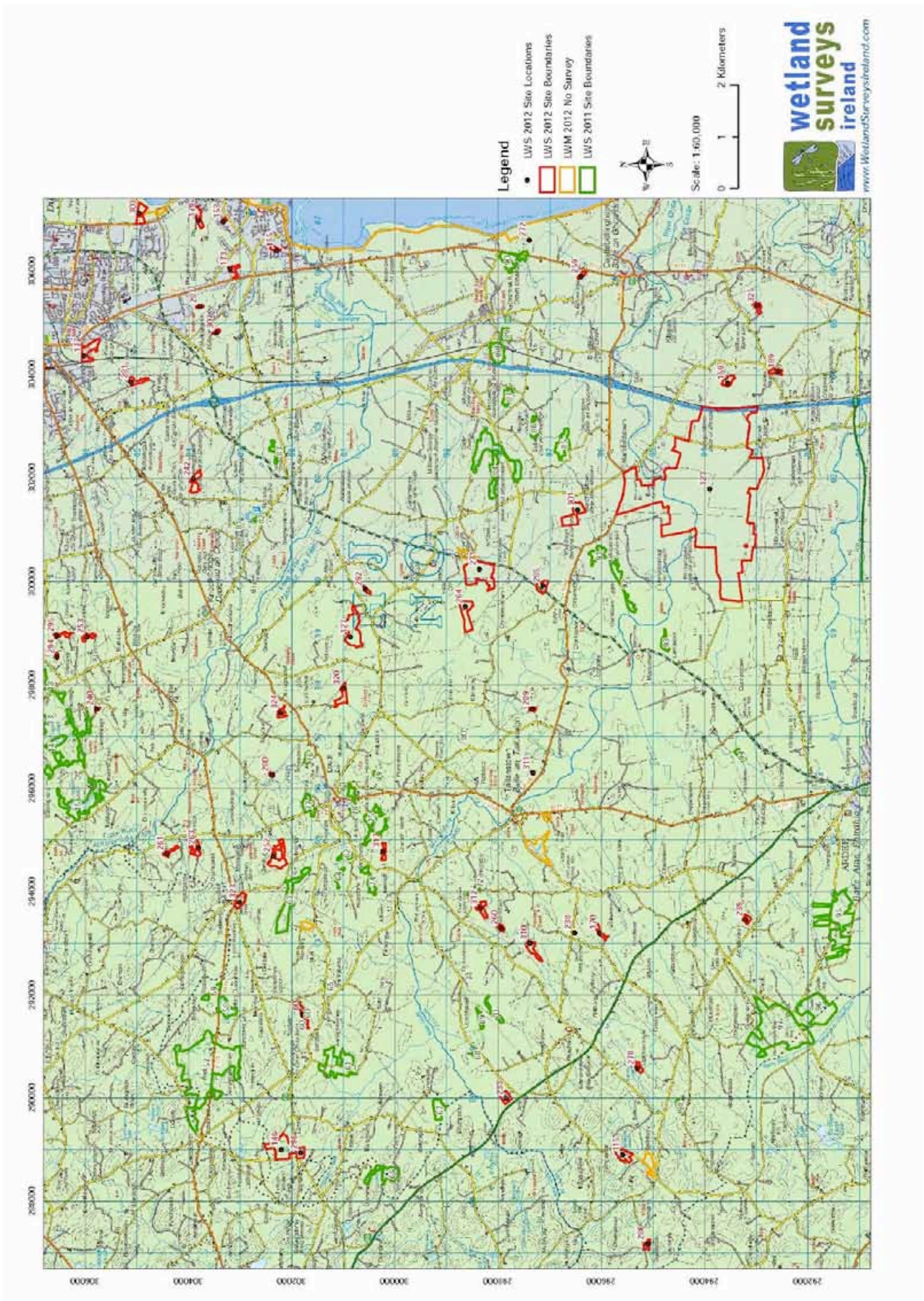
Appendix 7: Detailed location of sites surveyed in 2012 as part of the Louth Wetland Survey II

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Appendix 8: Site Evaluation Criteria

Modified from National Roads Authority (2009). Guidelines for Assessment of Ecological Impacts of National Roads Schemes.

Rating	Importance of Ecological Sites
A	<p>Internationally important</p> <p>Sites designated (or qualifying for designation) as SAC* or SPA* under the EU Habitats or Birds Directives.</p> <p>Undesignated sites containing good examples of Annex I <u>priority</u> habitats under the EU Habitats Directive. Sites designated (or qualifying for designation) as SAC* for salmonids or Annex II species under the EU Habitats Directives.</p> <p>Major salmon river fisheries.</p> <p>Major salmonid (salmon, trout or char) lake fisheries.</p>
B	<p>Nationally important</p> <ul style="list-style-type: none"> • Sites or waters designated or proposed as an NHA* or statutory Nature Reserves. • Undesignated sites containing good examples of Annex I habitats (under EU Habitats Directive). • Undesignated sites containing <u>significant numbers</u> of resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive or species protected under the Wildlife (Amendment) Act 2000. • Major trout river fisheries. • Water bodies with major amenity fishery value. • Commercially important coarse fisheries.
C+	<p>County value</p> <p>Area of Special Amenity.</p> <p>Area subject to a Tree Preservation Order.</p> <p>Area of High Amenity, or equivalent, designated under the County Development Plan.</p> <p>Resident or regularly occurring populations (assessed to be important at the County level) of the following:</p> <ul style="list-style-type: none"> • Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; • Species protected under the Wildlife Acts; and/or • Species listed on the relevant Red Data list. <p>Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.</p> <p>County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared.</p> <p>Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.</p>
C	<p>High value, locally important</p> <p>Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or significant populations of locally rare species.</p> <p>Sites containing any resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive.</p> <p>Small water bodies with known salmonid populations or with good potential salmonid habitat.</p> <p>Large water bodies with some coarse fisheries value.</p>
D	<p>Moderate value, locally important</p> <p>Sites containing some semi-natural habitat or locally important for wildlife.</p> <p>Small water bodies with some coarse fisheries value or some potential salmonid habitat.</p> <p>Any water body with unpolluted water (Q-value rating 4-5).</p>
E	<p>Low value, locally important</p> <p>Artificial or highly modified habitats with low species diversity and low wildlife value.</p> <p>Water bodies with no current fisheries value and no significant potential fisheries value.</p>
F	<p>Unknown Value</p> <p>Sites of possible ecological value which require further investigation at the optimum season to establish importance.</p> <p>Sites of possible fisheries value requiring further survey.</p>

* SAC = Special Area of Conservation, SPA = Special Protection Area, NHA = Natural Heritage Area

LWS II Report - Part 2: Site Reports

Appendix 9: Individual Site Reports from the Louth Wetland Survey II (see separate report volumes)

Site Reports Section A – Pages 1-228: Sites Aclint to Gallagher

Site Reports Section B – Pages 235-456: Sites Gallagher and Ballynagrena to Williamstown

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LWS 2012 Site Name	LWS 2012 Site Code	Report Part 2 - Section A Page Number
ACLINT	233	8
AGHNASKEAGH RESERVOIR	181	13
ANNAGHVACKY	235	17
ANNAGHVACKY (HACKBALLSCROSS)	171	22
ANNAVACKY WEST	237	27
ARTHURSTOWN	170	33
ARTHURSTOWN POND	238	38
ARTNALEVERY AND COOKSTOWN	239	43
ASH BIG	240	48
BALLYBARRACK	242	53
BALMER'S BOG (DUNDALK)	177	58
BANKERSTOWN	247	63
BAWNTAAFFE	249	67
BEGRATH (TULLYALLEN)	178	72
BIRCH'S LANE (BLACKROCK)	179	78
BOLIES QUARRY	189	82
BRAGANSTOWN BOG	159	87
BURREN	251	92
CARNALUGHOGE	252	98
CARRICKALLAN	253	103
CARRICKANEENA AND FEEDE	255	108
CARRICKNASHANAGH	256	113
CARRICKROBIN	257	118
CARTANSTOWN	180	123
CARTANSTOWN LOUGH cNHA	120	128
CARTANSTOWN WEST	258	134
CASTLEBELLINGHAM	259	139
CAVANROBERT	260	143
CHANONROCK	261	148
CHANONROCK SOUTH	263	153
CHRISTIANSTOWN	264	158
COLLON - MELLIFONT ABBEY WOODS cNHA	143	163
CORTIAL	267	168
DARVER WETLAND	271	173
DROMISKIN EAST	272	178
DRUMIN (ED DUNLEER)	274	183
DRUMMULLAGH	275	188
DRUMMULLAGH SOUTH	276	192
DRUMSHALBON LOUGH cNHA	119	197
DRUMULLA AND LISLEA	277	203
EDMONDSTOWN	278	209
EMLAGH AND COOLCREEDAN	280	214
FAIRHILL	281	219
GALLAGH	283	224

LWS 2012 Site Name	LWS 2012 Site Code	Report Part 2 – Section B Page Number
GALLAGH AND BALLYNAGRENA	284	235
GILBERTSTOWN	285	239
GREATWOOD	286	244
HAGGARDSTOWN	173	249
HAGGARDSTOWN AND MULLAGHARLIN	287	254
HAMILTON MARSH (BLACKROCK)	153	259
KEENAN'S CROSS POND	130	264
KILCRONEY SOUTH	289	268
KILDEMOCK MARSH cNHA	121	272
KILLINCOOLE	292	278
KILLINCOOLE MARSH	127	283
KILLINEER RESERVIOR	174	288
KILLYCRONEY	294	293
KILLYCRONEY AND CORTIAL	295	298
KIRCOCK	157	303
KNOCKAGH	172	308
LANNAT	146	312
LANNAT AND TULLYDRUM	296	317
LIBERTIES OF CARLINGFORD AND MILLGRANGE	297	321
LISLEA	299	327
MANSFIELDSTOWN	301	332
MARSH NORTH	302	337
MARSH SOUTH AND HAGGARDSTOWN	303	341
MELL LAKES	169	345
MULLAGHARLIN	307	350
MULLATEE AND GREENORE	308	355
MULLATEE EAST	309	360
RASSAN	326	364
RATHBODY	310	369
RATHBRIST	311	374
RATHESCAR WOOD cNHA	116	378
RATHNEESTIN WEST	312	383
RAVENSDALE PARK	313	388
REAGHSTOWN MARSH cNHA	115	393
ROOTATE	60	399
SHAMROCKHILL	316	404
SHEEPWALK	317	408
SHORTSTONE EAST	318	413
SHORTSTONE WEST	319	418
SPRINGFIELD MARSH (BLACKROCK)	155	422
STABANNAN / BRAGANSTOWN cNHA	123	427
SUMMERHILL	320	432
TANKARDSROCK AND DONAGHMORE	321	437
TOOMES AND BALLYKELLY	323	442
WHITECROSS	324	447
WILLIAMSTOWN	325	452

Site Reports Section A – Pages 1-228: Sites Aclint to Gallagher**Site Reports Section B – Pages 235-456: Sites Gallagher and Ballynagrena to Williamstown**

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LWS 2012 Site Name	LWS 2012 Site Code	Report Part 2 - Section A Page Number
ROOTATE	60	399
REAGHSTOWN MARSH cNHA	115	393
RATHESCAR WOOD cNHA	116	378
DRUMSHALBON LOUGH cNHA	119	197
CARTANSTOWN LOUGH cNHA	120	128
KILDEMOCK MARSH cNHA	121	272
STABANNAN / BRAGANSTOWN cNHA	123	427
KILLINCOOLE MARSH	127	283
KEENAN'S CROSS POND	130	264
COLLON - MELLIFONT ABBEY WOODS cNHA	143	163
LANNAT	146	312
HAMILTON MARSH (BLACKROCK)	153	259
SPRINGFIELD MARSH (BLACKROCK)	155	422
KIRCOCK	157	303
BRAGANSTOWN BOG	159	87
MELL LAKES	169	345
ARTHURSTOWN	170	33
ANNAGHVACKY (HACKBALLSCROSS)	171	22
KNOCKAGH	172	308
HAGGARDSTOWN	173	249
KILLINEER RESERVIOR	174	288
BALMER'S BOG (DUNDALK)	177	58
BEGRATH (TULLYALLEN)	178	72
BIRCH'S LANE (BLACKROCK)	179	78
CARTANSTOWN	180	123
AGHNASKEAGH RESERVOIR	181	13
BOLIES QUARRY	189	82
ACLINT	233	8
ANNAGHVACKY	235	17
ANNAVACKY WEST	237	27
ARTHURSTOWN POND	238	38
ARTNALEVERY AND COOKSTOWN	239	43
ASH BIG	240	48
BALLYBARRACK	242	53
BANKERSTOWN	247	63
BAWNTAAFFE	249	67
BURREN	251	92
CARNALUGHOGE	252	98
CARRICKALLAN	253	103
CARRICKANEENA AND FEED	255	108
CARRICKNASHANAGH	256	113
CARRICKROBIN	257	118
CARTANSTOWN WEST	258	134
CASTLEBELLINGHAM	259	139
CAVANROBERT	260	143
CHANONROCK	261	148
CHANONROCK SOUTH	263	153
CHRISTIANSTOWN	264	158

CORTIAL	267	168
DARVER WETLAND	271	173
DROMISKIN EAST	272	178
DRUMIN (ED DUNLEER)	274	183
DRUMMULLAGH	275	188
DRUMMULLAGH SOUTH	276	192
DRUMULLA AND LISLEA	277	203
EDMONDSTOWN	278	209
EMLAGH AND COOLCREEDAN	280	214
FAIRHILL	281	219
GALLAGH	283	224
GALLAGH AND BALLYNAGRENA	284	235
GILBERTSTOWN	285	239
GREATWOOD	286	244
HAGGARDSTOWN AND MULLAGHARLIN	287	254
KILCRONEY SOUTH	289	268
KILLINCOOLE	292	278
KILLYCRONEY	294	293
KILLYCRONEY AND CORTIAL	295	298
LANNAT AND TULLYDRUM	296	317
LIBERTIES OF CARLINGFORD AND MILLGRANGE	297	321
LISLEA	299	327
MANSFIELDSTOWN	301	332
MARSH NORTH	302	337
MARSH SOUTH AND HAGGARDSTOWN	303	341
MULLAGHARLIN	307	350
MULLATEE AND GREENORE	308	355
MULLATEE EAST	309	360
RATHBODY	310	369
RATHBRIST	311	374
RATHNEESTIN WEST	312	383
RAVENSDALE PARK	313	388
SHAMROCKHILL	316	404
SHEEPWALK	317	408
SHORTSTONE EAST	318	413
SHORTSTONE WEST	319	418
SUMMERHILL	320	432
TANKARDSROCK AND DONAGHMORE	321	437
TOOMES AND BALLYKELLY	323	442
WHITECROSS	324	447
WILLIAMSTOWN	325	452
RASSAN	326	364

Key to Habitat Map Symbols 2012






























Legend

-  LWS Site Boundaries
- LWS 2012 Site Locations
- LWS 2012 Survey Target Notes

LWS 2012 Linear Habitats

-  FW1 Upland - eroding rivers
-  FW2 Depositing - lowland rivers
-  FW4 Drainage ditches
-  WL1 Hedgerows
-  WL2 Treelines

LWS 2012 Polygon Habitats

-  BC1 Arable crops
-  BC2 Horticultural land
-  BC3 Tilled land
-  BL3 Buildings and artificial surfaces
-  CW1 Lagoons and saline lakes
-  ED2 Spoil and bare ground
-  ED3 Recolonising bare ground
-  ED3 Recolonising bare ground / BL3 Buildings and artificial surfaces
-  ED3 Recolonising bare ground / GS2 Dry meadows and grassy verges
-  FL1 Dystrophic lakes
-  FL4 Mesotrophic lakes
-  FL5 Eutrophic lakes
-  FL5 Eutrophic lakes / FS1 Reed and large sedge swamps
-  FL7 Reservoirs
-  FL8 Other artificial lakes and ponds
-  FS1 Reed and large sedge swamps
-  FS1 Reed and large sedge swamps / GM1 Marsh
-  FS1 Reed and large sedge swamps / GS4 Wet grassland
-  FS1 Reed and large sedge swamps / PF1 Rich fen and flush
-  FS1 Reed and large sedge swamps / WS1 Scrub
-  FS2 Tall herb swamp
-  FW2 Depositing - lowland rivers
-  FW4 Drainage ditches
-  GA1 Improved agricultural grassland
-  GA1 Improved agricultural grassland / GS4 Wet grassland
-  GA1 Improved agricultural grassland / WS1 Scrub
-  GA2 Amenity grassland
-  GM1 Marsh
-  GM1 Marsh / WS1 Scrub

-  GS Semi-natural grassland
-  GS1 Dry calcareous and neutral grassland
-  GS2 Dry meadows and grassy verges
-  GS2 Dry meadows and grassy verges / WS1 Scrub
-  GS3 Dry - humid acid grassland
-  GS4 Wet grassland
-  GS4 Wet grassland / GM1 Marsh
-  GS4 Wet grassland / WS1 Scrub
-  HD1 Dense bracken
-  HD1 Dense bracken / PB4 Cutover bog
-  HH3 Wet heath
-  PB4 Cutover bog
-  PB4 Cutover bog / PB1 Raised bog
-  PB4 Cutover bog / PF2 Poor fen and flush
-  PB4 Cutover bog / PF3 Transition mire
-  PB4 Cutover bog / PF3 Transition mire / WS1 Scrub
-  PF1 Rich fen and flush
-  PF2 Poor fen and flush
-  PF3 Transition mire and quaking bog
-  PF3 Transition mire and quaking bog / FS1 Reed and large sedge swamps
-  PF3 Transition mire and quaking bog / GS2 Dry meadows and grassy verges
-  PF3 Transition mire and quaking bog / WS1 Scrub
-  WD1 (Mixed) broadleaved woodland
-  WD2 Mixed broadleaved - conifer woodland
-  WD4 Conifer plantation
-  WN2 Oak-ash-hazel woodland
-  WN6 Wet willow-alder-ash woodland
-  WN7 Bog woodland
-  WN7 Bog woodland / WS1 Scrub
-  WS1 Scrub
-  WS1 Scrub / FS1 Reed and large sedge swamps
-  WS1 Scrub / GS2 Dry meadows and grassy verges
-  WS1 Scrub / GS4 Wet grassland
-  WS1 Scrub / HD1 Dense Bracken
-  WS1 Scrub / PF3 Transition mire and quaking bog
-  WS1 Scrub / WN6 Wet willow-alder-ash woodland
-  WS2 Immature woodland
-  WS3 Ornamental - non-native shrub

Appendix 10: Louth Wetland Survey II

Complete list of wetland sites recorded in the LWS Site Database and GIS

The list is sorted alphabetically by site name and formatted so as to print on A4 page.

Data presented for each site includes: Site code, Site name, Grid reference, date of last survey, and conservation ranking following survey. (An Excel file version of this table is included on the final project disk with this report).

LWS Site Code	Site Name	Easting	Northing	Date of last survey	Conservation Ranking After Survey
233	ACLINT	289986	297840	2012	D Rating: Local conservation value (moderate value)
234	AGHAGLASS	294387	304267		
190	AGHAMEEN	313267	311184		
191	AGHNASKEAGH	307233	312145		
181	AGHNASKEAGH RESERVOIR	307898	312633	2012	E Rating: Local conservation value (low value)
192	ALLARDSTOWN	300143	300663		
193	ALLARDSTOWN AND KILLINCOOLE	299540	300331		
235	ANNAGHVACKY	296184	310617	2012	C Rating: Local conservation value (high value)
171	ANNAGHVACKY (HACKBALLSCROSS)	296354	310286	2012	E Rating: Local conservation value (low value)
236	ANNALOUGHAN	313301	308179		
237	ANNAVACKY WEST	294592	310537	2012	C Rating: Local conservation value (high value)
95	ARDEE CUTAWAY BOG NHA	293445	291425	2011	B Rating: Nationally Important
79	ARDPATRICK	296241	300331	2011	C Rating: Local conservation value (high value)
39	ARDTULLY BEG	319421	306441	2011	D Rating: Local conservation value (moderate value)
170	ARTHURSTOWN	293196	296031	2012	E Rating: Local conservation value (low value)
238	ARTHURSTOWN POND	293202	296516	2012	D Rating: Local conservation value (moderate value)
194	ARTNALEVERY	293211	293353		
239	ARTNALEVERY AND COOKSTOWN	293459	293197	2012	E Rating: Local conservation value (low value)
62	ARTONEY	294711	300955	2011	C+ Rating: County Conservation value
240	ASH BIG	297544	305774	2012	D Rating: Local conservation value (moderate value)
86	BABESWOOD	302970	297319	2011	D Rating: Local conservation value (moderate value)
48	BALLAGAN	323545	307924	2011	D Rating: Local conservation value (moderate value)
47	BALLAGAN AND WHITESTOWN	323674	307214	2011	C+ Rating: County Conservation value
241	BALLINFUIL	299941	312459		
43	BALLUG	320194	305813	2011	D Rating: Local conservation value (moderate value)
242	BALLYBARRACK	301994	303894	2012	D Rating: Local conservation value (moderate value)
165	BALLYMAKELLETT LANDS cNHA	311451	312099		
160	BALLYMASCANLAN ESTUARY - DUNDALK BAY SAC	307170	309442		
243	BALLYNAGRENA	307860	287855		

244	BALLYNAHATTIN	305085	309854		
195	BALLYNAHATTIN AND REDCOW	304841	310688		
42	BALLYNAMAGHER	319648	306001	2011	C Rating: Local conservation value (high value)
38	BALLYNAMAGHER WEST	319411	305870	2011	D Rating: Local conservation value (moderate value)
44	BALLYNAMONY (BRADSHAW)	320987	305849	2011	C Rating: Local conservation value (high value)
49	BALLYNAMONY (MURPHY)	322881	308455	2011	No Conservation Value
50	BALLYNAMONY (MURPHY) EAST	323089	308501	2011	E Rating: Local conservation value (low value)
196	BALLYONAN	315886	314668		
177	BALMER'S BOG (DUNDALK)	304380	306020	2012	D Rating: Local conservation value (moderate value)
245	BALRIGGAN	303298	310037		
246	BALTRAY	314680	277423		
247	BANKERSTOWN	306317	283160	2012	No Conservation Value
161	BARMEATH WOODS cNHA	309487	287640		
182	BARNATTIN RESERVOIR	305098	279091		
248	BAVAN	312888	315889		
249	BAWNTAAFFE	305561	282726	2012	C Rating: Local conservation value (high value)
108	BEAULIEU	312461	276554	2011	C Rating: Local conservation value (high value)
250	BEAULIEU NORTH	312717	277431		
178	BEGRATH (TULLYALLEN)	302985	279062	2012	C Rating: Local conservation value (high value)
20	BELLURGAN	309990	308926	2011	D Rating: Local conservation value (moderate value)
19	BELLURGAN (MARSH ROAD) - DUNDALK BAY SAC SPA	308283	309696	2011	E Rating: Local conservation value (low value)
22	BELLURGAN EAST	311030	308468	2011	No Conservation Value
179	BIRCH'S LANE (BLACKROCK)	307000	303802	2012	No Conservation Value
189	BOLIES QUARRY	304070	292580	2012	D Rating: Local conservation value (moderate value)
107	BOYCETOWN QUARRY cNHA	313181	289342	2011	C+ Rating: County Conservation value
162	BOYNE COAST AND ESTUARY SAC	313796	277245	2007	
141	BOYNE RIVER ISLANDS NHA - RIVER BOYNE AND RIVER BLACKWATER SAC	305500	275500		
159	BRAGANSTOWN BOG	303853	293552	2012	E Rating: Local conservation value (low value)
105	BRIARHILL	310803	286653	2011	D Rating: Local conservation value (moderate value)
251	BURREN	306918	286027	2012	A Rating: Internationally Important
197	CARDISTOWN	291359	295172		
158	CARLINGFORD LOUGH cNHA	319030	312265		
187	CARLINGFORD LOUGH SPA	319030	312265		
109	CARLINGFORD MOUNTAIN cNHA	317000	313000	2010	
183	CARLINGFORD MOUNTAIN SAC	317000	313000	2010	
164	CARLINGFORD SHORE SAC	320095	311115		
252	CARNALUGHOGE	294689	302353	2012	E Rating: Local conservation value (low value)
7	CARRAGHCLOUGHAN LAKE	294397	308383	2011	B Rating: Nationally Important
253	CARRICKALLAN	298937	305958	2012	D Rating: Local conservation value (moderate value)
254	CARRICKALLAN AND MULLABOHY	299298	305651		
198	CARRICKANEENA	306057	313858		
255	CARRICKANEENA AND FEED	306520	314151	2012	C+ Rating: County Conservation value
103	CARRICKBAGGOT	310509	285380	2011	C Rating: Local conservation value (high value)

2	CARRICKCARNAN	307015	318435	2011	E Rating: Local conservation value (low value)
256	CARRICKNASHANAGH	307223	282308	2012	C+ Rating: County Conservation value
257	CARRICKROBIN	297854	308091	2012	D Rating: Local conservation value (moderate value)
180	CARTANSTOWN	307730	282878	2012	C Rating: Local conservation value (high value)
120	CARTANSTOWN LOUGH cNHA	307595	283586	2012	B Rating: Nationally Important
258	CARTANSTOWN WEST	307317	283424	2012	D Rating: Local conservation value (moderate value)
259	CASTLEBELLINGHAM	305914	296392	2012	No Conservation Value
29	CASTLECARRAGH	317323	305872	2011	E Rating: Local conservation value (low value)
28	CASTLECARRAGH SOUTH	317011	305634	2011	C+ Rating: County Conservation value
199	CASTLETOWNCOOLEY HEATH	317284	307776		
145	CASTLETOWNCOOLY	317008	308410	2005	
260	CAVANROBERT	293295	297947	2012	D Rating: Local conservation value (moderate value)
261	CHANONROCK	294739	304415	2012	C Rating: Local conservation value (high value)
263	CHANONROCK SOUTH	294850	303803	2012	No Conservation Value
264	CHRISTIANSTOWN	299519	298630	2012	D Rating: Local conservation value (moderate value)
200	CLONALEENAGHAN	296420	310040		
201	CLUIDE	306282	288825		
143	COLLON - MELLIFONT ABBEY WOODS cNHA	301151	283037	2012	B Rating: Nationally Important
142	COLLON NORTH - MELLIFONT ABBEY WOODS cNHA	300845	284331	2005	
265	COLLON WEST	299092	283205		
96	COOLE BOG	291720	291816	2011	D Rating: Local conservation value (moderate value)
266	CORBOLLIS	298576	297500		
66	CORRADORAN LOUGH	288528	300201	2011	C+ Rating: County Conservation value
18	CORRAKIT (WINDY GAP) - CARLINGFORD MOUNTAIN SAC	313232	313307	2011	A Rating: Internationally Important
267	CORTIAL	299289	307114	2012	D Rating: Local conservation value (moderate value)
13	CORTIAL LOUGH - DRUMCAH, TOPRASS AND CORTIAL LOUGHS NHA	298473	307334	2011	B Rating: Nationally Important
4	COURTBANE	293169	311871	2011	C Rating: Local conservation value (high value)
268	CROSSABEAGH	297885	305324		
269	CROWMARTIN	288240	295231		
202	CRUMLIN	304112	304420		
10	CUNNICAR	297493	309253	2011	C Rating: Local conservation value (high value)
270	CUNNICAR	296773	309033		
112	DARVER CASTLE WOODS cNHA	300500	298600	2010	
271	DARVER WETLAND	300248	298356	2012	C Rating: Local conservation value (high value)
92	DERRYCAMMAGH	299955	295600	2011	No Conservation Value
90	DROMISKIN	306231	297736	2011	C Rating: Local conservation value (high value)
272	DROMISKIN EAST	306621	297396	2012	D Rating: Local conservation value (moderate value)
273	DROMISKIN NORTH	305421	297979		
89	DROMISKIN WEST	304782	297852	2011	D Rating: Local conservation value (moderate value)
67	DRUMARD	289783	299157	2011	No Conservation Value
17	DRUMASS	295101	307236	2011	D Rating: Local conservation value (moderate value)

15	DRUMCAH LOUGH - DRUMCAH, TOPRASS AND CORTIAL LOUGHS NHA	295757	306025	2011	B Rating: Nationally Important
113	Drumcah, Toprass & Cortial Loughs NHA	297611	306970	2011	
203	DRUMGONNELLY	295109	305108		
64	DRUMGOOLAN	294304	301094	2011	C+ Rating: County Conservation value
65	DRUMGOWNA	292169	301278	2011	E Rating: Local conservation value (low value)
204	DRUMGOWNA AND MUFF	293257	301022		
274	DRUMIN (ED DUNLEER)	306223	287410	2012	C Rating: Local conservation value (high value)
275	DRUMMULLAGH	313328	317631	2012	E Rating: Local conservation value (low value)
276	DRUMMULLAGH SOUTH	313243	316599	2012	E Rating: Local conservation value (low value)
119	DRUMSHALBON LOUGH cNHA	308339	283316	2012	C+ Rating: County Conservation value
277	DRUMULLA AND LISLEA	312470	317620	2012	B Rating: Nationally Important
186	DUNDALK BAY CNHA	309000	307000		
156	DUNDALK BAY SAC	309000	307000		
185	DUNDALK BAY SPA	309000	307000		
205	DUNGOOLY	300940	313357		
83	DUNMAHON	302520	302309	2011	D Rating: Local conservation value (moderate value)
16	EDENAGRENA	295992	307121	2011	E Rating: Local conservation value (low value)
1	EDENTOBER	307569	319001	2011	C+ Rating: County Conservation value
278	EDMONDSTOWN	290576	295297	2012	D Rating: Local conservation value (moderate value)
279	EMLAGH	295974	302161		
280	EMLAGH AND COOLCREEDAN	296258	302378	2012	E Rating: Local conservation value (low value)
281	FAIRHILL	303870	305102	2012	C Rating: Local conservation value (high value)
206	FEEDE	307107	313849		
282	FEEDE AND DRUMAD	307237	314821		
125	FLURRY RIVER SITE - DUNDALK BAY SAC	307369	309903		
283	GALLAGH	307549	288331	2012	B Rating: Nationally Important
284	GALLAGH AND BALLYNAGRENA	307612	287956	2012	E Rating: Local conservation value (low value)
207	GALLSTOWN	307820	284194		
37	GALTRIMSLAND	319421	306342	2011	C Rating: Local conservation value (high value)
36	GALTRIMSLAND POND	319268	306522	2011	E Rating: Local conservation value (low value)
34	GALTRIMSLAND SOUTH	319316	306252	2011	D Rating: Local conservation value (moderate value)
285	GILBERTSTOWN	299931	297132	2012	E Rating: Local conservation value (low value)
208	GLENMORE	314813	311336		
209	GRANGE	297953	303311		
210	GRANGE IRISH	318761	308821		
35	GRANGE POND	319406	307789	2011	C Rating: Local conservation value (high value)
102	GRATTANSTOWN	307612	287382	2011	E Rating: Local conservation value (low value)
286	GREATWOOD	287182	295103	2012	E Rating: Local conservation value (low value)
94	GREENLANE	296649	293314	2011	D Rating: Local conservation value (moderate value)
53	GREENORE - GREENORE WETLANDS	322045	309445	2011	C Rating: Local conservation value (high value)

168	GREENORE WETLANDS	321744	309604		
173	HAGGARDSTOWN	306052	303183	2012	E Rating: Local conservation value (low value)
287	HAGGARDSTOWN AND MULLAGHARLIN	305334	303776	2012	D Rating: Local conservation value (moderate value)
153	HAMILTON MARSH (BLACKROCK)	306975	303316	2012	D Rating: Local conservation value (moderate value)
211	HAYNESTOWN	305405	301563		
74	HOARSTONE	294195	300481	2011	B Rating: Nationally Important
21	JENKINSTOWN	310912	308830	2011	C Rating: Local conservation value (high value)
212	JENKINSTOWN	312309	310519		
213	JENKINSTOWN AND BELLURGAN	310854	309942		
288	JENKINSTOWN AND MULLAGHATTIN	312797	310663		
130	KEENAN'S CROSS POND	309700	290370	2012	C Rating: Local conservation value (high value)
80	KILCRONEY	297044	298689	2011	D Rating: Local conservation value (moderate value)
214	KILCRONEY AND CORDERRY	298688	298663		
289	KILCRONEY SOUTH	297536	297333	2012	C Rating: Local conservation value (high value)
121	KILDEMOCK MARSH cNHA	297511	288289	2012	B Rating: Nationally Important
290	KILLEEN	293469	300381		
291	KILLIN	315393	308703		
292	KILLINCOOLE	299859	300570	2012	E Rating: Local conservation value (low value)
127	KILLINCOOLE MARSH	298930	300855	2012	B Rating: Nationally Important
293	KILLINEER	305143	279492		
174	KILLINEER RESERVIOR	306591	277819	2012	D Rating: Local conservation value (moderate value)
294	KILLYCRONEY	298549	306544	2012	D Rating: Local conservation value (moderate value)
295	KILLYCRONEY AND CORTIAL	298956	306544	2012	D Rating: Local conservation value (moderate value)
157	KIRCOCK	306442	282250	2012	E Rating: Local conservation value (low value)
172	KNOCKAGH	299470	310540	2012	No Conservation Value
81	KNOCKATTIN	301110	303043	2011	C Rating: Local conservation value (high value)
75	KNOCKMOR	295301	300428	2011	D Rating: Local conservation value (moderate value)
106	LABANSTOWN	312534	287040	2011	E Rating: Local conservation value (low value)
215	LACKNAGREAGH	296467	307961		
146	LANNAT	298152	302305	2012	D Rating: Local conservation value (moderate value)
296	LANNAT AND TULLYDRUM	288940	301826	2012	E Rating: Local conservation value (low value)
216	LANNAT EAST	289575	302020		
166	LEONARD'S CROSS QUARRY cNHA - MELL LAKES	307198	276004		
24	LIBERTIES OF CARLINGFORD	319275	311215	2011	D Rating: Local conservation value (moderate value)
217	LIBERTIES OF CARLINGFORD AND COMMONS	319145	309601		
297	LIBERTIES OF CARLINGFORD AND MILLGRANGE	320488	309114	2012	B Rating: Nationally Important
55	LIBERTIES OF CARLINGFORD EAST	319442	311401	2011	No Conservation Value
218	LIBERTIES OF CARLINGFORD WEST	318808	309911		
32	LISCARRAGH MARSH NHA	318537	306105	2011	B Rating: Nationally Important
298	LISDOO	304493	309498		
299	LISLEA	310047	316051	2012	D Rating: Local conservation value (moderate value)

27	LOUGHANMORE LAKE	314773	306276	2011	C Rating: Local conservation value (high value)
219	LOUTH HALL	294125	296351		
300	LOUTH HALL AND RATHEESTIN	294431	297524		
144	LOUTH HALL AND ARDEE WOODS cNHA	294888	297164	2005	
150	LURGAN GREEN NORTH - DUNDALK BAY SAC SPA	306518	301044	2006	
8	LURGANKEEL	301298	313023	2011	C+ Rating: County Conservation value
9	MAGHAREAGH	296527	308559	2011	C+ Rating: County Conservation value
301	MANSFIELDSTOWN	301396	296463	2012	No Conservation Value
93	MAPASTOWN	298819	294766	2011	C Rating: Local conservation value (high value)
302	MARSH NORTH	306367	308585	2012	No Conservation Value
220	MARSH NORTH WET GRASSLAND	306890.1935	308536.5833		
151	MARSH SOUTH - DUNDALK BAY SAC SPA	305587	306299	2006	
303	MARSH SOUTH AND HAGGARDSTOWN	307143	304953	2012	No Conservation Value
169	MELL LAKES	307413	276508	2012	C+ Rating: County Conservation value
110	MELLIFONT ABBEY WOODS cNHA	300400	283500	2010	
54	MILLGRANGE - GREENORE WETLANDS	321657	309657	2011	C+ Rating: County Conservation value
52	MILLGRANGE SOUTH	320790	308702	2011	D Rating: Local conservation value (moderate value)
304	MODEL FARM	304824	297614		
305	MONEYCROCKROE	314059	311923		
104	MORGANSTOWN	309066	286740	2011	D Rating: Local conservation value (moderate value)
221	MOUNTBAGNALL	315869	306233		
306	MOUNTRUSH	292006	294384		
51	MUCHGRANGE	321559	308323	2011	C+ Rating: County Conservation value
147	MUFF (LOUTH)	293328	301671	2005	
329	MULLABANE	322000	308100		
307	MULLAGHARLIN	304831	303453	2012	E Rating: Local conservation value (low value)
33	MULLAGHATTIN QUARRY	318329	307489	2011	C Rating: Local conservation value (high value)
56	MULLATEE	320949	309544	2011	B Rating: Nationally Important
308	MULLATEE AND GREENORE	321688	310232	2012	C+ Rating: County Conservation value
309	MULLATEE EAST	321680	310078	2012	E Rating: Local conservation value (low value)
76	MULLAVALLY	296600	301670	2011	D Rating: Local conservation value (moderate value)
87	NEWRATH	303580	297818	2011	C Rating: Local conservation value (high value)
99	NEWTOWN MONASTERBOICE	305780	282045	2011	C Rating: Local conservation value (high value)
11	NEWTOWNBALREGAN	301172	308885	2011	C Rating: Local conservation value (high value)
84	NEWTOWN DARVER	302368	298114	2011	C Rating: Local conservation value (high value)
69	NICHOLASTOWN (ED TALLANSTOWN)	291525	298342	2011	E Rating: Local conservation value (low value)
70	NICHOLASTOWN SOUTH	291658	298077	2011	E Rating: Local conservation value (low value)
222	PART OF HARRISTOWN	293946	293379		
223	PLASTER	307152	312481		
100	PRIEST TOWN	305690	283433	2011	D Rating: Local conservation value (moderate value)

224	RAMPARK	314260	307611		
26	RAMPARK LAKE	313678	306564	2011	E Rating: Local conservation value (low value)
326	RASSAN	293250	310894	2012	D Rating: Local conservation value (moderate value)
3	RASSAN BOG	292517	312133	2011	C+ Rating: County Conservation value
310	RATHBODY	292994	297374	2012	D Rating: Local conservation value (moderate value)
311	RATHBRIST	296298	297324	2012	E Rating: Local conservation value (low value)
40	RATHCOR LOUGH	319370	305349	2011	C+ Rating: County Conservation value
41	RATHCOR LOWER	319780	305300	2011	E Rating: Local conservation value (low value)
31	RATHCOR SOUTH	318414	305246	2011	E Rating: Local conservation value (low value)
30	RATHCOR UPPER	318025	306032	2011	No Conservation Value
116	RATHESCAR WOOD cNHA	302676	286891	2012	B Rating: Nationally Important
225	RATHMORE	299899	308293		
72	RATHNEESTIN	294057	298375	2011	D Rating: Local conservation value (moderate value)
73	RATHNEESTIN NORTH	293951	298549	2011	E Rating: Local conservation value (low value)
312	RATHNEESTIN WEST	293680	298338	2012	C Rating: Local conservation value (high value)
226	RATHNEETY	298642	301837		
313	RAVENSDALE PARK	309295	316786	2012	C Rating: Local conservation value (high value)
68	REAGHSTOWN	290839	298428	2011	D Rating: Local conservation value (moderate value)
115	REAGHSTOWN MARSH cNHA	288903	295587	2012	B Rating: Nationally Important
57	REDBOG	290554	303670	2011	C+ Rating: County Conservation value
227	REDCOW	305953	309913		
78	RICHARD TAAFFES HOLDING	295769	300815	2011	C Rating: Local conservation value (high value)
129	RIVER BOYNE AND RIVER BLACKWATER SAC	303828	276023		
149	RIVER DEE - RIVER FANE/RIVER DEE cNHA	307361	292166		
148	RIVER FANE - RIVER FANE/RIVER DEE cNHA	304984	300429		
163	RIVER FANE/RIVER DEE cNHA	0	0		
131	RIVER GLYDE	306500	294500		
23	ROCKMARSHALL	311539	308383	2011	A Rating: Internationally Important
60	ROOTATE	291628	301789	2011	C+ Rating: County Conservation value
60	ROOTATE	291628	301789	2012	C+ Rating: County Conservation value
228	ROOTATE NORTH	291654	302436		
58	ROSS LOUGH	291747	303276	2011	C+ Rating: County Conservation value
229	ROSSLOUGH	292649	303204		
59	ROSSLOUGH NORTH	292056	303536	2011	D Rating: Local conservation value (moderate value)
314	ROXBOROUGH	306878	283286		
315	ROXBOROUGH AND BANKERSTOWN	305944	283285		
327	ROXBOROUGH QUARRY	310884	293191		
316	SHAMROCKHILL	305326	287777	2012	E Rating: Local conservation value (low value)
317	SHEEPWALK	294781	300228	2012	E Rating: Local conservation value (low value)
25	SHILTIES LOUGH - CARLINGFORD SHORE SAC	319953	311146	2011	A Rating: Internationally Important

318	SHORTSTONE EAST	298701	311224	2012	D Rating: Local conservation value (moderate value)
319	SHORTSTONE WEST	297716	310961	2012	E Rating: Local conservation value (low value)
230	SLIEVENAGLOGH	314301	308674		
155	SPRINGFIELD MARSH (BLACKROCK)	306416	302292	2012	E Rating: Local conservation value (low value)
123	STABANNAN / BRAGANSTOWN cNHA	301800	293900	2012	A Rating: Internationally Important
184	STABANNAN / BRAGANSTOWN SPA	301800	293900	2012	
82	STEPHENSTOWN POND NHA	301226	302615	2011	C Rating: Local conservation value (high value)
97	STORMANSTOWN BOG	291335	292565	2011	C+ Rating: County Conservation value
320	SUMMERHILL	297936	300996	2012	E Rating: Local conservation value (low value)
12	TANKARDSROCK	301501	308181	2011	C Rating: Local conservation value (high value)
321	TANKARDSROCK AND DONAGHMORE	300841	307559	2012	C Rating: Local conservation value (high value)
154	THE LOAKERS MARSH - DUNDALK BAY SAC SPA	307098	304546	2006	
231	THOMASTOWN	292415	298355		
71	THOMASTOWN (ED TALLANSTOWN)	292366	298578	2011	D Rating: Local conservation value (moderate value)
322	THOMASTOWN AND RATHNEESTIN	293138	298426		
101	TINURE FEN cNHA	305180	283486	2011	C Rating: Local conservation value (high value)
63	TOOMES	293755	302065	2011	E Rating: Local conservation value (low value)
323	TOOMES AND BALLYKELLY	293796	303014	2012	E Rating: Local conservation value (low value)
14	TOPRASS LOUGH - DRUMCAH, TOPRASS AND CORTIAL LOUGHS NHA	296823	306410	2011	B Rating: Nationally Important
6	TREAGH	293570	309690	2011	D Rating: Local conservation value (moderate value)
5	TREAGH NORTH	293630	310175	2011	C Rating: Local conservation value (high value)
128	TRUMPET HILL cNHA	309525	309937		
98	TULLAKEEL	289844	294491	2011	C+ Rating: County Conservation value
232	TULLY	288096	295761		
61	TULLY (ED KILLANNY)	290658	301114	2011	C Rating: Local conservation value (high value)
77	TULLYCAHAN	295676	301674	2011	E Rating: Local conservation value (low value)
324	WHITECROSS	297463	302206	2012	D Rating: Local conservation value (moderate value)
88	WHITERATH	304437	298020	2011	C Rating: Local conservation value (high value)
46	WHITESTOWN	323746	306901	2011	E Rating: Local conservation value (low value)
45	WHITESTOWN COAST	323358	306531	2011	D Rating: Local conservation value (moderate value)
325	WILLIAMSTOWN	305353	292970	2012	E Rating: Local conservation value (low value)
91	WOODTOWN	300530	296072	2011	E Rating: Local conservation value (low value)
85	WOTTONSTOWN	302658	296749	2011	C+ Rating: County Conservation value

Louth Wetland Survey II (LWSII) 2012 CD ROM Contents

by Peter Foss, Patrick Crushell, Barry O'Loughlin & Faith Wilson

Contents:

1. **Louth Wetland Survey II 2012. Part 1: Main Report** prepared by Peter J. Foss, Patrick Crushell, Barry O'Loughlin & Faith Wilson (In PDF format, requires Adobe Acrobat to view) 107 pages
2. **Louth Wetland Survey II 2012. Part 2: Site Reports Parts A & B** prepared by Peter J. Foss, Patrick Crushell, Barry O'Loughlin & Faith Wilson (In PDF format, requires Adobe Acrobat to view)

Site Reports Sections A pages 1-228
Site Reports Sections B pages 229-456
3. **Louth Wetland Site Database 2012 Version 2.0; Louth Wetland Survey Database 2012 Version 2.0 & Publications Bibliography database** (requires Filemaker Pro 8.0 or later format to view).
4. **Excel tables to accompany the Louth Wetland Survey II 2012 report**
 - a. **Report Appendix 1:** Summary information on sites surveyed during the LWS 2012
 - b. **LWS_Survey_Database_Site_Summary:** Summary information on sites survey during the LWS 2012, including site location, site description and conservation ranking.
 - c. **LWS_Survey_Database_total_export:** Total Data Export of all information held within the LWS 2012 site database
5. **GIS Shape files from the Louth Wetland Survey II 2012.**
 - a. ArcView GIS dataset (Requires ArcView 10 GIS Software)
 - b. MapInfo GIS dataset (Requires MapInfo GIS Software)
6. **CD box cover for Louth Wetland Survey II 2012** (in PDF format)

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