

From: Matthew Craig <matthew.craig@2rn.ie>
Sent: 02 October 2020 12:19
To: conor@galetechenergy.com
Cc: Johnny Evans; windfarms@rte.ie
Subject: RE: Bracklyn Windfarm

Hi Conor,
I haven't seen this one.
2RN have no fixed linking that will be affected by the proposed site.
There is however a risk of interference to DTT viewers in the area.
Should the site go ahead we would like a protocol in place with the developer should any interference occur.

Matthew Craig

Project Engineer
Projects and Coverage Planning
2RN
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From: conor@galetechenergy.com <conor@galetechenergy.com>
Sent: 02 October 2020 11:20
To: Matthew Craig <matthew.craig@2rn.ie>
Subject: FW: Bracklyn Windfarm

Hi Matthew,

I hope you are keeping well.

I am just sending this on as we are preparing the EIAR chapters and I wanted to confirm that you had received this and to double check incase it was missed and 2rn had issues here if you could advise.

Kind Regards,

Conor

Conor Foy | Galetech Energy Services
Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06
M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

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From: conor@galetechenergy.com <conor@galetechenergy.com>

Sent: 26 March 2020 12:46

To: windfarms@rte.ie

Subject: Bracklyn Windfarm

To whom it may concern,

Please find attached a pre-application scoping request for a proposed wind farm development in County Westmeath.

Kind regards,

Conor

Conor Foy | Galetech Energy Services

Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06

M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

Galetech Energy Services Limited

Registered in Ireland No. 352304 | Registered Office: Greaghcrottagh, Cootehill, Co. Cavan H12 NV06

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From: Roger Woods <rwoods@bai.ie>
Sent: 26 March 2020 14:40
To: conor@galetechenergy.com
Subject: RE: Bracklyn Windfarm

Hi Conor

The BAI does not perform an in-depth analysis of the effect of wind turbines on FM networks. However, we are not aware of any issues from existing windfarms into existing FM networks. Also, the proposed windfarms are not located close to any existing or planned FM transmission sites.

Regards
Roger

Regards

Roger

Senior Executive Engineer
Broadcasting Authority of Ireland
2-5 Warrington Place
Dublin D02 XP29

Tel: 01 6441200
Fax: 01 6441299

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Tá an ríomhphost seo agus aon iatán a ghabhann leis rúnda agus is leis an duine sin amháin a bhfuil siad seolta chuige/chuici a bhaineann siad. Muna duitse an ríomhphost seo, ní ceart é a léamh ná a scaoileadh chuig aon tríú páirtí. Iarrtar ort teachtaireacht a sheoladh chuig an seoltóir nó chuig info@bai.ie, agus an ríomhphost seo a scrios.

From: conor@galetechenergy.com <conor@galetechenergy.com>
Sent: Thursday 26 March 2020 11:45
To: Reception BAI <reception@bai.ie>
Subject: Bracklyn Windfarm

To whom it may concern,
Please find attached a pre-application scoping request for a proposed wind farm development in County Westmeath.
Kind regards,
Conor

Conor Foy | Galetch Energy Services
Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06
M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

Galetch Energy Services Limited
Registered in Ireland No. 352304 | Registered Office: Greaghcrotagh, Cootehill, Co. Cavan H12 NV06

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From: Bat Conservation Ireland <info@batconservationireland.org>
Sent: 30 March 2020 11:33
To: conor@galetechenergy.com
Subject: RE: Bracklyn Windfarm

Dear Conor,
Bat Conservation Ireland do not have the resources to review planning applications.

Please follow the listed guidelines/publications in relation to required bat surveys:

Bat Conservation Ireland 2012 Guide to Turbines and Wind Farms. www.batconservationireland.org.

CIEEM (2016) Guidelines for Ecological impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal (2nd Edition). CIEEM, Winchester.

Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.

Kelleher, C. & Marnell, F. (2006) Bat Mitigation Guidelines for Ireland. Irish Wildlife Manuals, No. 25. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Lundy, M.G., Montgomery, I.W., Roche, N. & Aughney, T. (2011). *Landscape Conservation for Irish Bats & Species Specific Roosting Characteristics* (Unpublished). Bat Conservation Ireland, Cavan, Ireland.

Lysaght, L. and Marnell, F. (eds) (2016) Atlas of Mammals in Ireland 2010-2015, National Biodiversity Data Centre, Waterford.

Marnell, F., Kingston, N. & Looney, D. (2009) *Ireland Red List No. 3: Terrestrial Mammals*, National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.

McAney, K. (2006) A conservation plan for Irish vesper bats, Irish Wildlife Manual No. 20 National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland. McAney, K. (2014). An overview of *Rhinolophus hipposideros* in Ireland (1994-2014). *Vespertilio* **17**, 115–125.

SNH (2019) Bats and onshore wind turbines; Survey, Assessment and Mitigation. Version: January 2019. Scottish Natural Heritage, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (BCT).

Bat Conservation Ireland hold a large volume of bat records which can be consulted for a fee at the following email address: niamhr@batconservationireland.org.

Yours sincerely,
Bat Conservation Ireland

Bat Conservation Ireland Ltd.
Company Registration No. 494343

www.batconservationireland.org

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28th April 2020

Conor Foy,
Gaeltech Energy Services,
Clondargan,
Stradone,
Co. Cavan,
H12 NV06.

Re: **Proposed WindFarm Development (Bracklyn) in Co. Westmeath.**

Dear Mr Foy,

The following are the comments from this Division in relation to the proposed development:

If the proposed development will involve the felling or removal of any trees, the developer must obtain a Felling License from this Department before trees are felled or removed. A Felling Licence application form can be obtained from **Felling Section, Department of Agriculture, Food and the Marine, Johnstown Castle Estate, Co. Wexford**. Tel: 076-1064459, Web <https://www.agriculture.gov.ie/forests-service/tree-felling/tree-felling/>

A Felling Licence granted by the Minister for Agriculture, Food and the Marine provides authority under **the Forestry Act 2014**, to fell or otherwise remove a tree or trees and/or to thin a forest for silvicultural reasons. The Act prescribes the functions of the Minister and details the requirements, rights and obligations in relation to felling licences. The principal set of regulations giving further effect to the Forestry Act 2014 are the Forestry Regulations 2017 (S.I. No. 191 of 2017).

The developer should take note of the contents of the **Felling and Reforestation Policy** document, which provide a consolidated source of information on the legal and regulatory framework relating to tree felling;
<https://www.agriculture.gov.ie/media/migration/forestry/tree-felling/FellingReforestationPolicy240517.pdf> .

In order to ensure regulated forestry operations in Ireland accord with the principles of sustainable forest management (SFM) , as well as fulfilling the requirements of other relevant environmental protection laws, the Department (acting through its Forest Service division) must undertake particular consultations and give certain matters full consideration during the assessment of individual Felling Licence applications. This includes consultation with relevant bodies, the application of various protocols and procedures (e.g. Forest Service Appropriate Assessment Procedure), and the requirement for applicants on occasion to provide further information (e.g. a Natura Impact Statement).

Consequently, when the Forest Service is considering an application to fell trees, the following applies:

1. The interaction of these proposed works with the environment locally and more widely, in addition to potential direct and indirect impacts on designated sites and water, is assessed. Consultation with relevant environmental and planning authorities may be required where specific sensitivities arise (e.g. local authorities, National Parks & Wildlife Service, Inland Fisheries Ireland, and the National Monuments Service);
2. Where a tree Felling Licence application is received, the Department will publish a notice of the application before making a decision on the matter. The notice shall state that any person may make a submission to the Department within 30 days from the date of the notice. The notices for 2020 are published online at:
<https://www.agriculture.gov.ie/forests-service/publicconsultation/environmentalimpactassessment-2020/registerofdecisions/>
3. Third parties that make a submission or observation will be informed of the decision to grant or refuse the licence, and on request, details of the conditions attached to the licence, the main reasons and considerations on which the decision to grant or refuse the licence was based, and where conditions are attached to any licence, the reasons for the conditions. Both third parties and applicants will be also informed of their right to appeal any decision within 28 days to the Forestry Appeals Committee. Felling Licence decisions for 2020 are published online at:
<https://www.agriculture.gov.ie/forests-service/publicconsultation/environmentalimpactassessment-2020/registerofdecisions/>

Yours sincerely,

Joe O'Donnell
Felling Section
Forest Service
Department of Agriculture, Food and the Marine
Johnstown Castle
Co Wexford



Your Ref: Delvin Wind farm
Our Ref: **G Pre00096/2020**
(Please quote in all related correspondence)

20 July 2020
Westmeath County Council
Council Offices,
Mullingar,
Co. Westmeath
Via email ebrennan@westmeathcoco.ie

Re: Delvin Wind farm

A chara

On behalf of the Department of Culture, Heritage and the Gaeltacht, I refer to correspondence received in connection with the above.

Outlined below are heritage-related observations/recommendations of the Department under the stated heading(s).

Nature Conservation

The Department refers to your email dated 29th May 2020 and your request for observations on the pre-planning scoping document for the preparation of the EIAR for the proposed Bracklyn Wind Farm, near Delvin in Co. Westmeath, to be prepared by Gaeltech Energy Services.

This submission is made in the context of this Department's role in relation to nature conservation. Please find below general scoping comments for the EIAR and Appropriate Assessment screening, licensing requirements, followed by specific comments regarding the site in question.

These observations are intended to assist you in meeting the obligations that may arise in relation to European sites, other nature conservation sites, and biodiversity and environmental protection in general, in the context of the current application. The observations are not exhaustive and are made without prejudice to any recommendation that may be made by this Department in the future. Data collected and surveys carried out in connection with this proposed development may raise other issues that have not been considered here.

The National Parks and Wildlife Service website has recently been updated and should be consulted with regard to the impact of planning and development on nature conservation. The following link gives extensive details on the standards and content NPWS expect from applications: <https://www.npws.ie/development%20consultations> .

The observations have been divided into:

1. Matters relating to the EIAR



2. Matters relating to Appropriate Assessment
3. Comments relating to the site in question

1. Matters relating to the Environmental Impact Assessment Report (EIAR):

Ecological survey

With regard to scoping for an EIAR for a proposed development, in order to assess impacts on biodiversity, fauna, flora and habitats an ecological survey should be carried out of the proposed development site including the route of any access roads, pipelines or cables etc. to survey the habitats and species present. Any improvement or reinforcement works required for access and transport anywhere along any proposed haul route(s) should be included in the EIAR and subjected to ecological impact assessment with the inclusion of mitigation measures, as appropriate. Where bridges require strengthening this may involve grouting of crevices which may function as bat roosts. Where ex-situ impacts are possible survey work may be required outside of the development sites. Such surveys should be carried out by suitably qualified persons at an appropriate time of the year depending on the species being surveyed for. The EIAR should include the results of the surveys and detail the survey methodology and timing of such surveys. It is expected by this Department that best practice will be adhered to with regard to survey methodology and if necessary non Irish methodology adapted for the Irish situation. The EIAR should cover the whole project, including construction, operation and, if applicable, restoration or decommissioning phases. Alternatives examined should also be included in the EIAR. Inland Fisheries Ireland should be consulted with regard to fish species, if applicable. For information on Geological and Geomorphological sites, the Geological Survey of Ireland, should be consulted.

Specific reference should be made to the National Biodiversity Action Plan. Any losses of biodiversity habitat associated with this proposed development (including access roads and cabling etc.) such as woodland, scrub, hedgerows and other habitats should be mitigated for.

In order to assess impacts it may be necessary to obtain hydrological and/or geological data. Any impact on water table levels or groundwater flows may impact on wetland sites some distance away. The EIAR should assess cumulative impacts with other plans or projects, if applicable. Where negative impacts are identified suitable mitigation measures should be detailed as appropriate.

Hedgerows and related species

Hedgerows should be maintained where possible as they form wildlife corridors and provide areas for birds to nest in; hedgerow trees provide a habitat for woodland flora, roosting places for bats and Badger setts may also be present. The EIAR should provide an estimate of the length of any hedgerow that will be removed. Where it is proposed that trees or hedgerows will be removed there should be suitable planting of native species in mitigation incorporated into the EIAR. Where possible, hedgerows and trees should not be removed during the nesting season (i.e. March 1st to August 31st), noting the protection afforded under the Wildlife Act 1976-2018.



Watercourses and wetlands

Wetlands are important areas for biodiversity and ground and surface water quality should be protected during construction and operation of the proposed development. Any watercourse or wetland impacted on should be surveyed for the presence of protected species and species listed on Annexes II and IV of the Habitats Directive. These species could include otters (*Lutra lutra*) which are protected under the Wildlife Acts and listed on Annexes II and IV of the Habitats Directive, salmon (*Salmo salar*) and Lamprey (three species in Ireland) listed on Annex II of the Habitats Directive, Freshwater Pearl Mussels (*Margaritifera* species) and White-clawed Crayfish (*Austropotamobius pallipes*) which are both protected under the Wildlife Act and listed on Annex II of the Habitats Directive, Frogs (*Rana temporaria*) and Newts (*Trituris vulgaris*) protected under the Wildlife Acts and Kingfishers (*Alcedo atthis*) protected under the Wildlife Acts and listed on Annex I of the Birds Directive (Council Directive 79/409 EEC).

One of the main threats identified in the threat response plan for otter is habitat destruction (see https://www.npws.ie/sites/default/files/publications/pdf/2009_Otter_TRP.pdf). A 10m riparian buffer on both banks of a waterway is considered to comprise part of the otter habitat. Therefore any proposed development should be located at least 10m away from a waterway and should consider movements between waterways and waterbodies by otters.

Flood plains

Flood plains, if present, should be identified in the EIAR and left undeveloped to allow for the protection of these valuable habitats and provide areas for flood water retention (green infrastructure). If applicable the EIAR should take account of the guidelines for Planning Authorities entitled "*The Planning System and Flood Risk Management*" published by the Department of the Environment, Heritage and Local Government In November 2009.

Bats

Bat roosts may be present in trees, buildings and bridges. Bat roosts can only be disturbed and/or destroyed under licence issued under the Wildlife Act and a derogation under the Birds and Natural Habitats Regulations 2011 and are strictly protected species under Annex IV of Habitats Directive. An assessment of the impact of the proposed wind farm on bat species should be carried out noting recent guidance available, "*Bat and Onshore Wind Turbines: Survey, Assessment and Mitigation, 2019*" published jointly by Scottish Natural Heritage and Bat Conservation Trust and other stakeholders. Any proposed migratory bat friendly lighting should be proven to be effective.

Alien invasive species

The EIAR should also address the issue of invasive alien plant and animal species such as Japanese Knotweed or Crayfish plague, and detail the methods required to ensure they are not accidentally introduced or spread during survey and or construction. Information on alien Invasive species In Ireland can be found at <http://invasives.biodiversityireland.ie/> and at <http://invasivespeciesireland.com/>.

Bird surveys

Survey methodologies should follow best practice and if necessary be modified to reflect the Irish situation. Two full years of bird surveys is normally considered to be necessary. When survey results are being presented in an EIAR it is important that best practice is followed



and that the full survey methodologies used are detailed, including dates and times. Furthermore, it is expected that bird survey data should be presented in context and records should be supported by basic environmental data such as hourly estimates of visibility, glare arcs, cloud cover and precipitation during vantage point and walk over survey periods. Results for species need to be referenced back to the overall populations and their dynamics as, in some cases even a small risk to a population of a species could be considered significant. It is important that bird migration routes (day and night) are assessed as well as the flight lines of bird species travelling on a daily basis between roosting and feeding areas.

Impact assessment

The impact of the proposed development on the flora/ fauna and habitats present should be assessed with particular regard to:

Natura 2000 sites, i.e. Special Areas of Conservation (SAC) designated under the EC Habitats Directive (Council Directive 92/43/EEC) and Special Protection Areas designated under the EC Birds Directive (Directive 2009/147 EC), other designated sites, or sites proposed for designation, such as Natural Heritage Areas and proposed Natural Heritage Areas, Nature Reserves and Refuges for Fauna or Flora designated under the Wildlife Acts 1976 to 2012, species protected under the Wildlife Acts including protected flora, 'Protected species and natural habitats', as defined in the Environmental Liability Directive (2004/35/EC) and European Communities (Environmental Liability) Regulations, 2008 including Birds Directive - Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur) and Habitats Directive - Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur), important bird areas such as those identified by Birdlife International, features of the landscape which are of major importance for wild flora and fauna, such as those with a "stepping stone" and ecological corridors function, as referenced in Article 10 of the Habitats Directive, other habitats of ecological value in a national to local context (such as those identified as locally important biodiversity areas within Local Biodiversity Action Plans and County Development Plans), Red data book species, and biodiversity in general.

Complete project details including Construction Management Plans (CMPs) need to be provided in order to allow an adequate EIAR and appropriate assessment to be undertaken. Applicants need to be able to demonstrate that CMPs and other such plans are adequate, mitigation is effective and supported by scientific information and analysis and that they are feasible within the physical constraints of the site. The positions, locations and sizes of construction infrastructure and mitigation such as settlement ponds, disposal sites and construction compounds may significantly affect European and other designated sites, habitats and species in their own right and could have an effect for example on drainage, water quality, habitat loss, and disturbance. If these are undetermined at time of the assessment all potential effects of the development on the site are not being considered.

Construction Management Plans

Construction Management Plans should contain sufficient detail to avoid any post construction doubt with regard to the implementation of mitigation measures, timings and roles and responsibilities for same. There can be no doubts or lacunae regarding what is required for mitigation, pre-commencement surveys and or licencing requirements.



Construction work should not be allowed to impact on water quality and measures should be detailed in the EIAR to prevent sediment and/or fuel runoff from getting into watercourses which could adversely impact on aquatic species. See EIAR; Flood Plains for details with regard to flooding risk.

Inland Fisheries Ireland (IFI) should be consulted with regard to impacts on fish species and the applicant may find it useful to consult their publication entitled "Planning for watercourses in the urban environment" which can be downloaded from their web site.

If applicants are not in a position to state the exact location and details of cable routes at the time of application, then they need to consider the range of options that may be used within their assessment. Should the exact height and rotor diameter of the turbines not be known at EIAR stage then the assessment of impacts must be applicable to a variety of turbine heights and rotor diameters which could be used. This should be made clear in the EIAR.

It is important to note that unless post decision consultation with NPWS is specifically stated as a condition of planning, NPWS has no post consent role. However, regional staff are available for liaison regarding any associated licencing requirements and or new information arising for specific species of concern.

Cumulative and ex situ impacts

A rule of thumb often used is to include all European sites within a distance of 15km. It should be noted however that this will not always be appropriate. In some instances where there are hydrological connections a whole river catchment or a groundwater aquifer may need to be included. Similarly where bird flight paths are involved the impact may be on an SPA more than 15 kilometres away.

Other relevant Local Authorities should be consulted to determine if there are any projects or plans which, in combination with this proposed development, could impact on any European sites.

2. Matters relating to the Appropriate Assessment (AA):

In order to carry out the Appropriate Assessment screening, and/or prepare a Natura Impact Statement (NIS), information about the relevant European sites including their conservation objectives will need to be collected. Screening for appropriate assessment should focus on the likely significant effects of the proposed development and related activities on European sites noting that impacts to sites via air and water may occur over large distances. Details of designated sites and species and conservation objectives can be found on <http://www.npws.ie/>. Site-specific, as opposed to generic, conservation objectives are now available for many sites. Each conservation objective for a qualifying interest (QI) habitat or species is defined by a list of attributes and targets and is often supported by further documentation. Where these are not available for a site, an examination of the attributes that are used to define site-specific conservation objectives for the same QIs in other sites can be usefully used to ensure the full ecological implications of a proposal for a site's conservation objective and its integrity are assessed. It is advised, as per the notes and guidelines in the site-specific conservation objectives that any reports quoting conservation objectives should give the version number and date, so that it can be ensured and



established that the most up-to-date versions including map boundaries¹ are used in the preparation of Natura Impact Statements and in undertaking appropriate assessments. The Departmental guidance document on Appropriate Assessment is available on the NPWS website at <https://www.npws.ie/development-consultations> and in EU Commission guidance entitled:

- “Wind energy developments and Natura 2000”²
- "Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC"³;
- 2018 Commission notice "Managing Natura 2000 sites The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC"⁴

More recent CJEU and Irish case law has clarified some issues and should also be consulted.

Post construction monitoring:

This Department recognises the importance of pre and post construction monitoring, such as recommended in Drewitt et al. (2006), and Bat Conservation Ireland (2012). The applicant should not use any proposed post construction monitoring as mitigation to supplement inadequate information in the assessment. Please refer to Circular Letter PD 2/07 and NPWS 1/07 on this issue. This can be downloaded from the Department's website <https://www.npws.ie/development-consultations> .

The EIAR process should identify any pre and post construction monitoring which should be carried out. The post construction monitoring should include bird and bat strikes/fatalities including the impact on any such results of the removal of carcasses by scavengers. Monitoring results should be made available to the competent authority and copied to this Department. A plan of action needs to be agreed at planning stage with the Planning Authority if the results in future show a significant mortality of birds and/or bat species. It is important to note again that unless post decision consultation with NPWS is specifically stated as a condition of planning, NPWS has no post consent role. However, regional staff are available for liaison regarding any associated licencing requirements and or new information arising for specific species of concern.

Note: any significant change to mitigation may require amendment and where a licence has expired; there will be a need for new licence applications for protected species.

¹ <https://www.npws.ie/maps-and-data/designated-site-data>

² https://ec.europa.eu/environment/nature/natura2000/management/docs/Wind_farms.pdf

³

http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf

⁴

https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions_Art_6_nov_2018_en.pdf



Licenses:

Where there are impacts on protected species and their habitats, resting or breeding places, licenses may be required under the Wildlife Act 1976-2018 or derogations under the EC (Birds and Natural Habitats) Regulations 2011, as amended. In particular, bats and otters are **strictly** protected under Annex IV of the Habitats Directive. A copy of Circular Letter NPWS 2/07 entitled “*Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997 – strict protection of certain species/applications for derogation licences*” can be found on the Departmental web site at www.npws.ie/sites/default/files/general/circular-npws-02-07.pdf.

It should be noted that the Regulations of 1997 have since been superseded by the European Communities (Birds and Natural Habitats) Regulations 2011, as amended. Part 6 of those Regulations is now the relevant section dealing with the protection of flora and fauna. Reference to Regulation 23 in the circular letter should be taken to mean Regulation 51 in the current Regulations.

In addition, the planning authority should take account of species protected under sections 21, 22 and 23 of the Wildlife Acts if there are any impacts on other protected species or their resting or breeding places, such as on protected plants, badger setts or birds’ nests. And will also need to be cognisant of article 5 (d) of the Birds Directive. For that reason vegetation, including hedges and trees, should not be removed during the nesting season (i.e. March 1st to August 31st).

In order to apply for any such licenses or derogations as mentioned above the results of a survey should be submitted to the National Parks and Wildlife Service of this Department. Such surveys are to be carried out by appropriately qualified person/s at an appropriate time of the year. Details of survey methodology should be provided. Should this survey work take place well before construction commences, it is recommended that an additional ecological survey of the development site should take place immediately prior to construction to ensure no significant change in the findings of the baseline ecological survey has occurred. If there has been any significant change mitigation, this may require amendment and where a licence has expired, there will be a need for new licence applications for the protected species.

Baseline data:

Along with the standard NPWS data requests available, other sources of habitat and species information beyond those already identified include (but are not be limited to): the National Biodiversity Data Centre (www.biodiversityireland.ie), Inland Fisheries Ireland (www.fisheriesireland.ie), BirdWatch Ireland (www.birdwatchireland.ie), Irish Raptor Study Group, Golden Eagle Trust and Bat Conservation Ireland (www.batconservationireland.org). Data may also exist at a County level within the Planning Authority.

General guidance and useful references available include:

1. The Departmental Wind Energy Planning Guidelines
2. Windfarms on Peatland (2008-2010) Mires and Peat volume 4.
3. Best Practice guidance for Habitat Survey and Mapping by George F Smith, Paul O'Donoghue, Katie O'Hora and Eamon Delaney, 2011. The Heritage Council.



4. Pearce-Higgins, James W., Stephen, Leigh, Langston, Rowena H. W., Bainbridge, Ian P. and Bullman. Rhys (2009). "The distribution of breeding birds around upland wind farms". Journal of Applied Ecology, 46, p1323-1331.
5. Johnson, Gregory D. and Arnett Edward 8. "A Bibliography of Bat Fatality Activity and Interactions with Wind Turbines" (June 2004 updated February 2010) Bat Conservation International.
6. Pearce-Higgins, James W., Stephen, Leigh, Douse, Andy, and Langston, Rowena H. W. (2012). "Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multisite and multi-species analysis". Journal of Applied Ecology. 49. p386-394.
7. Rodrigues, Let ai, (2014). "Guidelines for consideration of bats in wind farm projects". Eurobats Publication Series NO.6 UNEP and Eurobats.
8. The Departmental guidance document on Appropriate Assessment which is available on the NPWS web site at <https://www.npws.ie/protected-sites/guidance-appropriate-assessment-planning-authorities>
9. The EU Commission guidance entitled "Assessment of plans and projects significantly affecting Natura 2000 sites, Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC" which can be downloaded from http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm
10. Bat Conservation Ireland (2012) Wind Turbine/Wind Farm Development Bat Survey Guidelines. Version 2.8, December 2012.
11. Drewitt, Allan Land Longston Rowena H. W. (2006) "Assessing the impacts of wind farms on birds". Ibis 148. p29-42.

3. Further to the above general comments please find below specific observations relating to the site in question:

- The EIAR should include an assessment of the impact on all bat species, noting possible impacts on Leisler's specifically in relation to the locality including post construction phase monitoring for all bat species.
- The EIAR should assess the impact of locating some of the turbines on what appears to be raised bog habitat west of Bracklyn Lough. Hydrological effects on raised bog habitat and the Lough itself should be assessed in the EIAR.

You are requested to send further communications to this Department's Development Applications Unit (DAU) at manager.dau@chg.gov.ie (team monitored); if this is not possible, correspondence may alternatively be sent to:

The Manager



Development Applications Unit (DAU)
Department of Culture, Heritage and the Gaeltacht
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

A handwritten signature in blue ink, appearing to read 'Connor Rooney', is written over a thin horizontal line.

Connor Rooney
Development Applications Unit

From: euplanningregulation <euplanningregulation@housing.gov.ie>
Sent: 31 March 2020 14:50
To: conor@galetechenergy.com
Subject: Bracklyn Windfarm

Dear Conor,

I wish to acknowledge receipt of your recent correspondence relating to the request for comments from stakeholders in the pre-application scoping exercise for Bracklyn Windfarm development.

Under section 30 of the Planning and Development Act 2000, as amended, the Minister for Housing, Planning and Local Government is specifically precluded from exercising power or control in relation to any particular case with which a planning authority or An Bord Pleanála is or may be concerned. As a consequence, the Department will not be making any comments in relation to the scoping exercise.

Morgan O Reilly

EU and Interantional Planning Regulation, Planning Division

An Roinn Tithíochta, Pleanála agus Rialtais Áitiúil
Department of Housing, Planning and Local Government

Teach an Chustaim, Baile Átha Cliath 1. D01 W6X0
Custom House, Custom House Quay, Dublin D01 W6X0

T (+353) 1 8882710

www.tithiocht.gov.ie www.housing.gov.ie

Is faoi rún agus chun úsáide an té nó an aonán atá luaite leis, a sheoltar an ríomhphost seo agus aon comhad atá nasctha leis. Má bhfuair tú an ríomhphost seo trí earráid, déan teagmháil le bhainisteoir an chórais.

Deimhnítear leis an bhfo-nóta seo freisin go bhfuil an teachtaireacht ríomhphoist seo scuabtha le bogearraí frithvíorais chun víorais ríomhaire a aimsiú.

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Conor Foy

From: Defence Property Management Planning
<PropertyManagementPlanning@defence.ie>
Sent: 05 February 2021 13:38
To: Conor Foy
Cc: Gareth O'Flaherty (Defence); Sarah Zacharia (Defence); Warren Downey
Subject: FW: Bracklyn Wind Farm (Re-consultation)

Good afternoon Conor,

Following consultations with our Air Corps colleagues on the proposed Bracklyn Wind Farm Development in County Westmeath,

The Department of Defence wished to make the following observations:

1. *All turbines or tall structures, should be illuminated by high intensity obstacle lights that will allow the hazard be identified and avoided by aircraft in flight.*
2. *Obstruction lights used should be incandescent or of a type visible to Night Vision Equipment. Obstruction lighting fitted to obstacles must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum specifically at or near 850nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.*
3. *Due to the nature of flight operations by the Irish Air Corps the above mentioned are separate to ICAO and IAA lighting requirements.*

Best regards

Don

Don Watchorn

Property Management Branch

An Roinn Cosanta

Department of Defence

Bóthar an Stáisiúin, An Droichead Nua, Contae Chill Dara, W12 AD93.

Station Road, Newbridge, Co.Kildare, W12 AD93.

T +353 (0)45 492199

E-mail don.watchorn@defence.ie

From: Defence Property Management Planning
Sent: Thursday 21 January 2021 09:43
To: Conor Foy <conor@galetechenergy.com>
Cc: Gareth O'Flaherty (Defence) <Gareth.OFlaherty@defence.ie>; Sarah Zacharia (Defence) <Sarah.Zacharia@defence.ie>
Subject: RE: Bracklyn Wind Farm (Re-consultation)

Good morning Conor,

I wish to acknowledge receipt of your e-mail.

We will consult with our Military colleagues on the proposer wind farm development and revert in due course.

Best regards

Don

Don Watchorn

Property Management Branch

From: Conor Foy <conor@galetechenergy.com>
Sent: Tuesday 19 January 2021 12:45
To: Don Watchorn (Defence) <Don.Watchorn@defence.ie>
Subject: FW: Bracklyn Wind Farm (Re-consultation)

Hi Don,

I hope you are keeping well.

I sent this to the general email yesterday and forgot to send to you directly.

If you have any comments please let me know.

Thanks & Regards,

Conor

Conor Foy | Galetech Energy Services
Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06
M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

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From: Conor Foy <conor@galetechenergy.com>
Sent: 18 January 2021 12:02
To: 'PropertyManagement@defence.ie' <PropertyManagement@defence.ie>
Subject: Bracklyn Wind Farm (Re-consultation)

To whom it may concern,

Please find attached a pre-application scoping request for a proposed wind farm development (revised scheme) in County Westmeath further to an initial scoping request in March 2020.

Kind regards,
Conor

Conor Foy | Galetech Energy Services
Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06

M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

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Fógra faoi Rúndacht: Tá an ríomhphost seo agus aon iatán a ghabhann leis rúnda. Is leis an duine / nó daoine sin amháin a bhfuil siad seolta chucu a bhaineann siad agus ní ceart iad a léamh ná a scaoileadh chuig aon tríú páirtí gan cead roimh ré ón Roinn Cosanta.

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conor@galetechenergy.com

From: Dept of Transport Tourism and Sport <info@dttas.gov.ie>
Sent: 26 March 2020 15:16
To: conor@galetechenergy.com
Subject: RE: Bracklyn Windfarm

Conor,

Thank you for contacting the Department of Transport, Tourism & Sport.

Your query falls under the remit of the Department of Communications, Climate Action and Environment at below link.

<https://www.gov.ie/en/organisation/departments-of-communications-climate-action-and-environment/>

Regards,

Margaret Ruddy
Customer Service

An Roinn Iompair, Turasóireachta agus Spóirt
Department of Transport, Tourism and Sport

Lána Líosain, Baile Átha Cliath, D02 TR60
Leeson Lane, Dublin, D02 TR60

T +353 (0)1 604 1140
Margaretruddy@dttas.gov.ie www.dttas.gov.ie

From: conor@galetechenergy.com [<mailto:conor@galetechenergy.com>]

Sent: 26 March 2020 12:01

To: Dept of Transport Tourism and Sport

Subject: Bracklyn Windfarm

To whom it may concern,

Please find attached a pre-application scoping request for a proposed wind farm development in County Westmeath.

Kind regards,

Conor

Conor Foy | Galetech Energy Services

Clondorgan, Stradone, Co. Cavan, Ireland, H12 NV06

M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

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Tá eolas sa teachtaireacht leictreonach seo a d'fhéadfadh bheith príobháideach nó faoi rún agus b'fhéidir go mbeadh ábhar rúnda nó pribhléideach ann. Is le h-aghaidh an duine/na ndaoine nó le h-aghaidh an aonáin atá ainmnithe thuas agus le haghaidh an duine/na ndaoine sin amháin atá an t-eolas. Tá cosc ar rochtain don teachtaireacht leictreonach seo do aon duine eile. Murab ionann tusa agus an té a bhfuil an teachtaireacht ceaptha dó bíodh a fhios agat nach gceadaítear nochtadh, cóipeáil, scaipeadh nó úsáid an eolais agus/nó an chomhaid seo agus b'fhéidir d'fhéadfadh bheith mídhleathach.

Tá ár Ráiteas Príobháideachta le fáil ar www.dttas.gov.ie

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From: John Bagnall <john.bagnall@eir.ie>
Sent: 15 April 2020 18:00
To: conor@galetechenergy.com
Cc: Mobile Networks TXN
Subject: Re: Bracklyn Windfarm

Hi Conor,

We have no transmission services that will be affected by these works. Best of luck with your proposal.

Please keep sending future windfarm development analysis and large infrastructure project request to MobileNetworksTXN@eir.ie for Eir Mobile (formerly Meteor) network analysis.

Kind regards,



John Bagnall
Transmission Design & Engineering

M: +353 85 1053746

E: john.bagnall@eir.ie

Address: EirCode - D24 HX03

On Thu, 26 Mar 2020 at 13:08, <conor@galetechenergy.com> wrote:

To whom it may concern,
Please find attached a pre-application scoping request for a proposed wind farm development in County Westmeath.

Kind regards,

Conor

Conor Foy | Galetech Energy Services

Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06

M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

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An timpeallacht? - Smaoinigh air sula bpriontáileann tú an r-phost seo.
Please consider the Environment before printing this email.

* * * * *

Tá an t-eolas sa ríomhphost seo agus in aon chomhad a ghabhann leis rúnda agus ceaptha le haghaidh úsáide an té nó an aonáin ar seoladh chuige iad agus na húsáide sin amháin.

Is tuairimí nó dearcthaí an údair amháin aon tuairimí nó dearcthaí ann, agus ní gá gurb ionann iad agus tuairimí nó dearcthaí ESB.

Má bhfuair tú an ríomhphost seo trí earráid, ar mhiste leat é sin a chur in iúl don seoltóir.

Scanann ESB ríomhphoist agus ceangaltáin le haghaidh víreas, ach ní ráthaíonn sé go bhfuil ceachtar díobh saor ó víreas agus ní glacann dliteanas ar bith as aon damáiste de dhroim víreas.

<https://www.esb.ie/contact>

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* * * * *

Conor Foy

From: planning applications <planning.applications@failteireland.ie>
Sent: 21 January 2021 14:59
To: Conor Foy
Subject: RE: Bracklyn Wind Farm (Re-consultation)

Hello Conor,

Thank you for sending the Pre-Application Scoping Request regarding the proposed wind farm development. At this stage of the project we have no further comment to add to our email dated 20th of April 2020.

Regards,

Yvonne

Yvonne Jackson

Product Development-Environment & Planning Support | Fáilte Ireland
Áras Fáilte, 88/95 Amiens Street, Dublin 1. D01WR86
T +353 (0)1 884 7224 | M +353 (0) 860357590 | www.failteireland.ie



From: Conor Foy <conor@galetechenergy.com>
Sent: Monday 18 January 2021 14:20
To: planning applications <planning.applications@failteireland.ie>
Subject: Bracklyn Wind Farm (Re-consultation)

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To whom it may concern,
Please find attached a pre-application scoping request for a proposed wind farm development (revised scheme) in County Westmeath further to an initial scoping request in March 2020.

Kind regards,
Conor

Conor Foy | **Galetech Energy Services**

Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06
M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

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From: Donncha O'Sullivan <Donncha.OSullivan@gasnetworks.ie>
Sent: 26 March 2020 14:43
To: 'conor@galetechenergy.com'
Cc: Jim Brohan (James); Wayne Mullins
Subject: RE: Bracklyn Windfarm

Conor,

We have reviewed the above referenced Proposal. We are pleased to advise you we have no comment to make in regard to it.

Regards,

Donncha

Donncha Ó Sullivan BE CEng MIEI MIGEM
Development Liaison Engineer

Gas Networks Ireland
P.O. Box 51, Gasworks Road, Cork, Ireland

T +353 21 453 4613 | **M** +353 87 982 2437
E donncha.osullivan@gasnetworks.ie

gasnetworks.ie | Find us on [Twitter](#)

You are reminded that all work in the vicinity of Gas Networks Ireland Pipelines and Installations must be completed to comply fully with the relevant guidelines to be found in the current editions of the Health & Safety Authority publications, 'Code Of Practice For Avoiding Danger From Underground Services' and 'Guide To Safety In Excavations'. Both documents are available free of charge from The Health And Safety Authority. www.hsa.ie, 1890-28 93 89.

From: conor@galetechenergy.com [mailto:conor@galetechenergy.com]
Sent: 26 March 2020 12:06
To: Donncha O'Sullivan <Donncha.OSullivan@gasnetworks.ie>
Subject: Bracklyn Windfarm

To whom it may concern,
Please find attached a pre-application scoping request for a proposed wind farm development in County Westmeath.
Kind regards,
Conor

Conor Foy | Galetch Energy Services
Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06
M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

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Tá an fhaisnéis á seachadadh dírithe ar an duine nó ar an eintiteas chuig a bhfuil sí seolta amháin agus féadfar ábhar faoi rún, faoi phribhléid nó ábhar atá íogair ó thaobh tráchtála de a bheith mar chuid de. Tá aon athsheachadadh nó scaipeadh den fhaisnéis, aon athbhreithniú ar nó aon úsáid eile a bhaint as, nó aon ghníomh a dhéantar ag brath ar an bhfaisnéis seo ag daoine nó ag eintitis nach dóibh siúd an fhaisnéis seo, toirimisceithe agus féadfar é a bheith neamhdhleathach. Níl Líonraí Gáis Éireann faoi dhliteanas maidir le seachadadh iomlán agus ceart na faisnéise sa chumarsáid seo nó maidir le haon mhoill a bhaineann léi. Ní ghlacann Líonraí Gáis Éireann le haon dliteanas faoi ghníomh nó faoi iarmhairtí bunaithe ar úsáid thoirmisceithe na faisnéise seo. Níl Líonraí Gáis Éireann faoi dhliteanas maidir le seachadadh ceart agus iomlán na faisnéise sa chumarsáid seo nó maidir le haon mhoill a bhaineann léi. Má fuair tú an teachtaireacht seo in earráid, más é do thoil é, déan teagmháil leis an seoltóir agus scrios an t-ábhar ó gach aon ríomhaire.

Féadfar ríomhphost a bheith soghabhálach i leith truaillithe, idircheaptha agus i leith leasaithe neamhúdraithe. Ní ghlacann Líonraí Gáis Éireann le haon fhreagracht as athruithe nó as idircheapadh a rinneadh ar an ríomhphost seo i ndiaidh é a sheoladh nó as aon dochar do chórais na bhfaighteoirí déanta ag an teachtaireacht seo nó ag a ceangaltáin. Más é do thoil é, tabhair faoi deara chomh maith go bhféadfar monatóireacht a dhéanamh ar theachtairreachtaí chuig nó ó Líonraí Gáis Éireann chun comhlíonadh le polasaithe agus le caighdeáin Líonraí Gáis Éireann a chinntiú agus chun ár ngnó a chosaint. Líonraí Gáis Éireann cuideachta ghníomhaíochta ainmnithe, faoi theorainn scaireanna, atá corpraithe in Éirinn leis an uimhir chláráithe 555744 agus a tá hoifig chláráithe ag Bóthar na nOibreacha Gáis, Corcaigh, T12 RX96.

Go raibh maith agat as d'aird a thabhairt.

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Thank you for your attention.



Conor Foy
Galetech Energy Services
Clondargan
Stradone
Co. Cavan
H12 NV06

01 April 2020

Re: 20 78 Pre-Application Scoping Request for Proposed Bracklyn Windfarm, Co Westmeath

Your Ref: N/A

Our Ref: 20/78

Geological Survey Ireland is the national earth science agency and has datasets on Bedrock Geology, Quaternary Geology, Geological Heritage Sites, Mineral deposits, Groundwater Resources and the Irish Seabed. These comprise maps, reports and extensive databases that include mineral occurrences, bedrock/mineral exploration groundwater/site investigation boreholes, karst features, wells and springs. Please see our [website](#) for data availability and we recommend using these various data sets, when undergoing the EIAR, planning and scoping processes. Geological Survey Ireland should be referenced to as such and should any data or geological maps be used, they should be attributed correctly to Geological Survey Ireland.

Dear Conor

With reference to your correspondence of 26 March 2020, concerning the proposed development by Bracklyn Wind Farm Ltd. for a windfarm development within the townland of Bracklin, County Westmeath, Geological Survey Ireland would like to make the following comments to assist Galetech with the completion of the EIAR scoping assessment.

Geoheritage

Geological Survey Ireland (GSI) is in partnership with the National Parks and Wildlife Service (NPWS, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) to identify and select important geological and geomorphological sites throughout the country for designation as geological NHAs (Natural Heritage Areas). This is addressed by the Irish Geoheritage Programme (IGH) of GSI, under 16 different geological themes, in which the minimum number of scientifically significant sites that best represent the theme are rigorously selected by a panel of theme experts.

County Geological Sites (CGS), as adopted under the National Heritage Plan are now included in County Development Plans and in the GIS of planning departments, to ensure the recognition and appropriate protection of geological heritage within the planning system. CGSs can be viewed online under the Geological Heritage tab on the online [Map Viewer](#). The audit for Co. Westmeath was completed in 2019. The full report is available via the geoheritage page of Geological Survey Ireland website which can be found [here](#). **Our records show that there are no CGSs in the vicinity of the proposed development.**

Therefore, with the current plan, there are no envisaged impacts on the integrity of current CGSs by the proposed development. However, if the proposed development plan is altered, please contact Clare Glanville (Clare.Glanville@gsi.ie) for further information and possible mitigation measures if applicable.



Geohazards

Geohazards can cause widespread damage to landscapes, wildlife, human property and human life. In Ireland, landslides are the most prevalent of these hazards. Geological Survey Ireland has information available on past landslides for viewing as a layer on our [Map Viewer](#). Geological Survey Ireland also engages in national projects such as Landslide Susceptibility Mapping and GWFlood Groundwater Flooding. We recommend that geohazards be taken into consideration, especially when developing areas where these risks and susceptibility are prevalent, and we encourage the use of our data when doing so. **Our data sets do not have any recorded landslides in the townland or Bracklin, however a landslide was recorded in the nearby townland of Chamberlainstown.**

Groundwater

Groundwater is important as a source of drinking water, and it supports river flows, lake levels and ecosystems. It contains natural substances dissolved from the soils and rocks that it flows through, and can also be contaminated by human actions on the land surface. As a clean, but vulnerable, resource, groundwater needs to be understood, managed and protected. Through our [Groundwater Programme](#), Geological Survey Ireland provides advice and maps to members of the public, consultancies and public bodies about groundwater quality, quantity and distribution.

Geological Survey Ireland monitors groundwater nationwide by characterising aquifers, investigating karst landscapes and landforms and by helping to protect public and group scheme water supplies. With regard to Flood Risk Management, there is a need to identify areas for integrated constructed wetlands. We recommend using the GSI's National Aquifer and Recharge maps on our [Map viewer](#) to this end.

Natural Resources (Minerals/Aggregates)

Geological Survey Ireland is of the view that the sustainable development of our natural resources should be an integral part of all development plans from a national to regional to local level to ensure that the materials required for our society are available when required. Geological Survey Ireland highlights the consideration of mineral resources and potential resources as a material asset which should be explicitly recognised within the environmental assessment process. Geological Survey Ireland provides data, maps, interpretations and advice on matters related to minerals, their use and their development in our [Minerals section](#) of the website. The Active Quarries, Mineral Localities and the Aggregate Potential maps are available on our [Map Viewer](#). **Our Aggregates Potential Map records crushed rock aggregate potential ranging from 'very high potential' to 'low Potential' in Bracklin townland and in the vicinity of the proposed Development and consideration to aggregate potential sterilisation should be included as part of the EIAR and planning process in the material assets section.**

Geotechnical Database Resources

Geological Survey Ireland continues to populate and develop our national geotechnical database and viewer with site investigation data submitted voluntarily by industry. The current database holding is over 7500 reports with 134,000 boreholes; 31,000 of which are digitised which can be accessed through downloads from our [Geotechnical Map Viewer](#). We would strongly recommend that this database be consulted as part of any baseline geological assessment of the proposed development as it can provide invaluable baseline data for the region or vicinity of the proposed development area. This information may be beneficial and cost saving for any site specific investigations that may be designed as part of the development.

Geological Survey Ireland would much appreciate a copy of reports detailing any environmental or geotechnical site investigations carried out. Should any significant bedrock cuttings be created, we would ask that they will be designed to remain visible as rock exposure rather than covered with soil and vegetated, in accordance with safety guidelines and engineering constraints. In areas where natural exposures are few, or deeply weathered, this measure would permit on-going improvement of geological knowledge of the subsurface and could be included as additional sites of the geoheritage dataset, if appropriate. Alternatively, we ask that a digital photographic record of significant new excavations could be provided. Potential visits from Geological Survey Ireland to personally document exposures could also be arranged. The data would be added to GSI's national database of site investigation boreholes, implemented to provide a better service to the civil engineering sector. Data can be sent to Beatriz Mozo, Geological Mapping Unit, at Beatriz.Mozo@gsi.ie, 01-678 2795.



Other Comments

We would also like to draw your attention to the Departments of Housing, Planning and Local Government and Communications, Climate Action and the Environment that recently published the revised Wind Energy Development Guidelines (WEDG) for public consultation (which closed on 19 February 2020).

We look forward to receiving a copy of the environmental impact assessment report in due course for statutory consultation.

In the meantime if you have any questions in relation to our data sets please or if we can be of further assistance to the project team please do not hesitate to contact me, IGH Programme Lead, Dr. Clare Glanville (clare.glanville@dccae.gov.ie)

Yours sincerely

Dr. Clare Glanville
Planning and Geoheritage Programmes



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Seirbhís Sláinte Comhshaoil,
FSS Baile Átha Cliath & Lár Laighin,
Aonad 7A,
Páirc Chorpadaídeach Loch Siabhair
Baile Roibín, An Muileann gCearr
Co. na hIarmhí, N91 P449

044 9384890 f 044 9384889 t

Environmental Health Service,
HSE Dublin Mid-Leinster,
Unit 7A,
Lough Sheever Corporate Park,
Robinstown, Mullingar,
Co Westmeath, N91 P449

30 JUN 2020

Gaeltech Energy Services
Clondargan
Stradone
Co.Cavan

23rd June 2020

Re: HSE SCOPING SUBMISSION REPORT

Dear Sir/Madam,

Please find enclosed the HSE consultation report in relation to the above proposal. The following HSE departments were notified of the consultation request for this development on 2nd June 2020.

- Emergency Planning – David O’Sullivan
- Estates – Helen Maher
- Assistant National Director for Health Protection – Kevin Kelleher / Laura Murphy
- CHO – Pat Bennett

This report only comments on Environmental Health impacts of the scoping request. If you have any queries regarding this report the contact is Marie Matthews, Principal Environmental Health Officer.

Yours sincerely,

Principal Environmental Health Officer



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Seirbhís Sláinte Comhshaoil,
FSS Baile Átha Cliath & Lár Laighin,
Aonad 7A,
Páirc Chorpadaídeach Loch Siabhair
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Environmental Health Service,
HSE Dublin Mid-Leinster,
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Lough Sheever Corporate Park,
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HSE EIS SCOPING REPORT

Environmental Health Service Consultation Report

(as a Statutory Consultee (Planning and Development Acts 2000,
& Regs made thereunder).

<u>Date:</u>	23rd June 2020
<u>Type of consultation:</u>	Scoping
<u>Planning Authority:</u>	Westmeath County Council
<u>EHIS Reference:</u>	1200
<u>Applicant:</u>	Bracklyn Wind Farm Ltd
<u>Proposed Development:</u>	Proposal to develop an 11 no. turbine wind farm with a total output of approximately 60.5MW. The project will also comprise of the development of an electricity line and 110kV substation to facilitate the export of electricity to the national grid on lands south of Delvin, Co. Westmeath.

This report only comments on Environmental Health impacts of the proposed development. I have made observations on the following specific areas:

Description of the Project:

The EIA must fully describe the characteristics and construction of the project and the reasons for proposing same. It should also describe the existing physical environment and detail any potential impacts on the existing environment both during the construction and operational phase of the project.

Later Consents Required:

Information on possible future monitoring requirements for the operation of the wind farm should be included in the EIAR.

Consideration of Alternatives:

The EIAR should fully describe and consider any alternatives to this project. The applicant should outline a rationale for site selection and proposed individual turbine location and design.

Public Consultation:

The scoping document should describe measures the applicant shall take to inform the public about the project. Details of feedback from the public regarding the proposal should be included within the EIAR. Public consultation should be a two way process between the applicant and the public. The EIAR should clearly demonstrate how the legitimate concerns of the public have been assessed and evaluated and how the outcome of consultation with the public influenced decision making within the EIA.

Noise:

A full and thorough noise survey must be carried out to assess the impact of noise from the proposed turbines on the residents living in the vicinity.

It is essential that up to date baseline monitoring is carried out to establish the existing noise environment. All noise sensitive receptors in the vicinity of the turbines shall be identified. The selection of noise monitoring locations for background noise is of critical importance in the noise survey, therefore the rationale for choosing the number and the positioning of these should be provided by the applicant.

Once the existing noise environment has been established, the predicted increase in noise from the proposed turbines should then be quantified and assessed. It is this department's opinion that adherence to specified noise limit values does not always protect sensitive receptors from noise nuisance therefore the significance of the predicted change in the noise environment should be fully assessed. It is requested that this information is outlined and displayed clearly in the EIS.

The potential cumulative effects of other windfarms, industry, quarrying etc in the vicinity of the development should be assessed as part of the noise survey. All mitigation measures for the control of noise shall be described.

Shadow Flicker:

A shadow flicker assessment is to be carried out. All possible impacted dwellings and sensitive receptors shall be identified. The assessment should include identification of the room use in properties potentially impacted by shadow flicker. If reduction factors are applied as part of the shadow flicker assessment, the rationale for applying same shall

be clearly outlined. Any mitigation measures for the control of shadow flicker shall be described. It is noted the exact model of turbine will not be finalised until the construction tender stage so the impact of all various turbine designs considered by the applicant should be modelled in the assessment.

Geological Impacts/Land Stability

A detailed assessment of the current ground stability of the site for the proposed wind farm development together with the necessary mitigation measures should be included in the EIAR. The assessment should include the impact construction work will have on the future stability of ground conditions taking into account extreme weather events, site drainage, and the possibility for soil erosion.

Water:

All drinking water sources, both surface and groundwater (including individual private wells) shall be identified. It would appear from site investigations carried out that most residents in the vicinity rely on private wells for their water source. Any potential impacts to these drinking water sources shall be assessed. Details of bedrock, overburden, vulnerability, groundwater flows and gradients, inner and outer zones of protection and catchment areas should all be considered when assessing potential impacts and possible mitigation measures. The EHS would recommend that all information is gathered by means of a site survey as desktop studies do not always accurately reflect the current use of water resources.

Dust:

The impact of dust generation from construction should be assessed and a dust minimisation plan or similar mitigation measure that meets current national standards for construction sites should be addressed.

Construction:

A construction management plan should be provided with the EIAR. This should comprehensively outline working procedures and any necessary mitigation measures that will be provided. A site visit has identified narrow access roads that are currently unsuited for construction traffic and the delivery of oversized loads. The scoping document does state that temporary upgrade works and road widening is proposed. The impact of this work along with the impact of increased construction traffic on residents in the vicinity should be assessed in the EIAR. Mitigation and traffic management measures should be outlined.

Complaints procedure:

The EIAR should include proposals for dealing with issues of nuisance from members of the public should they arise.

Ancillary Facilities

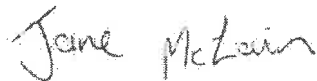
The EIAR should provide location details of any site office, construction yard(s), fuel storage depot, sanitary accommodation, canteen, 1st Aid, disposal of waste water and the provision of potable drinking water supply.

Cumulative Impacts:

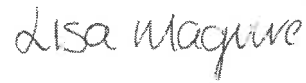
In line with the EPA Guidelines on the information to be contained in Environmental Impact Statements (2002) and their Advice Notes on Current Practise in the preparation of Environmental Impact Statements (2003) the EIA should include the assessment of cumulative impacts of any other industrial or energy developments in the area e.g. quarrying, heavy industry, composting facilities etc.

Health Gain:

The Developer should explore the possibility for recreational facilities to be provided on the Wind Energy Development. Any potential for health gain from the development should be exploited.



Jane McLain
Environmental Health Officer



Lisa Maguire
Environmental Health Officer

All correspondence or any queries with regard to this report including acknowledgement of this report should be forwarded to:

**Marie Matthews
Principal Environmental Health Officer
Environmental Health Service
Unit 7A Lough Sheever Corporate Park
Robinstown
Mullingar
Co. Westmeath**



Date 19th June 2020

Westmeath County Council
Planning Section
County Building
Mullingar
Co Westmeath

Development: Bracklyn Wind Farm Ltd is proposing to develop an 11-no. turbine wind farm, including a connection to the national grid, on lands south of Delvin, Co. Westmeath. The proposed development will have a total output of approximately 60.5MW. The project will also comprise the development of an electricity line and 110kV substation to facilitate the export of electricity to the national grid at lands south of Delvin, Co. Westmeath.

Dear Mr. Brennan,

Thank you for your email and the provision of the pre-application scoping request from Galetch with regard to the proposed Wind Farm development at Bracklyn, Co. Westmeath.

Based on the information provided, it would appear that this development will be approximately 15kms South West of the licensed aerodrome at Athboy, Co. Meath. In this regard, we would request that the consultants should engage with the aerodrome licensee to make them aware of the proposed development. Contact details as follows:

Mr. Bernard Cullen
Ballyboy House
Athboy
Co. Meath
Phone: +353 46 9430185
Phone: +353 87 2563070
Email: bcullenkcc@eircom.net
URL: <http://www.ballyboyairfield.com>



In general terms, the Authority has no specific requirements in relation to this pre-application based on the information provided. During the formal planning process, the Authority will likely provide the following general observations:

"In the event of planning consent being granted, the applicant should be conditioned to contact the Irish Aviation Authority to:

- (1) agree an aeronautical obstacle warning light scheme for the development,
- (2) provide as-constructed coordinates in WGS84 format together with ground and tip height elevations



<i>Turbine No.</i>	<i>WGS-84 Co-ordinates</i>	<i>Ground elevation (Malin Head OD)</i>	<i>Blade tip elevation of turbine (Malin Head OD)</i>	<i>Height of turbine (height from ground level to blade tip)</i>	<i>Confirm if turbine has obstacle lighting.</i>
T1	53.346125, -6.258288	75m	225m	150m	No

(3) notify the Authority of intention to commence crane operations with at least 30 days prior notification of their erection."

Yours sincerely

Deirdre Forrest
Corporate Affairs



Without Prejudice

18th January, 2021

Enda Brady
Corporate Support Unit
Department of Communications, Climate Change and Environment,
Elm House,
Earlsvale Road,
Cavan.
H12 A8H7

Email: CorporateSupport.Unit@DCCAE.gov.ie

BRACKYLN WIND FARM (Re-consultation)PROJECT SCOPING DOCUMENT

Dear Enda

Thank you for the opportunity to contribute to the above mentioned consultation. These comments reflect the views of IFI in respect of same.

Background:

This consultation by Galetech is part of a pre-application scoping request for a proposed wind farm development (revised scheme) in Bracklyln, County Westmeath further to an initial scoping request in March 2020

About Inland Fisheries Ireland's Role

Inland Fisheries Ireland is the statutory authority tasked under section 7(1) of the Inland Fisheries Act 2010 (No. 10 of 2010) with responsibility for the protection, management, and conservation, of the inland fisheries resource and recreational sea angling. IFI is mandated to ensure that the fisheries of the State are protected. To protect means to keep safe, defend, to shield from danger, injury or change. "Fisheries" includes all inland fisheries recreational and commercial, sea angling and mollusc fisheries stipulated under the Fisheries Acts, the physical habitat upon which the fishery relies, the facilities and access, the quantity and quality of the water and the plant and animal life on which fish depend for shelter and food and the spawning areas where in fish deposit their eggs.

The protective role of IFI relates to all aspects of the aquatic environment and all factors that influence the biotic communities within waters, which in any way relate to the propagation of fish populations. Ireland has in excess of 70,000 km of rivers and streams and 144,000 ha of lakes, all of which fall under IFI's fisheries management jurisdiction.

Many of these watercourses discharge directly to the sea and support species which utilise the marine environment for parts of their life cycle (e.g. salmon, sea trout, eel, lamprey species).

Aquatic Biological Diversity

Under section 7(3) of the Inland Fisheries Act 2010 Act it is stated that IFI shall in the performance of its functions have regard to (g) the requirements of the European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997) and the need for the sustainable development of the inland fisheries resource (including the conservation of fish and other species of fauna and flora habitats and the biodiversity of inland water ecosystems), (h) as far as possible, ensure that its activities are carried out so as to protect the national heritage (within the meaning of the Heritage Act 1995). It is important to highlight that there are many surface waters, which are not formally designated but which support populations of Annex II species designated under the Habitats Directive. Projects such as proposed have the potential to impact on downstream fisheries resources if they are not carried out in an environmentally sensitive manner. The potential impacts of the proposed development on fisheries relate largely to the construction of the turbines and access roads and the laying of cables, etc. When this work is carried out in close proximity to a watercourse, there is a potential for negative impacts on the aquatic habitat.

The EU Water Framework Directive

The EU Water Framework Directive (2000/60/EC) is recognised as a critical regulatory legislative provision. The WFD entered into force in December 2000 and requires the protection of the ecological status of surface and ground waters – this encompasses (among other elements) water quality and requires the conservation of habitats for ecological communities.

One of the primary objectives of the Directive is to establish a framework which prevents further deterioration and protects and enhances the status of aquatic ecosystems. Protection of aquatic ecosystems requires that surface water systems be protected. Protection of aquatic ecosystems requires that surface water systems be protected on a catchment basis - a shared objective between all relevant public authorities.

Article 5 of the 2009 Surface Water Regulations requires that a public authority, in performance of its functions, shall not undertake those functions in a manner that knowingly causes or allows deterioration in the chemical or ecological status of a body of surface water. Article 28(2) of the said regulations states that a surface water body whose status is determined to be less than good shall be restored to at least good status not later than the end of 2015.

The River Deel, adjacent to this site, is currently at *moderate* status (2018) a reduction from *good* in 2015. The River Deel contain stocks of Atlantic salmon, Brown Trout, Eel and Lamprey.

The following observations and comments are of necessity of a general nature, as construction proposals and method statements are not as yet available. While they apply to the proposed development in general, the sites for which details have been received are adjacent to and have potential to impact on a wide range of fisheries waters on the Rivers Deel and Boyne including areas designated as SAC's, angling waters, adult holding areas, nursery and spawning waters, etc. forming parts of the Eastern River Basin District. Many proposed turbine sites are to be sited adjacent to a range of smaller watercourses which act primarily as contributories to downstream habitat for juvenile salmonids, lampreys and other species as well as macrophytes, algae and macroinvertebrates which as drift form a significant part of the food supply to the downstream fisheries. All of the waters referred to have, in the context of the proposed development, the potential to convey deleterious matter from those works such as concrete, silt, fuel, paints, thinners and sewage effluent as well as lubricating and hydraulic oils from construction plant and equipment downstream unless proper safeguards are in place. IFI request you have particular regard to the following in the planning stage of the proposed development.

Stream size can be misleading in regard to fish presence. A significant amount of fish rearing occurs in very small channels and seasonal streams. These streams may not be recognised as fish or macroinvertebrate habitat and their importance to fisheries sometimes overlooked.

All natural watercourses which have to be traversed during site development and road construction works should be effectively bridged prior to commencement. The crossing of watercourses at fords is unacceptable because of the amount of uncontrolled sedimentation that can be generated by their use. If temporary crossing structures are required, IFI approval will be necessary as regards specification and timing of installation. There is sometimes a serious misconception that in installing temporary crossing structures, the only issue is keeping water flowing from above a temporary crossing to below it. Design and choice of temporary crossing structures must provide for passage of fish and macroinvertebrates, the requirement to protect important fish habitats e.g. spawning and over wintering areas, as well as preventing erosion and sedimentation. In certain circumstances, access for angling or commercial fishing purposes may also be required. No temporary crossing on any watercourse shall be installed without the approval of IFI as regards sizing, location, duration and timing. The preferred option is for clear span 'bridge type' structures on fisheries waters. The crossing of watercourses at natural fords is not permitted because of the amount of uncontrolled sedimentation that can be generated. The creation of fords on streams and rivers through the introduction of stone is prohibited.

Where circumstances such as space or access difficulties preclude use of clear span structures, temporary crossings structures shall:

- Comprise one or more metal or concrete pipes, prefabricated culverts or such other material as IFI may permit of minimum diameter 900 mm. Pipes or culverts may be vertically stacked.
- Be laid in such manner as to maintain the existing stream profile.
- Ensure no significant alteration in current speed or hydraulic characteristics, in particular not result in scouring, deposition or erosion upstream or downstream the temporary crossing location.
- Have capacity to convey the full range of flows including flood flows likely to be encountered without the crossing being overtopped.
- Be covered with clean inert material such as to allow for the safe crossing of the widest items of plant and equipment without cover material being dislodged and entering waters.

The approach and departure routes to temporary crossing structures should be designed and installed so that drainage will fall away from the watercourse being crossed. In the event that the fall of ground does not permit sufficient control on drainage, additional earthworks settlement areas shall be provided. Temporary crossing structures should be fenced with terram or similar material to prevent wind blow carrying dusts and other potentially polluting matter to waters. Side armour (e.g. reinforced concrete traffic barriers) should be provided on temporary crossing structures to ensure machinery cannot drive over its edge, or force the discharge of material from the bridge deck to waters. IFI wish to emphasise that site selection for temporary crossings should have regard to all access and construction needs ranging from those of fencing contractor's vehicles to the longest wheelbase of multi-axle cranes. It is not permissible, except in exceptional circumstances, to reposition temporary crossing structures where these are not of a clear span type.

Where connection from the proposed wind farm is to be made to the national grid the crossing of important fisheries waters may be an issue where our specific approval will be required.

Permanent crossing structures should not damage fish habitat or create blockages to fish and macroinvertebrate passage. As in the case of temporary crossing structures, design and choice of structure should be based on its technical and economic feasibility to pass fish and macroinvertebrates, the requirement to protect important fish habitats e.g. spawning and over-wintering areas, provision in certain areas of angling and commercial fishing access including boat access and prevention of erosion and sedimentation. Culverts are the most frequently used river/stream crossing structures and are associated with some of the most common fish passage problems. The culverting of long stretches of fisheries water is extremely undesirable and can result in significant loss of valuable habitat.

In the case of crossing structures over fishery waters, the preferred position is for clear span structures (bridges), so as not to interfere in any way with the bed or bank of the watercourses in question. Bridge foundations should be designed and positioned at least 2.5 metres from the river bank so as not to impact on the riparian habitat. Generally, bridges and bottomless culverts are the best option for maintaining natural stream channel characteristics and have the least impact on habitat. However, because of design and load bearing considerations, bottomless culverts may not always be suitable for installation particularly on narrow river channels, as foundations may encroach on the channel itself and possibly result in future scouring or erosion. Taking account of recent advances and investigations in the area of climate change and flood studies, designs should be such as to verifiably have carrying capacity for a 1 in 100 year fluvial flood flow whilst maintaining a minimum freeboard of 300 mm. The Office of Public Works (OPW) is the lead agency for flood risk management in the Republic of Ireland. Design and capacity of structures must also be in accordance with their requirements. IFI strongly recommends that contact be made with OPW at the earliest stage in the planning and design process. (www.opw.ie). Clear span designs maintain channel profile, do not alter gradients, readily pass sediment and debris and provide unrestricted passage for all size classes of fish by retaining the natural stream bed and gradient. Water velocity is not changed and they can be designed to maintain the normal stream width. Foundations should be positioned at least 2.5 metres from waters.

Embedded box and pipe culverts are less preferable to bridges and bottomless culverts. Embedded culverts must maintain the natural channel gradient, width and substrate configuration. They should be buried to a minimum of 500 mm. below the stream bed at the natural gradient. Box and pipe culverts must be sized to maintain the natural stream channel width. The gradient should not exceed 3%.

The availability of suitably sized material (depending on hydraulic conditions) to initiate "simulation" of the stream bed is the most preferable approach to establish fish and faunal passage through culverts. Culverts should be positioned where the watercourse is straightest and aligned with its bed.

In the case of bridges and bottomless culverts, structures should be designed and installed so as to:

- Allow for the maintenance of channel profile and existing gradient.
- Be capable of passing such debris as might arise during flood flow conditions.
- Ensure adequate light penetration to minimise loss in primary productivity.
- Not result in damage to the riparian habitat or necessitate construction within 2.5 metres of waters.
- Provide at locations specified by IFI, angling access and/or access for commercial fishing purposes.

- While the preferred option is for bottomless culverts, IFI is prepared in certain circumstances to consider proposals for the installation of box or pipe culverts on fisheries waters. These may be installed subject to structures being sized so as to meet the above requirements in terms of channel profile, gradient, flood debris capacity, light, access and:
 - Be positioned such that both the upstream and downstream invert shall be 500 mm. below the upstream and downstream river bed invert levels respectively.
 - Never exceed a slope of 5%, in which circumstances baffles generally are required, and preferably not exceed a slope of 3%.
 - As baffles can reduce the hydraulic efficiency of culverts, appropriate capacity provision must be included in the overall design.
 - In the case of box culverts on angling waters, be 3 meters in height.

Pipe culverts are not generally considered acceptable on fisheries waters. They are normally only appropriate for use on minor watercourses and drainage ditches where these can be demonstrated as not being significant in terms of fisheries habitat.

Bank protection works are often required upstream and downstream of new structures, to ensure no undercutting or destabilisation of either the structure or riparian bank areas occurs. In carrying out bank protection works, it is essential that large enough boulders are selected and strategically positioned, to ensure they cannot be undercut. Normally this entails part burying boulders up to one third of their depth below stream bed level and securing them into their final position. In areas of high water energy, to ensure stability, boulders size should be a minimum of 0.5 ton. To facilitate revegetation, each course of boulders laid should be back filled with a layer of top soil. Selection of boulders in terms of shape to facilitate their placement and stability is a major consideration. Irregularly shaped boulders are very difficult to work with in terms of building multiple stable courses.

The height to which rock armour is built must take account not only of the riparian zone requiring protection, but also in certain circumstances of the need to protect e.g. kingfisher and sand martin habitat. In many instances, one or two layers of armour will be sufficient to protect and stabilise the toe of embankments while allowing nesting.

Gabions are not a preferred option when it comes to bank protection. They can easily be vandalised and once the mesh is cut or broken, baskets can collapse. Gabion baskets can be unsightly and it is difficult to successfully establish and maintain vegetation on side walls. Gabion baskets are normally only acceptable at locations where due to access constraints it is not possible to install rock armour.

There are significant variations in the timing and duration of spawning activity throughout the Republic of Ireland. To minimise adverse impacts on the fisheries resource works in rivers, streams and watercourses should normally (except in exceptional circumstances and with the agreement of IFI) be carried out during the period **July-September**. The appropriate 'window' for instream works can vary depending on the nature of the fishery resource concerned and the existence of other factors such as catchment or sub catchment specific Bye Laws and Regulations.

In terms of stability both during the construction and operational phases, it is essential that you assess and critically review the soil type and structure at the proposed turbine locations, and along the route of any proposed access track(s)/road(s) including areas where temporary or permanent stock piling of excavated material takes place. This is particularly important if the areas concerned contain peat soils.

One of the potential impacts of the proposed development is the discharge of silt-laden waters to fisheries streams from newly developed sites at which earth moving and excavation works are on-going. Silt can clog salmonid spawning beds, and juvenile salmonids are particularly sensitive to siltation of gill structures. Similarly, plant and macroinvertebrate communities can literally be blanketed over, and this can lead to loss or degradation of valuable habitat. It is important to incorporate best practices into construction methods and strategies to minimise discharges of silt/suspended solids to waters.

The potential for soil erosion/ suspended solids generation is higher, during / after periods of prolonged rainfall. Systems should be put in place to ensure that there shall be no discharge of suspended solids or any other deleterious matter to watercourses during the construction / operational phase and during any landscaping works. Stockpiles of sand and other materials to be used in the works should be covered with sheeting when not in use to prevent washout of fines during rainfall. Stockpiles of topsoil and associated materials arising during site development such as turbine base excavations and installation of site road networks should be similarly protected. Silt traps should be constructed at locations that will intercept run-off to the drainage network. Traps should not be constructed immediately adjacent to natural watercourses. In designing silt traps account must be taken of the anticipated particle size(s) and the volumes of water likely to be focused through the trap(s). Retention time to allow appropriate settlement is a critical factor. A buffer zone should remain between silt trap(s) and watercourses with natural vegetation left intact so as to assist silt interception. Consideration should be given to the judicious positioning of silt fences. A comprehensive plan should be drawn up at the planning stage with specific measures to address the high potential for silt pollution of nearby watercourses during works on site.

During the construction process and operational phase, natural flow paths should not be interrupted or diverted so as to give rise to or create potential for erosion. Furthermore, excavation and installation of road(s)/access track(s) should be undertaken so as not to result in the creation of preferential flow paths that may result in erosion or which might otherwise interrupt the natural movement of waters for instance in peat bog areas. Where imported materials are used in road construction, these should be such as not to be liable to become crushed by vehicular movement, and lead to discharge of fine particulates to downstream receiving waters.

Uncured concrete can kill fish and macroinvertebrates by altering the pH of the water. Pre-cast concrete should be used whenever possible, to eliminate the risk to all forms of aquatic life. When cast-in-place concrete is required, all work must be done in the dry and effectively isolated from any water that may enter the drainage network for a period sufficient to cure the concrete. Concrete delivery vehicles should be precluded from washing out at locations which would result in a discharge to surface waters. Specific controlled and environmentally safe vehicle washout areas must be provided. If cement is stored on site during construction work, it should be held in a dry secure area when not in use.

All oils and fuels should be stored in secure bunded areas, and particular care and attention should be taken during refuelling and maintenance operations on plant and equipment. Bunding should be to a volume not less than the greater of the following; 110% of the capacity of the largest tank or drum within the bunded area, or 25% of the total volume of substance that could be stored within the bunded area. All plant and equipment should carry oil/fuel spill kits. Where temporary diesel or petrol driven pumps are required, they should be sited within portable temporary bunded units. Where site works involve the discharges of drainage water to receiving rivers and streams, temporary oil interceptor facilities should be installed and maintained. Waste oils, empty oil containers and other hazardous wastes should be disposed of in accordance with the requirements of the Waste Management Act, 1996.

Biosecurity The employment of effective bio-security measures during the construction phase are an important mitigation against the introduction and spread of invasive species. Notable invasive aquatic and riparian plant species can be introduced during the construction phase via contaminated machinery and topsoils. Taking further note that the development location is near the headwaters of a number of tributary catchments, any such introduction would have particular potential to allow the spread of an invasive downstream and affect the greater river catchment.

No instream works shall be carried out without the written approval of Inland Fisheries Ireland.

In the event of the project proceeding, it is the responsibility of the developer and the contractors to ensure that works will not give rise to a discharge of deleterious or polluting matter to waters.

At all times the precautionary principle should be applied throughout for the entire development. Particular attention should be paid to the various environmental directives including the Water Framework Directive, the Habitat and Birds Directives, the Fisheries Acts in particular and the Local Government (Water Pollution) Acts. Other environmental legislation should be considered as appropriate.

I trust these observations which are without prejudice will be of assistance. Notwithstanding statutory obligations under the planning process requiring the referral of certain applications for planning permission to us, IFI would be obliged to receive advance notification in the event our your clients proposing to submit an application for planning permission be it as strategic infrastructure to An Bord Pleanála, or at local authority level to the various planning authorities concerned.

Concluding Remarks

The long-term environmental sustainability of any activity that may impact on the status of fish species, their habitats, fisheries and/or the recreational angling or related commercial activities that may utilise these resources is of primary concern to IFI. IFI is among the public bodies that have a role in making policies, plans or programmes relevant to surface waters in Ireland. Critical and sensitive habitats and species (both designated and otherwise) must be protected. A number of fish species and associated habitats are protected under European Directives in Ireland. From an IFI perspective, all fish species and associated habitats within its remit require protection and management for conservation and development. IFI advocates application of the precautionary principle when considering the fisheries resource / aquatic ecology in the current process. In addition, it must be highlighted that all available consideration and support should be afforded to the national 'Blue Dots Catchment Programme' which focuses on the protection or restoration of high ecological status water bodies – a vital component in fisheries ecology, freshwater ecosystems and in Ireland's aquatic biological diversity more generally.

All works should also be carried out as per Guidelines (attached).

IFI are grateful for the opportunity to have these views considered and incorporated as a component of the proposed windfarm application.

Yours sincerely

Noel McGloin

Noel Gloin
SFEO, IFI Dublin

Please note that any and all further pre application correspondence regarding this matter should be addressed to Mr. Noel McGloin, Senior Fisheries Environmental Officer, IFI Dublin, 3044 Lake Drive, Citywest Business Campus, Dublin 24. Email noel.mcglain@fisheriesireland.ie



Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters

2016



**GUIDELINES ON PROTECTION OF FISHERIES DURING
CONSTRUCTION WORKS IN AND ADJACENT TO WATERS**

INLAND FISHERIES IRELAND

2016

GUIDELINES ON PROTECTION OF FISHERIES DURING CONSTRUCTION WORKS IN AND ADJACENT TO WATERS.

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GUIDELINES ON PROTECTION OF FISHERIES DURING CONSTRUCTION WORKS IN AND ADJACENT TO WATERS

1. INTRODUCTION.

1.1 Inland Fisheries Ireland (IFI) is responsible for the protection, management and conservation of the inland fisheries resource in Ireland, which includes over 70,000 kilometres of rivers and streams and 144,000 hectares of lakes. The agency is also responsible for sea angling. The waters concerned contain a wide range of fish species, which are particularly sensitive in terms of threats to their physical habitat and to water quality such as arise during construction works in and adjacent to waters.

1.2 IFI policy is aimed at maintaining a sustainable fisheries resource through preserving the productive capacity of fish habitat by avoiding habitat loss, and harmful alteration to habitat. Construction works particularly those entailing the installation of new river and stream crossing structures and the realignment of river channels have the potential to significantly impact both in the short and long term on fisheries resources if they are not carried out in an environmentally sensitive manner.



A brown trout at the alevin stage shortly after hatching. This life stage is very sensitive to pollution and physical disturbance.

1.3 These guidelines identify the main issues of concern in terms of construction impacts and their prevention. They set out *inter alia* requirements in relation to bridges and culverts and the need for such structures to allow for unhindered upstream and downstream movement of fish and aquatic life.

2 OBLIGATIONS ON DEVELOPERS DESIGNERS AND CONTRACTORS TO CONSULT IFI.

2.1 Contact should be made with IFI at the earliest possible stage in the planning and design process where works such as road construction, installation of culverts and bridges, the crossing of rivers/streams with pipelines and works on and in the environs of waters are planned. Such consultation will enable those concerned to comply with the provisions of the Fisheries Acts and Habitats Regulations.

2.2 In addition to the general guidance and requirements detailed herein, there will be design and construction issues specific to individual projects and locations. In such cases IFI will issue detailed operational and construction requirements.

3. THE ISSUES OF CONCERN.

3.1 Damage to the Aquatic and Associated Riparian Habitat, e.g.

- Removal and loss of instream spawning gravels and larger stones.

- Loss of submerged and emergent aquatic vegetation.
- Loss or damage to bankside cover including removal of trees, shrubs and bankside root masses.
- Undesirable changes in watercourse morphology and hydrology.



Drip tray is undersized, dangerously positioned and leaking oil. Unacceptable practice.

3.2 Pollution of Waters.

Pollutant	Examples of Construction Source
Silts and solids.	Earthworks, new drainage networks and instream works.
Cementitious residues.	Bridge, culvert and drainage headwall construction, etc.
Oils and greases. Anti freeze.	Construction plant and equipment.
Wood preservative.	Treatment of new timber fencing.

3.3 Introduction of Non Native Species.

Invasive Species	Construction Source
Plants, algae, fish and shellfish.	Earthmoving equipment, pumps, boats, ropes etc, previously used perhaps unknowingly in waters containing invasive species.
Plants and algae.	Imported materials such as top soil.

Further information on invasive species their impact and control, and on bio-security is available at www.inlandfisheriesireland.ie



It is a serious offence to discharge deleterious matter such as oil contaminated residues to waters.

3.4 Interference with Upstream and Downstream Movement of Aquatic Life.

- Improperly designed or installed temporary and/or permanent watercourse crossing structures. For example, insufficient water depth in culverts, culverts with perched inlets, outfalls and excessive slope.

- Insufficient water depth over bridge aprons/scour slabs.
- Physical alteration of stream channels resulting in:
 - Altered hydraulic characteristics.
 - Changes in stream profile, particularly in width, depth, gradient and current speed.



Temporary crossing impassable to fish life.

4. TIMING OF INSTREAM WORKS.

4.1 There are significant variations in the timing and duration of salmonid (Salmon and Trout) spawning activity throughout the Republic of Ireland. To minimise adverse impacts on the fisheries resource works in rivers, streams, watercourses, lakes, reservoirs and ponds should normally (except in exceptional circumstances and with the agreement of IFI) be carried out during the period July-September.

4.2 The appropriate 'window' for instream works can vary depending on the nature of the fishery resource concerned and the existence of other factors such as catchment or sub catchment specific Bye Laws and Regulations.

5. TEMPORARY CROSSING STRUCTURES ON WATERS.

5.1 All watercourses which have to be traversed during construction projects should be effectively bridged prior to commencement of works. There is sometimes a serious misconception that in installing temporary crossing structures, the only issue is keeping water flowing from above a temporary crossing to below it. Design and choice of temporary crossing structures must provide for passage of fish and macroinvertebrates, the requirement to protect important fish habitats e.g. spawning and over wintering areas, as well as preventing erosion and sedimentation. In certain circumstances, access for angling or commercial fishing purposes may also be required.



Temporary crossing structure. Impassable for aquatic life and emitting silt to waters as construction equipment traverses the crossing. Unacceptable practice.

5.2 No temporary crossing on any watercourse shall be installed without the approval of IFI as regards sizing, location, duration and timing.



The same temporary crossing location as shown on the previous page, but with a laden dumper dislodging and causing loss of cover material to waters.



Temporary clear span 'bailey bridge' ensuring free upstream and downstream movement of aquatic life. The streamside fencing should be 5 metres from the watercourse, not immediately alongside as in this photograph.



The inevitable result from the crossing shown above. Continuous silt discharges. Unacceptable practice.



A clear span temporary crossing capable of carrying heavy axle loadings and long wheel base vehicles.

5.3 The preferred option is for clear span 'bridge type' structures on fisheries waters.

5.4 The crossing of watercourses at natural fords is not permitted because of the amount of uncontrolled sedimentation that can be generated.

5.5 The creation of fords on streams and rivers through the introduction of stone is prohibited.

5.6 Where circumstances such as space or access difficulties preclude use of clear span structures, temporary crossings structures shall:

5.6.1 Comprise one or more metal or concrete pipes, prefabricated culverts or such other material as IFI may permit of minimum diameter 900 mm. Pipes or culverts may be vertically stacked.

5.6.2 Be laid in such manner as to maintain the existing stream profile.

5.6.3 Ensure no significant alteration in current speed or hydraulic characteristics, in particular not result in scouring, deposition or erosion upstream or downstream the temporary crossing location.

5.6.4 Have capacity to convey the full range of flows including flood flows likely to be encountered without the crossing being overtopped.

5.6.5 Be covered with clean inert material such as to allow for the safe crossing of the widest items of plant and equipment without cover material being dislodged and entering waters.

5.7 The approach and departure routes to temporary crossing structures should be designed and installed so that drainage will fall away from the watercourse being crossed. In the event that the fall of ground does not permit sufficient control on drainage, additional earthworks settlement areas shall be provided.

5.8 Temporary crossing structures should be fenced with terram or similar material to prevent wind blow carrying dusts and other potentially polluting matter to waters.

5.9 Side armour (e.g. reinforced concrete traffic barriers) should be provided on temporary crossing structures to ensure machinery cannot drive over its edge, or force the discharge of material from the bridge deck to waters.

5.10 IFI wish to emphasise that site selection for temporary crossings should have regard to all access and construction needs ranging from those of fencing contractors vehicles to the longest wheelbase of multi-axle cranes.



A crossing structure over a designated salmonid water. Note: terram covered fencing, reinforced concrete traffic barriers and fall back from the watercourse.

5.11 It is not permissible, except in exceptional circumstances, to reposition temporary crossing structures where these are not of a clear span type.

6. RIVER AND STREAM PERMANENT CROSSING STRUCTURES.



Is the culvert adequately sized?

6.1 Structures should not damage fish habitat or create blockages to fish and macroinvertebrate passage. Design and choice of structure should be based on its technical

and economic feasibility to pass fish and macroinvertebrates, the requirement to protect important fish habitats e.g. spawning and over-wintering areas, provision in certain areas of angling and commercial fishing access including boat access and prevention of erosion and sedimentation.

6.2 Culverts are the most frequently used river/stream crossing structures and are associated with some of the most common fish passage problems. The culverting of long stretches of fisheries water is extremely undesirable and can result in significant loss of valuable habitat. In the case of crossing structures over fishery waters, the preferred position is for clear span structures (bridges), so as not to interfere in any way with the bed or bank of the watercourses in question.



Excessively wide culverts can result in reduced current speed, ponding, and siltation of instream gravels.

6.3 Bridge foundations should be designed and positioned at least 2.5 metres from the river bank so as not to impact on the riparian habitat.



Excessively long culvert resulting in habitat loss and reduced productivity due to inadequate light penetration.

6.4 Generally, bridges and bottomless culverts are the best option for maintaining natural stream channel characteristics and have the least impact on habitat. However, because of design and load bearing considerations, bottomless culverts may not always be suitable for installation particularly on narrow river channels, as foundations may encroach on the channel itself and possibly result in future scouring or erosion.

6.5 Taking account of recent advances and investigations in the area of climate change and flood studies, designs should be such as to verifiably have carrying capacity for a 1 in 100 year fluvial flood flow whilst maintaining a minimum freeboard of 300 mm.

6.6 The Office of Public Works (OPW) is the lead agency for flood risk management in the Republic of Ireland. Design and capacity of structures must also be in accordance with their requirements. IFI strongly recommends that contact be made with OPW at the earliest stage in the planning and design process. (www.opw.ie)



An embedded box culvert sized to match existing stream profile.

6.7 Clear span designs maintain channel profile, do not alter gradients, readily pass sediment and debris and provide unrestricted passage for all size classes of fish by retaining the natural stream bed and gradient. Water velocity is not changed and they can be designed to maintain the normal stream width. Foundations should be positioned at least 2.5 metres from waters.

6.8 Embedded box and pipe culverts are less preferable to bridges and bottomless culverts. Embedded culverts must maintain the natural channel gradient, width and substrate configuration. They should be buried to a minimum of 500 mm. below the stream bed at the natural gradient. Box and pipe culverts must be sized to maintain the natural stream channel width. The gradient should not exceed 3%. The availability of suitably sized material (depending on hydraulic conditions) to initiate "simulation" of the stream bed is the most preferable approach to establish fish and faunal passage through culverts.

6.9 Culverts should be positioned where the watercourse is straightest and aligned with its bed.



Off-line culvert at construction stage back filled with gravel. The size range and depth of fill required will be site specific.

6.10 In the case of bridges and bottomless culverts, structures should be designed and installed so as to:

- 6.10.1 Allow for the maintenance of channel profile and existing gradient.
- 6.10.2 Be capable of passing such debris as might arise during flood flow conditions.
- 6.10.3 Ensure adequate light penetration to minimise loss in primary productivity.
- 6.10.4 Not result in damage to the riparian habitat or necessitate construction within 2.5 metres of waters.
- 6.10.5 Provide at locations specified by IFI, angling access and/or access for commercial fishing purposes.



Box culvert positioned at incorrect level. Upstream fish passage is made difficult. Culvert invert should be 500 mm. below existing bed level and back filled with clean gravel to match the existing stream profile.

6.11 While the preferred option is for bottomless culverts, IFI is prepared in certain circumstances to consider proposals for the installation of box or pipe culverts on fisheries waters. These may be installed subject to structures being sized so as to meet the requirements at 6.10 in terms of channel profile, gradient, flood debris capacity, light, access and:

6.11.1 Be positioned such that both the upstream and downstream invert shall be 500 mm. below the upstream and downstream river bed invert levels respectively.

6.11.2 Never exceed a slope of 5%, in which circumstances baffles generally are required, and preferably not exceed a slope of 3%. As baffles can reduce the hydraulic efficiency of culverts, appropriate capacity provision must be included in the overall design.

6.11.3 In the case of box culverts on angling waters, be 3 meters in height.



The smooth concrete finish is totally unsuitable for fish passage.

6.12 Pipe culverts are not generally considered acceptable on fisheries waters. They are normally only appropriate for use on minor watercourses and drainage ditches where these can be demonstrated as not being significant in terms of fisheries habitat.



Unacceptable culverting practice. These pipes are totally impassable to fish.

6.13 Bank protection works are often required upstream and downstream of new structures, to ensure no undercutting or destabilisation of either the structure or riparian bank areas occurs. In carrying out bank protection works, it is essential that large enough boulders are selected and strategically positioned, to ensure they cannot be undercut. Normally this entails part burying boulders up to one third of their depth below stream bed

level and securing them into their final position. In areas of high water energy, to ensure stability, boulders size should be a minimum of 0.5 ton.



The boulders in these bank protection works are not large enough, not sunken below stream bed level and likely to be undercut and dislodged in a storm event.



Suitably sized rock armour built to high water level at a location influenced by tidal back-up.

6.14 To facilitate revegetation, each course of boulders laid should be back filled with a layer of top soil. Selection of boulders in terms of shape to facilitate their placement and stability is a major consideration. Irregularly shaped boulders are very difficult to work with in terms of building multiple stable courses.



Revegetation of rock armour facilitated by the placing of locally sourced topsoil (to ensure no importation of non local grasses and shrubs) between each layer or course of boulders at installation time.

6.15 The height to which rock armour is built must take account not only of the riparian zone requiring protection, but also in certain circumstances of the need to protect e.g. kingfisher and sand martin habitat. In many instances, one or two layers of armour will be sufficient to protect and stabilise the toe of embankments while allowing nesting.



Visually unsightly stone filled gabion baskets.

6.16 Gabions are not a preferred option when it comes to bank protection. They can easily be vandalised and once the mesh is cut or broken, baskets can collapse. Gabion baskets can be unsightly and it is difficult to successfully

establish and maintain vegetation on side walls. Gabion baskets are normally only acceptable at locations where due to access constraints it is not possible to install rock armour.

7. CONSTRUCTION IMPACTS.

7.1 Uncured concrete can kill fish, plant life and macroinvertebrates by altering the pH of the water. Pre-cast concrete should be used whenever possible, to eliminate the risk to all forms of aquatic life.

7.2 Discharge of silt-laden waters to fisheries streams is of particular concern. Silt can clog fish spawning beds and juvenile fish species are particularly sensitive. Plant and macroinvertebrate communities can literally be blanketed over, and this can lead to loss or degradation of valuable habitat. It is important to incorporate best practices into construction methods to minimise discharges of silt/suspended solids to waters.



Construction sites require careful management. Is this the optimal haul route in terms of impact minimisation?



Silt discharge minimisation by providing retention areas to reduce discharge velocity and allow settlement during rainfall events.

7.3 Discharges of fuels and oils can be directly toxic to aquatic life and at sub lethal levels lead to tainting of fish tissues, rendering fish inedible. Oil films on water can seriously interfere with the diffusion of oxygen from the atmosphere into waters and in extreme cases result in oxygen depletion.



The practical impact of poor silt control.

7.4 IFI require that:

7.4.1 When cast-in-place concrete is required, all work must be done in the dry and effectively isolated from any flowing water (or water that may enter streams

and rivers) for a period sufficient to ensure no leachate from the concrete.



Silt control pond. The blue hose conveying pumped silt laden waters has its outlet securely anchored within the stone aggregate thereby dissipating energy, minimising disturbance, and preventing pond contents being disturbed and re-suspended.



Poor work practice. The drip tray is undersized, constructed of too light a material, and accordingly overly flexible, easily damaged, and unlikely to retain oil residues.

7.4.2 No direct discharges be made to waters where there is potential for cement or residues in discharges.

7.4.3 Designated impermeable cement washout areas must be provided.

7.4.4 The pH of any and all discharges made from and during construction works shall be in the range 6.0 - 9.0 units and not

alter the pH of any receiving fisheries waters by more than +/- 0.5 pH units.



Silt control pond. Note hose conveying pumped silt laden waters with its outlet positioned within the gravel mound thus ensuring no disturbance of pond contents.

7.4.5 Silt traps/settlement ponds or other forms of containment and treatment shall be constructed at locations that will intercept run-off to streams. Traps shall not be constructed immediately adjacent to natural watercourses. A buffer zone should remain between the silt trap and the watercourse with natural vegetation left intact. Alternatively, imported materials such as terram, straw bales, coarse to fine gravel should be used either separately or in combination as appropriate to remove suspended matter from discharges.

7.4.6 The level of suspended solids in any discharges to fisheries waters as a consequence of construction works shall not exceed 25 mg/l, nor result in the deposition of silts on gravels or any element of the aquatic flora or fauna.

7.4.7 All oils and fuels shall be stored in secure bunded areas and care and attention taken during refuelling and maintenance operations. Particular

attention shall be paid to gradient and ground conditions which could increase the risk of discharge to waters.

7.4.8 Temporary oil interceptor facilities shall be installed and maintained where site works involve the discharge of drainage water to receiving rivers and streams.

7.4.9 There shall be no visible oil film in any discharges from construction works to waters.

7.4.10 That all containment and treatment facilities are regularly inspected and maintained.

7.4.11 Waterproofing and other chemical treatment to structures in close proximity to waters shall be applied by hand.

7.4.12 Hydroseeding shall not be carried out in close proximity to water. These areas shall be seeded by hand.



Terram lined (to prevent erosion) silt control pond outlet channel showing gravel acting as filter medium for silt removal.

8. DUST SUPPRESSION AND WATER ABSTRACTION.

8.1 It is accepted in the interests of protection of terrestrial ecosystems and so as to avoid a wide range of impacts on

persons and property, that dust control measures sometimes may be required. This is normally achieved by abstraction from watercourses adjacent to the site of earthworks. In such circumstances it is essential that the aquatic resource is protected and that over-abstraction does not take place especially in low flow summer conditions at locations supporting important fish populations.



Continuous abstraction using submersible pump. No screening in place to prevent the entry of e.g. juvenile fish species to the pump. Unacceptable practice.

8.2 IFI require that:

8.2.1 Water abstraction for dust suppression shall not take place from any water body containing or suspected to contain aquatic invasive species.

8.2.2 Abstraction is confined to only those larger waters identified and agreed as being of sufficient size and volume so as to allow abstraction without adverse impact.

8.2.3 Abstraction points shall be screened so as to ensure that fish and aquatic plants are not removed from waters in the abstraction process.



A screened abstraction point using terram fitted over a fabricated support frame.

9. PLANNING, DESIGN AND CONSTRUCTION ISSUES.

9.1 The preferred position from the fisheries perspective is for clear span river and stream crossing structures thereby allowing for installation/construction without the need to alter or move existing watercourses. In the case of bridges and bottomless culverts, designers should ensure proposals are such that foundations and abutments including wing walls can be constructed without entering on or damaging the riparian zone, or existing channel profile.

9.2 Where on-line construction is proposed or taking place, it may be necessary for IFI, following an assessment of on the ground conditions with the contractors involved, to temporarily remove using electro-fishing equipment, fish from the reaches involved.

9.3 Where on line box or pipe culvert construction is proposed, it will be necessary to install a temporary by-pass channel so as to allow for stream continuity and the normal upstream and downstream movement of fish and aquatic life depending on location and seasonality.

9.4 Temporary long term by-pass channels shall be excavated and sized such as to replicate existing upstream and downstream channel conditions as regards width, depth, gradient and instream materials. Where necessary, rock armouring will be provided. In terms of capacity, by-pass channels shall be sized so as to accommodate such flood event as might reasonably be expected based on examination of hydrometric data and catchment characteristics.

9.5 In newly constructed by-pass channels the process of diverting waters and associated movement of fish stocks may only take place under the direction and supervision of IFI or its agents. Adequate advance notice of all such proposed works shall be given to IFI.



Extreme meanders installed during excavation of a new channel to overcome excessive gradient between the original course of the stream (in the background at tree line) and the point of entry of the newly created channel to a culvert (in foreground under the timber fencing). In this instance there was inadequate provision at the planning and design stage for the necessary land take.

9.6 Where temporary short term by-pass channels are required for a number of days, these shall be excavated and sized such as to accommodate such flood event as might reasonably be expected over the period in question.

9.7 Where a structure installed on line is completed within the period during which instream works normally may be undertaken (July-September), flow may be re-established through the new structure, fish transferred from the temporary by-pass channel back to the original channel, and the by-pass decommissioned immediately on completion of the fish removal with the area levelled and landscaped as appropriate. Such works may only take place following the giving of advance notice to IFI and under its supervision.

9.8 Where a structure installed on line is not completed within the period during which instream works normally may be undertaken, flow may not except in exceptional circumstances be re-established through the new structure until the next approved 'window' for such instream works.

9.9 Where on-line construction is not feasible and a structure is constructed off-line (subject to IFI approval), the course of the existing stream can be altered and new approach/departure channels designed and installed to link into the original stream channel

9.10 IFI require where box and/or pipe culverts are installed off-line on fisheries waters that:

9.10.1 Particular attention shall be given by designers and contractors to survey pre-existing upstream and downstream stream bed levels at appropriate locations, taking account of the requirement to ensure newly installed box or pipe culverts are lain with their invert level 500 mm. below bed level, so that in overall terms the newly created section of stream shall replicate and

where appropriate, improve on that which it replaces.

9.10.2 The approach and departure channels for newly installed culverts shall be excavated and sized such as to replicate and be compatible with existing upstream and downstream channel conditions as regards width, depth, gradient and instream materials. Bends and meanders shall be incorporated into the new channel.

9.10.3 The approach and departure channels for newly installed culverts are back filled to a depth of up to 500 mm with clean round gravel in such size range as required where IFI determine that the material in the newly formed channel is unsuitable in terms of fish habitat.

9.11 Where as an exceptional measure consequent on limited land availability or other space constraints a culvert having a gradient greater than 5% is permitted, IFI require as follows:

9.11.1 Water velocity through the culvert should not exceed 1.2m/sec. in the case of salmonid habitat and 0.8 m/sec. in the case of cyprinid habitat.

9.11.2 Baffles should be provided within the culvert structure to locally reduce flow velocity thus aiding fish swimming upstream without undue stress.

9.11.3 The entry and exit points of the structure must be drowned out to a minimum depth of 150 mm. in the case of salmon waters and 100 mm. for trout waters.

9.11.4 Where culvert gradient is too steep to achieve backwatering, the downstream water level should be raised by providing one or more ponding weirs below the culvert outfall. Ponding weirs should have fish notches to facilitate upstream movement and the pools formed by them should provide resting and take-off conditions for fish.

9.12 The fitting of mesh or screens to culverts, albeit with the intention of intercepting instream debris is prohibited.

9.13 Newly constructed river and stream channels shall have banks battered to a finished angle of not greater than 45° on one bank and not greater than 30° on the opposite bank, (to allow for maintenance of a low flow channel, an overflow and a flood flow channel). Banks shall be top soiled and seeded so as to ensure the growth and development of a broad range of local grasses and shrubs thereby facilitating development of stable bank root structures.



Well vegetated newly established river channel, with broadleaves planted to within 5 meters of the overflow channel. The root structures aid bankside stability.



Looking from upstream towards a culvert arrangement. Moderate and flood flows are conveyed in the right hand culvert. Entry to that culvert is dictated by the invert and contour of the right hand portion of the newly created river channel. The left hand bank finished batter angle is approx. 45°. The first portion of the right hand bank to convey the moderate flow is battered to approx. 30°. The extreme right bank area is battered to approx. 45° to convey flood flows.

9.14 Broadleaves shall, where prescribed by IFI, be planted along newly created channels so as to provide a mixture of dapple and shade conditions. Planting shall be a minimum of 5 meters from the watercourse channel.

9.15 In the case of culverts, low flows can be accommodated in an appropriately sized structure, thereby sustaining the fisheries resource. Moderate and flood flows should be directed through a culvert that becomes operable only at a pre-determined discharge level. Moderate and flood flow culverts should be installed such that the culvert empties in its entirety when the flood has passed.

9.16 To aid in the colonisation and development of newly created river channels, it is desirable to transfer established riparian plants, shrubs and trees together with living root structures as well as boulders, stones and gravels from decommissioned to new channels where they can be positioned, inserted and replanted as appropriate.



Newly created channel. The riparian grasses on the right bank have been transferred from the previous course of the now redundant original channel. The root structures stabilise the bank area while the grasses provide a degree of cover and shade and provide habitat for aquatic insects which form part of the food for fish.

9.17 In the case of newly created stream and river channels IFI require that:

9.17.1 Such transfer of riparian plants, trees and instream material(s) as necessary, is carried out under IFI's direct supervision.

9.17.2 Gravels and stones are removed from the dried out river channels and securely stored for re-use in the newly created river channels.

9.18 Stock proof and mammal proof fencing shall not cause an obstruction to fish passage or angling.

9.19 IFI shall be reimbursed the cost of fish removal and replacement operations associated with river and stream diversions and associated works.

10.0 REPAIRS TO EXISTING BRIDGES, CULVERTS AND SCOUR SLABS.

10.1 There are within Ireland very many old stone bridges in need of strengthening and

repair works. The most commonly used methods for such works include pressure grouting, guniting and pointing of joints



Grout loss to waters is normally stopped by placing dry cement over the leak, with sand bags on top to restrict grout flow until the leak solidifies. (This photograph was taken after water flow was re-established following solidification of the grout.)

10.2 The concerns as regards sensitivity of aquatic life to pollutants and physical disturbance set out earlier in this document all apply, particularly as regards loss of grout and gunite rebound, both of which are highly alkaline.



Repairs to a single arch bridge and scour slab with stream flow piped from upstream to downstream (foreground) during both grouting and slab repair.

10.3 Grouting is a high risk process, as it is not always possible to pre-determine the route that grout will follow. It may travel through

fissures and appear upstream or downstream of the structures under repair, sometimes metres from the location of injection. Particular vigilance is required. During grout injection at least one member of a repair crew should be closely monitoring for grout losses both upstream and downstream of the structure. Portable pH monitoring facilities should always be available and staff trained in its use.

10.4 Where the structure to be grouted comprises a number of arches, water flow should be diverted away from the arch being repaired so as to allow working in the dry. Diversion of water by means of temporary damming should be undertaken. Sand bags in conjunction with e.g. plastic sheeting, marine plywood and other suitable materials may be used. A number of manufacturers provide heavy duty rubber type aqua dams which can readily be deployed, linked together and filled on site with river water thus forming a very effective seal to a banded area. While such damming and diversion of water as is required will normally be only for a short period, the dam or berm must nonetheless be high enough not to be over topped in the event of a rainfall event and increased water levels.

10.5 Where a single arch structure is under repair, to achieve grouting in the dry, water may be diverted from upstream to downstream by means of a secure flume arrangement, or through piping, or in very limited circumstances, by means of over pumping. Screening to preclude entry of aquatic life to pumps must be carried out.



Gunite rebound on a stream bed where no precautions were taken to prevent its entry to waters. Rebound having a pH >11.5 would have entered the actively flowing stream with dire environmental consequences.

10.6 In all instances of guniting and repair works including repointing and masonry cleaning, the entirety of the area of water over which works are taking place should be protected from gunite rebound, mortar and vegetation loss by installation of a sealed and secure decking which shall extend upstream and downstream the structure concerned so as to ensure no losses to water.



Apron/scour slab inaccessible on its downstream end to fish life because of the extent of perching and impassable due to a combination of excessive water velocity and lack of water depth across its surface.

10.7 Approved forms of scaffolding are required to support decking. It is essential that

the decking completely captures all falling debris and rebound. All materials captured must be removed for safe disposal.

10.8 Repairs to bridge aprons/scour slabs must be undertaken so as to ensure upstream and downstream passage of fish is possible in all flow conditions. Particular care must be exercised to ensure perching does not result where new concrete slabs are poured.



Low level stone weirs installed on a salmonid nursery stream to back water the bridge apron /scour slab originally installed at too high a level.

10.9 Existing stream bed materials (stones and boulders depending on conditions) should be set into new concrete aprons/slabs thereby providing for non uniform baffled flow of varying depth across the structure which will allow for the weakest fish species to swim upstream through the deeper water area.

10.10 Scour slabs should be dished so as to provide a deeper zone and consequently deeper water to facilitate fish passage.

10.11 It is difficult and costly to retrospectively render a poorly installed apron/scour slab passable, especially where it has been installed at too high a level. In some instances the installation of one or more low level weir type structures in the river downstream may assist in

back-flooding the apron thereby rendering it passable.

10.12 The installation of baffles can assist where excessive water velocity over an apron/scour slab prohibits free upstream fish movement. Baffles should be positioned so as to reduce velocity and provide temporary rest areas for weaker fish attempting to swim upstream.



Large stone baffles held in position on concrete apron with stainless steel dowel rods drilled into both the apron and stones. (Poor placement of the livestock fencing as shown in the photograph has the potential to cause blockage by catching debris.)

11.0 PIPELINE INSTALLATION.

11.1 In the case of pipeline crossings under fisheries waters, the preferred method is by way of trenchless crossings using techniques such as horizontal directional drilling, auger boring or micro-tunnelling. There are many advantages from use of such methods. Apart from the obvious avoidance of impacts on the fisheries resource, works do not have to be confined to the July-September 'window' period.

11.2 Where circumstances such as site size and contour or the existence of buildings

preclude trenchless methodologies, open cut or trench type crossings may be undertaken.

11.3 In the case of trenchless crossing of waters IFI require as follows:

11.3.1 Locations for drill rig positioning and pipeline pull areas shall be chosen or engineered such that the fall is away from the waters in question, thereby facilitating installation of pollution containment and control facilities.

11.3.2 Where drilling fluids are being returned for cleaning and re-use or recirculation through a temporary fluid return line, pneumatic leak testing shall be carried out to confirm the integrity of the return line.

11.3.3 Where circumstances necessitate the running of a return fluid line across the bed of the waters being under bored, the pipeline shall be sunken and weighted down by means of prefabricated concrete collars or by sand bags attached using web construction straps, or such other means as appropriate and securely anchored. Marker buoys and on-land marker posts will be required and all such fluid return pipelines and markers shall not interfere with or constitute a fouling risk to licensed and legally used fishing equipment.

11.3.4 Spent drilling fluids including separated drill materials shall be contained in secure bunded areas for off-site disposal at a licensed disposal facility.

11.4 In the case of open cut or trench type crossing of waters IFI require as follows:

11.4.1 Water shall be diverted from upstream to downstream the pipeline crossing location by means of a secure open flume arrangement, or through piping, or in limited circumstances, by means of over pumping.

11.4.2 Screening to preclude entry to pumps of aquatic life must be carried out.

11.4.3 The waters being crossed shall be effectively dammed both upstream and downstream of the trench location so as to ensure that works are undertaken in the dry.

11.4.4 Where concrete ballast is used to prevent pipelines rising as a result of buoyancy, it should be precast.

11.4.5 Following completion of backfilling, river bed and banks shall be reformed to match their original profile.

11.5 It will normally be necessary to temporarily remove, using electrofishing equipment, fish from the reaches involved.

12. ANGLING AND COMMERCIAL FISHING ACCESS.

12.1 In circumstances where crossings of important angling waters are concerned, it will often be necessary to provide for angling access to and from stretches of water during the construction phase of projects. It is important to note that fishing rights are property rights and that it is a legal right for anglers to access fisheries. Additionally, certain commercial fishing activities may have entry and access requirements. In such site specific circumstances, IFI will issue project and location specific requirements.



A tidal water with access for vehicles and on the opposite side, access for anglers.

12.2 IFI require:

12.2.1 In the case of permanent crossing structures on waters recognised as of angling importance, that a minimum walkway through or under the structure 1.5 meters in width and 2.5 meters in height be provided. The walkway shall be self draining and have a non slip finish.

12.2.2 In the case of a bridge spanning a specific salmon angling site, up to 7 meters clearance above water level and in the case of trout angling, up to 4 metres clearance to allow casting.

13.0 PROVISION OF DOCUMENTS.

13.1 In the case of structures and pipelines crossing waters, IFI shall be provided in Excel spreadsheet format with precise details of all watercourse crossings including seasonal streams. The spreadsheet shall in respect of each watercourse contain:

13.1.1 The number, code or other means of identification of the location.

13.1.2 Easting and northing coordinates (Irish Grid Ref).

13.1.3 Dimensions including width, height, length and gradient of proposed structures and the estimated discharge.

13.1.4 A description of the proposed structure including its shape.

13.2 Contractors/developers shall provide or have provided to IFI:

13.2.1 In the case of road construction, a copy of the Discovery 1:50,000 map(s) showing the proposed road scheme.

13.2.2 In the case of road construction, engineering drawings and OS maps in A3 size showing mainline and side road plans, chainage and profiles for all locations where watercourse crossings and drainage issues arise.

13.2.3 Engineering drawings and OS maps in A3 size of all crossing structures and pipelines in final proposal stage for construction. These shall include dimensions, setting out points, and where necessary gradient expressed as a percentage.

13.2.4 Such other details and method statements as may reasonably be required.

14.0 CONTACT BETWEEN DESIGNERS, DEVELOPERS, CONTRACTORS AND IFI.

14.1 IFI is committed in the national interest to working in a positive and cooperative manner with all relevant parties including

representatives of State and public authorities undertaking works in order to ensure that impacts on the fisheries resource are minimised. IFI is obliged to ensure that all structures are designed, installed and maintained so as to ensure the free upstream and downstream movement of aquatic life and the sustainable maintenance of the aquatic and associated riparian zone.

14.2 IFI require that contact be established and maintained between senior representatives of the developer, designer and contractor with responsibility for earthworks, structures and environmental management issues and relevant river basin district personnel in advance of commencement and for the duration of the specified construction project.

14.3 IFI has offices located within each of the River Basin Districts situated wholly or partly in the Republic of Ireland. Contact details and a map showing the locations of IFI's regional offices and areas covered are given in Appendix 1.

14.4 Responsibility for waters in the Republic of Ireland which form parts of the North Western, Neagh Bann and Shannon International River Basin Districts lies with IFI Ballyshannon, IFI Blackrock and IFI Limerick respectively.

APPENDIX 1

CONTACT DETAILS AND LOCATIONS OF IFI REGIONAL OFFICES

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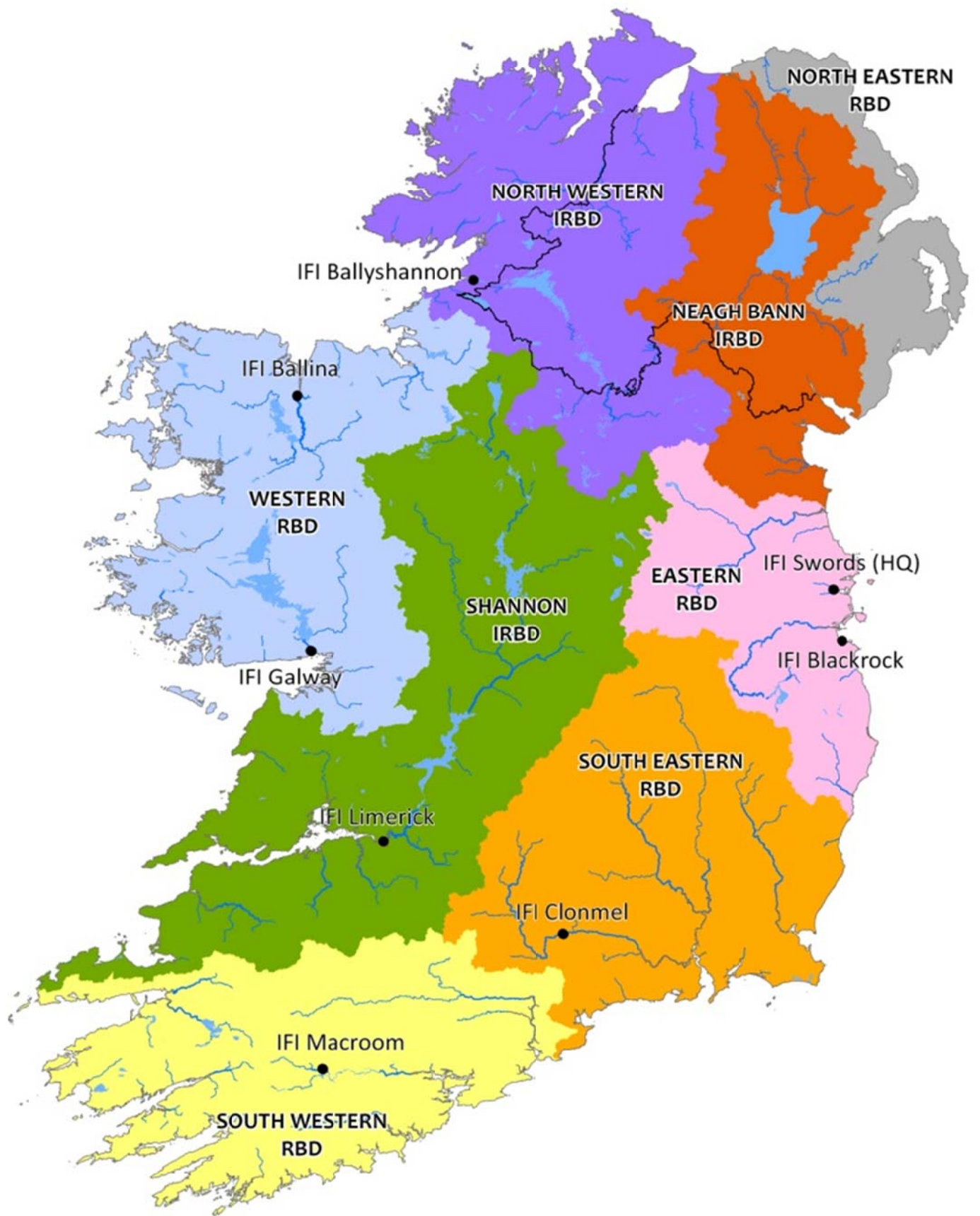
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APPENDIX 2

RELEVANT LEGISLATION

The Arterial Drainage Act 1945.

The Fisheries Consolidation Act 1959 (as amended).

The Fisheries (Amendment) Act 1997.

The Inland Fisheries Act 2010.

Council Directive 78/659/EEC on the Quality of Freshwaters Needing Protection or Improvement in Order to Support Fish Life.

The European Communities (Quality of Salmonid Waters) Regulations 1988 (S.I. 293 of 1988).

European Communities (Quality of Shellfish Waters) Regulations 2006 (S.I. 268 of 2006).

European Communities (Quality of Shellfish Waters) (Amendment) Regulations 2009 (S.I. No. 55 of 2009).

The Wildlife Act 1976.

The Wildlife (Amendment) Act 2000.

The Local Government (Water Pollution) Act 1977.

The Local Government (Water Pollution) Amendment) Act 1990.

The Habitats Directive (92/43/EEC).

The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011).

The Water Framework Directive (2000/60/EC).

The European Communities (Water Policy Regulations 2003 (S.I. 722 of 2003).

The European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. 272 of 2009).

The European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009 (S.I. 296 of 2009).

GLOSSARY

Alevin Newly hatched salmon, trout or related fish usually with a yolk sac attached which acts as a primary nutrient source, before it emerges from the spawning gravel to begin swimming freely.

Armouring Lining of watercourse banks with rock or other material to protect from scour.

Apron Erosion protection placed below watercourse bed level in an area of high velocity such as downstream of a bridge or culvert.

Cyprinid Belonging to the largest European freshwater fish family. Common examples in Irish waters include roach, rudd, dace, minnow, gudgeon bream and carp.

Ecosystem Any combination of living and non living components that with a supply of matter and energy is self sustaining over a defined period of time

Electrofishing Fishing with electrical devices based on electro-taxis and electro-narcosis (state of immobility resulting from muscular slackening of fish due to electric current).

Gabions Baskets normally made of woven wire and filled with stone/rock or other hard material generally used to form erosion resistant structures.

Habitat The natural abode of a plant or animal, especially the particular location where it normally grows or lives.

Invasive species Species that have been introduced, generally by human intervention, outside their natural range and whose establishment and spread can threaten native ecosystems

Perched Set at an elevated level, or in a higher position, and in the context of culverts – and scour slabs, the tendency to develop a water fall or cascade due to erosion of a watercourse downstream of a structure.

Riparian The terrestrial aquatic interphase or area immediately alongside the bank of a watercourse.

Salmonids The only two indigenous fishes in the genus *Salmo* in Ireland - Atlantic salmon (*Salmo salar* L.) and brown trout (*Salmo trutta* L.).

Terram A geotextile cloth type permeable material normally made from polypropylene or polyester used in construction as a separation layer.

Toe The point at which the bottom of a bank and the bed of the alongside watercourse intersect.

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PLANNING FOR WATERCOURSES IN THE URBAN ENVIRONMENT

A Guide to the Protection of Watercourses through the use of Buffer Zones,
Sustainable Drainage Systems, Instream Rehabilitation, Climate / Flood Risk and Recreational Planning

**Including one-off developments*



Iascach Iníre Éireann
Inland Fisheries Ireland

A Guideline Developed by Inland Fisheries Ireland

Inland Fisheries Ireland

OUR VISION

To place the inland fisheries resource in the best sustainable position possible for the benefit of future generations.

OUR MISSION

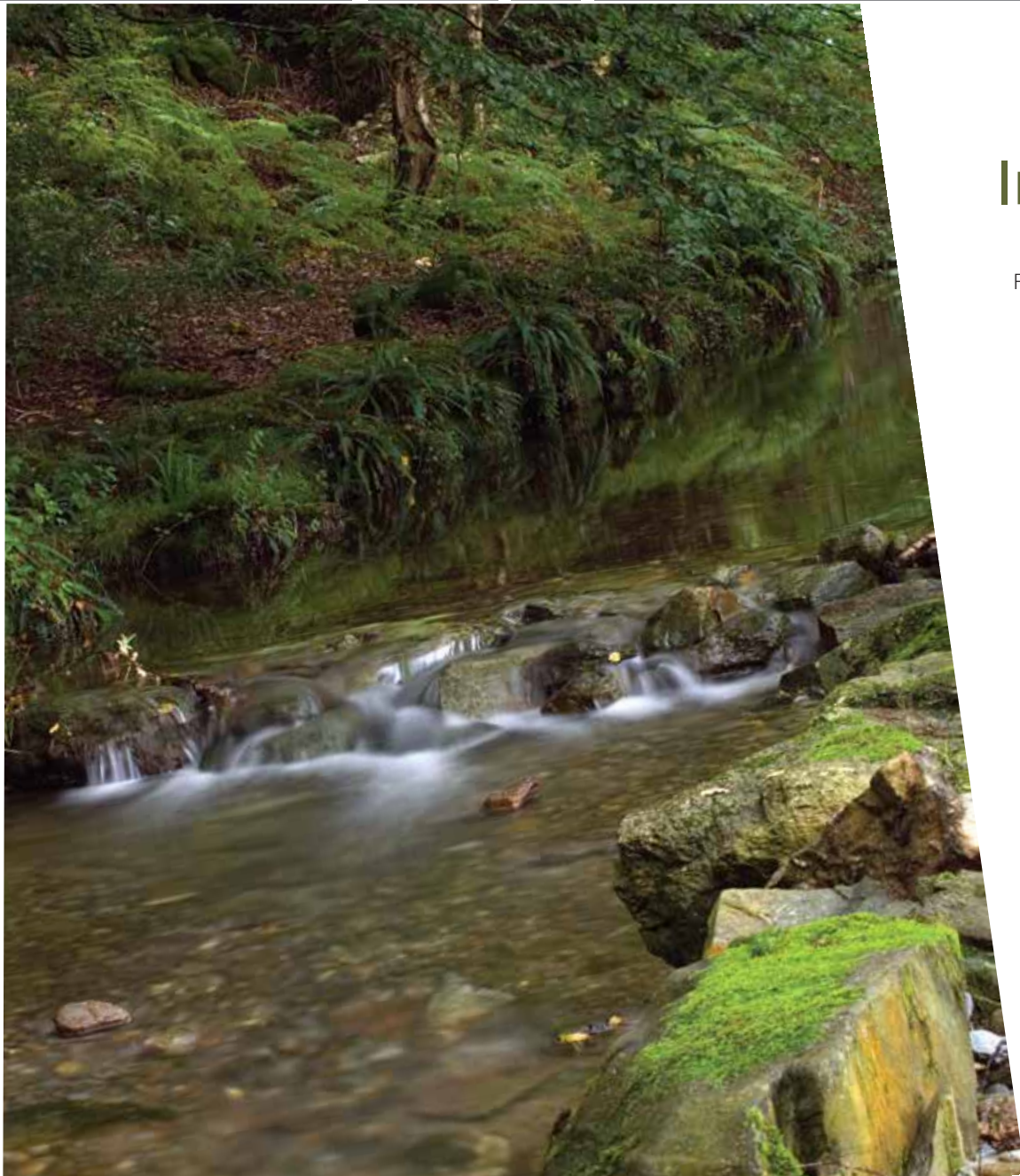
To protect, manage and conserve Ireland's inland fisheries and sea angling resources and to maximise their sustainability and natural biodiversity.

Inland Fisheries Ireland is a statutory body operating under the aegis of the Department of the Environment, Climate and Communications (DECC).

Its principal function is the protection and conservation of the inland fisheries resource. Inland Fisheries Ireland promotes supports, facilitates and advises the Minister on the conservation, protection, management, development and improvement of inland fisheries, including sea angling. Inland Fisheries Ireland also develops policy and national strategies relating to inland fisheries and sea angling and advises the Minister on same.



**Iascach Intíre Éireann
Inland Fisheries Ireland**



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This guidance also aims to support planning processes which address predicted Climate Change impacts associated with water (Climate Change Adaptation) and encourages greater CO2 sequestration along watercourses (Climate Change Mitigation).



Rivers, lakes and streams are an integral part of our environment and if managed appropriately can significantly improve the quality of life for people living in urban areas. They can be a setting of high visual and acoustic amenity, where people find respite from the busy humdrum and stress of urban life. In this context, they provide an opportunity to develop linear parks or walks close to nature, not often associated with urban living. However, they become fragmented and degraded, losing their intrinsic value, if not planned for and managed sensitively.

This guideline document outlines an integrated watercourse protection strategy, developed by Inland Fisheries Ireland through consultation with a wide range of experts in the area. Development management standards, policies and objectives should be set per watercourse. These could be mapped in County Development Plans, Local Area Plans & masterplans and integrated with flood risk, Natura 2000 designated sites, habitat and amenities mapping.

Implementation of this strategy should, not only protect watercourses and their associated riparian zones in urban areas, but also provide other benefits important for the well-being of people living nearby. It is important to note that, the riparian zone (i.e. the bank and the vegetation running along a watercourse) is an integral part of any watercourse, serving not just ecological, but also practical functions from a human point of view. For example, the vegetation in the riparian zone provides bank stability during flood conditions and filters pollutants out of surface water before it reaches a river or lake. Sufficient setaside space adjacent to the watercourse must be allocated at the planning stage, and it is strongly recommended that this space is planned for at the forward planning stage, such as during the compilation of County and Local Area Plans. Without this space, the four steps in this guideline cannot be accommodated. These steps are described in the context of an overall riparian buffer zone (i.e. strip of vegetated land running parallel to the river, which acts as a buffer against negative human development or activity). Again - this Riparian Buffer Zone MUST however be sufficiently wide to protect the river.

The recommended buffer zone width for larger river channels (>10m) is 35m to 60m and for smaller channels (<10m) is 20m or greater. The determined width should be tailored to site specific circumstances, river reach or lakeshore characteristics. It is important that the buffer

zone is wide enough to protect the ecological integrity of the river (including emergent, marginal and bankside vegetation) and takes into account the human history of the area. Wider buffer zones can be multifunctional in the urban environment if linked and managed appropriately, bringing greater benefits to the wider community.

This riparian buffer is subdivided into three separate zones, each with a different function, width, vegetation type and use. It is important to note that, the urban landscape, unlike agricultural land comprises of many hard non-biological features and therefore a greater buffer width is needed than that normally associated with the protection of water courses from farming or forestry.

THE FOUR MAJOR STEPS IN THE STRATEGY ARE:

- STEP 1. PROTECT THE STREAMSIDE RIPARIAN ZONE.
- STEP 2. CREATE A MIDDLE RIPARIAN ZONE – CAN INCLUDE AMENITY INFRASTRUCTURE, EG. FOOTPATHS.
- STEP 3. CREATE AN OUTER ZONE TO INCORPORATE SUSTAINABLE URBAN DRAINAGE SYSTEMS
- STEP 4. REHABILITATE THE RIVER ITSELF TO RECREATE DIVERSITY OF INSTREAM FEATURES FOUND IN NATURAL CHANNELS

Protection of the riparian zone doesn't preclude amenity use, and this guide strongly advocates the incorporation of amenity uses (walks, angling etc) into the (middle or outer) Riparian Buffer Zone, so long as it is done sensitively and with minimal impact on the water and riparian environment. The outer zone can be linked to a network of linear parks, picnic areas and other amenity areas where appropriate. These can provide greater space for flood protection and Sustainable Urban Drainage Solutions.

Culverting and piping of small streams and drains should not be permitted except under exceptional circumstances and only through agreement with Inland Fisheries Ireland. Drains should be incorporated into a SUDS network

Wild Irish Rivers



Wild watercourses are three dimensional systems, the channel sculpted by water from the surrounding landscape and moulded by local vegetation over time. Marginal vegetation, such as reeds and sedges, together with the bank vegetation form an important part of river ecosystems, providing rivers with much of their character, whether they are small upland cascading streams or large slow moving lowland rivers. Even underwater there are holes, nooks, crannies and shallow gravelly areas which scientists refer to as "riffles" where salmon and trout spawn. Deeper pools hold eel, adult salmon and trout, and often coarse fish species, such as roach, pike and even eel. The bank vegetation not only protects the river from pollutants, but is also important for cover and as a food source for fish and other aquatic animals such as otters, dippers, herons, bats, crayfish and even freshwater pearl mussels. A wild river, with the riparian zone intact is not only good for biodiversity and wildlife generally, but is pleasing to the eye. Therefore, wild rivers are of high amenity value to the public, providing a range of recreational pursuits from fishing to walking.

This guide aims to provide a basic template for the protection and enhancement of rivers in urban areas, and bring the positive benefits of the wild river to built up areas. By using this guide during the forward planning process, we are confident that "wild rivers" and other watercourses not only have a future in Ireland, but will enhance urban environments, if adequately protected in Local, County, Regional and National Development Plans and processes. This will require prescriptive planning requirements to be incorporated into planning permissions to ensure that developments do not degrade watercourses nor reduce their value as a public good. Developed appropriately, a river can enhance a development and even increase the value of properties.

Gently flowing watercourse with protective riparian vegetation



Typical example of a wild Irish cascading watercourse illustrating a good range of instream and bank habitat diversity

Urban Impacts



EXAMPLES OF DAMAGED WATERCOURSES DUE TO INSENSITIVE URBAN DEVELOPMENT

To plan for appropriate development along watercourses in urban or expanding urban centres, it is helpful to learn from past experiences. The following “what not to do” examples of developments proximal to watercourses have been identified by fisheries staff as problematic. A brief explanation is given for each case, all of which demonstrate that these impacts can be wide ranging; from amenity loss and loss of biodiversity to increased flooding and pollution impacts. All of these developments have been built too close to the watercourse.

COMMONLY ENCOUNTERED PROBLEMS ARE:

RESTRICTED PUBLIC AND ANGLER ACCESS.

INCREASED SURFACE RUNOFF LEADING TO UNNATURAL RIVER FLOW REGIMES.

INCREASED FLOODING AND EROSION PROBLEMS.

LOSS OF COVER AND FOOD FOR FISH AND AQUATIC ANIMALS.

LOSS OF FOOD AND HABITAT FOR RIPARIAN ANIMALS AND PLANTS.

LOSS OF RIPARIAN AREA AND FRAGMENTATION OF RIPARIAN CORRIDOR RESULTING IN A REDUCTION IN BIODIVERSITY.

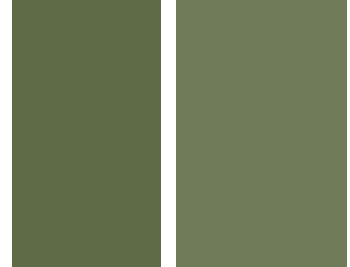
OFTEN THE INTRODUCTION OF NON NATIVE PLANTS (SUCH AS JAPANESE KNOTWEED) IN IMPORTED SOIL.

LOSS OF AESTHETIC VALUE AND A POTENTIAL QUALITY AMENITY FOR PUBLIC UTILISATION.

POORLY DESIGNED CULVERTS AND BRIDGES RESULTING IN BARRIERS TO FISH PASSAGE / NATURAL MOVEMENT OF RIVERBED MATERIALS



The riparian corridor is permanently fragmented by this development, part of which now sits on the riparian zone. There is no bank cover for fish and the movement of mammals such as otters are affected by the absence of bank vegetation, which they often use for cover. Surface runoff from the adjacent carpark and building enters the river untreated. Public access is completely restricted. If this type of development continues further up the catchment, the river will be in serious trouble.



This river has been straightened and canalised. All the larger instream material has been removed, resulting in the loss of pools and instream habitat variability (riffles and runs etc.) necessary to support older fish, invertebrates and other aquatic fauna and flora. The river banks have been engineered, leaving bank slopes that are unnaturally steep. In addition, the bank to the right of the picture has been planted with non-native vegetation, which is of lower biodiversity value to fish and other aquatic animals. Also, on closer inspection, it will be noted that grass cuttings (the light brown material) from the adjacent lawn have been dumped over the fence. These in turn will leach nutrients into the river. Dumping of grass cuttings is a common problem associated with developments, which have gardens bordering water courses. Public access to this river is completely restricted.

The riparian zone has been replaced with vertical rock armouring. There is no buffer between the carpark above and surface water runoff. Hydrocarbons, heavy metals, surfactants and other pollutants associated with motor vehicles, will enter untreated into the river through the drainage pipe, every time it rains. In addition, soil brought in by the developer has brought in an invasive non-native plant, Japanese knotweed (green plant growing between rocks). This plant is undesirable along river banks as it can outcompete native vegetation and is of low biodiversity value. The area covered by Japanese knotweed, will become much bigger over time and bring more ecological problems to the river. Japanese knotweed often causes infrastructural problems to a development itself; in this case it will undermine the rock armouring. *Japanese knotweed is an invasive species listed on the Third Schedule of the EU Habitats Regulations 2011 as amended.*

Riverbank Infilling



PROTECT THE STREAMSIDE ZONE FROM INFILLING

Infilling of land adjacent to rivers, prior or during development, is a recurring problem which can have serious consequences for flooding, local biodiversity and the riparian zone. Frequently, land is raised to accommodate a development and imported soil and/or builders' rubble is dumped right up to the water's edge. This is sometimes done under a waste permit (prior to the construction of the development itself) and it is important that local authorities don't license such activities close to watercourses. Builders' rubble (cement, building blocks, plastic, steel bars etc.) is not only unsightly but will alter the pH of the soil and its permeability, reducing its ability to support marginal vegetation associated with the area. The resulting steeper riverbank slopes present problems for public and angler access and interfere with natural flood conveyance. In some instances the spoil can be hazardous and potentially dangerous.

PROTECT IMPORTANT FEATURES ASSOCIATED WITH WATERCOURSES.

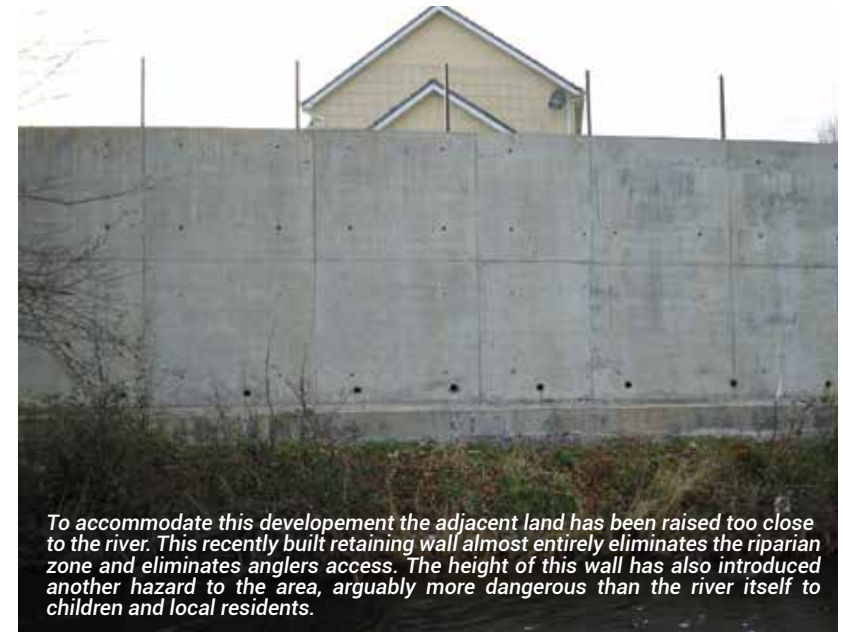
The development of the Riparian Buffer Zone should not impact or replace important ecological or geological features such as wetlands or glacial valleys of high amenity. In some instances it will be necessary to prescribe protection for these important ecological features adjacent to the riparian zone from infilling in local and county development plans. Work around them and incorporate their protection into the forward planning process.

The streamside zone should not be infilled as this impacts on its ecological characteristics and increases flood risk. Where wetlands occur, these must be protected as they provide important functions such as water regulation and retention. Wetlands are of high biodiversity value.

Note: Special Areas of Conservation and Special Protection Areas may require measures beyond the scope of this document and should be considered on a case by case basis taking into account the conservation objectives and special conservation interests of the sites.



Site left in a dangerous condition with vertical upstanding rebar (almost invisible amongst the autumn leaves) along the river bank. A potential hazard to children and anglers.



To accommodate this development the adjacent land has been raised too close to the river. This recently built retaining wall almost entirely eliminates the riparian zone and eliminates anglers access. The height of this wall has also introduced another hazard to the area, arguably more dangerous than the river itself to children and local residents.



Builders rubble is unsightly and reduces biodiversity value of the riparian zone



Areas of high amenity should be protected from encroachment and be clearly demarcated on GIS, and should be readily accessible to planners. This river is not only an area of high amenity but also a Special Area of Conservation. The development on the left hand bank is much too close to the river. Public access is annexed and significant ecological impact has occurred to the riparian zone and to the river itself. The gabions in the foreground (part of a separate development) are also undesirable, and should not be used on river banks as they are unsightly and restrict riparian vegetation growth. Areas of high amenity value can include, areas of high aesthetic appeal due to unusual or dramatic morphology caused by geological or ecological features such as glacial valleys or alluvial woodlands.



Natural floodplains. Infilling of natural floodplains and other natural features move the flooding problem elsewhere, often with catastrophic consequences to local communities. Floodplains should be protected and never infilled or built upon.



Land reclamation. Infilling of land with a view to future development, alters the natural channel bank profile resulting in unnaturally steep banks and a potentially more hazardous watercourse during flood conditions. This bank should be rehabilitated by sloping its profile back to mimic the natural river.



Infilling of a high amenity glacial valley area. In this example, the river is down to the right. Not only does this infilling of material (several meters high in places) introduce silt to the river during high rainfall events, but also degrades the riparian woodland and the area as an amenity for the wider community.



Builders' rubble on the rivers edge. Infilling of riparian zone with builders' rubble, which is unsightly and hazardous. The valley, a high amenity area, has also been infilled and degraded.

Four Steps to Good Riparian & River Planning for Urban Areas



STEP 1 – PROTECT STREAMSIDE ZONE >10M

- ENSURE SUFFICIENT SPACE IS SET-ASIDE , I.E. >10M.
- LEAVE INTACT IF IN AN UNDISTURBED NATURAL SITE.
- IF DISTURBED, LANDSCAPE APPROPRIATELY.
- PLANT WITH NATIVE MARGINAL AND EMERGENT VEGETATION.



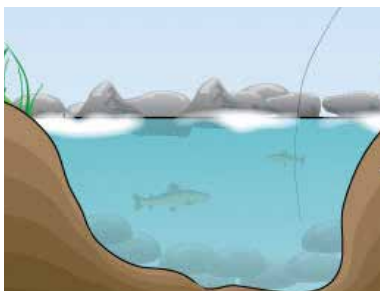
STEP 2 – CONSTRUCT MIDDLE ZONE 15M-30M

- ENSURE SUFFICIENT SPACE SET-ASIDE , I.E. >15M.
- LEAVE INTACT IF IN AN UNDISTURBED NATURAL SITE.
- IF DISTURBED, LANDSCAPE APPROPRIATELY.
- CREATE AMENITY WALKS ETC.
- PLANT WITH NATIVE TREES AND VEGETATION.



STEP 3 – CONSTRUCT OUTER ZONE >8M

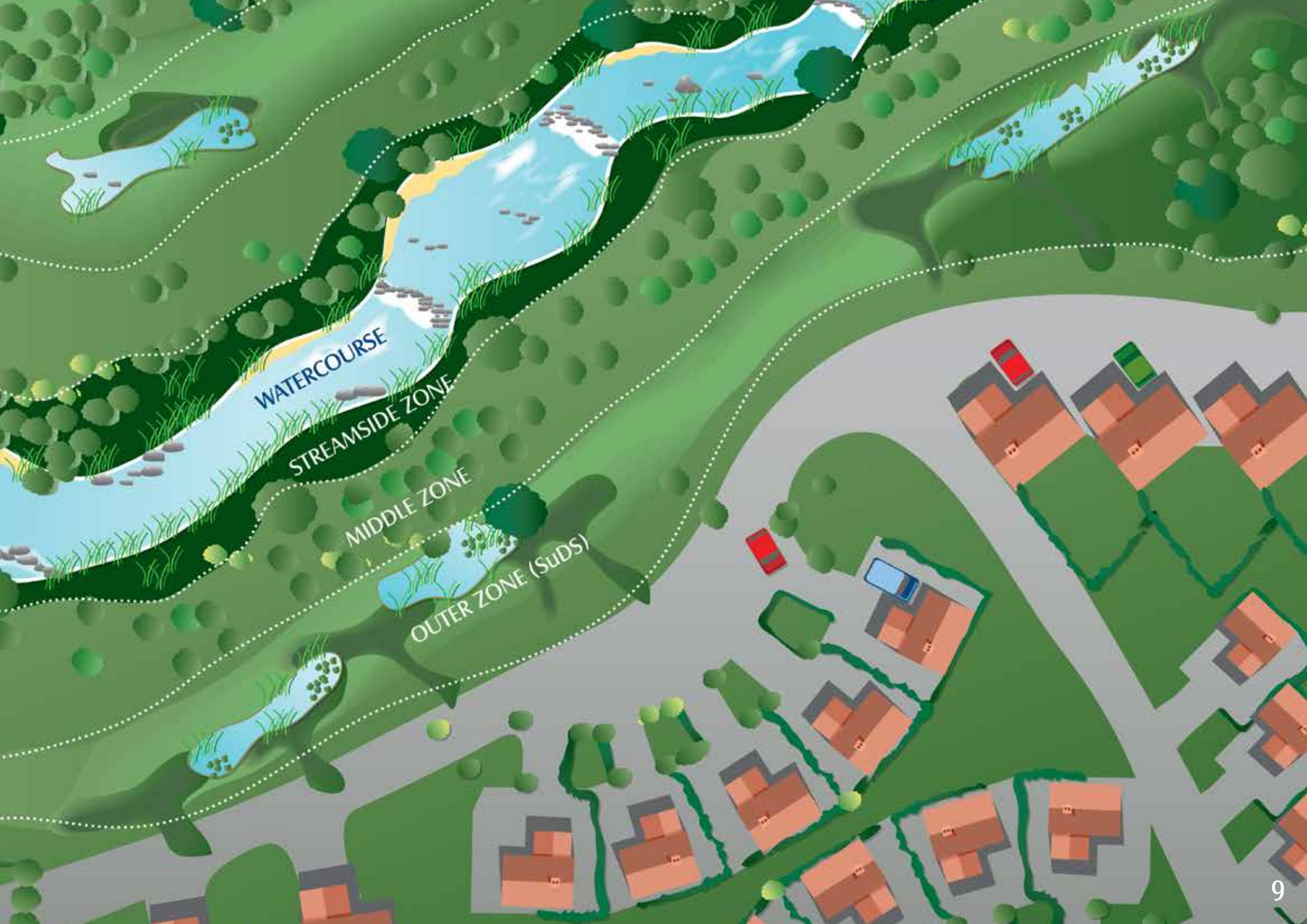
- ENSURE SUFFICIENT SPACE SET-ASIDE , I.E. >8M.
- LEAVE INTACT IF IN AN UNDISTURBED NATURAL SITE.
- IF DISTURBED, LANDSCAPE APPROPRIATELY.
- INCORPORATE SUDS (E.G. SWALES, RETENTION PONDS ETC.).
- ENSURE SUDS LINK APPROPRIATELY TO DEVELOPMENT IN A TREATMENT TRAIN.
- CONSIDER WIDER AMENITY USES IF APPROPRIATE.



STEP 4 – REHABILITATE INSTREAM CHANNEL

- IF WATERCOURSE WAS PREVIOUSLY DEGRADED BY DRAINAGE, REHABILITATE WITH APPROPRIATE HABITAT RESTORATION TECHNIQUES.
- CONTACT INLAND FISHERIES IRELAND FOR ADVICE.
- RECREATE HABITAT VARIABILITY.
- CONSIDER CREATION OF ANGLING POOLS IF APPROPRIATE.
- CONSIDER SAFETY REQUIREMENTS (E.G. AVOID STEEP BANKS.)
- ENSURE WORK IS CARRIED OUT TO A HIGH ECOLOGICAL STANDARD. *CONSULT WITH IFI FOR FURTHER ADVICE*





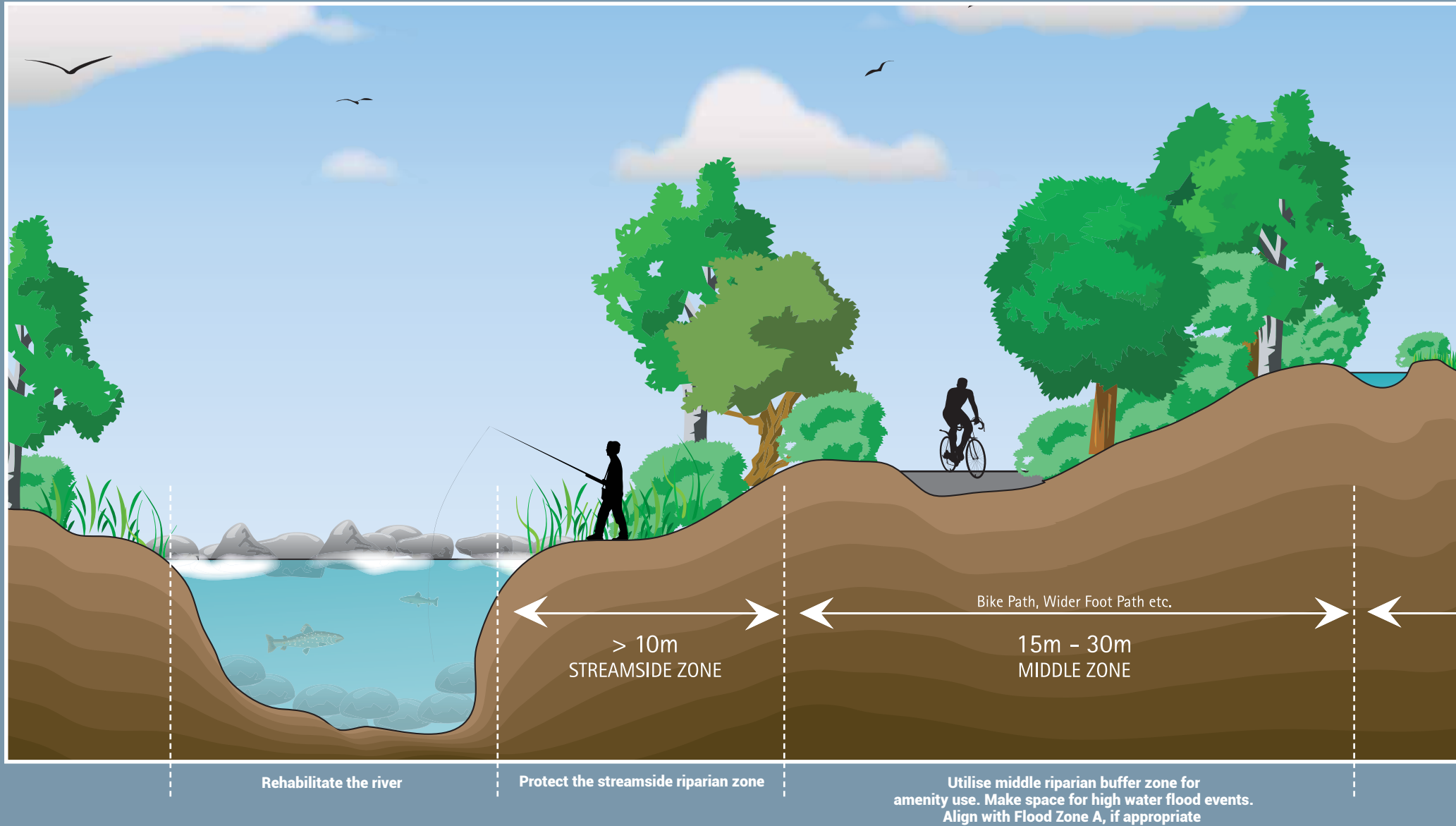
WATERCOURSE

STREAMSIDE ZONE

MIDDLE ZONE

OUTER ZONE (SuDS)

Three Buffer Subzones



Potentially align middle and outer zones with Flood Zones (<https://www.floodinfo.ie>) & Local Authority information.



CHARACTERISTICS	STREAMSIDE ZONE >10M	MIDDLE ZONE 15M-30M	OUTER ZONE >8M
FUNCTION	Protect the physical integrity of the stream ecosystem	Provide distance between upland development and streamside zone. Acts as a sump/filter for nutrients and sediment	Prevent encroachment and filter hard surface runoff
WIDTH	Minimum 10m plus wetland and other habitat	15-30m depending on stream	8m minimum setback to structures
VEGETATIVE TARGET	Native riparian vegetation	Managed woodland, some clearing/open space allowed	Woodland encouraged, but usually-turfgrass
ALLOWABLE USES	Very restricted except for fishing or walking trails	Restricted, e.g. some recreational uses such as bike path or larger footpaths can function as a flood zone*	Unrestricted e.g. residential uses, including lawn, swales, most stormwater treatment will occur here
SUPPORTING OTHER PLANNING OBJECTIVES	<p>All zones but especially the streamside zone should support Biodiversity including EU Habitats Directive objectives</p> <p>Potentially Align with Flood Zones (https://www.floodinfo.ie) & Local Authority information.</p> <p>Walking trails should not run through sensitive ecological habitats. It is recommended that a multi-disciplinary team including an ecologist and flood risk expert determine the appropriate zonation and allowable uses.</p> <p>No artificial lighting is recommended for the streamside zone and artificial lighting should be restricted unless absolutely necessary in the middle zone. LEDs should be warm white to minimise disturbance to wildlife</p>		

- Steps 1 (i.e. create stream side zone) and 3 (i.e. create outer zone) are essential for all streams irrespective of size.
- Steps 4 (i.e. rehabilitate channel) and 2 (i.e. create middle zone) are strongly recommended and arguably necessary for rivers with amenity potential, particularly in the context of social cohesion in urban areas.

LEGEND

- Commercial
- Residential
- Open Spaces
- Outer Zone
- Middle Zone
- Streamside Zone
- Watercourse

INCORPORATE BUFFER ZONATION INTO LOCAL AREA PLANS

Incorporation of this guideline into local area plans will protect the watercourse and ensure sufficient space is set aside for appropriate amenity and SuDS provision.

Climate change is expected to have diverse and wide ranging impacts on Ireland's environment, society and economic development, including managed and natural ecosystems, water resources, agriculture and food security, human health and coastal zones. The most immediate risks to Ireland which can be influenced by climate change are predominantly those associated with changes in extreme events, such as floods, precipitation and storms. These factors should be integrated in every decision made when planning for watercourse management.

* It is recommended to use this guide in association with the OPW Flood Maps (<http://www.floodmaps.ie/>).

Step 1: Protect Streamside Zone



THE STREAMSIDE ZONE



**STREAMSIDE RIPARIAN ZONE
MINIMUM WIDTH >10M**

The streamside zone is the zone nearest the river and provides essential habitat for marginal aquatic plants and food and cover for aquatic animals, including fish.

This is the most ecologically sensitive zone and should be either left alone if in its natural state, or if degraded, planted with appropriate emergent aquatic vegetation and a mixture of native trees along the bank itself. Suitable native tree species include:- alder, birch, aspen and willow, all of which do well on wet soils. In time, they will overhang the streambank providing shade and food insects for fish. Ash and oak are also suitable but require dry acid soils. Holly, rowan, hazel, guelder rose, elder and

crab apple grow well on drier fertile banks (Fossitt, 2000; Anon, 2000). Plant with Irish rather than imported "native varieties" as the vegetation community should ideally be genetically similar to that which occurs naturally in the locality. This zone is suitable for angling if appropriately managed, e.g., leave occasional open space for casting of bait into fishing areas such as pools. The local Inland Fisheries Ireland office can provide advice on the construction of angling pools.



In this example the river bank has been replaced by builders rubble and is too steep. Builders rubble is not a suitable substrate for riparian plants and river edge vegetation with the consequence of a severely diminished riparian zone.

BENEFITS OF STREAMSIDE ZONE

The streamside zone, if sufficiently wide and managed appropriately, will

- Filter out pollutants and sediment from overland surface runoff.
- Provide a refuge for insects and animals with close affinity to rivers (e.g., otters, kingfishers and dragonflies).
- Provide habitat necessary to support diverse fish and other aquatic life.
- Provide amenity and recreation for local people and visitors to the area (fishing, birdwatching, etc.).
- Enhance flood alleviation through increased channel stability and improved resilience to the impacts of climate disruption.
- Bring about greater public appreciation and reduce the risk of dumping of unwanted rubbish.



Example of a suitable riparian zone showing marginal vegetation.

Step 2: Construct Middle Zone



THE MIDDLE ZONE



**MIDDLE RIPARIAN ZONE
RECOMMENDED WIDTH 15M-30M**

The next zone out from the river is the middle zone. This zone is best developed as a narrow woodland area and planted with an appropriate mixture of native woodland species.

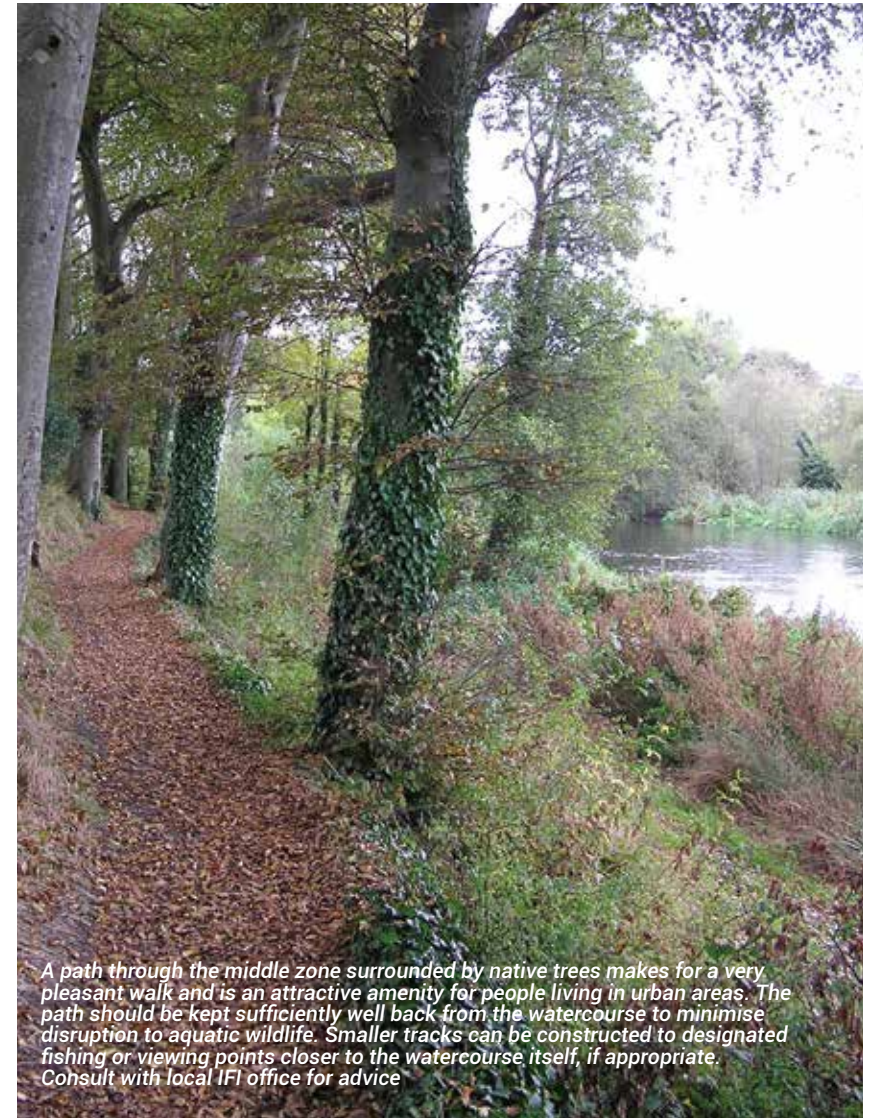
This zone is suitable for human usage and the habitat is also important for wildlife. Recreational activities such as walking (permeable paved or gravel footpaths) or cycle lanes can be planned for incorporation into this zone. Planting of appropriate tree and shrub species is important; species such as poplar, Scots pine, European larch, ash, oak, alder, birch, aspen, willow, holly, rowan, hazel, guelder rose, elder and crab apple are suitable.

Plant with Irish rather than imported "native varieties" as the vegetation community should ideally be genetically similar to that which occurs naturally in the locality. This zone could also be planned to provide for projected extra water retention. Take EU Habitats and Birds Directive objectives into consideration if applicable.

BENEFITS OF MIDDLE ZONE

The middle zone, if sufficiently wide and managed appropriately, will

- Provide amenity and a recreation area for local people and visitors (fishing, scenic walks, etc.). This zone is suitable for high impact recreational pursuits, such as cycling and horse riding.
- Provide a refuge for a range of woodland and grassland species.
- Filter out pollutants and sediment from overland surface runoff.
- Act as a carbon sink between the outer and streamside zone.



A path through the middle zone surrounded by native trees makes for a very pleasant walk and is an attractive amenity for people living in urban areas. The path should be kept sufficiently well back from the watercourse to minimise disruption to aquatic wildlife. Smaller tracks can be constructed to designated fishing or viewing points closer to the watercourse itself, if appropriate. Consult with local IFI office for advice

Step 3: Construct Outer Zone



THE OUTER ZONE



**OUTER ZONE
MINIMUM 8M SET BACK FROM
HARD SURFACES**



The outer zone is the first line of defense against urban development. It is recommended that it is also developed to receive and treat surface water runoff, through the incorporation of Sustainable Urban Drainage Systems (SuDS). All development sites, not just those adjacent to watercourses should incorporate SuDS, and these should be arranged in a treatment train to maximize their effectiveness (see below for more detail). The outer zone can be expanded to merge with recreational playing fields or picnic spaces. The outer zone must not be enclosed or incorporated into private gardens. If enclosed, home owners may subsequently pave or build on it, effectively impacting on the zone.

SUSTAINABLE URBAN DRAINAGE SYSTEM (SUDS)

Culverting, draining, direct piping of storm waters and the construction of hard surfaces too close to watercourses reduces their aesthetic qualities, impacts on and eliminates fish and other wildlife, and reduces stream function from a human health perspective. Sustainable Urban Drainage Systems (SuDS) is a suite of techniques developed to manage and reduce the impact of storm waters on river systems, by reducing the surface run off rate from developed sites compared to conventional systems (shores, pipes etc.). They are also effective at removing certain pollutants. Developed internationally, the efficiency of these techniques have been conclusively demonstrated by scientific research and now form an integral part of the Greater Dublin Drainage Strategy Strategy and most County Development Plans to manage surface waters from developed areas.

It is recommended that the outer zone is developed to incorporate some of these SuDS techniques such as SWALES (constructed watercourses, which are shaped or graded in earth materials and planted with site suitable vegetation) and constructed wetlands. These can be linked back into the SuDS treatment train, starting from site specific techniques (such as water butts or tanks and permeable paving) and subsequently linking onto larger wetlands prior to discharging to the watercourse. For further information on SuDS check out (CIRIA, 2015). Excellent examples of the different SuDS methods available can be found on www.dublincity.ie.

BENEFITS OF OUTER BUFFER SUB-ZONE AND SUDS

If Sustainable Urban Drainage Systems are incorporated into the outer zone then the following should occur:

- A significant reduction in stormwater runoff rates to the watercourse.
- An improvement in flood alleviation, reducing erosion and other flood impacts downstream.
- Increased water quality - filtering out of pollutants and sediment from overland surface runoff.
- A provision of additional habitat for species and an overall increase in biodiversity of the area.
- Depending on SuDS type, additional amenity value can be added to an area (e.g., parks, playing areas etc).

Management of SUDS should ensure that invasive species are controlled should they occur and good biosecurity protocols followed.



Surface runoff from a car park during a spell of heavy rain. This car park is covered in a hard impermeable surface with grit and organic matter clearly visible in the foreground, which eventually is washed into the watercourse. The high concentration of suspended solids can be seen clearly as it enters and discolours the watercourse (see left inset image)



A small constructed stormwater wetland removes pollutants and reduces the impact of stormflow runoff on the watercourse. Note the green channel in the foreground, which feeds the water from the development through a system of interconnected swales.

Table 1. Typical pollutant removal rates of a stormwater wetland

Pollutant	% Removal *
Total Suspended Solids	60-80%
Total Phosphorous	20-40%
Total Nitrogen	20-40%
Bacteria	60-80%
Copper	60-80%

• various sources; see page 18 for further information



A SWALE is a relatively simple but effective SuDS technique to construct. The example above is known as a **dry swale** and during storm water events, surface water runs off the adjacent hard surface (road), and attenuates in the SWALE, and is filtered out slowly to a receiving drainage network. This effectively slows water runoff and removes pollutants.

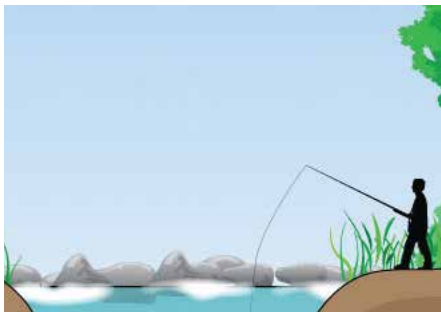
Table 2. Typical pollutant removal rates of a SWALE

Pollutant	% Removal *
Total Suspended Solids	80-90%
Total Phosphorous	29-65%
Total Nitrogen	30-50%
Bacteria	50%
Metals	14-19%
Hydrocarbons	100%

Step 4: Rehabilitate Instream Channel



REHABILITATE AND RESTORE



REHABILITATE WATERCOURSE

INSTREAM REHABILITATION

Wild watercourses are usually complex systems defined by the surrounding topography, geology, vegetation and hydrology. The natural form of rivers can range from slow meandering riffles, glide, pool sequences to steeper and straighter step pool sequences. In Ireland, this natural physical form is often lost in rivers close to urban environments due to river engineering. Drainage and straightening of river channels result in a loss of habitat for fish and other aquatic organisms. Therefore, when planning for rivers in urban areas, it is important that such channels are rehabilitated to compensate for this habitat loss. A range of instream rehabilitation techniques have been developed by Inland Fisheries Ireland. These techniques have the added advantage of increasing river stability, reducing unnaturally high rates of river bank erosion and bedload movement (both of which are flooding hazards), and improve river biodiversity. They can include soft-engineering techniques, which use

nature based solutions and native vegetation such as willow to work with natural river processes. In other situations, especially where natural river processes are constrained (e.g., in canalised river channels), a range of harder engineering techniques may be required; such as randomly placed boulders, deflectors, insertion of gravel and spawning beds, artificial riffles, weirs, log and Christmas tree bank protection, and rip-rap (stone armouring) to increase habitat availability inside the channel (see O'Grady 2006 for detail). In some cases it may be necessary to landscape the entire channel, for example to reduce bank slope and reintroduce meanders. It is essential that personnel with the appropriate experience in river rehabilitation advise on instream habitats and it is recommended that Inland Fisheries Ireland is contacted for advice. Angling pools for children to go fishing can be placed at desired locations using these instream rehabilitation techniques, the design of which will be determined by the target species and the type of watercourse. Consider also removing or adjusting barriers that prevent the passage of migrating fish and improving the flow of water and sediments - EU Biodiversity Strategy 2030.

BENEFITS OF INSTREAM REHABILITATION

If constructed to Inland Fisheries Ireland standards then instream rehabilitation works will:

- Improve channel stability by reducing excessive erosion and improving flood conveyance.
- Dramatically improve the rivers' holding capacity for fish (2-5 fold increases are not uncommon) by recreating habitat.
- Improve aesthetics of a watercourse and its value as an amenity.
- Improve biodiversity in the area, not only for fish but also crayfish, otters, dippers, grey wagtails and other wildlife.
- Provide angling pools for kids to fish.



Example of rehabilitation works on the River Gloscha (Mulcair River catchment) in County Limerick. Here a series of alternating deflectors reintroduce sinuosity and riffle glide pools sequence characteristic for this type of channel



Random boulders were introduced into the channel for instream fish cover, greater hydraulic diversity and perching areas for dipper, yellow wagtail and otters. Emergent vegetation and grass have established themselves on the deflectors, significantly increasing local biodiversity and providing additional cover and food for fish, bats and birds.

This step will most likely require collaboration with the Local Authority and possibly other agencies to take a hydromorphological approach appropriate for the reach. It offers an opportunity to bring about an 'enhanced' amenity now required as a result of the higher density development prescribed under government guidance.

Providing Tangible Benefits to Urban Communities: Climate Action, Flooding, Mental Health, Positive Living & Reduced Crime



WIDER BENEFITS TO SOCIETY

The rehabilitated watercourse with its Riparian Buffer Zone (incorporating SuDS) can be developed even further to improve the overall amenity value for the public. The benefits of nature to individuals stress-levels and mental health in general is well documented. More recently studies have shown that the impact of nature and green areas have significant health benefits for wider society. These include improvements in community well-being, recreation, recovery from serious illness and reduced anti-social behaviour.

Studies have even found a reduction in violent crime rates in greener areas. The incorporation of the Riparian Buffer Zone and the restored river into a network of linear parks, walks and cycle routes in the urban environment is a logical progression as the riparian buffer should provide some of the green space needed. Walking is now the most popular outdoor activity in Ireland, and schemes such as the Slí na Slàinte offer ways to manage such routes effectively. Rivers offer an ideal opportunity to develop waymarked walks in urban areas (away from hazardous traffic) which are not only safe, but have high visual and acoustic appeal. This must be an important consideration for urban planning, as obesity (in particular childhood obesity) has been identified as one of the biggest health threats in Ireland today. The design of the walk and green spaces can be planned on a site by site basis, but ideally should preserve and compliment the longitudinal riparian corridor.

THE WHOLE IS GREATER THAN THE SUM OF THE PARTS

Any one of the four steps will result in an improved watercourse and amenity in the urban environment. However, the combination of steps compliment each other, working cumulatively to maximise protection of the watercourse and ensuring that it serves as a high quality amenity for the local community. In addition flood risk to property and infrastructure should be significantly reduced. Therefore, it is recommended that this system is incorporated into future planning decisions with regard to local area and regional plans. These plans need to be prescriptive as to what is expected from developers, and the responsibility of implementation and maintenance needs to be examined carefully. In other words, set aside sufficient buffer width, landscape and plant appropriately, incorporate SuDS if possible, rehabilitate the watercourse itself including angling pools for kids, and design amenity infrastructure such as paths



for the middle and outer zones. Limited nature trails may be considered for the streamside zone. Set-aside riparian zones not only function as amenity areas but can also be important buffers for protecting urban buildings and infrastructure (and the local economy) against severe flood events such as the example above in Golden, Co. Tipperary on the River Suir. Here the river regularly floods into the park which alleviates pressure further downstream and making space for water. Implementation of the recommendations in this guidance document will increase the resilience of urban areas to predicted impacts of Climate Change. Making space for water and biodiversity will reduce flood risk and increase environmental quality for those living in urbanised areas.

Further Information



CLIMATE CHANGE AND FLOODING

IRELAND'S CLIMATE ACTION PLAN / SUSTAINABLE DEVELOPMENT

Department of the Environment, Climate and Communications. (<https://www.dccae.gov.ie>)

NATIONAL ADAPTATION FRAMEWORK

Planning for a Climate Resilient Ireland. 2019. Department of Communications, Climate Action and Environment (<https://www.dccae.gov.ie>)

FLOOD RISK MAPS

(<https://www.floodinfo.ie>)

GREEN INFRASTRUCTURE

GREEN INFRASTRUCTURE

Nature-based solutions – 'thinknature' (<https://platform.think-nature.eu/>) Integrating Ecosystem Approaches, Green Infrastructure and Spatial Planning (www.epa.ie)

SUSTAINABLE DRAINAGE SYSTEMS

SuDS The SuDS Manual C753 (2015) (<https://www.ciria.org>)

NATIVE WOODLANDS SCHEME & NEIGHBOURHOOD SCHEME

Department of Agriculture (<https://www.agriculture.gov.ie>)

COMMUNITY HEALTH / GREEN WALKS

The Slí na Sláinte Programme encourages people to walk more and get more health benefits from their walking (<https://www.irishheart.ie>) and Sport Ireland Trails listed at (<https://www.irishtrails.ie>)

OPW (2009)

The Planning system and flood risk management. Guidelines for Planning Authorities

INTEGRATED CATCHMENT MANAGEMENT

RIVER RESTORATION / FISHERIES HABITAT / IRELAND'S INLAND FISHERIES

(protection, management and conservation of Ireland's inland fisheries and sea angling resources) IFI Guidance / Research Documents (<https://www.fisheriesireland.ie>) River Restore (<https://www.restoreivers.eu>)

RIVER BASIN MANAGEMENT PLAN/WFD GUIDANCE

(<https://www.dhplg.gov.ie>) & (<https://www.epa.ie>)

INTEGRATED CATCHMENT MANAGEMENT

Catchments.ie (<https://www.catchments.ie>) and Local Authority and Waters Programme (<https://www.watersandcommunities.ie>)

WATER CONSERVATION

Taptips (<https://www.taptips.ie>)



Rivers can provide immense pleasure for children as well as providing a natural educational setting if managed with safety and biodiversity in mind. Degraded rivers on the other hand tend to be low in biodiversity, lacking character and amenity value, and by virtue of the damage caused by physical engineering are often more dangerous than their natural counterparts.

THE INFORMATION PROVIDED FROM THIS DOCUMENT IS DRAWN FROM INTERNATIONAL RECOMMENDATIONS & MODIFIED FOR THE IRISH ENVIRONMENT INCLUDING:

1. Anon. (1997) Stewards of our streams. Buffer strip design, establishment and maintenance. Iowa State University.
2. Anon. (2000) Our Trees – A Guide to Growing Ireland's native Trees in Celebration of a New Millennium. Tree Council of Ireland, Cabinteely House, The Park, Cabinteely, Dublin 18.
3. Curtis, J.A, and Williams, J., ESRI (2002) A National Survey of Recreational Walking in Ireland.
4. Dublin City website
http://www.dublincity.ie/shaping_the_city/environment/drainage_services/greater_dublin_strategic_drainage_study/
5. Faber Taylor, A., Kuo, F.E., W.C. Sullivan (2001) Coping with ADD. The surprising connection to green play areas. Environment and Behavior 33: 54-77
6. Fossitt, J.A. (2000). A Guide to Habitats in Ireland. The Heritage Council, Rothe House, Kilkenny.
7. Kuo, F.E., W.C. Sullivan (2001). Environment and crime in the inner city. Does vegetation reduce crime? Environment and behaviour. 33 (3). 343-367
8. Mahan B. L, Polasky, S. and RM Adams (2000) Valuing urban wetlands. A property price approach. Land Economics. 6 (1). 100-113.
9. The Obesity Report (2005) National Taskforce on Obesity, Ireland
10. NRA (2006) A guide to landscape treatments for national road schemes in Ireland National Roads Authority
11. Welsch, D.J. (1991) Riparian Forest Buffers. USDA-FS Pub. NA-PR-07-91. USDA-FS, Radnor. PA

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Photographs by Fran Igoe and Ken O'Neill, Inland Fisheries Ireland. Additional photographs kindly supplied Waxwing Wildlife Productions Ltd.



Inland Fisheries Ireland is the statutory agency responsible for inland fisheries in Ireland. It operates under the aegis of the Department of the Environment, Climate and Communications. The principal function of Inland Fisheries Ireland is set out under Section 7 (2) of the Inland Fisheries Act of 2010. This is the protection, management and conservation of the inland fisheries resource. Our mission is to protect, manage and conserve Ireland's inland fisheries and sea angling resources and to maximise their sustainability and natural biodiversity for you and for future generations. We achieve this through working with the Community, Government, its agencies, and Business.



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18th February 2021

Re: EIAR Scoping Request – Alteration of the proposed Bracklyn Wind Farm, Co. Westmeath

Dear Sir/Madam,

Irish Water (IW) acknowledges receipt of your request in respect of the Environmental Impact Assessment Report (EIAR) scoping for the above proposed development in Co. Westmeath.

Please see attached our suggested scope in relation to Water Services. On receipt of the planning referral, Irish Water will review the EIAR as part of the planning process

Queries relating to the terms and observations above should be directed to planning@water.ie

Yours sincerely,

Signed on behalf of Irish Water:

PP: Ali Robinson

Yvonne Harris
Connections and Development Services

Response to EIAR Scoping Report Requests

IW currently does not have the capacity to advise on scoping of individual projects. However, in general we would like the following aspects of Water Services to be considered in the scope of an EIAR where relevant;

- a) Impacts of the development on the capacity of water services (do existing water services have the capacity to cater for the new development if required). This is confirmed by IW in the form of a Confirmation of Feasibility (COF). If a development will require a connection to either a public water supply or sewage collection system the developer is advised to submit a Pre Connection Enquiry (PCE) enquiry to IW to determine the feasibility of connection to the Irish Water network. All pre-connection enquiry forms are available from <https://www.water.ie/connections/get-connected/>
- b) Where the development proposal has the potential to impact an IW Drinking Water Source the applicant shall provide details of measures to be taken to ensure that there will be no negative impact to IWs Drinking Water Source during construction and operational phases of the development. It is a requirement of the Water Framework Directive that waters used for the abstraction of drinking water are protected so as to avoid deterioration in quality.
- c) Any up-grading of water services infrastructure that would be required to accommodate the development.
- d) In relation to a development that would discharge trade effluent – any upstream treatment or attenuation of discharges required prior to discharging to an IW collection network
- e) In relation to the management of surface water; the potential impact of surface water discharges to combined sewer networks & potential measures to minimise/stop surface waters from combined sewers
- f) Any physical impact on IW assets – reservoir, drinking water source, treatment works, pipes, pumping stations, discharges outfalls etc. including any relocation of assets
- g) If you are considering a development proposal, it is best practice to contact us in advance of designing your proposal to determine the location of public water services assets. Details, where known, can be obtained by emailing an Ordinance Survey map identifying the proposed location of your intended development to datarequests@water.ie. Other indicators or methodologies for identifying infrastructure located within your lands are the presence of registered wayleave agreements, visible manholes, vent stacks, valve chambers, marker posts etc. within the proposed site.
- h) Any potential impacts on the assimilative capacity of receiving waters in relation to IW discharge outfalls including changes in dispersion /circulation characterises
- i) Any potential impact on the contributing catchment of water sources either in terms of water abstraction for the development (and resultant potential impact on

the capacity of the source) or the potential of the development to influence/ present a risk to the quality of the water abstracted by IW for public supply.

- j) Where a development proposes to connect to an IW network and that network either abstracts water from or discharges waste water to a “protected”/sensitive area, consideration as to whether the integrity of the site/conservation objectives of the site would be compromised.
- k) Mitigation measures in relation to any of the above

This is not an exhaustive list.

Please note

- The Confirmation of Feasibility from IW, to the applicant, should be issued prior to applying for planning permission.
- Irish Water will not accept new surface water discharges to combined sewer #networks

Comhairle Chontae na Mí

Roinn Pleanála,
Teach Buvinda, Bóthar Átha Cliath,
An Uaimh, Contae na Mí
Fón: 046 – 9097500/Fax:046 – 9097001
R-phost: info@meathcoco.ie Web: www.meath.ie



Meath County Council

Planning Dept.,
Buvinda House, Dublin Road,
Navan, Co. Meath.
Tel: 046 – 9097500/Fax: 046 – 9097001
E-mail: info@meathcoco.ie Web: www.meath.ie

27 JAN 2021

26th January 2021

Conor Foy
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Stradone
Co Cavan, H12 NV06

Re: Bracklyn Wind Farm (Re-consultation), Co Westmeath

Dear Conor,

I would like to acknowledge receipt of your email dated the 18th of January 2021 in relation to the above.

Meath County Council have no comments to make at this time as the development is in Co Westmeath, however, if an application is lodged we would make comments if appropriate.

If you require any further information please do not hesitate to contact our office.

Yours faithfully

Alison Ryan

On Behalf of Meath County Council

Conor Foy

From: Thomas Sheridan <thomas.sheridan@eir.ie>
Sent: 26 January 2021 15:40
To: Conor Foy; Martin Burke
Subject: Re: Bracklyn Wind Farm (Re-consultation)

Hi Conor,

This detail is ground infracture only and has no impact on the eircom LTD radio network.

I am forwarding the mail to my Access network planners for their information.

Regards,
Tom

On Mon, Jan 18, 2021 at 1:05 PM Conor Foy <conor@galetechenergy.com> wrote:

To whom it may concern,
Please find attached a pre-application scoping request for a proposed wind farm development (revised scheme) in County Westmeath further to an initial scoping request in March 2020.
Kind regards,

Conor

Conor Foy | Galetech Energy Services

Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06

M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

Galetech Energy Services Limited

Registered in Ireland No. 352304 | Registered Office: Greaghcrotagh, Cootehill, Co. Cavan H12 NV06

Part of the Galetech Group

www.galetechgroup.com

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--
Thomas Sheridan
Core Networks Radio Engineer



T: +353 851742191

E: Thomas.Sheridan@eir.ie

eir Monivea Road, Mervue, Galway

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Oifig na
nOibreacha Poiblí
Office of Public Works



Office of Public Works
Head Office
Jonathan Swift Street
Trim
Co. Meath
C15 NX36

Galetech Energy Services
Clondargan
Stradone
Co.Cavan
Ireland
H12NV06

15th April 2020

**Re: Consultation on Proposed Wind Farm Development at
Bracklin, Co Cavan**

Dear Sir,

Thank you for forwarding on the EIA Scoping report for the above-mentioned wind farm development.

We note the proposed location of the Bracklyn Wind Farm development on the map that Galetech Energy Services supplied. We expect it to have no significant effect on any properties that the Office of Public Works has an interest in.

We welcome the opportunity to make further comments on the proposed development as part of the statutory planning process.

If you have any queries in respect to the above, I would be grateful if you could address your correspondence to Alan Dalton, OPW Property Management Services (alan.dalton@opw.ie).

Yours sincerely

Assistant Principal Architect
Architectural Services OPW

Conor Foy

From: Adrian Carroll <adrian.carroll@ripplecom.net>
Sent: 25 January 2021 09:47
To: Licensing; conor@galetechenergy.com
Subject: RE: Bracklyn Wind Farm (Re-consultation)

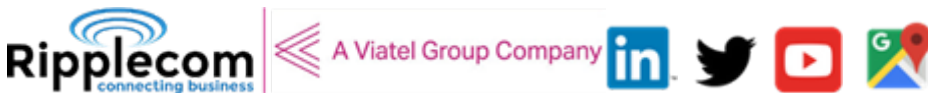
Hi Conor,

This development will not impact our network.

Regards,

Adrian Carroll | Network Operations Manager

T: 061 5711561 M: 086 8372264
E: adrian.carroll@ripplecom.net | W: ripplecom.net
Houston Hall, Raheen Business Park, Limerick, V94 PKF1



From: Denis Herlihy <denis.herlihy@ripplecom.net>
Sent: 22 January 2021 18:28
To: Licensing <licensing@ripplecom.net>
Subject: FW: Bracklyn Wind Farm (Re-consultation)

FYI if you didn't already receive

From: Conor Foy <conor@galetechenergy.com>
Sent: Monday 18 January 2021 12:37
To: Business@Ripplecom <business@ripplecom.net>
Subject: Bracklyn Wind Farm (Re-consultation)

To whom it may concern,
Please find attached a pre-application scoping request for a proposed wind farm development (revised scheme) in County Westmeath further to an initial scoping request in March 2020.
Kind regards,
Conor

Conor Foy | **Galetech Energy Services**

Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06
M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

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conor@galetechenergy.com

From: Thomas Barry <Tom.Barry@TETRAIRELAND.IE>
Sent: 31 March 2020 07:42
To: conor@galetechenergy.com
Subject: FW: Bracklyn Windfarm

Conor,

We anticipate no impact from development at the proposed location. Can you ensure the proposal is also reviewed by eir.

Regards,
Tom

From: Derek Rosarius
Sent: Thursday 26 March 2020 13:01
To: Thomas Barry
Subject: FW: Bracklyn Windfarm

Regards

Derek Rosarius | Compliance Manager |
TETRA Ireland Communications Ltd
Block 43a, 2nd floor, Yeats Way, Parkwest Business Park, Nangor Road, D12
M +353 85 1746044 | E_derek.rosarius@tetraireland.ie | www.tetraireland.ie/



From: conor@galetechenergy.com [mailto:conor@galetechenergy.com]
Sent: Thursday 26 March 2020 12:46
To: Info
Cc: Derek Rosarius
Subject: Bracklyn Windfarm

To whom it may concern,
Please find attached a pre-application scoping request for a proposed wind farm development in County Westmeath.
Kind regards,
Conor

Conor Foy | **Galetech Energy Services**
Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06
M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

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Conor Foy
Galetech Energy Services
Clondargan
Stradone
Co. Cavan

by email: conor@galetechenergy.com

Dáta | Date
20 January, 2021

Ár dTag | Our Ref.
TII21-112267

RE: EIA Scoping Request: Proposed Windfarm (revised to 9 no. turbines) with associated infrastructure, including 110 kV substation and grid connection at Bracklyn, south of Delvin, Co. Westmeath

Dear Mr. Foy,

Transport Infrastructure Ireland (TII) acknowledges receipt of your EIA Scoping request in respect of the above proposed project, received by email 18 January, 2021.

As outlined in TII's previous EIA Scoping submission, National Strategic Outcome 2 of the National Planning Framework includes the objective to maintain the strategic capacity and safety of the national roads network. It is also an investment priority of the National Development Plan, 2018 – 2027, to ensure that the extensive transport networks which have been greatly enhanced over the last two decades, are maintained to a high level to ensure quality levels of service, accessibility and connectivity to transport users.

The issuing of this correspondence is provided as best practice guidance only and does not prejudice TII's statutory right to make any observations, requests for further information, objections or appeals following the examination of any valid application referred.

The approach to be adopted by TII in making such submissions or comments will seek to uphold official policy and guidance as outlined in the Section 28 Ministerial Guidelines 'Spatial Planning and National Roads Guidelines for Planning Authorities' (DoECLG, 2012). Regard should also be had to other relevant guidance available at www.tii.ie.

With respect to EIA Scoping issues, the recommendations indicated below provide only general guidance for the preparation of EIA, which may affect the National Roads Network. The developer should have regard, *inter alia*, to the following;

1. As set down in the Spatial Planning and National Roads Guidelines (2012), the primary purpose of the national road network is to provide strategic transport links between the main centres of population and employment, including key international gateways such as the main ports and airports, and to provide access between all regions. The EIA should identify the methods/techniques proposed for any works traversing/in proximity to the national road network in order to demonstrate that the development can proceed complementary to safeguarding the capacity, safety and operational efficiency of that network.
2. In relation to the proposed development site, the scheme promoter should note locations of existing and future national road schemes and develop proposals to safeguard proposed road schemes. Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to locations of existing and future national road schemes.

Próiseálann BlÉ sonraí pearsanta a sholáthraítear dó i gcomhréir lena Fhógra ar Chosaint Sonraí atá ar fáil ag www.tii.ie.
TII processes personal data in accordance with its Data Protection Notice available at www.tii.ie.

3. In relation to grid connection and cable routing, proposals should be developed to safeguard proposed road schemes as TII will not be responsible for costs associated with future relocation of cable routing where proposals are catered for in an area of a proposed national road scheme. In that regard, consideration should be given to routing options, use of existing crossings, depth of cable laying, etc.

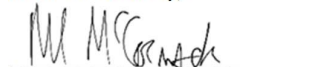
In the context of existing national roads, alternatives to the provision of cabling along the national road network, such as alternative routing or the laying of cabling in private lands adjoining the national road, should be considered in the interests of safeguarding the investment in and the potential for future upgrade works to the national road network. The cable routing should avoid all impacts to existing TII infrastructure such as traffic counters, weather stations, etc. and works required to such infrastructure shall only be undertaken in consultation with and subject to the agreement of TII, any costs attributable shall be borne by the applicant/developer. The developer should also be aware that separate approvals may be required for works traversing the national road network.

4. Clearly identify haul routes proposed and fully assess the network to be traversed. Separate structure approvals/permits and other licences may be required in connection with the proposed haul route. Consultation with relevant PPP Companies and MMaRC Contractors may also be required. All structures on the haul route should be checked by the applicant/developer to confirm their capacity to accommodate any abnormal load proposed.
5. Where appropriate, subject to meeting the appropriate thresholds and criteria and having regard to best practice, a Traffic and Transport Assessment be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site with reference to impacts on the national road network and junctions of lower category roads with national roads. The Authority's Traffic and Transport Assessment Guidelines (2014) should be referred to in relation to proposed development with potential impacts on the national road network. The scheme promoter is also advised to have regard to Section 2.2 of the TII TTA Guidelines which addresses requirements for sub-threshold TTA.
6. TII Standards should be consulted to determine the requirement for Road Safety Audit (RSA) and Road Safety Impact Assessment (RSIA).
7. Assessments and design and construction and maintenance standards and guidance are available at [TII Publications](#) that replaced the NRA Design Manual for Roads and Bridges (DMRB) and the NRA Manual of Contract Documents for Road Works (MCDRW).
8. The developer, in conducting Environmental Impact Assessment, should have regard to TII Environment Guidelines that deal with assessment and mitigation measures for varied environmental factors and occurrences. In particular;
 - a. TII's Environmental Assessment and Construction Guidelines, including the *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (National Roads Authority, 2006),
 - b. The EIAR should consider the Environmental Noise Regulations 2006 (SI 140 of 2006) and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider the incorporation of noise barriers to reduce noise impacts (see *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (1st Rev., National Roads Authority, 2004)).

Notwithstanding, any of the above, the developer should be aware that this list is non-exhaustive, thus site and development specific issues should be addressed in accordance with best practice.

I hope that the above comments are of use in your EIAR preparation.

Yours sincerely,



Michael McCormack
Senior Land Use Planner

From: Liam Allister <Liam.Allister@virginmedia.ie>
Sent: 13 May 2020 14:35
To: conor@galetechenergy.com
Cc: Mark Nolan; Keiran Butler
Subject: RE: Bracklyn Wind Farm

Hi Conor,

Virgin Media do not have any links in the area outlined that would be affected by the proposed development.

Regards
Liam

From: conor@galetechenergy.com [mailto:conor@galetechenergy.com]
Sent: 13 May 2020 09:29
To: Liam Allister <Liam.Allister@virginmedia.ie>
Subject: Bracklyn Wind Farm

Hi Liam,

This is another windfarm scoping we are undertaking and I sent this via post to your offices in March, I thought I would send on to you via email now I have one for you.

If you require anything further please let me know.

Kind Regards,

Conor

Conor Foy | Galetech Energy Services
Clondargan, Stradone, Co. Cavan, Ireland, H12 NV06
M: +44 77 31715328 | D: +353 49 489 0026 | conor@galetechenergy.com

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Galetech Energy Services,
Clondargan,
Stradone,
Co. Cavan,
H12 NV06

Date: 13th July 2020

Re: Pre-Application Scoping Request: Proposed Wind Farm Development, Bracklyn, Co. Westmeath.

Dear Sir/Madam,

Further to your correspondence dated the 25th March 2020, please find below comments in relation to the pre-application scoping request with regard to a proposed windfarm development at Bracklyn, Co. Westmeath.

Reference is made in Section 2.1.2 of the submission to the Draft *“Guidelines on the Information to be contained within an EIAR”* dated August 2017. Please note that these draft guidelines were superseded by the *“Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment”* published in August 2018 and due regard must be had to these adopted guidelines when preparing the EIAR for the proposed development. The EIAR must include the expected effects arising from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project. Where appropriate, the description of expected significant effects should include details of the preparedness for and proposed response to such emergencies.

Statutory Planning Context

The status of existing developments under the Planning Acts and the legal implications of same shall be considered. Regard shall be given to relevant policy objectives contained in both the Westmeath County Development Plan 2014-2020 and the Draft Westmeath County Development Plan 2021-2027, in particular policy objectives in relation to wind energy, climate, biodiversity, rural economy, tourism and the protection of environmental assets. Furthermore, the contents of both the Westmeath County Heritage Plan 2018-2023 and the Westmeath Biodiversity Action Plan 2014-2020, and any revisions made thereto, should be given due consideration. The Applicant shall also have regard to both the *“Wind Energy Development Guidelines”* (2006) and the *“Draft Revised Wind Energy Development Guidelines”* (December 2019) in the preparation of the EIAR.

Environmental Considerations

The EIAR shall take account of all ecological sensitivities and of the likely environmental effects of the proposed project on the receiving environment. All in combination and cumulative effects of development within the zone of influence of the proposal are to be considered together with the following:

The River Boyne And River Blackwater Special Area of Conservation (SAC) and Special Protection Area (SPA) are located in close proximity to the subject site. Impacts on the conservation objectives for designated habitats such as river lamprey, salmon, otter and kingfisher require consideration and analysis. Impacts on water quality including construction impacts need to be assessed given water quality is one of the factors influencing vegetation and input of nutrients.

The application site is surrounded by peatlands. Impacts of the proposed development on the hydrology of adjoining peatlands should be given due consideration in the EIAR.

Impacts of infrastructure provision (e.g. roads, power supply) on nature conservation objectives of designated habitats should be assessed.

Impacts of the proposed development (including existing and future operations) on the local and regional road networks including haul routes, volume of traffic, delivery of the turbines etc. should be included in the EIAR.

Impacts resulting from emissions connected with construction traffic and dust generated from disturbed ground during dry periods is another important consideration.

The EIAR should include a Decommissioning and Restoration Plan which provides for the reinstatement of the temporary set-down areas at each turbine.

Natural & Built Heritage

You are advised to have regard to the protected ringfort WM014-019 which is located approximately 80m from the application site and must be protected at all times.

In relation to biodiversity, it is noted from the submitted documentation that several surveys have been undertaken and that early stage scoping has identified a series of potential significant likely effects of the proposed development. The EIAR should include the results of these surveys and provide detail in relation to all potential impacts of the proposal on birds, mammals and associated habitats. Where significant adverse effects are identified associated with the implementation of the proposed development, there should be a clear link with relevant and appropriate mitigation measure(s). The emphasis should, in the first instance, be on avoidance of significant adverse effects.

Impacts on birds/mammals should be assessed in terms of the construction, operational and decommissioning phase of the proposed development.

In relation to landscape, consideration should be had to the Protected Views outlined in the Draft County Westmeath Development Plan 2021-2027, which have been subsequently updated since the adoption of the County Westmeath Development Plan 2014-2020. Applicant is also advised to reference the Landscape Character Assessment outlined in Section 13.6 of the Draft Westmeath County Development Plan 2014-2020 with regard to the suitability of the landscape to absorb the proposed development.

The Cultural Heritage Section should refer to Architectural Heritage features included in the Record of Protected Structures and any other architectural heritage features of merit, such as those included in the National Inventory of Architectural Heritage (NIAH).

Due consideration should be given to the potential impact on subsurface archaeological material during geotechnical investigations (pre-construction) and at construction phase.

Grid Connection

Whilst it is noted that the exact connection to the national grid has not been determined at this stage, it is imperative that assessment of the routing of all three potential connections to the national grid is included in the EIAR as the windfarm and connection to the grid should be assessed collectively to avoid project splitting.

Reasonable Alternatives

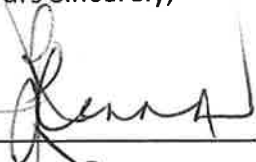
A detailed review of all reasonable alternatives considered for the proposed development shall be undertaken and incorporated into the EIAR to demonstrate that the proposed development represents the optimum form and siting for the project. The assessment will also include the main reasons for selecting the chosen option and shall include a comparison of the environmental effects of the reasonable alternatives.

Miscellaneous

The EIAR should include an analysis of the socio-economic impacts of the proposal including impacts on tourism and tourism potential. Consideration should be given to inclusion of proposals for community dividend/gain in the document. Impacts on residential amenity should be discussed within the section on Population & Human Health.

We respectfully request that you take into consideration the comments listed above together with the advice from the TII, HSE and the Irish Aviation Authority as attached, in the preparation of the EIAR.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'Eamonn Brennan', written over a horizontal line.

Eamonn Brennan,
Administrative Officer,
Planning Department,
Tel No: 044-9332165
Fax No: 044-9342330
E-Mail: ebrennan@westmeathcoco.ie

Galetech Energy Services,
Clondargan,
Stradone,
Co. Cavan,
H12 NV06

Date: 16th April 2020

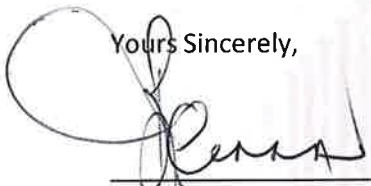
Re: Pre-Application Scoping Request: Proposed Wind Farm Development, Bracklyn, Co. Westmeath.

Dear Sir/Madam,

With reference to your recent correspondence dated 25th March last, requested in accordance with Section 173 (2) (a) (ii) of the Planning & Development Act 2000 as amended, I wish to advise that further to order dated 29/3/20 in the context of the most up-to-date public health advice during this COVID-19 Emergency, the Government has introduced a suspension of all time periods associated with statutory processes under the Planning and Development Acts. Please note that the period of time for assessments required under EIA, SEA and Habitats Directive are also extended by the period covered by the Section 251A Order, as specific time limits are set out in national (planning) legislation.

In this regard, you are advised that time afforded to the Planning Authority to respond to your Scoping request has been extended by 23 days, or until such further time as determined by the Minister for Housing Planning and Local Government (further details will be provided in the event of a further extension of the public consultation period). The response to your Scoping request will therefore issue on May 29th.

Yours Sincerely,



Eamonn Brennan,
Administrative Officer,
Planning Department,
Tel No: 044-9332165
Fax No: 044-9342330
E-Mail: ebrennan@westmeathcoco.ie

14 MAY 2020

Galetech Energy Services,
Clondargan,
Stradone,
Co. Cavan,
H12 NV06

Date: 8th May 2020

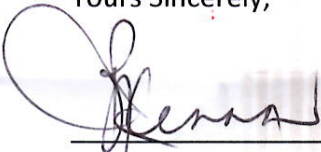
Re: Pre-Application Scoping Request: Proposed Wind Farm Development, Bracklyn, Co. Westmeath.

Dear Sir/Madam,

Further to previous correspondence dated 16th April 2020, I wish to advise that in the context of the most up-to-date public health advice during this COVID-19 Emergency, the Government has introduced a further suspension of all time periods associated with statutory processes under the Planning and Development Acts, until the 30th June 2020.

Please note that the Planning Authority has consulted with the relevant Prescribed Bodies and has requested comments/observations on your Scoping Submission by the 30th June 2020. Thereafter the Planning Authority has three weeks to collate the information and will furnish a response to you by the 21st July 2020.

Yours Sincerely,



Eamonn Brennan,
Administrative Officer,
Planning Department,
Tel No: 044-9332165
Fax No: 044-9342330
E-Mail: ebrennan@westmeathcoco.ie