ECOLOGYSOLUTIONS
Part of the ES Group

DALRADIAN GOLD LIMITED

CURRAGHINALT PROJECT
COUNTY TYRONE
NORTHERN IRELAND

UPDATE SHADOW HABITATS REGULATIONS ASSESSMENT

PA Ref: LA10/2017/1249/F

Pursuant to Regulation 43 of the Conservation (Natural Habitats &c.) Regulations (Northern Ireland) 1995

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1. INTRODUCTION

1.1. Background

1.1.1. Ecology Solutions (Manchester) Ltd was instructed by Dalradian Gold Limited ("DGL" the Applicant), in relation to matters concerning the Curraghinalt Project, County Tyrone (the Application Site).

1.1.2. The Curraghinalt Project is concerned with prospecting / exploration and mining for gold (the Curraghinalt deposit) in County Tyrone, Northern Ireland.

1.1.3. Project design decisions have been informed through the undertaking of an Environmental Impact Assessment. The application for planning permission was supported by an Environmental Statement (ES), produced and submitted in 2017 and an ES Addendum (Further Environmental Information – "FEI"), produced and submitted in 2019.

1.1.4. Of note in relation to this 2020 update Shadow Habitats Regulations Assessment (sHRA), a document titled "Information to inform Habitats Regulations Assessment Pursuant to Article 6(3): Curraghinalt Gold Project"[1] ("2019 sHRA") was submitted as part of the 2019 ES Addendum. Ecology Solutions (Manchester) was commissioned to undertake a review of available, relevant, information and reassess the proposals in the light of the tests included at Regulation 43 of the Habitats Regulations. This further assessment has been undertaken in view of additional information, which was not available at the time of the 2019 sHRA, and also comments received from the Department of Agriculture, Environment and Rural Affairs (DAERA) (including those of the Natural Environmental Division (NED), dated 24th April 2020.

1.1.5. Detail on the Habitats Regulations and the application of the relevant legal tests is included at Section 2 of this report.

1.1.6. The Application Site is not located within any site subject to European / international protection for nature conservation reasons. Hydrological connectivity does however exist with several such sites, including most notably, the Owenkillew River SAC. The nature of the project proposals, means that Regulation 43 of the The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 ("Habitats Regulations") is engaged.

1.1.7. The location of the Application Site in context with European / international sites is shown on Plan ECO1.

1.1.8. This update sHRA considers the implications for the relevant designated sites which could arise from the project proposals associated with the Application Site. The information is presented such that in discharging its legal duties, the Competent Authority (in this instance the Department for Infrastructure - DfI) can undertake an Appropriate Assessment where that is deemed necessary.

[1] James O'Neill Associates (July 2019) Information to inform Habitats Regulations Assessment Pursuant to Article 6(3): Curraghinalt Gold Project

1.1.9. It is of relevance that current jurisprudence necessitates an approach to assessment (under the Habitats Regulations) which is fundamentally different to that which would have applied in 2017 (when the planning application was made) and in previous years. This is a matter discussed in Section 2 of this assessment report.

1.1.10. The following section of this sHRA describes relevant jurisprudence and associated guidance, with baseline information and an assessment of the implications for relevant designated sites considered in subsequent sections.

2. LEGISLATION, CASE LAW AND RELEVANT GUIDANCE

Legislation

2.1. The location of the Application Site in relation to the Owenkillew River SAC, means that the EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (Habitats Directive) is relevant. This Directive is transposed in Northern Ireland (NI) legislation through the Habitats Regulations (1995) (as amended).

2.2. The relevant Directives and corresponding NI legislation is discussed below.

Habitats Directive

2.3. Under the EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, commonly referred to as "the Habitats Directive" (Council Directive 92/43/EEC), Member States are required to take special measures to maintain the distribution and abundance of certain priority habitats and species (listed in Annexes I and II of the Directive). In particular, each Member State is required to designate the most suitable sites as SACs. All such SACs will form part of the Natura 2000 network under article 3(1) of the Habitats Directive.

2.4. Article 2(3) sets out that Member States have a duty, in exercising their obligations under the Habitats Directive, to:

> *".. take account of economic, social and cultural requirements and local characteristics."*

2.5. There is an obligation under the Habitats Directive for Member States to designate sites before turning to measures for their protection.

2.6. Article 6(2) requires Member States to take appropriate steps to avoid the deterioration of natural habitats and disturbance of species for which the sites have been designated, in so far as the disturbance could be significant in relation to the objectives of the Directive. Article 6(3) and Article 6(4) require that a plan or project not directly connected with the management of the site, but likely to have a significant effect upon it, either individually or in combination with other plans or projects, must be subject to an appropriate assessment of its implications on the site, in view of the sites conservation objectives.

2.7. Having undertaken an appropriate assessment, the competent authority may agree to a plan or project where it can be concluded that it will not adversely affect the integrity of the site. In light of a negative assessment on the implications for the integrity of the site, Article 6(4) provides that the plan or project may still proceed where it can be demonstrated that there are no alternatives and there are imperative reasons of over-riding public interest as to why it must proceed. In the event that a plan or project is to proceed on the basis of imperative reasons of over-riding public interest, by direction of Article 6(4), compensatory measures must be put in place to ensure that the overall coherence of the Natura 2000 network is protected.

The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995

2.8. The Habitats Regulations, transpose the requirements of the Habitats Directive into NI legislation. The Habitats Regulations aim to protect a network of sites in NI that have rare or important habitats and species in order to safeguard biodiversity.

2.9. Under the Habitats Regulations, Competent Authorities have a duty to ensure that all the activities they regulate have no adverse effect on the integrity of any of the Natura 2000 sites. Regulation 43 of the Habitats Regulations 1995 requires that:

> *"43(1) A competent authority before deciding to undertake, or give any consent, permission or other authorisation for a plan or project, which: -*
>
> *(a) is likely to have a significant effect on a European site in Great Britain (either alone or in combination with other plans or projects) and*
> *(b) is not directly connected with or necessary for the management of the site,*
>
> *shall make an appropriate assessment of the implications for the site in view of that site's conservation objectives.*
>
> *…*
>
> *43(5) In light of the conclusions of the assessment, and subject to regulation 44, the authority shall agree to a plan or project only after having ascertained that it will not adversely affect the integrity of the European site.*
>
> *…*
>
> *43(6) In considering whether a plan or project will adversely affect the integrity of the site, the authority shall have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which they propose that the consent, permission or other authorisation should be given.*
>
> *…"*

2.11. Regulation 43 of the Habitats Regulations therefore sets out a two stage process. The first test is to determine whether the plan / project is likely to have a significant effect on the European site, the second test (if applicable) is to determine whether the plan / project will affect the integrity of the European site.

2.12. Some key concepts of the Habitats Directive and Habitats Regulations have been clarified through case law. The most pertinent cases are discussed below.

Case Law

Waddenzee Judgement

2.13. In the 'Waddenzee' case the European Court of Justice considered the trigger for 'Appropriate Assessment'. It decided that an appropriate assessment is required for a plan or project where there is a probability or a risk that it will have a significant effect on the SPA. The Judgement states [at paragraph 3(a)] that:

> *"…any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects."*

2.14. Hence the need for an appropriate assessment should be determined on a precautionary basis.

2.15. The Judgement gives clarity that the test of 'likely significant effect' should also be undertaken in view of the European site's conservation objectives. It is stated at paragraph 3(b)] that:

> *"where a plan or project not directly connected with or necessary to the management of a site is likely to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site."*

2.16. Paragraph 4 of the Judgement emphasises the requirement for the appropriate assessment to rely on objective scientific information:

> *"…an appropriate assessment…implies that, prior to its approval, all the aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field. The competent national authorities, taking account of the appropriate assessment of the implications…for the site concerned in the light of the site's conservation objectives, are to authorise such an activity only if they have made certain that it will not adversely affect the integrity of that site. That is the case where no reasonable scientific doubt remains as to the absence of such effects."*

2.17. In terms of Objective evidence, the decision in Smyth v Secretary of State for Communities & Local Government [2] (the Exminster Marshes decision) the English Court of Appeal clarified at Paragraph 46 to 48 of the Judgement that objective evidence includes that knowledge, experience and expertise of an expert. The contention brought before the Court of Appeal was that an expert witness's evidence amounted "merely to assertion, unsupported by any objective evidence".

2.18. However the Court of Appeal rejected this assertion, finding that:

> Para 46. "*Three points should be made. First, I consider that on a fair reading of Mr Goodwin's proof of evidence it can be seen that he has drawn on specific information relevant to the SPA and the SAC, as well as the development site and proposed mitigation measures, in a manner which supports in an entirely conventional and acceptable way his expressions of opinion as an ecological expert. By way of example, at paras. 10.4 and 10.5 of his proof, he pointed out that, contrary to the suggestion made by GIE's*

[2] [2-15] EWCA Civ 174

representative at the inquiry, it was not appropriate to use the analogy of mitigation measures developed for heathland sites (a 400m exclusion zone), where ground nesting birds might be subject to predation by cats, since for the SPA "the designating bird features are wintering or passage species and access to large parts of the site is not possible in any event" (because it is marshland or cut off by water). He referred to the Interim Report and the Disturbance Study, as appropriate. Mr Goodwin demonstrated a good understanding of the particular ecological and mitigation features relevant to the SPA and the SAC. Contrary to Mr Jones's contention, Mr Goodwin's evidence was very far from being unsupported, free-standing assertion."

Para 47. "*Secondly, in my view it is acceptable and to be expected that an expert will draw on his own background knowledge, experience and expertise in the field to inform the opinions which constitute his evidence to a relevant decision-maker (here, the Inspector). That is, indeed, in large part the point of looking to expert witnesses to provide assistance on technical matters. In this case, Mr Goodwin's own practical experience, the practical experience of ecologists generally and the knowledge shared between them all informed the expertise which he was able to bring to bear in giving his views regarding the effects of the development and the practical impact and viability of the mitigation options which he reviewed in his proof of evidence."*

Para 48. "*Thirdly, expert evidence of the kind given by Mr Goodwin was objective evidence on which the competent authority, the Inspector, was entitled to rely in making his assessment for the purposes of Article 6(3) of the Directive. Where, as in this case, an assessment is called for of impacts on bird species and of how large numbers of people might be expected to react to incentives to direct their recreational habits away from a protected site or of how on-site control measures could be expected to limit their impact, the views of an expert ecologist drawing on his practical experience and knowledge of the effectiveness of ecological initiatives elsewhere may constitute highly material and relevant objective evidence. The Inspector clearly thought he would be assisted by such evidence, which is why he adjourned the inquiry to provide an opportunity for Bellway to provide it. It cannot be said that this indicates any error of approach on the part of the Inspector. On the contrary, in my view it indicates the care with which the Inspector approached the question of application of the Habitats Directive in this case."*

Dilly Lane Decision

2.19. In applying the tests of the Habitats Regulations it is important to refer to the Judgment of Justice Sullivan (as he was then) in relation to the decision handed down in the English High Court regarding the case of Hart District Council v The Secretary of State for Communities and Local Government, Luckmore Ltd and Barratt Homes Ltd (commonly known as "the Dilly Lane Judgment")[3].

2.20. The Secretary of State's decision to allow an appeal in relation to applications for a total of 170 new homes on a greenfield site off Dilly Lane, Hartley Witney, was challenged in the English High Court by Hart District Council. The legal

[3] [2008] EWHC 1204 (Admin).

challenge was made on the grounds that the Secretary of State had erred in departing from her Inspector's conclusions as to the effects on the Thames Basin Heaths SPA. A key issue for the case was whether mitigation measures should be disregarded when assessing whether the project would have a significant effect on the SPA. Mr Justice Sullivan ruled in favour of the Secretary of State after concluding that there was no absolute legal rule that mitigation measures should be disregarded in assessing whether the new homes would have significant effect on the SPA. Mr Justice Sullivan states at paragraph 55 of his judgement:

> *"The competent authority is not considering the likely effect of some hypothetical project in the abstract. The exercise is a practical one which requires the competent authority to consider the likely effect of the particular project for which permission is being sought. If certain features (to use a neutral term) have been incorporated into that project, there is no sensible reason why those features should be ignored at the initial, screening, stage merely because they have been incorporated into the project in order to avoid, or mitigate, any likely effect on the SPA."*

2.21. As such, it was judged right and proper that mitigation or avoidance measures, which form a feature of a plan / project should be viewed as integral to the plan / project and not excluded when considering the likely significance test, in this instance at Regulation 43(1).

2.22. It should however be noted that more recent case law provides different guidance on the application of the test at Regulation 43(1). Relevant case law is discussed below within this section.

Sweetman Case

2.23. Further guidance in relation to the consideration of impacts in the light of the Habitats Regulations is provided in the Sweetman case[4]. The case as set out by the Advocate General considered in detail the test for likely significant effect in paragraphs 50 and 51*:*

> *"50. The test which that expert assessment must determine is whether the plan or project in question has 'an adverse effect on the integrity of the site', since that is the basis on which the competent national authorities must reach their decision. The threshold at this (the second) stage is noticeably higher than that laid down at the first stage. That is because the question (to use more simple terminology) is not 'should we bother to check' (the question at the first stage) but rather 'what will happen to the site if this plan or project goes ahead; and is that consistent with "maintaining or restoring the favourable conservation status" of the habitat or species concerned'…*
>
> *51. It is plain, however, that the threshold laid down at this stage of Article 6(3) may not be set too high, since the assessment must be undertaken having rigorous regard to the precautionary principle. That principle applies where there is uncertainty as to the existence or extent of risks. The competent national authorities may grant authorisation to a plan or project only if they are convinced that it will not adversely affect the integrity of the*

[4] Case C-258/11 CJEU 11 April 2013

site concerned. If doubt remains as to the absence of adverse effects, they must refuse authorisation."

2.24. The Court of Justice of the European Union (CJEU) agreed with the Advocate General's conclusions, and held*:*

"40. Authorisation for a plan or project, as referred to in Article 6(3) of the Habitats Directive, may therefore be given only on condition that the competent authorities – once all aspects of the plan or project have been identified which can, by themselves or in combination with other plans or projects, affect the conservation objectives of the site concerned, and in the light of the best scientific knowledge in the field – are certain that the plan or project will not have lasting adverse effects on the integrity of that site. That is so where no reasonable scientific doubt remains as to the absence of such effects."

2.25. Hence a plan or project may be authorised only if no reasonable scientific doubt remains as to the absence of effects. Reasonable scientific doubt will exist if the evidence is not sufficiently conclusive, or if there are gaps in the information*.*

The A5 Judgment

2.26. The A5 judgement[5] handed down by Mr Justice Stephens provides guidance in relation to the application of the Habitats Regulations/Directive on two main counts. The first being the requirement to demonstrate the efficacy of mitigation. The second being the fact that a clear difference exists between what is required of a screening assessment and what is required of an Appropriate Assessment.

2.27. At paragraph 89 Mr Justice Stephens considers the Judgment of Mr Justice Sullivan in relation to the Dilly Lane case (as referred to above). He states;

"[89] In R (on the application of Hart District Council) v Secretary of State for the Communities and Local Government the competent authority was not the developer. In that case Sullivan J stated:

'If the competent authority does not agree with the proponents' view as to the likely efficacy of the proposed mitigation measures, or is left in some doubt as to the efficacy, then it will require an appropriate assessment because it will not have been able to exclude the risk of a significant effect on the basis of objective information (see Waddenzee above)."

2.28. He goes on:

"I consider that is the test to be applied by the competent authority, namely if it is left in some doubt as to the efficacy of the mitigation measures. In this case the Department is both the competent authority and the developer but that does not relieve the Department of its obligation to have an appropriate assessment if it is left in some doubt as to the efficacy of the mitigation measures."

[5] [2013] NIQB 30

2.29. Thus the Judgment is clear that the efficacy of the mitigation must be demonstrable if the Competent Authority are to hold at the first stage of the legal tests being applied (namely at Regulation 43(1), and not move to undertake an Appropriate Assessment.

2.30. Paragraph 91 gives direction as to what is required of a screening assessment and what is required of an Appropriate Assessment. It is stated:

> *"[91] A screening opinion is different from an appropriate assessment which involves detailed consideration. The screening opinion does not require all considerations to be mentioned."*

Wealden v SSCLG [2017] ('the Wealden Judgment 2017')

2.31. Specifically, in relation to air quality impacts on designated sites (most notably in relation to Nitrogen deposition), until relatively recently, Natural England's advice regarding the screening threshold for a likely significant effect was as follows. Where either, the resulting deposition / concentration equates to 'less than 1% of the relevant benchmark', or the predicted AADT value is less than 1000, a likely significant effect can be screened out for the project when it is considered both alone and in combination with other plans or projects.

2.32. However, relevant guidance has changed in the light of the High Court judgment in Wealden v SSCLG [2017] ('the Wealden Judgment 2017').

2.33. The Wealden Judgment confirms that the use of the project / plan level 1000 AADT threshold (equivalent to 1% of the critical level/load for receiving habitat) as the only means of addressing in-combination effects was not appropriate, particularly where other AADT values are known and importantly which, when added together, breach the threshold. The 1000 AADT (and 1%) thresholds themselves were not questioned in terms of their use for assessment purposes.

2.34. The Judgment clarified that whilst the 1000 AADT (and 1% of the critical load / level) threshold is appropriate for use in screening assessments when applying the tests of the Habitats Regulations, a true in combination assessment must be undertaken, in view of all relevant AADT data.

People over Wind (Sweetman II) [C323/17]

2.35. This CJEU judgment concerned a Preliminary Ruling in Case C-323/17. A request for a preliminary ruling was made to the CJEU concerning the interpretation of Article 6(3) of Council Directive 92/43/EEC (the Habitats Directive). The request was made in relation to proceedings brought by 'People Over Wind', and Mr Peter Sweetman against Coillte Teoranta. The ruling is as follows:

> *"Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site."*

2.36. The ruling from the CJEU, departs from previous domestic jurisprudence (in particular the Dilly Lane Decision, discussed above), where it was deemed acceptable to include consideration of any mitigation / avoidance measures, which formed an integral part of the plan or project, in considering the first stage of assessment and screening for likely significant effects on a European site (or Ramsar site). In that case, where it could be concluded that no likely significant effect arises there was no recourse to move to Appropriate Assessment and address the Integrity test.

2.37. In view of this ruling from the CJEU, in addressing the test at Regulation 43(1) of the Habitats Regulations, it is necessary to undertake the screening assessment in the absence of any consideration of avoidance or mitigation measures.

ESB Wind Developments (Sweetman III) [Case C164/17]

2.38. In this case a request for a preliminary ruling was made to the CJEU concerning the interpretation of Articles 6(3) and 6(4) of Council Directive 92/43/EEC (the Habitats Directive). The request was made in relation to proceedings brought by Mr Peter Sweetman and Edel Grace against the decision of An Bord Pleanála (National Planning Appeals Board, Ireland) concerning the latter's decision to grant ESB Wind Developments Ltd and Coillte permission for a wind farm project within an SPA. The ruling was handed down on 25th July 2018.

2.39. For the purpose of the application of Articles 6(3) and 6(4) of the Directive, this ruling distinguishes between 'mitigation' that consists of measures intended to avoid or reduce harm to the protected site, and measures intended to compensate for any harm (Compensatory measures). It is stated:

> *"Article 6 of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, where it is intended to carry out a project on a site designated for the protection and conservation of certain species, of which the area suitable for providing for the needs of a protected species fluctuates over time, and the temporary or permanent effect of that project will be that some parts of the site will no longer be able to provide a suitable habitat for the species in question, the fact that the project includes measures to ensure that, after an appropriate assessment of the implications of the project has been carried out and throughout the lifetime of the project, the part of the site that is in fact likely to provide a suitable habitat will not be reduced and indeed may be enhanced may not be taken into account for the purpose of the assessment that must be carried out in accordance with Article 6(3) of the directive to ensure that the project in question will not adversely affect the integrity of the site concerned; that fact falls to be considered, if need be, under Article 6(4) of the directive."*

2.40. The ruling clarifies (in the context of the specifics of that project) what constitutes mitigation and what should correctly be termed compensation. It confirms that mitigation should be subject to Appropriate Assessment under article 6(3) but that measures designed to compensate for any harm rather than prevent it, cannot be considered under article 6(3) (Appropriate Assessment). In such instances, the proposal must be considered under article 6(4) and thus it cannot

be permitted unless there are, “Imperative Reasons of Overriding Public Interest”.

Holohan Judgment

2.41. In the case of Holohan v. An Bord Pleanála the CJEU considered the appropriate assessment procedure to be adopted when considering potential impacts on a European Site. In considering this case, the CJEU ruled, amongst other matters:

a) An appropriate assessment (AA) must catalogue the entirety of the habitat types and species for which a site is protected.

b) It must also identify and examine the implications of the proposed project for the species present on that site and for which that site has not been listed. Additionally, it must examine the implications for habitat types and species outside the boundaries of the protected site, insofar as those implications are liable to affect the site’s Conservation Objectives.

c) Where the competent authority rejects findings of an expert that additional information must be obtained, the Appropriate Assessment must include a detailed statement dispelling all reasonable scientific doubt concerning effects on the protected site.

The Dutch Nitrogen Cases

2.42. On 7th November 2018 the Judgment of the CJEU was handed down pursuant to a reference for a Preliminary Ruling relating to the application of Article 6 of Directive 92/43/EEC (the Habitats Directive) in joined cases C-293/17 and C-294/17.

2.43. The cases concerned authorisation schemes for agricultural activities which cause nitrogen deposition on Natura 2000 (European) sites in the Netherlands.

2.44. Key parts of the ruling (insofar as they are relevant to this assessment) are discussed below.

2.45. In line with preceding case law (Waddenzee and Sweetman, discussed above) the need for scientific rigour and firm conclusions as to the absence of effects are a pre-requisite for authorisation of a plan / project. Ruling 3 in the case states:

> *“Article 6(3) of Directive 92/43 must be interpreted as not precluding national programmatic legislation which allows the competent authorities to authorise projects on the basis of an 'appropriate assessment' within the meaning of that provision, carried out in advance and in which a specific overall amount of nitrogen deposition has been deemed compatible with that legislation's objectives of protection. That is so, however, only in so far as a thorough and in-depth examination of the scientific soundness of that assessment makes it possible to ensure that there is no reasonable scientific doubt as to the absence of adverse effects of each plan or project on the integrity of the site concerned, which it is for the national court to ascertain.”*
>
> [*emphasis added*]

2.46. Ruling 4 in the case states:

> *"Article 6(3) of Directive 92/43 must be interpreted as not precluding national programmatic legislation, such as that at issue in the main proceedings, exempting certain projects which do not exceed a certain threshold value or a certain limit value in terms of nitrogen deposition from the requirement for individual approval, if the national court is satisfied that the 'appropriate assessment' within the meaning of that provision, carried out in advance, meets the criterion that there is no reasonable scientific doubt as to the lack of adverse effects of those plans or projects on the integrity of the sites concerned."*
>
> [*emphasis added*]

2.47. Ruling 5 in the case states:

> *"Article 6(3) of Directive 92/43 must be interpreted as precluding national programmatic legislation, such as that at issue in the main proceedings, which allows a certain category of projects, in the present case the application of fertilisers on the surface of land or below its surface and the grazing of cattle, to be implemented without being subject to a permit requirement and, accordingly, to an individualised appropriate assessment of its implications for the sites concerned, unless the objective circumstances make it possible to rule out with certainty any possibility that those projects, individually or in combination with other projects, may significantly affect those sites, which it is for the referring court to ascertain."*
>
> [*emphasis added*]

2.48. Ruling 6 in the case confirms that any measures which are relied upon to mitigate or avoid adverse effects on the integrity of the European site in question, must be certain at the time of assessment. It is stated:

> *"Article 6(3) of Directive 92/43 must be interpreted as meaning that an 'appropriate assessment' within the meaning of that provision may not take into account the existence of 'conservation measures' within the meaning of paragraph 1 of that article, 'preventive measures' within the meaning of paragraph 2 of that article, measures specifically adopted for a programme such as that at issue in the main proceedings or 'autonomous' measures, in so far as those measures are not part of that programme, if the expected benefits of those measures are not certain at the time of that assessment."*
>
> [*emphasis added*]

Guidance and other Relevant Documents

2.49. Guidance on the interpretation of key terms and concepts contained within the European and NI legislation of relevance to European designated sites is provided through several documents issued by the European Commission and

national organisations such as the Joint Nature Conservation Committee ("JNCC") and the DOE Northern Ireland[6]. This guidance is discussed below.

Natura Standard Data Forms

2.50. A standard reporting format has been developed for Natura 2000 sites (SACs and Special Protection Areas – SPAs) to ensure that the relevant site selection information is reported and stored in a consistent manner that can be easily made available.

2.51. A standard reporting form for SPAs and SACs was developed by the European Commission and published in 1996. The form is used for all sites designated, or proposed to be designated as SPAs and SACs under the relevant Directives, with the information to be stored on a central database.

2.52. Article 4 of the Habitats Directive provides the legal basis for providing the data. Article 4 states that information shall include a map of the site, its name, location, extent and the data resulting from application of the criteria specified in Annex III and that this shall be provided in a format established by the Commission.

2.53. Whilst it is the relevant country agency (i.e. Northern Ireland Environment Agency (NIEA)) that is responsible for designating a site, it is the JNCC who are responsible for collating the lists of European and international designated sites, together with relevant supporting information. The Natura 2000 Data Forms for SPAs and SACs are therefore made available by the JNCC.

2.54. Within the explanatory notes for Natura Standard Data Forms (European Commission 1996) the following "main objectives" of the Natura data form / database are given:

1. *"to provide the necessary information to enable the Commission, in partnership with the Member States, to co-ordinate measures to create a coherent NATURA 2000 network and to evaluate its effectiveness for the conservation of Annex I habitats and for the habitats of species listed in Annex II of Council Directive 92/43/EEC as well as the habitats of Annex I bird species and other migratory bird species covered by Council Directive 79/409/EEC."*

2. *"to provide information which will assist the Commission in other decision making capacities to ensure that the NATURA 2000 network is fully considered in other policy areas and sectors of the Commission's activities in particular regional, agricultural, energy, transport and tourism policies."*

3. *"to assist the Commission and the relevant committees in choosing actions for funding under LIFE and other financial instruments where data relevant to the conservation of sites, such as ownership and management practice, are likely to facilitate the decision making process."*

[6] Now the DfI. Additionally the Northern Ireland Environment Agency is now in the Department of Agriculture, Environment & Rural Affairs (DAERA)

4. "to provide a useful forum for the exchange and sharing of information on habitats and species of Community interest to the benefit of all Member States."

Communication from the Commission on the Precautionary Principle (2000)

2.55. Enshrined within the Habitats Directive and Regulations (though not explicitly set out in either), based upon article 191 of the Treaty on the Functioning of the European Union, is the need to have due regard to the Precautionary Principle when assessing the risks posed to the integrity of the site(s). If a risk of significant effect to the integrity of a site cannot be excluded on the basis of objective information then the application of the precautionary principle requires no consent to be given for such a project.

2.56. The document titled "Communication from the Commission on the Precautionary Principle" (2000) (included at Annex 1) provides useful guidance in relation to the application of the Precautionary Principle in relation to European sites issues. Paragraph 6, sets out the six key matters for consideration when applying the Precautionary Principle. Paragraph 6 states:

"Where action is deemed necessary, measures based on the precautionary principle should be, inter alia:

- proportional to the chosen level of protection,
- non-discriminatory in their application,
- consistent with similar measures already taken,
- based on an examination of the potential benefits and costs of action or lack of action (including, where appropriate and feasible, an economic cost/benefit analysis),
- subject to review, in the light of new scientific data, and
-capable of assigning responsibility for producing the scientific evidence necessary for a more comprehensive risk assessment."

2.57. Under these bulleted points, the guidance gives specific definitions in relation to each of the above at pages 4 and 5, with further detail provided within section 6.

Managing Natura 2000 Sites (European Communities 2000)

2.58. The document entitled "Managing Natura 2000 Sites the provisions of article 6 of the Habitats Directive 92/43/CEE", published by the European Commission in 2000, provides guidelines to the Member States on the interpretation of certain key concepts used in Article 6 of the Habitats Directive. It should be noted that the section relating to Article 6(4) has subsequently been replaced through the publication of a further guidance document by the European Commission in 2007 entitled "Guidance document on Article 6(4) of the 'Habitats Directive', which is considered below under the relevant heading.

2.59. This document states at Section 2.3.3 that conservation measures must correspond to the ecological requirements of the habitats and species present for which the site is designated and that these requirements "*involve all the ecological needs necessary to ensure their favourable conservation status*".

2.60. At section 3.5 the guidance states, in relation to deterioration and disturbance of habitats or species:

"Deterioration or disturbance is assessed against the conservation status of species and habitats concerned. At a site level, the maintenance of the favourable conservation status has to be evaluated against the initial conditions provided in the Natura 2000 standard data forms when the site was proposed for selection or designation, according to the contribution of the site to the ecological coherence of the network. This notion should be interpreted in a dynamic way according to the evolution of the conservation status of the habitat or the species."

2.61. Section 4.4.1 sets out that in determining what may constitute a likely 'significant' effect one should take into account the conservation objectives for the site and other relevant baseline information. In the second paragraph of this section of the document it is stated:

"In this regard, the conservation objectives of a site as well as prior or baseline information about it can be very important in more precisely identifying conservation sensitivities."

2.62. Section 4.5.3 of the document sets out the duty of Member States to provide certain specific information in support of the inclusion of a site within the Natura 2000 network. This information is to be provided in a format specified by the European Commission (the Natura 2000 Standard Data Form).

2.63. A link is drawn between the Standard Data Form and the formation of the sites conservation objectives within the text box at the end of section 4.5.3 of the guidance where it is stated:

"The information provided according to the standard data form established by the Commission forms the basis for a Member State's establishment of the site's conservation objectives."

2.64. With regard to an assessment of the effects of a plan / project on the integrity of a site, the 'integrity of the site' is defined at Section 4.6.3 as:

"… the coherence of the site's ecological structure and function, across the whole area, or the habitats, complex of habitats and / or populations of species for which the site is or will be classified."

2.65. The guidance is clear, within the text box at the foot of page 39, that an assessment as to the implications of the plan / project on the integrity of the site should be limited to an assessment against the sites conservation objectives:

"The integrity of the site involves its ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site's conservation objectives."

2.66. Section 5 of the document deals with Article 6(4) of the Habitats Directive. Note that this section has been expanded upon and replaced by further guidance issued by the European Commission entitled "Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC" (2007). This document is dealt with below at paragraphs 2.57 – 2.61.

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 (European Commission 2001)

2.67. This document, published by the European Commission in 2001, gives guidance on carrying out and reviewing those assessments required under Article 6(3) and (4) of the Habitats Directive. It is provided as supplementary guidance and does not over-ride or replace any of that set out within Managing Natura 2000 (European Commission 2000) which as stated at page 6 of the document, "*is the starting point for the interpretation of the key terms and phrases contained in the Habitats Directive*". The guidance provided is not mandatory and it is clearly set out that its use is "*optional and flexible*" and that it is for "*Member States to determine the procedural requirements deriving from the directive*".

2.68. The guidance sets out the key stages in following the tests contained within the Habitats Directive. Pertinent to this application, stages one and two are relevant. Stage one is the screening stage assessing the likelihood of a plan / project resulting in a significant effect upon the European site. The second comprises the appropriate assessment.

2.69. Section 3.2.4 is concerned with Appropriate Assessment and specifically, the assessment against the conservation objectives of the European Site. Box 9 provides a list of five example conservation objectives for differing broad habitat types. One such example, that for a coastal site, taken from Box 9 is provided below:

> *"to maintain the status of the European features of this coastal site in favourable condition, allowing for natural change. Features include coastal shingle vegetation and lagoons (within a candidate special area of conservation (SAC), which is also an SPA)."*

Common Standards Monitoring (JNCC February 2004)

2.70. Common Standards Monitoring is a means by which condition objectives for habitats, species, or other features of designated sites (e.g. SSSIs and SPAs) are set based on key attributes of the features.

2.71. The JNCC and the country Conservation Agencies (e.g. NIEA) developed guidance on the setting and assessment of condition objectives, as required under the Birds and Habitats Directives and set out a framework for this in 1999. This framework is provided in the form of Common Standards Monitoring ("CSM") guidance which comprises a suite of documents including an "Introduction to the Guidance Manual on Common Standards Monitoring" and several species/habitat specific documents. The Introduction to the Guidance Manual covers various relevant concepts and terms. It also provides a background to the setting of conservation objectives and sets out the desired approach to setting targets, monitoring, management and reporting on conservation measures in designated sites.

2.72. The Introduction to the CSM Guidance and CSM guidance for individual site attributes, sets out specific criteria regarding the identification of interest features, targets and methods of assessment. There is in-built flexibility and allowances for 'judgements to be made' when assessing, for example, favourable condition.

2.73. It is understood that NIEA applies the Common Standards Monitoring approach to European designated sites through an assessment of the ASSI condition. This is undertaken on a cycle of approximately 6 years. The assessment does not relate to the Conservation Objectives of the European site, but provides a tool for tailoring future management of the ASSI such that favourable condition of the interest features can be maintained or restored as appropriate.

Guidance document on Article 6(4) of the 'Habitats Directive' (European Commission 2007)

2.74. This document, published by the European Commission in 2007, is intended to provide clarification on key terms / concepts as referred to within "Managing Natura 2000 Sites" and replaces the section on Article 6(4) within that earlier document.

2.75. The Guidance document covers, in particular, the concepts of Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensation Measures, Overall coherence and the Opinion of the Commission.

2.76. With regard to ensuring the quality of an appropriate assessment, and to define exactly what needs to be compensated, it is stated at Section 1.3 that:

> *"Assessment procedures of plans or projects likely to affect Natura 2000 sites should guarantee full consideration of all elements contributing to the site integrity and to the overall coherence of the network, both in the definition of the baseline conditions and in the stages leading to identification of potential impacts, mitigation measures and residual impacts. These determine what has to be compensated, both in quality and quantity."*

2.77. The need to use information contained within the Natura Standard Data Form, in tandem with the sites conservation objectives, when undertaking an appropriate assessment is specifically referred to (under the second hyphenated point at Section 1.3 on page 5).

2.78. Section 1.3.2 gives guidance on the application of Article 6(4) in respect of reasons of overriding public importance and Section 1.4.1 gives guidance on the application of Article 6(4) in respect of compensatory measures.

Managing Natura 2000 Sites – The provisions of Article 6 of the habitats Directive 92/43/EEC

2.79. In January 2019 the European Commission published updated guidance in relation to managing Natura 2000 sites, following initial guidance published in 2000 (see above).

2.80. The primary purpose of the revision was to incorporate relevant rulings of the Court of Justice of the European Union (EU) which have been issued since the initial guidance was published in 2000. It also integrates, into a single document, other relevant European Commission notes / guidance documents. Those key rulings (of the Court of Justice of the EU) and other relevant European Commission notes / guidance are discussed above in this report. The revised guidance provides clarifications of key concepts to Member State, authorities

and stakeholders involved in the management of Natura 2000 sites (e.g. SPAs and SACs).

Conservation Objectives

2.81. Whilst Regulation 43 of the Habitats Regulations is explicit in setting out that any assessment of the implications of the plan/project on a European designated site should be undertaken in view of the site's "conservation objectives", the term 'conservation objective' is not explicitly defined within the Regulations. The term "conservation objectives" appears at Article 6(3) of the Habitats Directive which sets out the process of assessment for a plan or project which may be likely to have an effect on a designated site, however the term itself is not defined.

2.82. To understand what is meant by the term "conservation objective" it is necessary to look at the Habitats Directive in light of relevant European and other guidance. That guidance is not always consistent or clear about the use of the term "conservation objectives". For the purposes of this assessment, reference is made to the formal "conservation objectives" mentioned in Article 6(3) and Regulation 43 as "Conservation Objectives".

2.83. The term "conservation" is defined within the Habitats Directive at Article 1(a):

> *"conservation means a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status as defined in (e) and (i)".*

2.84. The term "conservation status of a natural habitat" is defined within the Habitats Directive at Article 1(e):

> *"conservation status of a natural habitat means the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory referred to in Article 2."*

2.85. The term "conservation status of a species" is defined within the Habitats Directive at Article 1(i):

> *"conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2:*
>
> *The conservation status will be taken as 'favourable' when:*
>
> - *Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
> - *The natural range of the species is neither being reduced nor is it likely to be reduced for the foreseeable future, and*
> - *There is and will probably continue to be a sufficiently large habitat to maintain its populations on a long-term basis."*

2.86. Article 3 of the Habitats Directive sets out that Member States have a duty to designate (in accordance with Article 4 of the Directive) special areas of

conservation and that where necessary Member States shall endeavor to improve the ecological coherence of Natura 2000.

2.87. Article 4(1) of the Habitats Directive states that Member States must provide a list of sites, indicating which Annex I habitats and species occurring on Annex II are present. This Article also clarifies the type of information that must be submitted for each listed site (map, name, location, extent and the results of the application of qualification criteria listed at Annex III of the Directive). This information provides the basis of the Natura 2000 Data Form discussed elsewhere within this document. Article 4(4) states:

> *"Once a site of Community importance has been adopted in accordance with the procedure laid down in paragraph 2, the Member State concerned shall designate that site as a special area of conservation as soon as possible within six years at most, establishing priorities in the light of the importance of the sites for the maintenance or restoration, at a favourable conservation status, of a natural habitat type in Annex 1 or a species in Annex 2 and for the coherence of Natura 2000, and in the light of the threats of degradation or destruction to which those sites are exposed."*

2.88. The formal Conservation Objectives for SPAs and SACs in Northern Ireland are published by NIEA, an agency within the Department of Agriculture, Environment and Rural Affairs ("DAERA"). Those Conservation Objectives applicable to the designated sites being considered as part of this assessment are included as annexes to this sHRA.

2.89. Full regard has been had to the significant weight to be applied to the formal Conservation Objectives when considering a plan or project and applying the tests of the Habitats Regulations. Regard has also been had to other relevant information including that available from the JNCC.

3. SUMMARY SCREENING OF RELEVANT DESIGNATED SITES

3.1. The Application Site is not located within any site subject to European / international protection for nature conservation reasons. Hydrological connectivity does however exist between the Application Site and several European designated sites and Ramsar sites.

3.2. The following European designated sites / Ramsar sites are located within a 10km radius of the Application Site boundary (maximum extent of exploration):

I. Owenkillew River SAC;
II. Upper Ballinderry River SAC; and
III. Black Bog SAC/Ramsar site;

3.3. Beyond this 10km buffer, the following European designated sites / Ramsar sites are present, which, whilst well removed from the Application Site, are hydrologically linked with it:

I. River Foyle and Tributaries SAC;
II. Lough Foyle SPA;
III. Lough Foyle Ramsar site;
IV. River Finn SAC (Republic of Ireland); and
V. Lough Foyle SPA (Republic of Ireland).

3.4. In its response of 24th April 2020, pursuant to FEI of July 2019, NED highlight that two SACs are present "in the vicinity of the development", these being the Owenkillew River SAC and the River Foyle and Tributaries SAC. No other European or internationally designated sites are highlighted by NED and commentary in relation to potential implications for such sites are confined to considerations relating to effects on qualifying interest features of these specific sites (insofar as HRA matters are concerned).

3.5. The 2019 sHRA included a specific section regarding the screening process associated with that sHRA, presented at Sections 4.1 and 4.2 of that assessment report. The 2019 sHRA identified (correctly) at an early stage in the assessment process, a broad suite of relevant European / internationally designated sites. Those same sites have been listed above in relation to this updated screening assessment.

3.6. The 2019 sHRA screened out of requiring any further detailed assessment, all sites with the exception of the Owenkillew River SAC, the River Foyle and Tributaries SAC and Lough Foyle Ramsar site. At Section 4.2 of the 2019 sHRA it is stated:

> "*That review has indicated that the sole likely significant pathway for indirect impacts is through the water environment which forms an environmental continuum between the proposal site and the designated sites. No other pathways (airborne deposition, noise, visual disturbance etc.) are likely (within the proper meaning of the word in an environmental assessment context[3]) to represent significant impact pathways.*"

3.7. Section 4.2 of the 2019 sHRA also states:

> *"The site selection features of Owenkillew River SAC, River Foyle & Tributaries SAC and Lough Foyle Ramsar Site and the related conservation objectives, represent valuable ecological RECEPTORS.*
>
> *It has been concluded that the source-pathway-receptor mechanism cannot be established for any additional Natura 2000 sites as those sites are distant from, upstream or not hydrologically or ecologically connected to the proposal site. Therefore, the only Natura 2000 sites potentially implicated in terms of indirect impacts as a result of the project are Owenkillew River SAC, River Foyle & Tributaries SAC and Lough Foyle Ramsar Site."*

3.8. Further clarity regarding the screening exercise is provided below as part of this assessment. For details relating to the qualifying interest features of relevant designated sites, the reader is directed to Section 4 of this update sHRA. The reader is also directed to Plan ECO1 of this update sHRA, which shows the Application Site in context with nearby relevant designated sites.

3.9. In view of the project proposals themselves, the proximity of the designated sites and the hydrological linkages which exist, in adopting a precautionary approach to assessment, it has been concluded that the following sites should be considered in detail within this sHRA:

a) Owenkillew River SAC;
b) River Foyle and Tributaries SAC;
c) Lough Foyle SPA (UK and ROI);
d) Lough Foyle Ramsar site; and
e) River Finn SAC.

3.10. For clarity the Owenkillew River SAC is located in very close proximity to the Application Site and watercourses which drain the Application Site (including the Curraghinalt Burn), drain into the Owenkillew River SAC. The Owenkillew River itself drains into the River Strule near Newtownstewart, with the downstream section of the River Strule from this location being designated as part of the River Foyle and Tributaries SAC. The River Foyle system drains into Lough Foyle which is located on the border of Northern Ireland and the Republic of Ireland.

3.11. Regarding the River Finn SAC, this designated site is also part of the River Foyle system, with the River Finn discharging into the River Foyle at its confluence with the River Mourne. For assessment purposes, the River Finn itself can be considered 'upstream' of the Application Site and no adverse effect on this stretch could arise. However, as can be seen from Plan ECO1 the River Finn SAC extends to cover the western bank / channel of the River Foyle, being contiguous at this point with the River Foyle and Tributaries SAC. It is therefore considered appropriate to 'screen in' the River Finn SAC.

3.12. It is considered that the following European designated sites do not need to be considered in further detail within this sHRA:

f) Upper Ballinderry River SAC; and
g) Black Bog SAC/Ramsar site.

3.13. There is no hydrological connectivity between the Application Site and the Upper Ballinderry River SAC, and also no link with Black Bog SAC/Ramsar site.

3.14. The following section of this sHRA describes the conservation status and qualifying interest features of the relevant designate sites with reference to appended supporting information.

4. CONSERVATION STATUS OF RELEVANT SITES

4.1. As discussed previously, the Application Site is hydrologically connected to the Owenkillew River SAC, which is in turn linked to several other designated sites.

4.2. Information relevant to the conservation status of this SAC is presented below.

Owenkillew River SAC

4.3. The Owenkillew River SAC includes a 42 km stretch of the river itself, together with its associated flora, fauna and adjacent semi-natural vegetation (primarily woodland) and its associated flora and fauna.

4.4. The Owenkillew River is a fast-flowing spate river, which is noted for the physical diversity and naturalness of the bank and channel together with the richness and naturalness of its flora and fauna. Flora includes, extensive beds of Stream Water Crowfoot *Ranunculus penicillatus* var. *penicillatus* and the largest population of Freshwater Pearl Mussel *Margaritifera margaritifera* in Northern Ireland. In addition, the river is important for Otter *Lutra lutra* and Atlantic Salmon *Salmo salar*.

4.5. Adjacent woodlands include Drumlea and Mullan Woods ASSI and the Owenkillew and Glenelly Woods ASSI. These are two of the largest stands of Oak woodland in Northern Ireland.

Qualifying Features

4.5.1. The Owenkillew River SAC was designated in May 2005. Current information in relation to the classification of this site is included on the latest version of the Natura 2000 Standard Data Form, published on 25th January 2016 by the Joint Nature Conservation Committee (JNCC), who act as custodians of information in respect of Natura 2000 and Ramsar sites in the UK.

4.5.2. The SAC covers an area of 213.84ha and qualifies as an SAC by virtue of the presence of:

i. Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation for which it is considered to be one of the best areas in the United Kingdom;
ii. Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles for which this is considered to be one of the best areas in the United Kingdom;
iii. Bog woodland for which the area is considered to support a significant presence;
iv. Salmon, for which the area is considered to support a significant presence;
v. Otter, for which the area is considered to support a significant presence; and
vi. Freshwater Pearl Mussel *Margaritifera margaritifera*, for which this is considered to be one of the best areas in the United Kingdom.

4.5.3. Of the above, the water courses, old Sessile Oak woods and Freshwater Pearl Mussel are all principal features for which (SAC) site has been

selected. Bog woodland, Otter and Atlantic Salmon are cited as being of secondary interest. All are however listed interest features of the SAC and the implications for each must be considered within a Habitats Regulations Assessment.

4.5.4. A copy of the Natura 2000 Standard Data Form is included at Annex 1, along with a copy of the document titled and "Reasons for designation as a Special Area of Conservation", which is available from the DAERA website.

Conservation Objectives

4.5.5. The Habitats Regulations require an appropriate assessment to be undertaken "in view of the site's nature conservation objectives". As discussed in section 2 of this assessment, conservation objectives are a statement of the measures required to maintain at, or restore to, favourable conservation status the natural habitats and/or the populations of species of wild fauna and flora for which the site has been selected. The conservation status of a species is defined as favourable when the population, range and natural habitats of the species are stable or increasing. Similarly, the conservation status of a habitat is favourable when the range, structure and function, and typical species thereof, are stable or increasing.

4.5.6. The current formal Conservation Objectives for the SAC (published 27th July 2017) are included at Annex 1. With reference to section 7 of the document included at Annex 1, the Conservation Objectives are as follows:

"The Conservation Objective for this site is:

To maintain (or restore where appropriate) the

- *Fresh Water Pearl Mussel Margaritifera margaritifera*
- *Water courses of plain to montane levels with the Ranunculus fluitans and Callitricho-Batrachion vegetation*
- *Old Sessile Oak woods with Ilex and Blechnum in the British Isles*
- *Bog Woodland*
- *Otter Lutra lutra*
- *Atlantic Salmon Salmo salar*

to favourable condition."

4.5.7. It is noted that within the formal Conservation Objectives document, Brook Lamprey *Lampetra planeri* is listed as a species which is present, but not at a level which merits listing as an SAC qualifying interest feature.

4.5.8. For each SAC feature, component objectives are outlined and these include a series of attributes, measures and targets which form the basis of the Condition Assessment. This information can be found at Annex 1.

River Foyle and Tributaries SAC

4.5.9. The River Foyle and Tributaries SAC includes that part of the River Finn which lies within Northern Ireland, the River Mourne and its tributary the River Strule (up to its confluence with the Owenkillew River) and the River Derg (along with two of its sub-tributaries), the Mourne Beg River and the Glendergan River. The designated area encompasses 120km of watercourse. It is notable for the physical diversity and naturalness of the banks and channels and also the richness of its flora and fauna. Of particular importance in nature conservation terms is the population of Atlantic Salmon, which is one of the largest in Europe and also Otter which is found throughout the designated river system.

4.5.10. In the upper catchments of the SAC, the rivers are fast-flowing spate rivers with dynamic flow regimes. At the upper reaches of the River Derg (and its two tributaries), the aquatic flora reflects the highly acidic character of the water, with mosses and liverworts being dominant. Below Strabane, the River Foyle itself is slow-flowing and it is influenced by a tidal regime.

Qualifying Features

4.5.11. The River Foyle and Tributaries SAC was designated in May 2005. Current information in relation to the classification of this site is included on the latest version of the Natura 2000 Standard Data Form (dated 22nd December 2015) and is available from the Joint Nature Conservation Committee (JNCC), who act as custodians of information in respect of Natura 2000 and Ramsar sites in the UK.

4.5.12. The SAC covers an area of 771.8ha and qualifies as an SAC by virtue of the presence of:

I. Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation for which it is considered to be one of the best areas in the United Kingdom;
II. Salmon, for which the site is considered to be one of the best areas in the United Kingdom; and
III. Otter, for which the area is considered to support a significant presence.

4.5.13. A copy of the Natura 2000 Standard Data Form is included at Annex 2, along with a copy of the document titled and “Reasons for designation as a Special Area of Conservation”, which is available from the DAERA website.

Conservation Objectives

4.5.14. The Conservation Objectives for this site are as follows:

“To maintain (or restore where appropriate) the:-

- *Atlantic Salmon Salmo salar*
- *Water courses of plain to montane levels with the Ranunculus fluitans and Callitricho-Batrachion vegetation*
- *Otter Lutra lutra*

to favourable condition"

4.5.15. The current formal Conservation Objectives for this SAC are included at Annex 2. For each SAC feature, component objectives are outlined and these include a series of attributes, measures and targets which form the basis of the Condition Assessment. This information can be found at Annex 2.

Lough Foyle SPA (UK)

4.5.16. Lough Foyle is a shallow sea lough, with extensive mud and sand flats which are exposed at low tide. Whilst diminished by historical reclamation schemes, it comprises the second largest area of inter-tidal habitat in Northern Ireland. With the exception of the Roe Estuary and northwards, the shoreline is generally engineered. Adjacent agricultural land is of importance as high tide roosts for birds and for supporting wintering geese and swans.

Qualifying Features

4.5.17. This SPA qualifies on account of its wintering populations of Bewick's Swan, Whooper Swan, Golden Plover, Bar-tailed Godwit, Light-bellied Brent Goose and its assemblage of wintering waterfowl.

4.5.18. Further detail on the qualifying interest features are included in the formal Conservation Objectives document included at Annex 3.

Conservation Objectives

4.5.19. The Conservation Objectives for this site are:

"To maintain each feature in favourable condition."

4.5.20. The current formal Conservation Objectives for this SAC are included at Annex 3. For each SPA feature, component objectives are outlined and these include a series of attributes, measures and targets which form the basis of the Condition Assessment. This information can be found at Annex 3.

Lough Foyle SPA (ROI)

Qualifying Features

4.5.21. In accordance with the Natura 2000 data form (a copy of which is included at Annex 4), this SPA qualifies on account of its wintering populations of Wigeon, Mallard, Ruddy Turnstone, Brent Goose, Red Knot, Common Ringed Plover, Oystercatcher, Common Gull, Black-headed Gull, Red-breasted Merganser, Curlew, Cormorant, Great Crested Grebe, Shelduck, Common Greenshank, Common Redshank.

Conservation Objectives

4.5.22. Conservation Objectives for relevant features are defined within the document reproduced at Annex 4. With reference to various attributes and targets, the conservation objectives are to "maintain the favourable conservation condition" of the feature.

Lough Foyle Ramsar site

4.5.23. Lough Foyle is designated as a Wetland of International Importance under criteria 1, 2, 3, 5 & 6 of the Ramsar Convention. The justifications for qualification under each criterion are provided below (quoted from the Ramsar Information Sheet, included at Annex 5):

Criterion 1

"This is a particularly good representative example of a wetland complex including intertidal sand and mudflats with extensive seagrass beds, saltmarsh, estuaries and associated brackish ditches.

This is a particularly good representative example of a wetland, which plays a substantial hydrological, biological and ecological system role in the natural functioning of a major river basin which is located in a trans-border position."

Criterion 2

"The site supports an appreciable assemblage of rare, vulnerable or endangered species or sub-species of plant and animal. A range of notable fish species have been recorded for the Lough Foyle estuary and the lower reaches of some of its tributary rivers. These include allis shad Alosa alosa, twaite shad A. fallax fallax, smelt Osmerus eperlanus and sea lamprey Petromyzon marinus, all of which are Irish Red Data Book species. In addition, important populations of Atlantic salmon Salmo salar migrate through the system to and from their spawning grounds."

Criterion 3

"The site supports a diverse assemblage of wintering waterfowl which are indicative of wetland values, productivity and diversity. These include internationally important populations of Whooper Swan Cygnus cygnus, Light-bellied Brent Goose Branta bernicla hrota and Bar-tailed Godwit Limosa lapponica. Additional wildfowl species which are nationally important in an all-Ireland context are Red-throated Diver Gavia stellata, Great crested Grebe Podiceps cristatus, mute swan Cygnus olor, Bewick's Swan C. columbianus, Greylag Geese Anser anser, Shelduck Tadorna tadorna, Teal Anas crecca, Mallard Anas platyrhynchos, Wigeon A. penelope, Eider Somateria mollissima, and Redbreasted Merganser Mergus serrator. Nationally important wader species are Oystercatcher Haematopus ostralegus. Golden Plover Pluvialis apricaria, Grey Plover Pluvialis squatarola, Lapwing Vanellus vanellus, Knot Calidris canutus, Dunlin

C. aplina, Curlew Numenius arquata, Redshank Tringa tetanus and Greenshank T. nebilaria."

Criterion 5

"The site supports about 29000 migrating birds."

Criterion 6

4.5.24. The site qualifies under criterion 6 on account of its internationally important spring / autumn populations of Whooper Swan and Light-bellied brent goose, and its wintering population of Bar-tailed Godwit.

River Finn SAC

4.5.25. The site synopsis published by the (ROI) Department of Arts, Heritage and the Gaeltacht (see Annex 6) states:

"This site comprises almost the entire freshwater element of the River Finn and its tributaries the Corlacky, the Reelan sub-catchment, the Sruhamboy, Elatagh, Cummirk and Glashagh, and also includes Lough Finn, where the river rises. The spawning grounds at the headwaters of the Mourne and Derg Rivers, Loughs Derg and Belshade and the tidal stretch of the Foyle north of Lifford to the border are also part of the site. The Finn and Reelan, rising in the Bluestack Mountains, drain a catchment area of 195 square miles. All of the site is in Co. Donegal."

Qualifying Features

4.5.26. The SAC covers an area of approximately 5498.5ha and qualifies as an SAC by virtue of the presence of:

I. Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
II. European Atlantic wet heaths with *Erica tetralix*
III. Blanket bogs
IV. Atlantic Salmon
V. Otter

Conservation Objectives

4.5.27. The formal Conservation Objectives for this site are presented at Annex 6. In summary, with reference to various attributes and targets, the Conservation Objectives are to "restore the favourable conservation condition of those habitats for which the site has been designated, and to "maintain the favourable conservation condition" of those species populations for which the site has been designated.

5. ASSESSMENT OF THE IMPLICATIONS OF THE PROPOSALS ON RELEVANT SITES

5.1. Section 2 of this document describes the legislation, case law and guidance of relevance to an assessment of the implications of a plan / project on a European site. Having regard to this legislation and supporting information, including relevant guidance and jurisprudence, the assessment is a two-stage process, the first being the 'likely significant effect' stage, the second being the 'integrity test'.

5.2. This assessment is initially concerned with the (screening) 'likely significant effect' stage of the assessment process. In line with current and applicable case law, this must comprise a broad assessment of the proposals, in the absence of any mitigation or avoidance measures which may be required to address any identified potential significant effects on the SAC. For clarity, where any such measures are deemed necessary, they must be considered under the 'integrity test' associated with an Appropriate Assessment.

5.3. It is clear that the formal Conservation Objectives of a European site are the most important consideration in determining whether the plan / project will have an adverse effect on the site, including any effects on its integrity.

5.4. It is evident that there is a clear hierarchical approach to assessing effects on European sites in line with the Habitats Directive/Regulations. The primary test is that against the Conservation Objectives with other considerations following these. Such other considerations would include:

- Other features of interest associated with the site; and
- Other relevant baseline information for the site and its immediate surrounds.

5.4. In line with the above, whilst the qualifying interest features of the site and other baseline information have informed this assessment, the greatest weight has been placed upon the formal Conservation Objectives for the relevant European site.

5.5. In addressing Regulation 43(1) of the Habitats Regulations, this section of the assessment report discusses the relevant potential pathways for a significant effect to occur. This information is presented having regard to the nature and scale of the proposed activity and other relevant information. In line with relevant jurisprudence, this screening exercise is undertaken at a 'high level' and in the absence of any consideration of required mitigation measures, even where such measures are integral to the proposals.

Potential significant effects

5.6. The proposed project is not directly connected with or necessary to the management of any European level designated sites or Ramsar sites.

5.7. The proposed project is not directly associated with any European level designated sites or Ramsar sites. No potential for direct impacts / adverse effects have been identified.

5.8. As discussed in section 3 above, it has been possible to screen out several European designated sites from the assessment at an early stage due to an obvious lack of any pathway by which an adverse effect could arise. It is however considered that potential exists for significant effects to arise in relation to:

a) Owenkillew River SAC;
b) River Foyle and Tributaries SAC;
c) Lough Foyle SPA (UK and ROI);
d) Lough Foyle Ramsar site;
e) River Finn SAC.

5.9. It should be noted that for this assessment, it is considered that the Lough Foyle SPA (UK and ROI) does require further consideration in line with the legal tests, as does the River Finn SAC (albeit only that section which is contiguous with the River Foyle and Tributaries SAC). Whilst the overall conclusions of the 2019 sHRA are considered sound, for clarity and to demonstrate robustness in the assessment process it is considered that additional information should be made available to the Competent Authority regarding Lough Foyle SPA (UK and ROI) and the River Finn SAC.

5.10. The project as originally proposed, is described within Chapter 4 of the 2017 ES. Chapter 2 (Volume 2) of the 2019 Addendum to the ES describes the proposed changes to the project description. Those changes reflect a design review process undertaken by the Applicant following feedback received during the planning application process. Section 2.1 of Chapter 2 (Volume 2) of the 2019 ES Addendum describes the changes to the main project parameters, which are shown in tabulated format at Table 2-1 of that chapter. The same information is reproduced at section 2 of the 2019 sHRA and it is not repeated here, instead the reader is referred to the aforementioned documents.

5.11. In terms of potential pathways for significant adverse effects to occur on European designated sites / Ramsar sites, it is necessary to consider the following:

I. Any potential significant effects which could arise during the construction phase;
II. Any potential significant effects which could arise during the operational phase; and
III. Any potential significant effects which could arise during the closure / restoration phase.

5.12. In addressing the test of likely significance at Regulation 43(1), as with the 2019 sHRA, reference is drawn to the 2017 Ecological Impact Assessment (EcIA - prepared by SLR and submitted as part of the planning application) and in particular Table 15 of that document which describes the “sources of potential impacts and the interaction with important ecological features”. Reference has also been made to Tables 16, 17 and 18 of the 2017 EcIA, which describe the “Assessment of effects on identified and relevant important ecological features” in the construction, operational and closed phases of the proposals.

5.13. It is noted that at Section 4.2.11 of the 2019 Addendum to the ES (Volume 2) it is confirmed:

"Following review and careful consideration of the proposed changes to elements of the operation of the development, it is concluded that the findings of the EcIA which accompanied the 2017 submission ES are not materially changed as a result of the revisions made to the scheme."

5.14. On review of available information, as documented within the 2017 ES (including Chapters 7, 8 and 9) and its associated technical appendices (including most notably Appendix C8 – the 2017 EcIA) and also within the 2019 Addendum to the ES and Second Addendum submitted alongside this update sHRA (in 2020)[7] produced by SRK Consulting, it is considered that a range of pathways exist by which likely significant effects could arise in relation to European / Ramsar designated sites.

5.15. The following likely significant effects have been identified:

1. Habitat loss, damage and fragmentation;
2. Disturbance from human activity (noise and visual disturbance);
3. Dust deposition;
4. Disturbance from vibration;
5. Changes in air quality (traffic emissions);
6. Changes in water quality (groundwater and surface water); and
7. Changes to the hydrogeological and hydrological regime.

5.16. Of the above, all are considered relevant to the Owenkillew River SAC, during at least one phase of the proposed project, given the sites qualifying interest features (and Conservation Objectives), proximity to the proposed project and the existence of hydrological connectivity between the SAC and the proposed project.

5.17. It is considered that only changes in water quality and changes to the hydrogeological and hydrological regime require further, more detailed consideration in respect of those other designated sites identified above.

5.18. By way of summary conclusion, in the absence of mitigation, there exists the potential for a likely significant effect to arise on at least one European / Ramsar designated site. As such, in line with relevant jurisprudence, it is considered necessary that the Competent Authority undertakes an Appropriate Assessment to determine whether it can be excluded (on the basis of the best scientific knowledge in the field) that an adverse effect on the Integrity of any European / Ramsar site will arise. Information relevant to the application of that legal test is presented below.

Appropriate Assessment and the Integrity test

5.19. In undertaking this stage of the assessment, each of the previously identified pathways for likely significant effects (as relevant to each of the three phases) are addressed in relation to the relevant designated sites, in view of their respective Conservation Objectives and qualifying interest features. Reference has been made to the information contained in the 2017 ES, the 2019 Addendum to the ES and FEI submitted alongside this update sHRA. At this stage of the assessment, in reaching conclusions as to the nature of any effect, any

[7] In particular the: Surface Water Impact Assessment for the Curraghinalt Gold Project, County Tyrone, Northern Ireland, SRK Consulting (UK) Ltd

measures proposed which mitigate or avoid adverse effects are taken into consideration.

Habitat loss, damage and fragmentation

5.20. It is considered that effects relating to habitat loss, damage and fragmentation are only relevant to the Owenkillew River SAC and only during the construction phase of the proposed project.

5.21. With reference to Table 16 of the 2017 EcIA, it is noted that following comprehensive assessment in relation to such potential effects on the Owenkillew River SAC, effects are determined to be not significant and no specific ecological mitigation is required. It is stated:

> *"The proposed works and activities associated with the construction phase of the mine development will not result in any direct loss, damage or disturbance to any habitats within the defined boundaries of the Owenkillew River SAC. The site of the existing exploration adit and infrastructure site do not support any Annex I habitats, as cited for the Owenkillew River SAC, that will be lost and which could be considered to contribute to those qualifying habitats within the SAC.*
>
> *The retention of the existing exploration adit and its associated infrastructure will not result in any fragmentation of habitats within the Owenkillew River SAC which would directly or indirectly impact upon any of the Annex II qualifying species as a result of the proposed works and activities associated with the construction phase of the mine development."*

5.22. From a review of the 2019 Addendum to the ES it is clear that no additional significant effects are identified and that no additional mitigation is required.

5.23. The project (Outline) Construction Environmental Management Plan (CEMP) (Appendix B2 to the 2019 Addendum to the ES) describes a comprehensive range of measures which would be implemented in order to prevent adverse environmental impacts. Those measures are summarised at Table 6-2 of the CEMP. Further, section 3.2 of the CEMP specifically considers those mitigation measures relevant to water pollution, vegetation clearance and soil conservation. The reader's attention is drawn to the CEMP for the relevant detail.

5.24. It is concluded that **no adverse effect on the integrity** of the Owenkillew River SAC or any other European / Ramsar site would arise in relation to **habitat loss, damage or fragmentation**.

Disturbance from human activity (noise and visual disturbance)

5.25. It is considered that effects relating to disturbance from human activity are only relevant to the Owenkillew River SAC, during the construction and operational phases of the proposed project.

5.26. Having regard to the conservation objectives (qualifying interest features) of the SAC (see section 4 above), effects of noise and visual disturbance would be of direct relevance to populations of Otter and Salmon. In addition, adverse effects

on Trout would be relevant insofar as they are an important host species for Fresh Water Pearl Mussel larvae.

5.27. As reported in Table 16 of the 2017 EcIA :

> *"The existing exploration adit and its associated infrastructure will be used for approximately two years until the decline from the new portal entrance is completed. During this period there will be a continuation of human disturbance from the use of this site. The majority of the noise generated through the mine development works will be below ground and not anticipated to alter environmental baseline levels within the Owenkillew River SAC. However, surface noise sources are likely to be predominantly from the movement of HGVs transporting waste rock generated from the mine development to the DSF within the proposed infrastructure site and returning with empty loads. These vehicle movements have the potential to result in disturbance to parts of the Owenkillew River SAC that lie in close proximity to the existing exploration adit site (245 m at its closest point) and to the Camcosy Road (270 m at its closest point at the entrance to the existing surface infrastructure site and 300 m along this route where it passes the Drumlea and Mullan Woods) that will be used for access.*
>
> *The existing infrastructure site is permitted for up to 36 HGV vehicle movements in and out this site per day. It is estimated that the waste rock that will be moved by road from the existing surface infrastructure site will be 35 HGV movements in and out of the site per day.*
>
> *Baseline noise monitoring indicates that the existing background noise levels around the existing exploration adit site, based on day and night-time monitoring, range from 33.5 to 34 dB. The Owenkillew River is the dominant source of background noise levels with livestock and other agricultural noises and very occasional traffic on the Camcosy Road the other main noise sources.*
>
> *The retention of the existing exploration adit and its use for mine development works until such time as the new portal and decline are in operation is not anticipated to generate increased noise levels over and above existing levels at this site, or along the Camcosy Road from HGV movements. Therefore no significant changes in baseline noise levels are predicted at the boundary of the Owenkillew SAC where there is likely to be any measureable effects on either Atlantic salmon and/or otter."*

5.28. Section 4.2.7 of the 2019 Addendum to the ES describes the changes to the impact assessment in relation to noise, which arise as a result of the changes to the project parameters as detailed in the 2019 Addendum. Detail on the assessment methodologies and assessment results are contained at technical appendix C18 of the 2019 Addendum.

5.29. For both the construction and operational phases of the project, noise levels are not considered significant in view of the legal tests, when compared against the measured baseline. The existing baseline values and degree of separation between the SAC and noise source points are relevant factors.

5.30. It is concluded that **no adverse effect on the integrity** of the Owenkillew River SAC or any other European / Ramsar site would arise in relation to **human / visual disturbance**.

Dust deposition

5.31. It is considered that effects relating to dust deposition are only relevant to the Owenkillew River SAC. Such effects are relevant to the construction, operational and closure phases of the proposed project.

5.32. Having regard to the conservation objectives (qualifying interest features) of the SAC (see section 4 above), in broad terms, effects of dust deposition would be of relevance to all qualifying interest features.

5.33. Dust deposition could act to suppress vegetation including through settlement of airborne / fugitive dust and through sedimentation in aquatic habitat. Where large amounts of dust are continually deposited on vegetation adverse effects upon plants can arise, for example through restricted photosynthesis, respiration and transpiration. In some circumstances this can also lead to phytotoxic gaseous pollutants penetrating the plants. Such effects lead to impaired plant growth / productivity, and this can lead to indirect effects on the overall quality of the vegetation community / habitat and associated fauna.

5.34. Sedimentation could also adversely affect populations of Salmon and Freshwater Pearl Mussel, most notably in relation to diminished reproductive success.

5.35. As reported in Table 16 of the 2017 EcIA:

> *"Baseline dust monitoring would indicate that average dust deposition at six locations in proximity to the existing surface infrastructure site between 2014 and 2016 were below 350 mg/m2/day. The retention and use of the existing surface infrastructure site during the construction phase is not anticipated to increase the rate of dust deposition generated from existing baseline levels and which would be predominantly generated through the loading and movement of HGVs provided standard dust suppression mitigation methods are implemented, i.e. sheeting of loads and good housekeeping of roads.*
>
> *It is anticipated that dust deposition levels will remain well below 350 mg/m2/day. At these levels it is assessed that it is not likely that there would be any measurable impact on the Annex I qualifying habitats for which the SAC is of European importance.*
>
> *The levels of dust deposition is not predicted to result in any significant increase in sedimentation rates within the channel of the Owenkillew River where there would be a likely measurable impact on any freshwater pearl mussels (primary reason for site selection) within the localised area of the existing surface infrastructure site."*

5.36. Section 4.2.6 of the 2019 Addendum to the ES describes the relevant changes to the project parameters which influence dust impacts of the proposals, along with confirmation of the proposed mitigation measures. It is stated that:

> *"In summary, there is no change from the predicted residual impacts and conclusions as outlined in Section 8 in the 2017 ES. However, additional mitigation measures will apply. The air quality and dust levels from the construction and operation of the proposed Curraghinalt Project are predicted to be lower than the relevant air quality and dust standards and guideline limit values. When compared to the measured baseline Air Quality & Dust levels in the area of the proposed Curraghinalt Project, the increased air quality and dust levels at nearby properties to the proposed infrastructure site will be negligible and at the nearest air quality and dust sensitive receptors throughout the lifetime of the gold mine and processing operations."*

5.37. Reference has also been made to the 2nd Addendum to the ES (2020) and the updated Air Quality Impact Assessment (October 2020)[8]. With specific reference to the updated Air Quality Impact Assessment, the 2nd Addendum to the ES states at paragraph 1.10.4:

> *"Revised operational dispersion modelling has been undertaken using AERMOD modelling software, to assess the amendments to the operational design of the proposed DSF. The assessment follows the same methodology used in the 2017 Air Quality & Dust Impact Assessment (Appendix C19 to the 2017 ES).*
>
> *The DSF dust dispersion models have been updated to reflect the changes in the DSF design. This includes the introduction of the starter embankment and assessment of different particle size distribution of the tailings portion of the DSF. The latter is based on additional testing of the tailings material associated with the process design changes following the removal of cyanide from the process circuit.*
>
> *To complete the above, AONA Environmental made use of the description of the proposed construction of the starter embankment and the subsequent Cells 1 – 3 of the DSF. Details considered include daily volumes of waste rock and tailings to be supplied to the DSF, the expected numbers of truck movements, the approximate location of haul road routes, the size of payload/truck, and working times and durations. Details of the DSF material quantities that informed this update are included in the Mine Waste Management Plan (Appendix B.3).*
>
> *Dust emissions from the operation of the amended DSF design for the proposed Curraghinalt Project are predicted to have dust deposition and air quality effects well below the relevant standards and limit values. When compared to the measured baseline dust levels and air quality, there could be a minor increase in dust deposition rates and PM10 and PM2.5 concentrations localised to a few properties near to the proposed infrastructure site based on a*

[8] Curraghinalt Gold Mine Project, Air Quality & Dust Impact Assessment – Second Addendum, October 2020, produced by AONA Environmental Consulting Limited

worst-case predictions. The predicted impact is classed as not significant.

There is no change in the proposed dust management and monitoring commitments. These are given in the ESMP and are based on the Dust Management Plan and proposed air quality and dust monitoring in the Air Quality & Dust Impact Assessment included in the 2017 ES and 2019 Addendum. There is no change to the health impact assessment as a result of the changes described above."

5.38. Evidence suggests that the most sensitive species are only likely to be affected by dust deposition at levels above 1000 mg/m2/day[9]. For comparative purposes, this is of a magnitude five times greater than the level at which most dust deposition may start to cause a perceptible nuisance to humans.

5.39. Evidence also demonstrates that fugitive dust from construction sites is typically deposited within 100-200m of the source; the greatest proportion of which, comprising larger particles (greater than 30 microns) is deposited within 100m[10]. The volume of dust deposited on any given receptor (and its effects) are also strongly dependent upon weather conditions. In wet weather less fugitive dust will be generated by activities and previously deposited dust would be washed off foliage.

5.40. It is also of note that in accordance with guidance produced by the UK Institute of Air Quality Management (IAQM)[11] an assessment of the effects of dust on ecological receptors will normally only be required where an ecological receptor occurs within 50m boundary of the development site or within 50m of routes used by construction vehicles and on public highways, up to 500m from the site entrance.

5.41. In view of the above information any effects from dust would be localised and not likely to give rise to anything beyond a nugatory effect on any interest features of the SAC.

5.42. It can be concluded that **no adverse effect on the integrity** of the Owenkillew River SAC or any other European / Ramsar site would arise in relation to **dust deposition**.

[9] Farmer, A.M. (1993). The Effects of Dust on Vegetation – A Review. Environmental Pollution Vol.79, Issue 1, Pages 63-75

[10] Department of the Environment (1995). The Environmental Effects of Dust from Surface Mineral Workings. Volume 1: Summary Report & Best Practice Guides. HMSO

[11] Holman et al (2014). IAQM Guidance on the Assessment of Dust from Demolition and Construction. Institute of Air Quality Management, London

Disturbance from vibration

5.43. It is considered that effects relating to vibration are only relevant to the Owenkillew River SAC. Such effects are relevant to the construction and operational phases of the proposed project.

5.44. Having regard to the conservation objectives (qualifying interest features) of the SAC (see section 4 above), effects from vibration are of relevance to Salmon and Otter. In addition, adverse effects on Trout would be relevant insofar as they are an important host species for Fresh Water Pearl Mussel larvae.

5.45. With reference to Table 15 of the 2017 EcIA, it is generally recognised by ecologists that vibration can cause disruption to wildlife, triggering for example a 'flight response'. However, the effects of vibration are very often masked by other disturbance factors including human visual disturbance and also noise. It is likely that any species sensitive to increased noise will also be sensitive to vibration, with the converse also true.

5.46. Table 15 of the 2017 EcIA states that the zone of influence of any above ground blasting associated with the construction phase is assessed to be similar to the disturbance anticipated from noise and as such is likely to be up to a 300 m radius of the point source.

5.47. Below ground blasting operations undertaken as part of the mine development including the construction of the decline and extraction of rock have the potential to generate vibration. The effects of any vibration will be dependent on a range of factors including the magnitude of the blast, the frequency of blasting, the depth of any blasting event and the location of any blast event in relation to any important ecological feature.

5.48. Table 15 of the 2017 EcIA states that during monitoring of blasting events carried out during exploration activities at the site, recorded vibration levels below 1 mm/second peak particle velocity (PPV) at above ground receptors.

5.49. Regarding operational effects, in Table 15 of the 2017 EcIA, it is stated that due to the narrow veins of ore being mined, any below ground blasting event will be of relatively small magnitude. Whilst the below ground point of blasting will inevitably change during the operation of the mine, it is considered that any blasting event will have a negligible effect above ground, even where any such event occurs in close proximity to the ground surface (25 m at closest point). Vibration levels would remain below 6 mm/second PPV as currently consented as part of the existing exploration activities and it is noted that a planning condition is proposed which would set a limit value of 6 mm/second PPV.

5.50. Also regarding operational effects, Table 17 of the 2017 EcIA states that:

> *"No blasting will take place directly below the Owenkillew River SAC. At predicted levels below 6 mm/second, it is considered that there would be no discernible surface vibration or noise from any such blasting event and is not likely to have any significant effects on the freshwater pearl mussel or the other the Annex II qualifying species present but not a primary reason for site selection, namely Atlantic salmon and otter for which the Owenkillew River SAC is of European importance, or any other species*

of importance for which the Owenkillew River ASSI and the Drumlea and Mullan Woods ASSI are of conservation importance."

5.51. With reference to the 2019 Addendum to the ES, at section 4.2.8 it is stated:

"Construction and operation vibration impacts for the project remain unchanged from the 2017 ES. As such, the proposed Construction and Operational Mitigation Measures outlined in Section 6 of the Vibration Impact Assessment for the project remain unchanged from the 2017 ES.

Consistent with the findings of the 2017 ES, no significant residual adverse vibration impacts will occur during operation of the Curraghinalt Project. Continuous monitoring of vibration in proximity to the nearest residential properties will ensure that the recommended vibration thresholds and the relevant Planning Condition vibration limits are not exceeded."

5.52. The Vibration Impact Assessment Report Addendum can be found in Appendix C.20 of the 2019 Addendum to the ES and the reader's attention is drawn to that document for further detail regarding identified effects and proposed mitigation.

5.53. In its consultation response of 24th April 2020 DAERA (NED) state:

"In relation to the commentary on vibration impacts on Atlantic Salmon, NED would suggest that an iterative monitoring plan is put in place to ensure the receptors and monitors are adequately picking up any potential impacts on sensitive receptors in the river especially salmon and otter. NED acknowledge in a face to face meeting, the applicant outlined that the Alaskan Standards to be met, were what they applicant has considered as accepted industry levels. NED would note that the applicant should ensure the appropriate noise levels as used in these studies are not breached. Monitoring should ensure these standards are met, but this should also be reflected appropriately in the HRA. NED have also noted there appears to be a discrepancy between the noise levels outlined in the HRA (possibly expected levels) and the levels noted in the FEI response. In addition, as outlined previously, consideration should be given to the timing of works to avoid potentially impacting spawning Salmon."

5.54. For completeness, insofar as any discrepancy may exist between the noise levels outlined in the 2019 sHRA and the levels noted in the FEI response, it is understood that this most likely relates to the recorded (i.e. baseline) vibration levels of "below 1 mm/second PPV" cited in the 2019 sHRA (as also reported above) and the anticipated levels of "below 6 mm/second", as referenced in the FEI. Note that levels of below 6 mm/second are currently consented in relation to exploration activities and are also cited in the 2019 sHRA and in Appendix C.20 of the 2019 Addendum to the ES.

5.55. In terms of the application of appropriate precautionary thresholds for relevant effects guidelines developed to protect fish and incubating embryos from the effects of blasting in and near water bodies, produced by the Alaska Department of Fish and Game are relevant. It is those standards set out in that guidance which the Applicant proposes to adopt. That guidance establishes that blast

induced pressure should not exceed 2.7 psi in the water and vibrations should not exceed 13 mm/second. From the evidence presented in the ES and associated addendum, such thresholds would not be breached and noting the commitment to on-going monitoring as part of the mitigation package, no additional mitigation is considered to be required.

5.56. It can be concluded that **no adverse effect on the integrity** of the Owenkillew River SAC or any other European / Ramsar site would arise in relation to **effects from vibration**.

Changes in air quality (traffic emissions)

5.57. It is considered that effects relating to changes in air quality are only relevant to the Owenkillew River SAC. Such effects are relevant to the construction and operational phases of the proposed project.

5.58. It is a commonly held view by air quality specialists that in the majority of instances, deposition at or beyond 200m from a road is at a level which is so small as to be insignificant (nugatory). In this light, potential significant effects can be screened out of the assessment process where qualifying interest features of a European designated site do not fall within 200m of a road affected by the plan or project and this position is reflected in the Design Manual for Roads and Bridges (DMRB) and similarly in guidance issued by UK statutory agencies.

5.59. As reported at Table 16 of the 2017 EcIA, any HGVs accessing and travelling along the Camcosy Road will be >200 m from the boundary of the SAC and it is therefore considered that any increase in traffic emissions as a result of the movement of waste rock from the existing exploration adit to the DSF in the infrastructure site is not likely to have a significant impact on the qualifying interest features of the Owenkillew River SAC.

5.60. The 2017 ES and 2019 Addendum to the ES does however adopt a precautionary approach to assessment and considers in further detail the potential implications for the SAC in relation to air quality effects. The reader's attention is drawn in particular to Table 16 of the 2017 EcIA and the "Air Quality & Dust Impact Assessment Addendum" included at technical appendix C.19 of the 2019 ES Addendum. Specific and detailed consideration is given to increases in NOx and Nitrogen deposition.

5.61. In relation to NOx it is noted that as of March 2020, the APIS data base now provides updated information and the "Site Relevant Critical Load Tool" displays the 3-year mean data for 2016-18. In relation to NOx concentrations for the Owenkillew River SAC, the range is cited as being from 3.55 to 5.02 µg NOx/m3 with an average of 3.83 µg NOx/m^3, across the site. This represents a slight decline (i.e. betterment) from the levels previously assessed and reported in 2017.

5.62. Regarding Nitrogen deposition during the construction phase, which was taken forward in the ES for further more detailed assessment; in accordance with relevant guidance, where the process contribution is determined as less than 1% of the relevant long-term Environmental Assessment Levels (EAL) on the Owenkillew River SAC, then traffic emissions are not likely to have a significant

effect either alone, or in combination (irrespective of the background levels). In the event this criterion is exceeded, consideration of the Predicted Environmental Concentration (PEC) is required to be less than 70 % of the relevant long-term benchmark for traffic emissions in order to conclude no significant effect.

5.63. It was concluded within Table 16 of the 2017 EcIA that:

> *"The air quality assessment carried out as part of the gold mine development would indicate that the process contributions from traffic emissions will be less than 1% of the relevant EAL. Based on <1 % process contributions and that any HGVs accessing and travelling along the Camcosy Road will be >200 m from the boundary of the SAC, it is therefore considered that any increase in traffic emissions as a result of the movement of waste rock from the existing exploration adit to the DSF in the infrastructure site is not likely to have a significant impact on the Annex I habitats and/or Annex II qualifying species for which the Owenkillew River SAC is of European importance."*

5.64. With reference to the overall conclusion (paragraph 7.1) of the "Air Quality & Dust Impact Assessment Addendum" included at technical appendix C.19 of the 2019 ES Addendum, it is stated:

> *"There is no change from the predicted residual impacts and conclusions as outlined Section 8 in the 2017 Air Quality & Dust Impact Assessment. The Air Quality & Dust levels from the construction and operation of the proposed Curraghinalt Project are predicted to be lower than the relevant air quality and dust standards and guideline limit values. When compared to the measured baseline Air Quality & Dust levels in the area of the proposed Curraghinalt Project, the increased Air Quality & Dust levels at nearby properties to the proposed infrastructure site will be cause a negligible Air Quality & Dust impact at the nearest Air Quality & Dust sensitive receptors throughout the lifetime of the gold mine and processing operations."*

5.65. In view of the above it can be concluded that **no adverse effect on the integrity** of the Owenkillew River SAC or any other European / Ramsar site would arise in relation to **effects from air quality impacts**.

Hydrological implications

- Changes in water quality (groundwater and surface water)
- Changes to the hydrogeological and hydrological regime

Context

5.66. The contextual information presented below is reproduced from the 2019 sHRA, with the exception of some minor revisions to factual information where new information has become available.

Hydrogeology

5.67. The project is located in the area of the Gortin Groundwater Body, which is characterised as having limited potential for significant abstraction. This groundwater body incorporates the entire catchments of the Owenkillew, Glenelly and Mourne Rivers.

5.68. Hydrogeological studies for the Curraghinalt Project have established that fracture flow is the dominant flow mechanism in the bedrock with most flow occurring in the upper, weathered zone (up to approximately 20 m depth). The bedrock aquifer is low-yielding with limited potential for significant abstraction. The superficial alluvial and glaciofluvial deposits in the area are generally localised to river valley and low-lying areas, with the exception of the thin glacial outwash deposits recorded up-slope, at the proposed infrastructure site. Typically, the peat has very low hydraulic conductivity and high storage capacity.

5.69. Groundwater levels in the weathered bedrock superficial deposits are close to surface and closely mirror topographic elevation. The hills forming the ridge between the Owenkillew and Owenreagh Rivers therefore comprise a hydraulic divide with groundwater flowing away from the high ground towards the valleys. Groundwater levels in the deeper fresh bedrock are generally similar to shallow deposits, however they do not follow topographical lows. Piezometeric groundwater levels in the fresh bedrock in valley areas are greater than shallow units indicating a natural upward gradient and discharge to the river valleys.

5.70. Most groundwater flow is shallow, discharging locally and rapidly to surface waters. Within the river valleys some limited discharge from bedrock to glaciofluvial and alluvium aquifers is likely to occur. The water table in intact peatland fluctuates only a little, but is usually close to the surface, naturally either above or below usually by only centimetres. The storage and the runoff behaviour of the peat varies significantly with very small changes in water level. The peat stores water in dryer periods but is prone to flashy high discharges when the water level is higher during wetter periods.

5.71. All groundwaters in the area are fresh quality, with bedrock groundwater characterised by a weakly mineralised calcium or sodium bicarbonate signature and low to neutral pH. Sands and gravels groundwater has a similar calcium bircarbonate and low/neutral pH chemistry.

5.72. Peat groundwaters typically have a sodium chloride signature and are acidic and oxidising with low total dissolved solids and a high iron content. In general, the groundwater shows an increase in total dissolved solids and electrical conductivity with depth from the superficial sediments, to the weathered bedrock and in-turn the fresh bedrock. Similarly, there is a general increase in many metal concentrations with depth. This is likely a result of the reduced interaction with freshwater recharge to the deeper formations and increased age of the groundwater water at depth (i.e. increased water mineralisation).

5.73. The only groundwater abstraction licence in the vicinity of the study area is understood to be held by Cemex NI Ltd, approximately 2 km from the project infrastructure area.

5.74. Private (non-regulated) groundwater abstractions, including wells and springs, are relatively commonplace across the region and 135 abstraction points were identified from a groundwater user survey undertaken between October 2015 and February 2016 within the project area.

Hydrology

5.75. The Curraghinalt deposit and the infrastructure sites are located within an area comprising a topographic ridge that forms the drainage divide between the Owenkillew River and the Owenreagh River. Much of the higher ground on the Curraghinalt ridge is covered with peat, supporting blanket bog and wet heath habitats. Peat thickness varies from <5 cm to over 3 m that has historically, and continues to be, subject to cutover in some areas.

5.76. The river basin management plan (RBMP) for the North Western River Basin (of which all rivers draining the project site form a part) was prepared in accordance with legislation transposed from the EU Water Framework Directive. The RBMP summarises the state of the water environment and define actions to protect and improve the water environment. The current status of, and future objectives for the rivers are outlined below.

5.77. The stretch of the Owenkillew adjacent to the project site is currently of Good status. The 2019 sHRA reported that the 2021 and 2027 objectives were reduced to Moderate, however it has been confirmed by the Water Management Unit that the information available on the NIEA Webmapper is incorrect. The correct position is that “all objectives for the Owenkillew are Good for 2021”.

5.78. The stretch of the Owenreagh adjacent to the application site is currently of Good status with upstream waterbodies also of Good status.

5.79. The Mourne River is currently of Moderate Ecological Potential with objectives of Good Ecological Potential. The Upper Foyle transitional water is of Moderate status. The receiving Foyle Harbour and Faughan water body is of Moderate Ecological Potential and is termed a heavily modified water body. Finally, Lough Foyle is of Good status.

5.80. Overall, the water quality in watercourses downstream of the project sites reflects the natural mineralisation of the project area and the wider effects of peaty soils and agricultural activity in the local catchments. Average pH is circum-neutral and within guideline values although pH of individual samples ranges quite widely, from 5.3 to 8. Electrical conductivity, a reflection of dissolved ions in the water, is fairly consistent at between 100 and 122 µS/cm. Existing nutrient levels in the watercourses often exceed ideal values for freshwater pearl mussels. Total suspended solids are generally low, elevated levels are generally correlated with high flows associated with heavy rainfall. Concentrations of metals are generally below guideline values but concentrations of cadmium, copper, iron, mercury, manganese and selenium sometimes exceed environmental quality standards defined in legislation, specifically the Water Framework Directive (Classification, Priority Substances and Shellfish Waters) Regulations (Northern Ireland) 2015.

5.81. Watercourses draining the site are detailed within the CEMP at Figure 3.6.

Assessment

5.82. It is considered that effects relating to changes in water quality and the hydrogeological and hydrological regime are of greatest relevance to the Owenkillew River SAC, but that effects could extend to River Foyle and Tributaries SAC, Lough Foyle SPA (UK and ROI), Lough Foyle Ramsar site and the River Finn SAC.

5.83. Such effects are relevant to the construction, operational and closure phases of the proposed project.

Changes in water quality (surface water)

5.84. As an overarching point, in order to ensure that the aquatic environment (including designated sites) is protected from harmful effects, Discharge Consents set strict limit values for relevant parameters. These limit values are defined through detailed modelling undertaken in accordance with accepted industry guidance. Discharge Consent 068/12/2 (relevant to the exploration activities at the project site) included such limits and it would be expected that any new Discharge Consent/s would also include relevant, agreed limits.

5.85. The information presented in the 2017 ES and the 2019 Addendum to the ES (including the 2019 sHRA) has informed this assessment. An additional key reference source used in undertaking this sHRA is the "Surface Water Impact Assessment", prepared by SRK Consulting (2020) and the associated technical reports prepared by Kaya Consulting[12]. The reader's attention is drawn to those documents for detailed information, however key information is reproduced below.

5.86. The Surface Water Impact Assessment (2020) assesses impacts on both the Owenreagh catchment and Owenkillew catchment. It is important to note that since the Owenreagh River joins the Owenkillew River, effects on water quality in the Owenreagh River are relevant to this sHRA, but only insofar as they relate to waters downstream of the confluence with the Owenkillew River.

5.87. Regarding the Owenreagh River, water quality has the potential to be impacted by operations at the proposed infrastructure site, as well as from the existing infrastructure site. Detail regarding the sources of changes to water quality downstream of the confluence with the Owenreagh River are summarised at section 9.3.1 of the Surface Water Impact Assessment (2020), with further detail given at Section 6.2.2 of that document. The main sources are cited as being associated with water pumped from underground workings, runoff and seepage from the DSF, water used in ore processing and also earth movement resulting in increased sediment concentrations in runoff water.

5.88. Section 10 of the Surface Water Impact Assessment (2020) is concerned with impacts associated with the Owenkillew catchment and Section 10.3.1 describes

[12] In particular: "Proposed Discharge Criteria for Owenkillew River and Curraghinalt Burn, Gortin, County Tyrone, BT79 7SF" (October 2020) and Proposed Discharge Criteria for Owenreagh River and Pollanroe Burn, Gortin, County Tyrone, BT79 7SF" (October 2020)

in detail the sources of changes to water quality which result from the proposals. These include:

a) Flow from existing adit;
b) Runoff from Existing Surface Infrastructure Site;
c) Management of water at the Existing Surface Infrastructure Site; and
d) Loadings from groundwater;

5.89. The reader's attention is drawn to section 10.3.3 of the Surface Water Impact Assessment (2020). Here it is confirmed that discharges from the existing infrastructure site will be treated to comply with the proposed discharge criteria provided in Table 10-15 of that document. Those criteria have been calculated to limit the increase in concentrations in the Owenkillew River to allowable limits (e.g. an increase in baseline concentrations of 10% of the Environmental Quality Standard (EQS) for most parameters).

5.90. There is of course however an important difference between the setting of limit values for discharge consent purposes, and the actual discharges which arise. For example, the Reverse Osmosis plant would be expected to produce significantly higher quality effluent than is required by the site discharge consent, resulting in better water quality in the Owenkillew River than predicted in the Proposed Discharge Criteria document (Kaya 2020) and increases in baseline of less than 10% of the EQS.

5.91. Discharges from the water treatment plant will be regulated by NIEA. The operator will be required to monitor and record the flow and quality of water discharged from the treatment plant to the Curraghinalt Burn. Additionally, water quality in the Owenkillew River will be managed through the Surface Water and Groundwater Environmental Monitoring and Action Plan (SGEMAP), providing a further safeguard.

5.92. As described in section 10.2.2 of the Surface Water Impact Assessment (2020), there will only be limited construction activities in the existing infrastructure site and any waste rock from the construction of the decline will be held in the existing ore store before being transported to the proposed infrastructure site. As a result, any construction wastes will be stored within existing infrastructure which is managed by an existing water management system comprising lagoon storage and treatment elements.

5.93. With appropriate management of construction activities in the Pollanroe Burn, such as those measures contained within the (outline) CEMP, there are expected to be negligible changes in water quality in the Owenreagh River at its confluence with the Owenkillew River.

5.94. Specifically in relation to the operational phase, the following is stated at section 10.3.3 of the Surface Water Impact Assessment:

> *"During operations there are expected to be no significant changes to flows or releases of mine water to the tributaries to the Owenkillew River around the existing surface infrastructure site, with no flow from the adit and no groundwater flows from the underground mine. The only discharge to the Curraghinalt Burn during normal operations would be from treated surface water runoff from the existing surface infrastructure site. There*

remains the option to be able to treat and discharge underground mine water to the Curraghinalt Burn and the proposed discharge consent for the existing surface infrastructure site is based on a discharge of 11.7 L/s to the Curraghinalt Burn. The discharge consent is assessed are predicted during operations, so there are predicted to be no impacts on the Owenkillew River upstream of the Owenreagh River.

The discharge criteria have been calculated using a methodology that is protective of EQS within the Owenkillew River. The method is outlined in Annex C and it and aims to;

- *Prevent concentrations in Owenkillew River from exceeding an EQS (where it does not currently exceed an EQS);*
- *Limit increase in background concentrations in Owenkillew River to less than 10% of EQS, for parameters where background concentrations are less than the EQS; and*
- *Limit increase in background concentrations Owenkillew River to less than 3% of EQS, for parameters where background concentrations are already more than the EQS."*

5.95. Regarding the closure phase, it is stated at section 10.3.3 of the Surface Water Impact Assessment that:

"As outlined in Section 10.3.1, after closure adit water will flow to the Curraghinalt Burn and from there to the Owenkillew River. There will also be loadings from groundwater, sourced from the infilling of the underground mine workings. These loadings are described in Section 10.3.2 and the results of dilution calculations assessing the impact of adit water and groundwater on the water quality in the Owenkillew River are shown in Table 10-29 to Table 10-31.

"The results show no exceedances of EQS other than silver which exceeded the EQS under baseline conditions, due to the EQS being lower than the detection limit for that parameter. Therefore, this does not indicate any impact of the mine on baseline conditions and no change in the concentration is predicted in the Owenkillew River for silver at closure. Changes from baseline are minor in the Owenkillew River downstream of the Curraghinalt Burn 13 years after mine closure. The predictions for average concentrations are less than during operations, apart from manganese. A discussion of manganese concentrations and the conservative (low) discharge criteria value for manganese is provided above. The changes in baseline concentrations as a percentage of the EQS are shown in the final column of each results table and they illustrate the increases are significantly lower than the increases allowed when calculating discharge criteria for the operational mine (typically 10% for parameters that are below EQS under baseline conditions). By 50+ years after closure the predicted changes in concentrations in the Owenkillew downstream of the Curraghinalt Burn are generally lower, with small or no changes from baseline conditions for all parameters.

Further downstream where the Owenkillew River meets the Owenreagh River, the impacts are even lower, with small changes from baseline.

Due to the small to negligible changes in water quality in the Owenkillew River and similar negligible changes in the Owenreagh River at closure, no quantitative predictions of water quality are made for the Owenkillew River downstream of the Owenreagh River, as changes in water quality will also be negligible."

5.96. The reader's attention is also drawn to the conclusions in relation to surface water quality as set out at Section 13.2 of the Surface Water Impact Assessment (2020). Here it is stated:

"Surface water discharges from the project during construction and operations will be regulated by site discharge permits, with associated water quality criteria. These discharge criteria have been calculated using methods agreed with regulators and which will limit increases in baseline concentrations in sensitive watercourses (Owenreagh and Owenkillew Rivers) to values outlined in guidance agreed with NIEA (i.e., England and Wales Environment Agency (LIT 10419: Modelling: surface water pollution risk assessment). Discharges to less sensitive watercourses (Pollanroe Burn, Curraghinalt Burn, Attagh Burn) will meet drinking water standards apart from iron and manganese where baseline conditions already exceed baseline conditions. For these parameters the discharge consent values are set to the average baseline conditions.

Water discharged from the mine site will be treated prior to discharge. Treatment of mine waters will be based on RO technology, with the quality of water discharged from the mine expected to be significantly better than required under discharge permits. Sewage water will be treated to national standards and then passed through the RO water treatment plant.

During construction, sediment management measures will be required to control the release of sediment produced by construction activities to watercourses. Sediment discharges from construction activities will be limited to 50 mg/L, with calculations undertaken in the impact assessment showing that discharges at these concentrations will not significantly increase suspended solids concentrations in the receiving environment. Construction activities will be controlled through the CEMP.

At closure, the project infrastructure will be reclaimed and returned as close to baseline conditions as possible."

5.97. In undertaking this sHRA, specific consideration has been given to key parameters assessed as part of the Surface Water Impact Assessment (2020) and these are discussed below.

5.98. Specifically regarding matters concerning Total Suspended Solids (TSS) / sediment discharges, and also the draft Sub Basin Management Plan for the Owenkillew River SAC insofar as matters concern discharge limits pertinent to avoiding effects on Freshwater Pearl Mussel, the following information is relevant.

5.99. For TSS, extant Discharge Consent 068/12/2 sets a limit of 50mg/l. It is noted that for waters containing Freshwater Pearl Mussel, a limit value of 10mg/l is relevant, in accordance with the (unpublished) "Proposals for Owenkillew Sub Basement Management Plan". It has however previously been agreed with NIEA

that in the light of dilution arising as a result of discharge into the Curraghinalt Burn, further dilution in the Owenkillew River, and having undertaken detailed modelling, NIEA was content that the limit value of 50mg/l was acceptable. In this matter reference is drawn to the internal memo dated 13th February 2015 produced by NIEA, a copy of which is included at Annex 7. This memo confirms that the limit value of 50mg/l:

> *"…will protect the 10mg/litre suspended solids objective in the Owenkillew, subject to the upstream* concentrations *in the Owenkillew not exceeding this level".*

5.100. The relevance of the Owenkillew Sub Basement Management Plan is addressed within the Proposed Discharge Criteria reports produced by Kaya Consulting and included at Technical Appendices (Annexes) B and C of the Surface Water Impact Assessment (2020). Reference is drawn to Section 2.1 of the Proposed Discharge Criteria reports where it is stated:

> *"We are aware that there is an unpublished draft 2013 report prepared for NIEA that outlines management measures related to Freshwater Pearl Mussels in the Owenreagh catchment. This report provides indicative water quality guidelines for the rivers with Freshwater Pearl Mussels, based on a review of available literature. As this report has not been finalised and is not a published document, it is considered superseded by the 2017 BS EN 16859:2017. The British Standard is expected to have undertaken a more thorough review of Freshwater Pearl Mussel literature than the earlier 2013 report. However, it is noted that in the absence of a guideline value for TSS related to TSS concentrations (mg/L) in BS EN 16859:2017, results of this assessment are compared to the 10 mg/L guideline value for TSS presented in the unpublished report."*

5.101. In relation to Biochemical Oxygen Demand (BOD), Nitrate and Total Ammonia, in both the Surface Water Impact Assessment and at Section 3.2.1.1 of the Kaya reports, reference is made to BS EN 16859:2017.

5.102. When interpreting the ranges cited in BS EN 16859:2017, it is important to recognise that BS EN 16859:2017 does not set standards or limits for assessment purposes. Indeed, it is specifically stated within BS EN 16859:2017 that:

> *"these specific levels should not be interpreted as water quality targets but are presented to provide assistance in target-setting."*

5.103. Regarding BOD, the post development mean concentration is within the range of 1 – 1.4 mg/L identified in BS EN 16859:2017, for discharges associated with both the Pollanroe Burn and Curraghinalt Burn.

5.104. For Nitrate, regarding discharges to the Curraghinalt Burn, the calculated mean concentration is predicted to be 0.19 mg/L and thus within the range of 0.125 – 0.5 mg/L identified in BS EN 16859:2017. For discharges to the Pollanroe Burn, the calculated mean nitrate concentration is predicted to be 0.53 mg/L (compared with a baseline mean value of 0.24 mg/L) and thus, just outside the range of 0.125 – 0.5 mg/L.

5.105. In relation to ammonia, for discharges to both the Curraghinalt Burn and Pollanroe Burn, the range for total ammonia as set out in BS EN 16859:2017 (of 0.01 to 0.05 mg/L for mean concentrations) is exceeded. Specifically, in relation to the Pollanroe Burn, the mean concentration is predicted to be 0.071 mg/L, compared to the baseline mean of 0.062 mg/L. For the Curraghinalt Burn, the mean concentration, it is predicted to be 0.055 mg/L, compared to the baseline mean of 0.050 mg/L.

5.106. As can be seen from the above, for ammonia the range cited in BS EN 16859:2017 is exceeded for discharges to both burns with the baseline value already exceeding the range. However, the actual predicted increases over the baseline are negligible.

5.107. For nitrate, the predicted increase over the baseline value for discharges to the Pollanroe Burn is more notable, at 0.53 mg/L compared to 0.24 mg/L. However, as stated above, the exceedance is only just outside of the range set out in BS EN 16859:2017.

5.108. In considering these increases, it is important to understand the correlation between the proposal and the existing use of the lands that comprise the proposed surface Infrastructure Site. The project entails the construction of a surface Infrastructure Site (above ground element of the proposals) over circa 68ha, a significant proportion of which is currently grazed agricultural land, with improved and semi-improved pasture present as well as other grassland types. The construction of the Infrastructure Site results in the removal of the agricultural lands, with a corresponding reduction of agricultural activity that gives rise to adverse impacts on the rivers.

5.109. Diffuse pollution from agricultural sources is a major contributor to degraded water quality. As stated in the document titled “Planning for the third cycle River Basin Plan 2021-2027” (December 2019) :

> *“Diffuse agricultural pollution is believed to be the primary cause of pollution in impacted river sites assessed during the period 2015 – 2018, using SRP concentrations as an indicator.”*

5.110. The proposed change to land use will effectively remove an element of agriculture from the relevant river catchments. The exceedances in accepted standards or proposed ranges relating to discharges / water quality must be viewed in the light of the betterment arising from a reduction in agricultural practices in the catchments.

5.111. As part of the assessment work undertaken by Kaya Consulting, it is noted that a further precautionary test has also been applied. This relates to an assessment of the level of risk that an EQS could be breached as a result of the discharges. This matter is discussed at Section 3.2.2 of the respective Kaya Reports. The test applied, is whether the risk of exceedance is greater than 5% and the assessment isolates the impact of the discharge by presenting data for two scenarios, one with, and one without the discharge from the treatment plant.

5.112. As is demonstrated through this analysis, in relation to discharges into the Curraghinalt Burn, it stated within the Kaya Consulting report:

> "*However, exceedances are predicted for two parameters which either have their mean values above the standard (iron) or detection limits which approach or exceed the standard (silver). The impact of the mine discharge is minor for all parameters, with a 3% increase in non-compliance for iron, a 2.2% increase of cadmium, a 1% increase for copper, and a 0.1% increase for chromium VI, with zero for all other parameters."*

5.113. Specifically regarding discharges into the Pollanroe Burn, it stated within the Kaya Consulting report:

> "However, exceedances are predicted for three parameters which either have high standard deviations that result in some samples exceeding the standard (Total Ammonia and BOD) or detection limits which approach or exceed the standard (silver). The impact of the mine discharge is minor for all parameters, with a 1.7% increase in non-compliance for mercury and less than or equal to 1% for all other parameters*."*

5.114. The risk of non-compliance, when the two mine discharges are viewed together remains below 5%.

5.115. In each instance the proposed discharge criteria were set based on EQS values for relevant component features for each river. They were then adjusted with comparison to drinking water standards. The impact of the discharge on mean water quality was then compared to non-statutory guidelines, including the British Standard (BS EN 16859:2017) relevant to monitoring Freshwater Pearl Mussel populations and their environment.

5.116. The Proposed Discharge Criteria reports justify the assessment approach taken at Section 2.1. It is considered that the approach is comprehensive in scope, looking to a range of relevant standards and guidelines, and fully compliant with the precautionary principle.

5.117. Specifically regarding BS EN 16859:2017, whilst exceedances of the ranges are predicted to arise in relation to ammonia and nitrate in view of the proposed discharge limits, it is important to view these exceedances in the light of the removal of land from agricultural practices which arises from the construction of the proposed surface Infrastructure Site.

5.118. By way of summary conclusion, it is considered that that **no adverse effect on the integrity** of the Owenkillew River SAC would arise in relation to effects from **changes in surface water quality**. and noting the improvements in the baseline situation which would arise from removal of land from agriculture (through delivery of the mine project), the discharges are not likely to retard any measures aimed at restoring or maintaining populations of qualifying species, such as Freshwater Pear Mussel.

5.119. In the light of the above conclusion; given the heightened sensitivities to water quality associated with the qualifying interest features of the Owenkillew River SAC, the SACs proximity to the project site and also, the dilution which would occur within receiving waters, it can be concluded that **no adverse effect on the integrity** of any other European / Ramsar site would arise.

Changes in water quality (Groundwater)

5.120. The information presented in the 2017 ES and the 2019 Addendum to the ES (including the 2019 sHRA) has informed this assessment. An additional key reference source used in undertaking this sHRA is the "Groundwater Impact Assessment", prepared by SRK Consulting (2020).

5.121. As expressly stated at Section 1.1 of the Groundwater Impact Assessment Executive Summary (2020), groundwater interacts with surface water and thus it informs the surface water impact assessment in relation to both surface water flow and water quality impacts. Regard must therefore be had to relevant information detailed (or referenced) above in relation to surface water quality.

5.122. Table ES1 of the Groundwater Impact Assessment Executive Summary summarises the relevant identified impacts, receptors, existing design measures and the assessment approach used. Water quality impacts which must be addressed through assessment are identified in relation to contaminant migration from the underground mine, contaminant seepage from the DSF and ponds, and plant machinery spills / contaminant migration. In relation to all of these pathways, the assessment work confirms that any potentially significant effects can be mitigated / avoided.

5.123. Regarding plant machinery spills / contaminant migration, it is stated at paragraph 1.9.1 of the Groundwater Impact Assessment Executive Summary that:

> *"With appropriate mitigation (i.e. refuelling areas appropriately constructed on hardstanding, with secondary containment, spill capture sumps and spill management plans) and implementation of the Construction Environmental Management Plan (CEMP; SRK, 2019c) the impacts on groundwater are not considered significant."*

5.124. In relation to contaminant seepage from the DSF and ponds during the operational phase, it is stated at paragraph 1.9.2 of the Groundwater Impact Assessment Executive Summary that:

> *"Impacts with respect to this issue have been assessed in relation to three receptor types; surface waters (i.e. the Pollanroe Burn and Owenreagh River), private groundwater abstractions and groundwater resource.*
>
> *On a conservative basis the estimated seepage rate from the DSF is equivalent to 1% of the groundwater flow passing beneath the facility. All of this flow is predicted to migrate into either the underdrains below the DSF or to the Pollanroe Burn via a groundwater pathway. No hazardous or non-hazardous substances are determined in the DSF that exceed groundwater screening criteria during operations and therefore the DSF presents a low risk.*
>
> *Taking account of the very low predicted seepage rates, the seepage from the ponds does not present a risk to groundwater or the Pollanroe Burn via underdrainage discharge.*
>
> *Based on this review, the impact of contaminant seepage from both the DSF and the ponds at the Proposed Infrastructure Site during operations is considered not to be significant."*

5.125. In relation to seepage from the DSF and ponds during the closure phase, it is stated at paragraph 1.9.3 of the Groundwater Impact Assessment Executive Summary that:

> *"Overall, the impact of contaminant seepage from both the DSF and the ponds at the Proposed Infrastructure Site during the post-closure phase are considered not to be significant."*

5.126. Regarding contaminant migration from the underground mine (only relevant to the closure phase) it is stated at paragraph 1.9.3 of the Groundwater Impact Assessment Executive Summary that:

> *"Based on the geochemical modelling no hazardous substances are determined in the underground mine that exceed the water quality targets following year 3 of groundwater rebound. For non-hazardous substances in the underground mine, no concentrations exceed groundwater screening criteria in the underground mine following year 15 after closure. This demonstrates the underground mine presents a low risk as a source of contaminants during the rebound period during post-closure.*
>
> *The "low risk" assessment for post-closure risk is considered appropriate; the source term modelling is predictive and there is an element of uncertainty, even with sensitivity analysis. In addition, the monitoring and action plan programme (refer to section 1.10) will adopt the target limits for assessment of the groundwater environment. Target limits are protective of the environment and designed to act as early warning action triggers in the event of exceedance. The risk is managed on this basis.*
>
> *On this basis impacts are assessed as follows:*
>
> - *surface waters (i.e. the Owenkillew River and local tributaries): groundwater passing to the adit is discharged to the Curraghinalt Burn, following treatment if required, and is assessed cumulatively in the Surface Water Impact Assessment report (SRK, 2020d). Other groundwater pathways migrate to the Owenkillew River, smaller streams or drains, or terminate as storage within the groundwater system. The impact of mine contact water migration to rivers is addressed in the Surface Water Impact Assessment.*
> - *private groundwater abstractions: on the basis of water quality predictions and flow pathways of source-impacted groundwater the impact on local private abstractions is not considered significant.*
> - *groundwater resource: the maintenance of the adit as a direct conduit for rebounding water out of the mine (and hydraulic containment towards the mine prior to this point in the rebound process) reduces the potential for widespread migration of mine water into the groundwater system. The impact on the groundwater resource is therefore not considered to be significant."*

5.127. It is of relevance that the draft SGEMAP covers monitoring of environmental performance in the groundwater environment, as well as actions that may be triggered in the event of an unforeseen occurrence.

5.128. The levels / limits presented in the SGEMAP are purposefully designed to be protective of compliance levels, associated obligations and any statutory conditions. These assessment limits and the monitoring regime will be subject to annual reviews. It is considered that this provides security as to the long-term safeguarding of the groundwater environment.

5.129. By way of summary conclusion, it is considered that that **no adverse effect on the integrity** of the Owenkillew River SAC would arise in relation to effects from **changes in groundwater quality**.

5.130. In the light of the above conclusion; given the heightened sensitivities to water quality associated with the qualifying interest features of the Owenkillew River SAC, the SACs proximity to the project site and also, the dilution which would occur within receiving waters, it can be concluded that **no adverse effect on the integrity** of any other European / Ramsar site would arise.

Changes to the hydrogeological and hydrological regime

5.131. The information presented in the 2017 ES and the 2019 Addendum to the ES (including the 2019 sHRA) has informed this assessment. Additional key reference sources used in undertaking this sHRA are the “Groundwater Impact Assessment”, prepared by SRK Consulting (2020) and the “Surface Water Impact Assessment”, prepared by SRK Consulting (2020) together with the associated technical reports prepared by Kaya Consulting.

5.132. Hydrological changes relating to flows, specifically concerning the Owenkillew River (SAC) have been assessed and a summary of the conclusions is presented at Section 10.2.3 of the Surface Water Impact Assessment (2020). As can be seen from that summary information, for all phases of the project, impacts are assessed as negligible.

5.133. There would be no significant deviation from existing baseline flows. In this context it is considered that there would be no potential for adverse effects to arise in relation to any qualifying interest features of the Owenkillew River SAC, or qualifying interest features of other downstream European / Ramsar designated sites.

5.134. By way of summary conclusion, it is considered that that **no adverse effect on the integrity** of the Owenkillew River SAC would arise in relation to effects from **changes to the hydrogeological and hydrological regime**.

5.135. In the light of the above conclusion; given the heightened sensitivities to the hydrological regime associated with the qualifying interest features of the Owenkillew River SAC and the SACs proximity to the project site by comparison, it can be concluded that **no adverse effect on the integrity** of any other European / Ramsar site would arise.

<u>In-combination assessment</u>

5.136. The proposed powerline is the subject of separate planning applications, however it has been acknowledged by the Applicant that the powerline is an integral part of the mine project. The powerline project has been assessed in terms of the potential for in-combination effects to arise in relation to relevant designated sites. No other plans or projects have been identified which must be considered in-combination with the project proposals.

5.137. In undertaking this in-combination assessment, Ecology Solutions has reviewed environmental reports relating to the powerline project. Of particular relevance are the following documents:

1) Fisheries and Aquatic Ecology Report[13], produced by RPS and dated September 2020.[
2) Outline Construction Environmental Management Plan (OCEMP), produced by RPS;
3) Water Quality Screening Assessment, produced by RPS and dated December 2019;
4) Ecological Impact Assessment, produced by RPS and dated December 2019

5.138. Within those documents cited above, whilst it is made clear that the powerline project design has sought (where possible) to avoid designated sites, it is also fully recognised that during the construction and operational phases of the project there is the potential for significant adverse effects to arise on relevant designated sites[14].

5.139. In some instances, construction work will take place relatively close to the banks of watercourses, with one structure (pole 2263) located approximately 5m from the top of the bank of the Owenkillew River. At nine other locations structures or underground cables are located within 10m of a tributary of the Owenkillew River.

5.140. At section 5.1.1 of the (powerline project) Ecological Impact Assessment it is stated that construction works have the potential to cause deterioration of water quality in relevant waterbodies, through an increase in suspended sediments and introduction of contaminants associated with the use of machinery close to the watercourse. In the case of the River Foyle and Tributaries SAC and River Finn SAC, effects could arise where sediments or contaminants are carried downstream, given their hydrological connectivity with the Owenkillew River.

5.141. Specifically regarding sediment release during construction it is stated that pathways include trench excavation and backfilling; installation of temporary crossing structures and associated movement of plant machinery; soil and vegetation clearance; bank disturbance caused by plant equipment; run-off from spoil storage; direct disturbance of the river bed; construction of dams to divert flow when soil or sandbags are used to block flow; water over-pumping and discharge of sediment-laden water back to the watercourse; removal of flumes/dams/crossing culverts; reinstatement of bank soils and vegetation.

5.142. It is specifically recognised within the (powerline project) Ecological Impact Assessment, at section 5.1.1 that:

[13] RPS, Screening Assessment of Potential Effects of the Curraghinalt 33kv Connection on Fisheries and Aquatic Ecological Quality in Streams of the Glenmornan and Owenkillew River Catchments, September 2020
[14] Including the Owenkillew River SAC, River Foyle and Tributaries SAC and River Finn SAC.

> "*Significant water quality and habitat deterioration effects have the potential to negatively affect otter, Atlantic salmon or freshwater pearl mussel, in addition to the Annex I habitat Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation."*

5.143. It is also stated at section 5.1.1 of the (powerline project) Ecological Impact Assessment, that potential exists for adverse effects on Atlantic Salmon and Otter to arise through noise, vibration or visual stimuli and that there is the potential to cause the spread of the non-native invasive species Himalayan Balsam.

5.144. It is concluded that, in relation to construction stage effects, specific mitigation measures are required to avoid or reduce any harmful effects of the proposed development on the SAC.

5.145. Insofar as operational effects (on relevant designated sites) are concerned, the (powerline project) Ecological Impact Assessment refers to visual inspections (single person on foot) to inspect the overhead line and any vegetation encroachment into the 5m safety easement, with vegetation clearance undertaken on a three year cycle (single person, on foot using hand held machinery and no refuelling on site). It is also stated that maintenance of the underground cable will require non-intrusive testing every five years, with any faults identified being the subject of a localised repair involving excavation and replacement of a cable section, followed by reinstatement works. It is stated that where such works are required close to the watercourse, there is potential for significant effects to occur in the absence of mitigation.

5.146. As stated above, regard has also been had to the Fisheries and Aquatic Ecology Report (September 2020), produced by RPS. That document is narrower in focus and of more specific relevance to this sHRA. It cites (section 5.2.5 of that document) sediment (and drilling mud) release / entrainment, and chemical spills (fuel/oil/lubricants) as key potential pathways for effects, alongside noise, vibration, temporary obstruction of migratory fish (e.g. Atlantic Salmon) and localised impacts on habitats / species through excavation of the river bed.

5.147. With reference to the information presented in the previous sections of this sHRA, of relevance to this in-combination assessment are the potential for adverse effects to arise in relation to water quality, noise and vibration.

5.148. Both the (powerline project) Ecological Impact Assessment and the Fisheries and Aquatic Ecology Report describe the relevant mitigation measures to be adopted and each also refer to the (powerline project) OCEMP. The OCEMP describes those measures to be employed in relation to sediment control, ground stabilisation, reinstatement, the storage and use of fuels and other chemicals, and invasive species. It also confirms that an ecological clerk of works will be appointed to oversee works wherever appropriate.

5.149. It is noted that at section 7 of the Fisheries and Aquatic Ecology Report, the conclusion regarding residual effects is that, through the adoption of the proposed mitigation measures, which will include timing restrictions on certain works, the construction phase residual effects are "reduced to Neutral so that

the net impact is expected to result in no appreciable effect on the identified attribute".

5.150. It is also noted that the Ecological Impact Assessment refers to the fact that the project specific HRA has concluded that the construction and operational phases of the project will not adversely affect the integrity of the Owenkillew River SAC. The same conclusions can be reached for the other relevant designated sites.

5.151. In view of all of the relevant information, it is concluded that with the adoption of the mitigation and avoidance measures proposed for each project, no in-combination effects would arise.

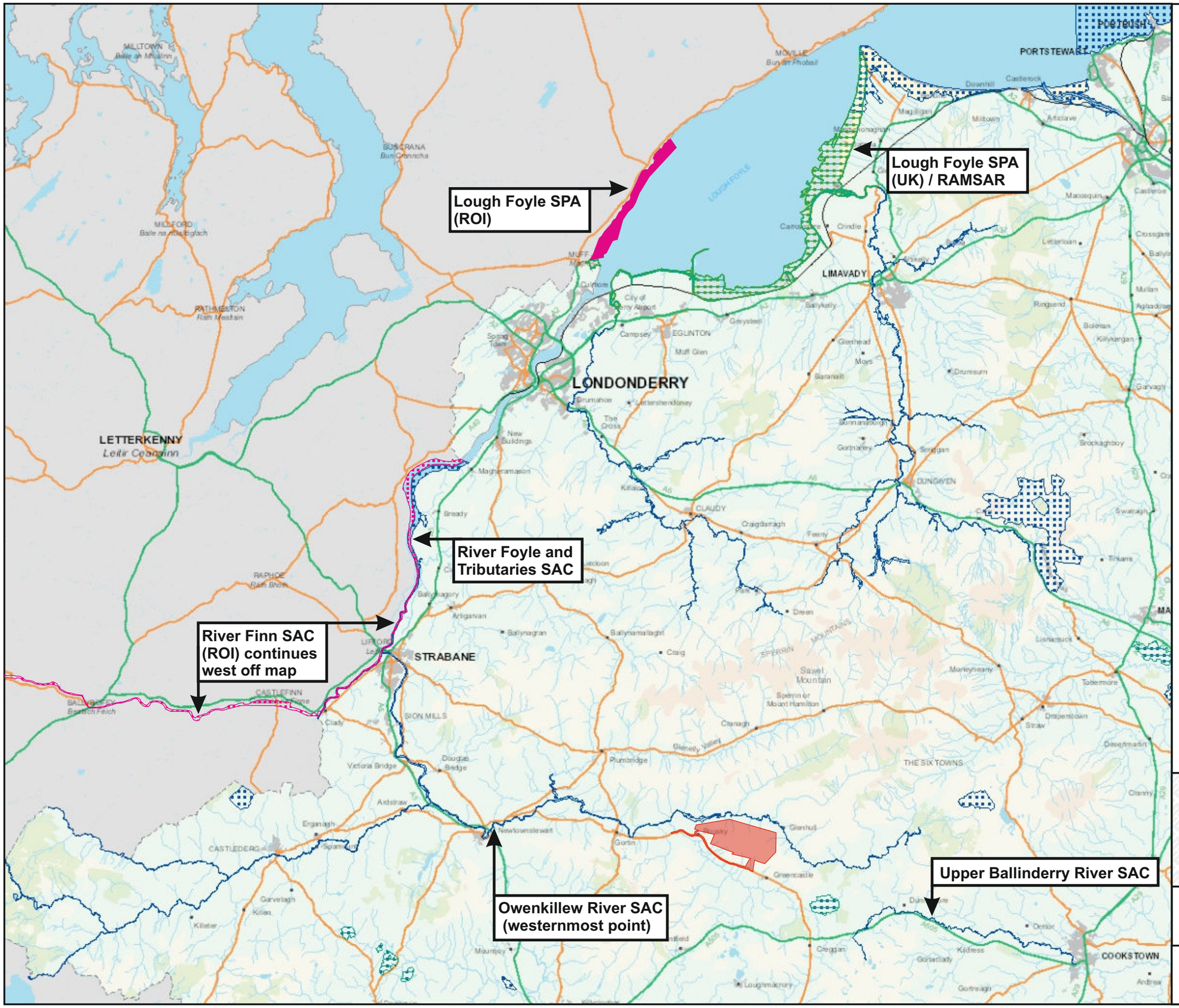
Overall Assessment Conclusion

5.152. It is concluded that, in view of the proposed mitigation and avoidance measures inherent within the project, any effects would be nugatory (*de minimis*). It is further considered that in line with jurisprudence, a safe conclusion can be reached that no adverse effect on the integrity of any European / Ramsar site would arise when the plan / project is considered both alone and in combination with other plans / projects.

PLANS

PLAN ECO1

Site Location and Relevant Designations



KEY:

- APPLICATION SITE BOUNDARY
- SPECIAL AREA OF CONSERVATION (SAC)(UK)
- SPECIAL PROTECTION AREA (SPA)(UK)
- SPECIAL AREA OF CONSERVATION (SAC)(ROI)
- SPECIAL PROTECTION AREA (SPA)(ROI)
- RAMSAR SITE

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8991: DALRADIAN GOLD, CURRAGHINALT MINE

LOCATION OF EUROPEAN DESIGNATED SITES

Rev: A

Aug 2020

APPENDICES

APPENDIX 1

Designation information relevant to Owenkillew River SAC

Reasons for Designation as a Special Area of Conservation

Area name: **Owenkillew River**

Administrative area: **Tyrone**

Component ASSI: **Drumlea and Mullan Woods**
Owenkillew and Glenelly Woods
Owenkillew River

This area has been designated as a Special Area of Conservation (SAC) because it contains habitat types and/or species which are rare or threatened within a European context. The ASSI citation describes the special interests for which the site was notified in the Northern Ireland context. [NB: not for marine interests below mean low water mark]. The interests for which the site was selected as ASSI may differ from the interests selected in a European context.

The habitats and/or species for which the area has been recommended as a candidate SAC are listed below. The reasons for their selection are listed, together with a brief description of the habitats and species as they typically occur across the UK. This area contains the interests described although it may not contain all the typical features.

The area is considered to have a high diversity of habitats/species of European importance.

European priority interest(s):

1. **Bog woodland**

- **which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares.**
- **for which the area is considered to support a significant presence.**

Bog woodland. Areas of pine or birch on bogs or acid, peaty hollows, where the trees are evidently a long-established and stable part of the bog vegetation. These trees may be of considerable age, are usually stunted and twisted, and often support a diverse lichen flora. Woodland encroachment resulting from falling water tables is not true 'bog woodland'.

European interest(s):

2. ***Lutra lutra***

- **for which the area is considered to support a significant presence.**

Otter. Otters are semi-aquatic mammals, requiring both good fishing grounds for food and suitable shelter on land for resting and breeding. Once widespread in Europe, the otter population declined sharply during the 1960s and 1970s. It is now showing signs of recovery in the UK and is spreading to repopulate its former areas. The UK, and in particular Scotland, supports some of the largest concentrations of otters in Europe, with both freshwater and coastal populations.

3. *Margaritifera margaritifera*

- **for which this is considered to be one of the best areas in the United Kingdom.**

Freshwater pearl mussel. The freshwater pearl mussel spends its larval stage attached to the gills of salmon and trout. Eventually the larvae drop off and settle in the riverbed gravel where they grow to adulthood. The species is widely distributed in the northern hemisphere but populations have declined sharply throughout Europe. Threats to its survival include disturbance to gravel beds and flow rates, water pollution, and pearl-fishing. The UK is now considered to be the main European stronghold for this species but in recent years it has been lost or has ceased breeding at many sites.

4. Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

- **for which this is considered to be one of the best areas in the United Kingdom.**

Western acidic oak woodland. The western oak woods in the UK include a range of woodland types, some with much heather *Calluna vulgaris* and bilberry *Vaccinium myrtillus*, others more grassy. They typically have rich assemblages of Atlantic mosses and liverworts, distinctive birds, lichen communities, and ferns such as hard fern *Blechnum spicant*, lemon-scented fern *Oreopteris limbosperma* and various species of male- and buckler-fern *Dryopteris* species. Holly *Ilex aquifolium* is common in the understorey. Such woodland is most abundant in the western parts of England, Wales, Scotland and Northern Ireland.

5. Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

- **for which this is considered to be one of the best areas in the United Kingdom.**

Rivers with floating vegetation often dominated by water-crowfoot. Rivers that support characteristic communities of water-crowfoot *Ranunculus* species, which often dominate the plant community in the river channel. This vegetation occurs in relatively unpolluted waters, in a diverse range of river types.

6. *Salmo salar*

- **for which the area is considered to support a significant presence.**

Atlantic salmon. The Atlantic salmon is the largest of our migratory fish and spawns in the least polluted rivers of north-west Europe. It has declined due to over-fishing at sea, pollution and barriers to migration within its spawning rivers. The UK supports a large proportion of the salmon population in the European Union.

The Register of European Sites in Northern Ireland	
Register reference number:	UK0030233
Date of Registration	13 May 2008
Signed by: G R Seymour	
on behalf of the Department of the Environment	

NATURA 2000 – STANDARD DATA FORM

Special Areas of Conservation under the EC Habitats Directive (includes candidate SACs, Sites of Community Importance and designated SACs).

Each Natura 2000 site in the United Kingdom has its own Standard Data Form containing site-specific information. The data form for this site has been generated from the Natura 2000 Database submitted to the European Commission on the following date:

22/12/2015

The information provided here, follows the officially agreed site information format for Natura 2000 sites, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

The Standard Data Forms are generated automatically for all of the UK's Natura 2000 sites using the European Environment Agency's Natura 2000 software. The structure and format of these forms is exactly as produced by the EEA's Natura 2000 software (except for the addition of this coversheet and the end notes). The content matches exactly the data submitted to the European Commission.

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

Further technical documentation may be found here
http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal

As part of the December 2015 submission, several sections of the UK's previously published Standard Data Forms have been updated. For details of the approach taken by the UK in this submission please refer to the following document:
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

More general information on Special Areas of Conservation (SACs) in the United Kingdom is available from the SAC home page on the JNCC website. This webpage also provides links to Standard Data Forms for all SACs in the UK.

Date form generated by the Joint Nature Conservation Committee
25 January 2016.

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK0030233**

SITENAME **Owenkillew River**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

Back to top

1.1 Type	1.2 Site code
B	UK0030233

1.3 Site name

Owenkillew River

1.4 First Compilation date	1.5 Update date
2001-06	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY

Email:

Date site proposed as SCI:	2001-06
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-05
National legal reference of SAC designation:	Regulations 6-7 and 10-12 of The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (http://www.legislation.gov.uk/nisr/1995/380/contents/made) as amended by The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2004 (http://www.legislation.gov.uk/nisr/2004/435/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-7.132222222	54.72777778

2.2 Area [ha]:

213.84

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKN0	Northern Ireland

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
3260			75.14		G	A	C	B	B
91A0			79.44		G	B	C	A	B
91D0	X		1.5		G	B	C	A	C

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive

92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
F	1096	Lampetra planeri			p				P	DD	D			
M	1355	Lutra lutra			p				C	DD	C	B	C	C
I	1029	Margaritifera margaritifera			p	10000	10001	i		G	B	C	C	B
F	1106	Salmo salar			p	1001	10000	i		G	C	B	C	C

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N06	35.1
N14	4.0
N08	0.2
N07	4.5
N21	7.0
N16	45.2
N10	4.0
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: shingle,metamorphic,sand,neutral,nutrient-poor,sedimentary,igneous 2 Terrestrial: Geomorphology and landscape: upland,valley

4.2 Quality and importance

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation for which this is considered to be one of the best areas in the United Kingdom. Old sessile oak woods with Ilex and Blechnum in the British Isles for which this is considered to be one of the best areas in the United Kingdom. Bog woodland for which the area is considered to support a significant presence. which is

considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares. Salmo salar for which the area is considered to support a significant presence. Lutra lutra for which the area is considered to support a significant presence. Margaritifera margaritifera for which this is considered to be one of the best areas in the United Kingdom.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	J02		I
M	M01		O
H	I01		I
H	H01		O
M	F02		I
L	C03		I
L	C01		I
H	B02		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	J02		I
M	F02		I
M	B02		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the DOENI link below provides access to the Conservation Objectives for this site. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

https://www.doeni.gov.uk/sites/default/files/publications/doe/land-information-owenkillew-river-conservation-objectives-2

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Northern Ireland Environment Agency
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

	Yes
	No, but in preparation
X	No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the official European Union guidelines for the Standard Data Form. The relevant page is shown in the table below.

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	Designated Special Protection Area	53
B	SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)	53
C	SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar	53

3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent	57
B	Good	57
C	Significant	57
D	Non-significant presence	57

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha□ rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	15%-100%	58
B	2%-15%	58
C	< 2%	58

3.1 Conservation status habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global grade habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	15%-100%	62
B	2%-15%	62
C	< 2%	62
D	Non-significant population	62

3.2 Conservation status species (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' Or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non breeding waterfowl assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK02	Marine Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67

OWENKILLEW RIVER SAC
UK0030233

CONSERVATION OBJECTIVES

Document Details

Title	*Owenkillew River SAC Conservation Objectives*
Prepared By	*R. McKeown*
Approved By	*P. Corbett*
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Contact	cdp@doeni.gov.uk

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Version	Date	Summary of Changes	Initials
V1	June 2013	Internal working document	PC
V2	January 2015	Complete review	RMK
V3	July 2017	Edit and minor correction	PC

Site relationships

The Owenkillew River SAC boundary adjoins the boundary of the River Foyle and Tributaries SAC.

1. INTRODUCTION

EU Member States have a clear responsibility under the Habitats and Birds Directives[1] to ensure that all habitats and species of Community Interest are maintained or restored to Favourable Conservation Status (FCS). Natura 2000 sites have a crucial role to play in achieving this overall objective since they are the most important core sites for these species and habitats. Each site must therefore be managed in a way that ensures it contributes as effectively as possible to helping the species and habitats for which it has been designated reach a favourable conservation status within the EU.

To ensure that each Natura 2000 site contributes fully to reaching this overall target of FCS, it is important to set clear conservation objectives for each individual site. These should define the desired state, within that particular site, of each of the species and habitat types for which the site was designated.

Once a site has been included in the Natura 2000 network, Member States are required to implement, on each site, the necessary conservation measures which correspond to the ecological requirements of the protected habitat types and species of Community Interest present, according to Article 6.1 of the Habitats Directive. They must also prevent any damaging activities that could significantly disturb those species and habitats (Article 6.2) and to protect the site from new potentially damaging plans and projects likely to have a significant effect on a Natura 2000 site (Article 6.3, 6.4).

Conservation measures can include both site-specific measures (i.e. management actions and/or management restrictions) and horizontal measures that apply to many Natura 2000 sites over a larger area (e.g. measures to reduce nitrate pollution or to regulate hunting or resource use).

In Northern Ireland, Natura 2000 sites are usually underpinned by the designation of an Area of Special Scientific Interest (ASSI) under the Environment (NI) Order 2002 (as amended).

[1] 92/43/EEC and 2009/147/EC (codified version of Directive 79/409/EEC as amended)

2. ROLE OF CONSERVATION OBJECTIVES

Conservation Objectives have a role in

- Conservation Planning and Management – guide management of sites, to maintain or restore the habitats and species in favourable condition

- Assessing Plans and Projects, as required under Article 6(3) of the Habitats Directive - Habitats Regulations Assessments (HRA) are required to assess proposed plans and projects in light of the site's conservation objectives.

- Monitoring and Reporting – Provide the basis for assessing the condition of a feature, the factors that affect it and the actions required.

3. DEFINITION OF FAVOURABLE CONSERVATION STATUS

Favourable Conservation Status is defined in Articles 1(e) and 1(i) of the Habitats Directive:

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable as defined in Article 1(i).

For species, favourable conservation status is defined in Article 1(i) as when:

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

3.1 DEFINITION OF FAVOURABLE CONDITION

Favourable Condition is defined as "**the target condition for an interest feature in terms of the abundance, distribution and/or quality of that feature within the site**".

The standards for favourable condition (Common Standards) have been developed by JNCC and are applied throughout the UK. Achieving Favourable Condition on individual sites will make an important contribution to achieving Favourable Conservation Status across the Natura 2000 network.

4. SITE INFORMATION

COUNTY: TYRONE

GRID REFERENCE: IH 553868

LOWER GR: IH 409863 **UPPER GR:** IH 699862

AREA: 213.46 ha

5. SUMMARY SITE DESCRIPTION

The SAC includes the river (42 km stretch) and its associated riverine flora and fauna and adjacent semi-natural vegetation, primarily woodland flora and fauna. The river rises at an altitude of 415m and flows into the Strule at an altitude of 35m. It is a fast-flowing spate river; notable for the physical diversity and naturalness of the bank and channel, the richness and naturalness of its plant and animal communities, which includes extensive beds of Stream Water Crowfoot *Ranunculus penicillatus* var*. penicillatus* and the largest Northern Ireland population of the now rare Fresh Water Pearl Mussel *Margaritifera margaritifera*. In addition, the river is important for Otter *Lutra lutra* and Atlantic Salmon *Salmo salar*.

Adjacent woodlands which form part of the SAC include Drumlea and Mullan Woods ASSI and the Owenkillew and Glenelly Woods ASSI, two of the largest stands of Oak woodland in Northern Ireland. An area of localised waterlogging in the former woodland has resulted in the development of Bog Woodland.

Further details of the site are contained in the relevant ASSI Citations and Views About Management statements, which are available on the DAERA website (www.daera-ni.gov.uk).

5.1 BOUNDARY RATIONALE

Defining the extent of site boundaries for rivers is variable across the UK. The four options currently in use are:-

(1) whole catchments
(2) main river stem from source to mouth, tributaries and upland catchment
(3) main river stem from source to mouth and tributaries
(4) main river stem from source to mouth only

The option used is dependent on the qualifying features for that site and the current knowledge of distribution of that feature. In the case of the Owenkillew River, the main SAC qualifying features are *Margaritifera margaritifera* and *Ranunculus* communities, which are confined to the main channel.

The upper limits of the site have been determined by the restricted size of the channel. Downstream limit is at the confluence with the Strule, where the site joins with the adjacent River Foyle and Tributaries SAC.

The lateral boundary beyond the river channel follows the same guidelines as that for all ASSIs, which is dependent on the type and quality of adjacent habitat. Much of the SAC has limited adjacent habitat. Therefore, the boundary is frequently restricted to the top of the riverbank. However, in places, there is significant adjoining woodland interest, and this is generally included. In addition the SAC includes both Drumlea and Mullan Woods ASSI and the Owenkillew and Glenelly Woods ASSI.

The boundary uses permanent man-made features where possible. However, along some stretches of the river and woodland edge, such boundaries were absent and recognisable topographical or physical features such as breaks in slope, scrub or tree line were used.

6. SAC SELECTION FEATURES

Feature Type	Feature	Global Status	Size/ extent/ pop~
Species	Freshwater Pearl Mussel *Margaritifera margaritifera*	B	10,000
Habitat	Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation	B	83% of channel length
Habitat	Old Sessile Oak woods with *Ilex* and *Blechnum* in the British Isles	B	79ha
Habitat	Bog Woodland	C	1.5ha
Species	Otter *Lutra lutra*	C	
Species	Atlantic Salmon *Salmo salar*	C	2,700*
Species	Brook Lamprey *Lampetra planeri*	D	P

Table 1. List of SAC selection features. Those with global status A-C will be referred to in ANNEX I.

The global status is an expert judgement of the overall value of the site for the conservation of the relevant Annex I habitat. Sites have been graded A, B or C - in the UK these gradings have been interpreted as follows:

A - Sites holding outstanding examples of the habitat in a European context.

B - Sites holding excellent stands of the habitat, significantly above the threshold for SSSI/ASSI notification but of somewhat lower value than grade A sites.

C - Examples of the habitat which are of at least national interest (i.e. usually above the thresholdfor SSSI/ASSI notification on terrestrial sites) but not significantly above this. These habitats are not the primary reason for SACs being selected.

D - Habitat present but not of sufficient extent or quality to merit listing as SAC feature.

There is therefore a distinction between the principal features for which sites have been selected (those graded A or B) and those which are only of secondary interest (those graded C). This is a useful distinction but it is important to note that all three grades are qualifying SAC interest features.

Click here to go to the Natura 2000 Standard Data Form for Owenkillew River SAC.

6.1 ASSI SELECTION FEATURES

Owenkillew River ASSI

Feature Type	Feature	Size/ extent/ pop~
Habitat	Series of river types present with corresponding macrophyte assemblages, ranging from ultra-oligotrophic, to mesotrophic types.	
Habitat	Oak Woodland	79 ha
Habitat	Wet Woodland	1.5 ha
Species	Freshwater Pearl Mussel *Margaritifera margaritifera*	
Species	Otter *Lutra lutra*	
Species	Atlantic Salmon *Salmo salar*	

Table 2. List of ASSI features.

7. CONSERVATION OBJECTIVES

The ***Conservation Objective*** for this site is:

To maintain (or restore where appropriate) the

- Fresh Water Pearl Mussel *Margaritifera margaritifera*
- Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation
- Old Sessile Oak woods with *Ilex* and *Blechnum* in the British Isles
- Bog Woodland
- Otter *Lutra lutra*
- Atlantic Salmon *Salmo salar*

to favourable condition.

For each SAC feature, there are a number of component objectives which are outlined in the table below. These include a series of attributes, measures and targets which form the basis of *Condition Assessment*. The results of this will determine whether the feature is in favourable condition or not. The feature attributes and measures are found in the attached annex.

8. SAC SELECTION FEATURE OBJECTIVE REQUIREMENTS

Feature	Grade	Objective
Freshwater Pearl Mussel *Margaritifera margartifera*	B	Maintain and if feasible enhance population numbers through natural recruitment.
		Improve age structure of population.
		Improve water quality.
		Improve channel substrate quality by reducing siltation.
		Ensure host fish population is adequate for recruitment.
		Increase the amount of shading through marginal tree cover along those sections of river currently supporting this species.
Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation	B	Maintain and if feasible enhance extent and composition of community.
		Improve water quality
		Improve channel substrate quality by reducing siltation.
		Maintain and if feasible enhance the river morphology
Old Sessile Oak woods with *Ilex* and *Blechnum* in the British Isles	B	Maintain and expand the extent of existing oak woodland. (There is an area of degraded bog, wetland and damp grassland which have the potential to develop into oak woodland
		Maintain and enhance Oak woodland species diversity and structural diversity.
		Maintain the diversity and quality of habitats associated with the Oak woodland, e.g. fen, swamp, grasslands, scrub, especially where these exhibit natural transition to Oak woodland
		Seek nature conservation management over adjacent forested areas outside the ASSI where there may be potential for woodland rehabilitation.
		Seek nature conservation management over suitable areas immediately outside the ASSI where there may be potential for woodland expansion.

Bog Woodland	C	Maintain and expand the extent of existing bog woodland. (There is an area of degraded bog, wetland and damp grassland that have the potential to develop into bog woodland.
		Maintain and enhance bog woodland species diversity and structural diversity.
		Maintain the diversity and quality of habitats associated with the bog woodland, e.g. fen, swamp, especially where these exhibit natural transition to swamp woodland.
		Seek nature conservation management over adjacent forested areas outside the ASSI where there may be potential for woodland rehabilitation.
		Seek nature conservation management over suitable areas immediately outside the ASSI where there may be potential for woodland expansion.
Otter *Lutra lutra*	C	Population numbers and distribution to be maintained and if possible, expanded.
		Maintain the extent and quality of suitable Otter habitat, in particular the chemical and biological quality of the water, and all associated wetland habitats
Atlantic Salmon *Salmo salar*	C	Maintain and if possible, expand existing population numbers and distribution
		Maintain and where possible, enhance the extent and quality of suitable Salmon habitat, in particular the chemical and biological quality of the water

9.1 ADDITIONAL ASSI FEATURE OBJECTIVE REQUIREMENTS

Feature	Component Objective
Series of river types present with corresponding macrophyte assemblages, ranging from ultra-oligotrophic, to mesotrophic types.	Maintain and if feasible enhance extent and composition of community.
	Improve water quality
	Improve channel substrate quality by reducing siltation.
	Maintain and if feasible enhance the river morphology
	Maintain the diversity and quality of habitats associated with the river e.g. bog, wet grasslands, scrub, swamp and oak woodland.
Oak Woodland	See SAC Selection Feature Objective Requirements table.
Wet Woodland	See SAC Selection Feature Objective Requirements table.
Freshwater Pearl Mussel *Margaritifera margaritifera*	See SAC Selection Feature Objective Requirements table.
Otter *Lutra lutra*	See SAC Selection Feature Objective Requirements table.
Atlantic Salmon *Salmo salar*	See SAC Selection Feature Objective Requirements table.

10. MANAGEMENT CONSIDERATIONS

Ownership

There are a total of 206 individuals or organisations with ownership or other rights associated with this site.

Adjoining Land Use

In the upper reaches, the river flows through a predominantly upland peatland landscape used for rough grazing. The river channel is generally unenclosed. Along its mid-reaches, the surrounding landscape is improved or semi-improved pasture used for silage and grazing, and is generally fenced from the surrounding land at least along one bank top. In the lower reaches, the main adjacent agricultural uses include tilled land and silage production as well as stock grazing. Here, a significant proportion of the river is bounded by woodland either as discrete woodland blocks along the valley side or as a thin bank top belt. The river channel and adjacent woodlands are only partially fenced.

11. MAIN THREATS, PRESSURES AND ACTIVITIES WITH IMPACTS ON THE SITE

Both on-site and off-site activities can potentially affect SAC/ASSI features. The list below is not exhaustive, but deals with the most likely factors that are either affecting Owenkillew River, or could affect it in the future.

Although **Fresh Water Pearl Mussel *Margaritifera margaritifera*, Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation, Old Sessile Oak woods with *Ilex* and *Blechnum* in the British Isles, Bog Woodland, Otter *Lutra lutra* and Atlantic Salmon *Salmo salar*** are the qualifying SAC features, factors affecting ASSI features are also considered.

NOTE - Carrying out any of the Notifiable Operations listed in the ASSI schedule could affect the site.

RIVER HABITATS AND SPECIES

Water Quality/Eutrophication

Water quality is probably the most important single factor for the SAC and ASSI selection features, with both point and diffuse sources of pollution potentially damaging. These are dependent on human activities throughout the catchment, the majority of which are largely beyond the direct control of the current designation. The total catchment area feeding into the river is 45,469ha and consists of seven sub-catchment areas. The designation only includes the main channel of the Owenkillew and has excluded 36 minor tributaries (<=2.5m wide) and 6 major tributaries (>2.5m wide).

A significant portion of the upper catchment of this river and some of its tributaries are afforested; there is a potential for enrichment of the river during forestry operations (planting and fertiliser application).

Stock have open access to the channel in many sections and have caused poaching of the bank and channel. This represents another possible source of enrichment.

ACTION: Reduce enrichment of the water column by minimising point source pollution and through a catchment-wide campaign, encourage land owners to avoid excessive fertiliser inputs, thus reducing diffuse pollution. Restrict stock access to less sensitive watering points.

Channel & Bank Modification

The Owenkillew River has been extensively altered by man in the past, especially along the upper reach of the river, resulting in a reduction of the natural channel area available to *M. margaritifera* and macrophyte communities. The river has recovered somewhat from the effects of resectioning. Several fisheries weirs and

one fish counter have been recently created in the lower reach of the river. These modifications have changed the natural flow regime of the river.
The river is a designated watercourse, which requires the Rivers Agency to undertake regular maintenance under their statutory requirements.
ACTION: Future in-river works should be minimised as they reduce habitat and species diversity and threaten vulnerable shellfish populations. Due to the dynamic nature of rivers, work carried out at any point on the river may have a significant impact on the catchment as a whole.

Habitat enhancement schemes, such as the 'Salmonid Enhancement Programme' should be thoughtfully planned. Properly executed enhancement schemes can significantly improve the wildlife potential of rivers, but it is important to effectively manage the installation of structures such as weirs, as they may have a negative effect on species diversity by causing excessive damming of the channel. In the past, the construction of weirs by fishing clubs as part of the programme has locally altered the morphology of the river. Enhancement work should be limited to areas of river that have been extensively modified by past drainage schemes and which have lost much of their natural dynamic character.
ACTION: Initiate discussions with Loughs Agency/DARD Fisheries Division and Environmental Protection to co-ordinate action.

Substrate Siltation
A significant portion of the area is afforested (especially the upper catchments), with a potential risk of sediment release during forestry operations, especially clear-felling.
ACTION: Liaise with Forest Service during felling and re-stocking programmes to minimise potential impacts (including potential eutrophication from planting and fertiliser application).

Sand wash from a number of commercial sandpits in the upper reaches of the river has resulted in siltation of the riverbed downstream.
ACTION: Monitor and control sediment input levels immediately downstream of sandpits.

Where the bank and channel of the river are accessible to stock, damage to *Margaritifera* beds, Salmon spawning grounds and the macrophyte community may occur. Trampling has an obvious direct impact but in some sections of the river, trampling and poaching of the river bank and channel have caused erosion, resulting in siltation of the riverbed downstream.
ACTION: Restrict livestock access to drinking areas only.

Sand Extraction
Small-scale sand extraction from the riverbed has been an ongoing practice by farmers, particularly in the lower reaches of the river. This disturbance results in

damage to the river morphology and increase in sediment loading, thus directly and indirectly affecting spawning beds and the macrophyte community.
ACTION: Under the Notifiable Operations, this activity is prohibited; ensure compliance with the ASSI Schedule.

Fish Farms
Fish farms can have a very serious impact on rivers. Fish farms normally abstract water from the river and release effluent downstream. Where the abstraction is large relative to streamflow, the channel between points of abstraction and release may have a much reduced discharge and water velocity. The effect can be so extreme that the upstream movement of migrating fish and other water-borne wildlife is obstructed.

In addition, effluents from intensive fish farms may have a modified temperature and pH, may be contaminated with toxic materials and may carry waste and partly decomposed food and the metabolic products of the fish. This can lead to increased oxygen demand (and hence a low oxygen concentration in the water), increased suspended solids and enrichment of the recipient stream.

Proposals for fish farms in the area will require very careful environmental assessment. In particular, it is imperative to ensure that an adequate compensatory flow is maintained and that that the effluent is adequately treated.
ACTION: Review existing Water Act consents.

Water Extraction
A natural flow regime is essential for the maintenance of many of the selection features. Proposals for water extraction in the area will require very careful environmental assessment.
ACTION: Review existing Water Act consents.

Fly-tipping
Small-scale fly tipping has occurred along the river banks and in the river channel as well as in adjacent woodland.
ACTION: Removal of dumped material from the banks and channel and removal of any rubbish from the woodland, to prevent the build up of debris and so discourage further tipping.

Alien species
At present Giant Hogweed *Heracleum mantegazzianum* and Indian Balsam *Impatiens glandulifera* are present along the riverbanks only in limited sections of the lower river reaches.
ACTION: Monitor and if necessary control the spread of alien species .

WOODLAND HABITATS AND SPECIES

Grazing/Poaching/Tree barking and Browsing

Free access to some woodland by domestic stock and feral goats is causing direct damage to the ground flora community by poaching and trampling. Grazing, barking and browsing can prevent regeneration leading to profound changes in woodland structure and composition. Information on current grazing levels of domestic stock within privately owned woodland is not readily available. No information of the current population of feral goats is available.

ACTION: Investigate current grazing practices. Where necessary, reduce stocking pressure in woods to sustainable levels or exclude stock altogether by fencing off woodland under MOSS agreements. Undertake census of the current feral goat population. If necessary, initiate control measures to reduce numbers to acceptable levels.

Invasion by exotics

Exotic species are widespread in the Owenkillew Woodland. They vary in the degree of impact they have and the threats they pose – for example, species such as Sycamore *Acer pseudoplatanus*, Indian Balsam *Impatiens glandulifera*, Salmon Berry *Rubus spectabilis* can be very invasive, while some are not seen as a immediate threat due to their limited occurrence (e.g. Rhododendron *Rhododendron ponticum*), or slow rate of spread (e.g. Beech *Fagus sylvatica*).

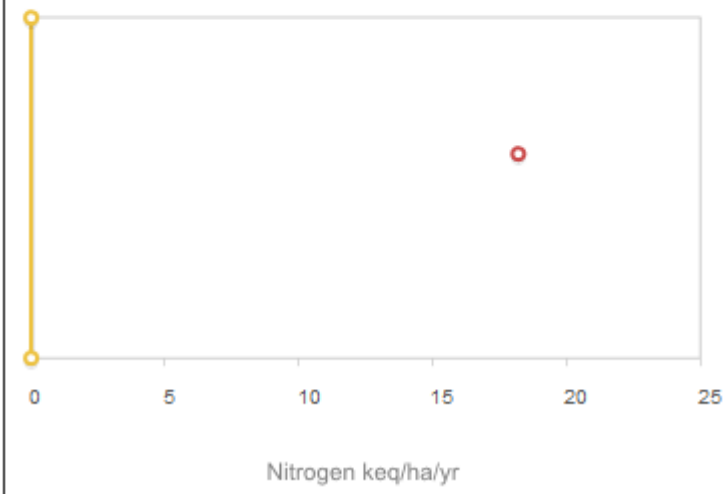
The most invasive species require management to control their spread – i.e. removal of seed sources. This is impractical with species such as Indian Balsam *Impatiens glandulifera* whose seed supply is partly recruited annually from water-borne seeds – indeed, it may be impossible to control the spread of this species, so research needs to be carried out to identify the effect it may have on the woodland community.

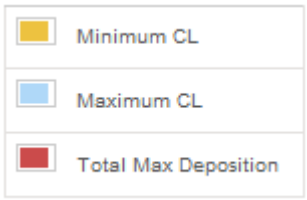
ACTION: Control invasive species where appropriate (e.g. Remove seeding Sycamore). Monitor other exotic species.

Nitrogen Deposition

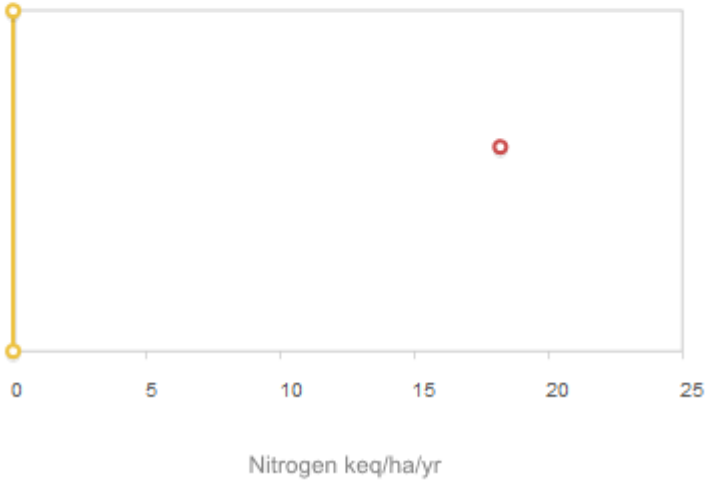
Excess nitrogen deposition can favour the growth of competitive plants and lead to changes in ecosystem structure or function and to a reduction in biodiversity. National scale studies show the potential adverse effects of excess nitrogen on natural and semi-natural habitats to be widespread across the UK. Lower and upper critical loads have been calculated for the Owenkillew River SAC.

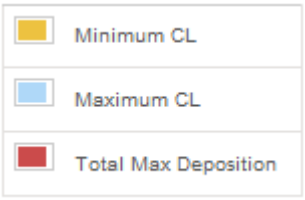
Feature: Margaritifera margaritifera - Freshwater pearl mussel
Critical Load Class: No comparable habitat with established critical load estimate available
Critical Loads (kg N/ha/yr): no critical loads available for this feature
Nitrogen Deposition (kg N/ha/yr):
Maximum: 18.2 Minimum: 10.2 Average: 12.4



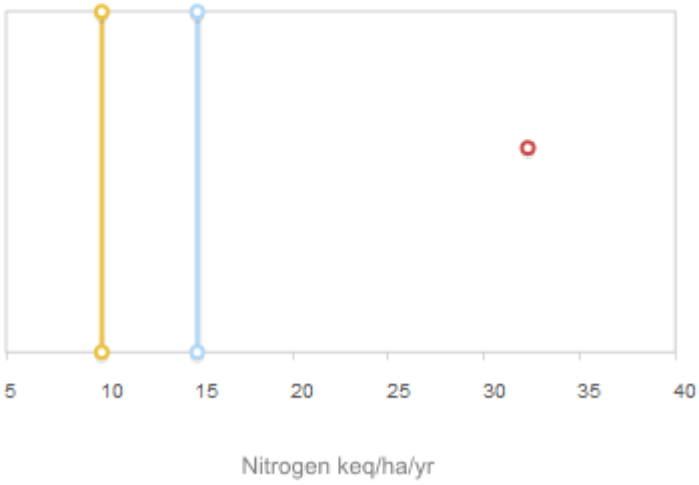


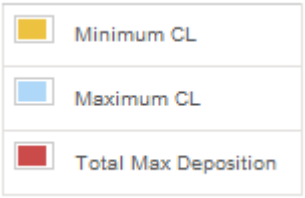
Feature: Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
Critical Load Class: No comparable habitat with established critical load estimate available
Critical Loads (kg N/ha/yr): no critical loads available for this feature
Nitrogen Deposition (kg N/ha/yr):
Maximum: 18.2 Minimum: 10.2 Average: 12.4



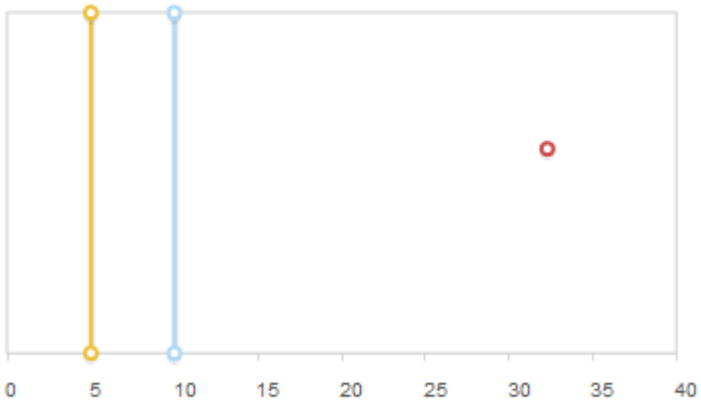


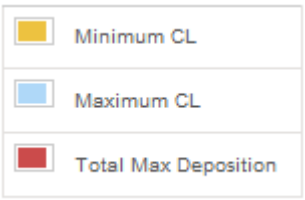
Feature: Old sessile oak woods with Ilex and Blechnum in the British Isles
Critical Load Class: Acidophilous Quercus-dominated woodland
Critical Loads (kg N/ha/yr): 10-15
Nitrogen Deposition (kg N/ha/yr):
Maximum: 32.3 Minimum: 23.9 Average: 26.5



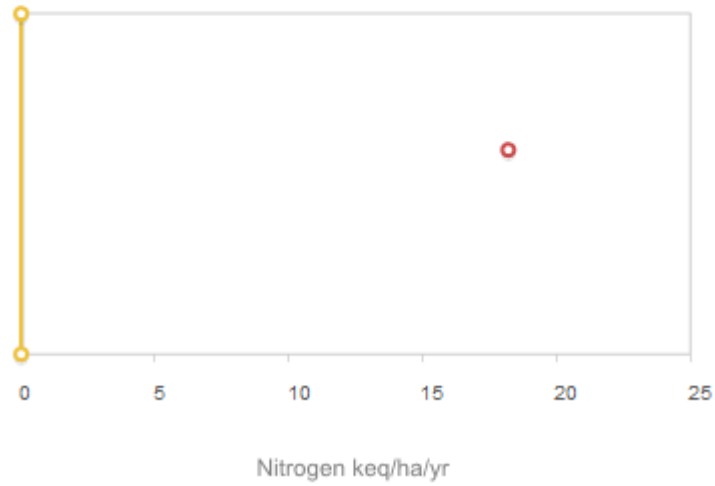


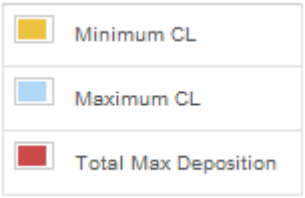
Feature: Bog woodland
Critical Load Class: Raised and blanket bogs
Critical Loads (kg N/ha/yr): 5-10
Nitrogen Deposition (kg N/ha/yr):
Maximum: 32.3 Minimum: 23.9 Average: 26.5



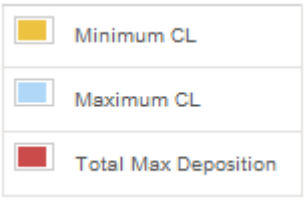


Feature: Lutra lutra - Otter
Critical Load Class: No comparable habitat with established critical load estimate available
Critical Loads (kg N/ha/yr): no critical loads available for this feature
Nitrogen Deposition (kg N/ha/yr):
Maximum: 18.2 Minimum: 10.2 Average: 12.4





Feature: Salmo salar - Atlantic salmon
Critical Load Class: No comparable habitat with established critical load estimate available
Critical Loads (kg N/ha/yr): no critical loads available for this feature
Nitrogen Deposition (kg N/ha/yr):
Maximum: 18.2 Minimum: 10.2 Average: 12.4



(Source: Air Pollution Information System (APIS) website- www.apis.ac.uk)

ACTION: Seek to maintain or where necessary, restore concentrations and deposition of air pollutants to at or below the site-relevant critical load.

Changes to surrounding land use

Any changes in local land-use e.g. agricultural intensification, drainage works and development) may be detrimental to the SAC.

ACTION: Reduce the risk of surrounding agricultural intensification by encouraging the adjacent owner/occupiers to enter into agri-environment schemes. Use Habitats Regulations Assessments (HRAs), through the planning process, to minimise any development risks adjacent to the SAC.

Climate Change
Northern Ireland faces changes to its climate over the next century. Indications are that we will face hotter, drier summers, warmer winters and more frequent extreme weather events.
ACTION: When developing SAC management plans, the likely future impacts of climate change should be considered and appropriate changes made.

12. MONITORING

Monitoring of SACs takes place using two monitoring techniques.

Site Integrity Monitoring (SIM) is carried out to ensure compliance with the ASSI/ SAC Schedule. The most likely processes of change will either be picked up by SIM (e.g. dumping, burning, turf cutting, grazing etc.) or will be comparatively slow (e.g. gradual degradation of the habitat).

These longer-term changes will be picked up by monitoring of the feature via **Site Condition Assessment** - this is carried out on a rolling basis to pick up subtle changes in the condition of the feature.

The method for Site Condition Assessment was agreed by the relevant JNCC-led Lead Co-ordination Network although the methodology has been modified to reflect individual site attributes in Northern Ireland.

12.1 MONITORING SUMMARY

1. *Monitor the integrity of the site (SIM or Compliance Monitoring)*

Complete boundary survey to ensure that the boundary features, where present are still intact. Ensure that there has been no tree felling, ground or riverbed disturbance, fly-tipping or inappropriate burning carried out within the SAC boundary. Evaluating stocking densities would also be desirable, whilst a check for feral goat damage should be carried out throughout the site. Inspection of river reaches with Pearl Mussel colonies should be undertaken once a year to ensure there has not been any pearl fishing. The SIM should be carried out once a year.

2. Monitor the condition of the site (Condition Assessment)
Monitor the key attributes for each of the SAC selection features. This will detect if the features are in favourable condition or not. See Annex I.

The favourable condition table provided in Annex 1 is intended to supplement the conservation objectives only in relation to management of established and ongoing activities and future reporting requirements on monitoring condition of the site and its features. It does <u>not by itself</u> provide a comprehensive basis on

which to assess plans and projects, but it does provide a basis to inform the scope and nature of any Habitats Regulations Assessment (HRA) that may be needed. It should be noted that completion of a HRA is a separate activity to condition monitoring, requiring consideration of issues specific to individual plans or projects.

13. REFERENCES

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ANNEX I

Feature 1 (SAC) – Freshwater Pearl Mussel *Margaritifera margartifera* (Status B)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attribute	Measure	Targets	Comments
*Population dynamics	Number	Stable or increasing	
	Age structure	20% of population <20 years old with aged individuals (>60 years) also present	A least-cost methodology for monitoring this attribute is being investigated, involving the sampling of representative reaches within an SAC. An abundant supply of juvenile salmonids is vital to the survival of the larval stage. The relative importance of salmon and migratory and non-migratory brown trout populations to pearl mussel will vary between rivers. Physical and chemical conditions need to be suitable for the well being of all life stages of salmonids, including free access up the river and conditions in the estuary and lower river where the juveniles of migratory salmonids are present.
	Maximum age	80-110 years	
	Mortality rate	No more than 10% of the population in 10 years	
	Fish host populations: Juvenile salmonid densities (0+ and 1+ year classes)	Should be abundant (to be refined following the results of LIFE project on pearl mussel/fish host relationships)	

	Biological disturbance: Introductions	No stocking/translocation of pearl mussel unless agreed to be in the best interests of the population	Little work has been undertaken on pearl mussel genetics. However, given the sedentary nature of the pearl mussel, genetically discrete populations are likely.
		Absence of rainbow trout and brook trout and any other non-native species that may impair juvenile densities of salmon and brown/sea trout.	Rainbow trout and brook trout are resistant to glochidial infection and are, therefore, not suitable host species. Stocking of these species will create competition with native salmonids and is likely to reduce host opportunities for glochidia.
	Exploitation	No fishing for pearl mussels	
*Physical integrity	Disturbance of habitat	No disturbance of existing mussel beds by in-river activities	Relevant activities include fishing and watering stock (wading in the river) and canoeing (at access points to the river).
	River morphology	Maintain and where necessary restore [*to an extent characteristic of the river/reach*	

	River Substrate	<10% fines in top 30cm of substrates hosting juvenile & adult mussels.	Elevated levels of fines can clog substrates used by juvenile mussels and can impair adult feeding/respiration. The target for salmon has been used for pearl mussels in the absence of species-specific information Sources of fines include; run-off from arable land, land (especially banks) trampled by livestock, sewage and industrial discharges.
*Water quantity	Flow	Flow regime should be characteristic of the river. As a guideline, at least 90% of the naturalised daily mean flow should remain in the river throughout the year	
*Water quality:	Biological class. Environment Protection's General Quality Assessment scheme. Assess every years.	'A'	
	Ecosystem Class. Environment Protection's General Quality Assessment scheme. Assess every years	'A'	
	Pollution	No Sheep dip	

	Minimal Algae cover	Should be <5% coverage over mussel beds and potentially suitable areas of coarse substrate	Extent of filamentous algal growth: Algal mats can impair respiration, feeding, fertilisation and the release of glochidia.
	Suspended solids	Annual mean <10mg L-1	

Feature 2 (SAC) – Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation (Status B)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attribute	Measure	Targets	Comments
*Population dynamics	Extent	Coverage should be characteristic of river type.	High cover of *Ranunculus spp* is not necessarily indicative of favourable condition.
	Reproduction *(only applies where control measures are implemented)*	*Ranunculus* should be able to flower and set seed, in suitable habitat.	Flowering outside the normal period and weed cutting or other activities that do not leave patches (at least 25% in every 100 metres of river) to flower and set seed are indicators of unfavourable condition. Use of herbicides should be avoided.
*Macrophyte assemblage	Composition	Characteristic plant species should dominate the assemblage. Indicators of unfavourable condition should be rare.	The absence of *Ranunculus* and high frequency of occurrence of blanketweed and other algae, or dominance of *Potamogeton pectinatus* are signs of unfavourable condition.

Water quantity	Flow	Flow regime should be characteristic of the river. As a guideline, at least 90% of the naturalised daily mean flow should remain in the river throughout the year.	
Physical integrity	River morphology	Maintain and where necessary restore [*to an extent characteristic of the river/reach*]	
	River substrate	Channels should be dominated by clean gravels. Maximum fines content should not be too great to prevent the establishment of new plants.	Siltation of riverine sediments, caused by high particulate loads and/or reduced scour within the channel, is a major threat to interest features. Elevated fines levels can interfere with the establishment of *Ranunculus* plants. Sources of fines include; run-off from arable land, land (especially banks) trampled by livestock, sewage and industrial discharges.
*Water quality:	Biological class. Environment Protection's General Quality Assessment scheme. Assess every years.	'A'	

	Ecosystem Class. Environment Protection's General Quality Assessment scheme. Assess every years	'A'	
	Suspended solids	Annual mean <10mg L-1	
	Soluble Reactive Phosphorus	*Targets should be set in relation to river/reach types (and should be near background levels)* <0.02mg/l - upland watercourses <0.06mg/l mid-altitude watercourses on hard substrates	

ANNEX I

Feature 3 (SAC) - Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (Status B)

* = primary attribute. One failure among primary attribute = unfavourable condition

Attribute	Targets	Method of Assessment	Comments
* Area of Oakwood	Maintain the extent of Oakwood at 79.3ha.	Visual estimate in 10x10m plots and across the extent of the woodland using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Loss due to natural processes (e.g. wind-throw during extreme storm) is acceptable.
Oakwood community diversity	Maintain presence of woodland communities, W11, W17, W9 & W7 as established at base line survey.	Visual estimate in 10x10m plots	
Presence of associated features and semi-natural habitats	Maintain existing associated features and semi-natural habitats (wet/bog woodland, wet heath, semi-natural grasslands etc.)	Visual estimate in 10x10m plots and across the extent of the ASSI using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Repeat monitoring of plots using GPS should indicate whether mosaics and associated habitats have changed or been lost. Note: Loss of associated habitats to Oakwood may be desirable in some instances.

* Structural variation (% cover)	Mean canopy cover greater than 70%	Estimate within the visual vicinity of the monitoring plots.	A well structured wood should have a well developed canopy and shrub layer.
	Mean shrub cover should be maintained between 20 - 50%	Estimate within the visual vicinity of the monitoring plots.	
	Maintain current levels of standard variation within reasonable limits for field, herb and moss cover. Where present assess cover of *Luzula sylvatica*.	Visual estimate in 10x10m plots.	At least the current level of structural diversity should be maintained for field cover, herb cover and moss cover. Limits to be set for each site after the baseline survey. Note: *L. sylvatica* may be dominant in many W11 oakwood communities. The percentage cover of this species may affect Oak regeneration, but more information is required before that assumption can be made.
		Visual estimate in 10x10m plots.	
		Visual estimate in 10x10m plots.	
		Visual estimate in 10x10m plots.	
	Mean cover of bare ground should be less than 5% Bare ground does not include boulders or rocks.	Visual estimate in 10x10m plots.	
* Age-class variation (DAFOR)	Young trees (5- 20cm diameter) at least occasional in 25% of plots	Estimate within the visual vicinity of the monitoring plots.	Age-class structure should be appropriate to the site, its history and management; however, in general, there should be a spread of different age-classes present, including young and over-mature trees. However, on very steep sided slopes with shallow soils, over-mature trees are unlikely to occur as larger trees are likely to fall over before becoming over –mature. Note, that in many cases achieving the set targets is a long term aim. However, providing the correct management practices are in place, this attribute may be recorded as Unfavourable - recovering.
	Mature trees (20 - 75cm diameter) at least frequent in 75% of plots	Estimate within the visual vicinity of the monitoring plots.	
	Over-mature trees (>75cm diameter) at least present in 10% of plots	Estimate within the visual vicinity of the monitoring plots.	

* Presence of standing and fallen dead wood (DAFOR)	Standing dead wood at least occasional in 70% of plots and at least frequent in 30% of plots.	Visual estimate in 10x10m plots.	
	Fallen dead wood at least occasional in 70% of plots and at least frequent in 30% of plots.	Visual estimate in 10x10m plots.	
* Presence of epiphytes and climbers (DAFOR)	Epiphytes and climbers at least occasional in 70% of plots and at least frequent in 30% of plots.	Visual estimate in 10x10m plots.	Epiphytes and climbers are an important component in all woodlands. However, in the extreme south east of Northern Ireland, where the climate is much warmer and drier, the generic limits may be set too high and may need amended for individual sites.
* Presence of epiphytic bryophytes and lichens (DAFOR)	Epiphytic bryophytes and lichens at least occasional in 70% of plots and frequent in 30% of plots.	Visual estimate in 10x10m plots.	Epiphytic bryophytes and lichens are an important component in all woodlands. However, in the extreme south east of Northern Ireland, where the climate is much warmer and drier, the generic limits may be set too high and may need amended for individual sites.
* Regeneration potential (DAFOR) Maintain current levels of native tree regeneration within reasonable limits for the current structure of the Oak woodland.	Regeneration of Oak seedlings.	Visual estimate in 10x10m plots.	The general aim is for the successful establishment of young stems (i.e. seedlings growing through to saplings to young trees) in gaps or on the edge of a stand at sufficient density to maintain canopy density over a 10 year period. Regeneration of Oak in particular is likely to be slow and sporadic; in some stands, there may currently not be sufficient and/or extensive enough gaps in the canopy for oak to regenerate. This does not necessarily indicate unfavourable condition.
	Regeneration of Oak saplings	Visual estimate in 10x10m plots.	
	Regeneration of other native seedlings.	Visual estimate in 10x10m plots.	
	Regeneration of other native saplings.	Visual estimate in 10x10m plots.	

* Cover of non-native species (all layers) (presence/absence)	Non–native invasive canopy species should be present in less than 20% of plots, but never frequent.	Visual estimate in 10x10m plots.	The canopy of the Oak woodland should be largely comprised of Oak trees. Non-native species are undesirable in the canopy, particularly invasive species such as Sycamore. In addition, non-native invasive species in any one layer is un-desirable. Note that non-invasive species are not viewed as a significant threat, and a low level of occurrence may be acceptable.
	Non–native invasive shrub species should be present in less than 20% of plots, but never frequent.	Visual estimate in 10x10m plots.	
	Non-native invasive canopy species seedlings/saplings should be present in less than 20% of plots, but never frequent.	Visual estimate in 10x10m plots.	
	Non–native invasive ground flora species should be present in less than 20% of plots, but never frequent.	Visual estimate in 10x10m plots.	
*Frequency and cover of eutrophication indicators: (DAFOR)	No one negative species no more than occasional throughout the wood and/or singly or together comprising more than 5% cover. *Galium aparine, Urtica dioica, Heracleum spp, Epilobium spp. Rumex obtusifolius* No more than occasional is equivalent to less than 40% occurrence in recorded plots.	Visual estimate in 10x10m plots.	
* Cover of *Pteridium* (% cover)	The mean cover of *Pteridium* for the wood should be less than	Visual estimate in 10x10m plots.	

	10%.		
* Cover of grasses (non-woodland species) (% cover)	The mean cover of grass for the wood should be less than 10%.	Visual estimate in 10x10m plots.	A high cover of grasses indicates past and/or present grazing. Where heavy grazing has been a past management practice, the natural woodland ground flora will take a considerable time to re-establish (time limits for restoration currently unknown). However, providing the grazing pressure has been addressed, and there is evidence that woodland flora is beginning to re-appear, this attribute may be recorded as unfavourable, recovering.
Management /Disturbance			
* Grazing (DAFOR)	Grazing should be recorded as no more than occasional over 80% of plots.	Estimate within the visual vicinity of the monitoring plots.	Grazing by domestic stock, where it occurs should be light resulting in minimal damage to the ground flora through poaching and damage to seedlings and saplings.
* Poaching by cattle (DAFOR)	Poaching should be absent, or recorded in less than 20% of plots and frequent in less than 10% of plots.	Visual estimate in 10x10m plots.	
*Frequency of recent goat damage (1-2 years) (DAFOR)	Recent goat damage should be absent, or recorded in less than 20% of plots.	Visual estimate in 10x10m plots.	
*Frequency of damage to seedlings/saplings (DAFOR)	Damage to seedling/saplings should be absent, or recorded in less than 20% of plots.	Visual estimate in 10x10m plots.	
Frequency of felling/coppicing (within 6 year monitoring cycle)	There should be no felling or coppicing of native trees or shrubs.	Visual estimate in 10x10m plots and across the extent of the ASSI using a	Felling non-native species as part of management for conservation is acceptable.

(DAFOR)		combination of aerial photographs, SIM and Condition Assessment structured walk.	
Maintain the diversity of woodland species throughout the wood.	Record the % of plots with each of the acid woodland indicators (W11 & W17 communities) listed below:- *Vaccinium myrtillus,* *Blechnum spicant,* *Dicranum spp.,* *Luzula pilosa,* *Rhytidiadelphus loreus*	Visual estimate in 10x10m plots.	Within any Oak woodland, there may be pockets of base-rich woodland and or flushed woodland within the boundaries of the SAC. The diversity of these woodland communities should be maintained. However, the W11 & W17 communities should dominate the woodland.
Maintain the diversity of woodland species throughout the wood.	Record the % of plots with each of the base-rich woodland indicators (W9 community) listed below:- *Sanicla europea,* *Geum urbanum,* *Polystichum setiferum,* *Aneomne nemorosa,* *Primula vulgaris.*	Visual estimate in 10x10m plots.	Within any Oak woodland, there may be pockets of base-rich woodland and or flushed woodland within the boundaries of the SAC. The diversity of these woodland communities should be maintained.
Maintain the diversity of woodland species throughout the wood.	Record the % of plots with each of the flushed woodland indicators (W7 community) listed below:- *Carex remota,* *Ranunculus repens,* *Chrysosplenium oppositifolium,* *Filipendula ulmaria,* *Lysimachia nemorum.*	Visual estimate in 10x10m plots.	Within any Oak woodland, there may be pockets of base-rich woodland and or flushed woodland within the boundaries of the SAC. The diversity of these woodland communities should be maintained.

Presence of rare or scarce species specific to the site.	Maintain current levels of standard variation within reasonable limits for rare and notable species. If these species are not recorded on any one visit, it does not automatically make the site unfavourable.	Name the species at least present along the length of the Condition Assessment structured walk.	

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

ANNEX 1

Feature 4 (SAC) – Bog woodland (Status C)

* = primary attribute. One failure among primary attribute = unfavourable condition

Attribute	Targets	Method of Assessment	Comments
* Area of Bog woodland	Maintain the extent of Bog woodland at 1.5ha.	Visual estimate in 10x10m plots and across the extent of the woodland using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Loss due to natural processes (e.g. wind-throw during extreme storm) is acceptable
Wet woodland community diversity	Maintain presence of the woodland communities W4 and W2 as established at base line survey.	Visual estimate in 10x10m plots	
Presence of associated features and semi-natural habitats	Maintain existing associated features and semi-natural habitats.	Visual estimate in 10x10m plots and across the extent of the ASSI using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Repeat monitoring of plots using GPS should indicate whether mosaics and associated habitats have changed or been lost. Note: Loss of associated habitats to Bog woodland may be desirable in some instances.
Vegetation structure			
* Structural Variation (% cover)	Mean canopy cover greater than 60%	Estimate within the visual vicinity of the monitoring plots.	A well structured wood should have a well developed canopy and shrub layer.

	Mean shrub cover should be maintained between 10-50%	Estimate within the visual vicinity of the monitoring plots.	
	Maintain current levels of standard variation within reasonable limits for field, herb cover and moss cover. In addition record the cover of *Molinia caerulea* and the cover of *Sphagnum* mosses.	Visual estimate in 10x10m plots.	At least the current level of structural diversity should be maintained for field cover, herb cover and moss cover.
		Visual estimate in 10x10m plots.	
		Visual estimate in 10x10m plots.	
		Visual estimate in 10x10m plots.	
		Visual estimate in 10x10m plots.	
	Mean cover of bare ground should be less than 5% Bare ground does not include boulders or rocks	Visual estimate in 10x10m plots.	
* Age-class variation (DAFOR)	Young trees (5- 20cm diameter) at least occasional in 25% of plots	Visual estimate in 10x10m plots.	Age-class structure should be appropriate to the site, its history and management; however, in general, there should be a spread of different age-classes present, including young and over-mature trees. Note that definition of young, mature and over-mature differs from drier woodland types, reflecting the fact that Birch will generally be the dominant species.
	Mature trees (20 - 75cm diameter) at least frequent in 50% of plots	Visual estimate in 10x10m plots.	
	Over-mature trees (>75cm diameter) at least present in 5% of plots	Visual estimate in 10x10m plots.	
* Presence of standing and fallen dead wood (DAFOR)	Standing dead wood at least occasional in 70% of plots and at least frequent in 30% of plots.	Visual estimate in 10x10m plots.	In wet woodland, dead wood is often abundant but because there tend to be fewer big trees the size of the fallen wood is often small.
	Fallen dead wood at least	Visual estimate in 10x10m	

	occasional in 70% of plots and at least frequent in 30% of plots.	plots.	
* Presence of epiphytes and climbers (DAFOR)	Epiphytes and climbers at least frequent in 10% of plots.	Visual estimate in 10x10m plots.	Epiphytes and climbers are an important component in all woodlands. However, they are less of a feature in Bog Woodlands than in other woodland types.
* Presence of epiphytic bryophytes and lichens (DAFOR)	Epiphytic bryophytes and lichens at least frequent in 75% of plots.	Visual estimate in 10x10m plots.	Epiphytic bryophytes and lichens are an important component in all woodlands, especially Bog woodlands.
* Regeneration potential (DAFOR) Maintain current levels of native tree regeneration within reasonable limits for the current structure of Bog woodland.	Regeneration of native seedlings.	Visual estimate in 10x10m plots.	The general aim is for the successful establishment of young stems (i.e. seedlings growing through to saplings to young trees) in gaps or on the edge of a stand at sufficient density to maintain canopy density over a 10 year period. Regeneration of some native species is likely to be slow and sporadic; in some stands, there may currently not be sufficient and/or extensive enough gaps for young trees to regenerate. This does not necessarily indicate unfavourable condition.
	Regeneration of native saplings.	Visual estimate in 10x10m plots.	
* Cover of non-native species (all layers) (presence/absence)	Non–native invasive canopy species should be present in less than 20% of plots, but never frequent.	Visual estimate in 10x10m plots.	The canopy of Bog Woodland should be largely comprised of Birch and Willow trees with associated native species. Non-native species are undesirable in the canopy, particularly invasive species such as Sycamore.
	Non–native invasive shrub species should be present in less than 20% of plots, but	Visual estimate in 10x10m plots.	

	never frequent.		In addition, non-native invasive species in any one layer is un-desirable. Note that non-invasive species are not viewed as a significant threat, and a low level of occurrence may be acceptable.
	Non-native invasive canopy species seedlings/saplings should be present in less than 20% of plots, but never frequent.	Visual estimate in 10x10m plots.	
	Non–native invasive ground flora species should be present in less than 20% of plots, but never frequent.	Visual estimate in 10x10m plots.	
* Frequency and cover of eutrophication indicators: (DAFOR)	No one negative species no more than occasional throughout the wood and/or singly or together comprising more than 5% cover. *Galium aparine, Urtica dioica, Heracleum spp, Epilobium spp. Rumex obtusifolius* No more than occasional is equivalent to less than 40% occurrence in recorded plots.	Visual estimate in 10x10m plots.	
* Cover of *Pteridium* (% cover)	The mean cover of *Pteridium* for the wood should be less than 10%.	Visual estimate in 10x10m plots.	
* Cover of grasses (excluding *Molinia* and woodland species) (% cover)	The mean cover of undesirable grass species for the wood should be less than 10%.	Visual estimate in 10x10m plots.	W4 *Betula pubescens-Molinia caerulea* woodland is the main bog woodland community in Northern Ireland and has a naturally high *Molinia* component of the ground flora. However, where *Molinia* is not predominant, a high grass component other than woodland species indicates past and/or

			present grazing and is undesirable. Nvertheless, providing the grazing pressure has been addressed, and there is evidence that woodland flora is beginning to re-appear, this attribute may be recorded as unfavourable, recovering.
Management /Disturbance			
*Grazing (DAFOR)	Grazing should be recorded as no more than occasional over 80% of plots.	Estimate within the visual vicinity of the monitoring plots.	Grazing by domestic stock, where it occurs should be light resulting in minimal damage to the ground flora through poaching and damage to seedlings and saplings.
*Poaching by cattle (DAFOR)	Poaching should be absent, or recorded in less than 20% of plots and frequent or more in less than 10 % of plots.	Visual estimate in 10x10m plots.	
*Frequency of recent goat damage (1-2 years) (DAFOR)	Recent goat damage should be absent, or recorded in less than 20% of plots.	Visual estimate in 10x10m plots.	
*Frequency of damage to seedlings/saplings (DAFOR)	Damage to seedling/saplings should be absent, or recorded in less than 20% of plots.	Visual estimate in 10x10m plots.	
Frequency of felling/coppicing (within 6 year monitoring cycle) (DAFOR)	There should be no felling or coppicing of native trees or shrubs.	Visual estimate in 10x10m plots and across the extent of the ASSI using a combination of aerial photographs, SIM and Condition Assessment structured walk.	Felling non-native species as part of management for conservation is acceptable.

Vegetation composition –			
Maintain the diversity of woodland species throughout the wood.	Record the % of plots with each of the Bog Woodland indicators (W2 and W4 communities) listed below:- *Betula pubescens,* *Salix cinerea,* *Filipendula ulmaria,* *Viola palustris,* *Phragmites australis,* *Molinia caerulea,* *Carex laevigata,* *Brachythecium rutabulum,* *Sphagnum squarrosum,* *S. recurvum,* *S. fimbriatum,* *S. palustris.*	Visual estimate in 10x10m plots.	
Indicators of Local Distinctiveness			
Presence of rare or scarce species specific to the site.	Maintain current levels of standard variation within reasonable limits for rare and notable species. If these species are not recorded on any one visit, it does not automatically make the site unfavourable.	Name the species at least present along the length of the Condition Assessment structured walk.	

Frequency -
1-20% = Rare
21-40% = Occasional
41- 60% = Frequent
> 60% = Constant

ANNEX 1

Feature 5 (SAC) – Otter *Lutra lutra* (Status C)

Attribute	Measure	Target	Notes
Presence of otters	Presence of one or more of the following signs within the site: Positive identification of otter spraint, footprints, tracks, paths, lying-up sites or feeding signs.	Signs of otters found at least once per year	Use data from other surveys or Ulster Museum, if available
	Sightings of otters.		
	Positive identification of holt(s).		
Bankside/ Waterside cover	Presence of cover: Mature trees, woodland, scrub, other tall bankside vegetation, reed and sedge beds.	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
Water quality	EP water quality scale	Water quality should be at least category A or B, according to EP guidelines, with no pollution incidents	Refer to Environment Protection for data
Food Sources	Assessment of fish stocks and other food sources (e.g.amphibians)	Fish stocks appropriate to the nutrient status of the river, with no significant decline in fish biomass or species diversity	Refer to appropriate Agency for sample data if available (This information may need to be inferred from the water quality category).
Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant	

Attribute	Measure	Target	Notes
		development	
Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Refer to data from Rivers Agency if available
Site integrity	Total area	No reduction or fragmentation of area	

ANNEX 1

Feature 6 (SAC) – Atlantic Salmon (*Salmo salar*) (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attribute	Measure	Targets	Comments
*Population dynamics	Number	Stable or increasing	
	Adult Run	Total run size at least matching an agreed reference level, including a seasonal pattern of migration characteristic of the river and maintenance of the multi-sea-winter component.	The N.I. equivalent of Environment Agency MBAL (Minimum Biological Acceptable Level) should be set for each catchment. Expectation needs to be tempered by the intrinsic ability of the river type to support salmon. Fish classification schemes operated regionally and nationally should permit an interpretation of performance.
	Juvenile population densities	These should not differ significantly from those expected for the river type/reach under conditions of high physical and chemical quality.	

	Biological disturbance: Introductions	The population should be naturally self-sustaining. There should be a presumption against stocking of salmon unless it is agreed to be necessary as an emergency interim measure to maintain population viability whilst underlying ecological problems are being addressed. No introduction, or stocking, of other species, or sub-species, at excessively high densities in salmon spawning and nursery areas. Effective screening on all fish farm intakes and discharges.	The nature conservation aim is to provide conditions in the river that support a healthy and natural population, achieved through habitat protection/restoration and the control of exploitation as necessary. Stocking represents a loss of naturalness and, if successful, obscures the underlying causes of poor performance (potentially allowing these risks to perpetuate). It carries various ecological risks, including the loss of natural spawning from broodstock; competition between stocked and naturally produced individuals, disease introduction and genetic alterations to the population. For these reasons, consideration of stocking is only justifiable in cases where population viability is threatened. Stock must come from within the same catchment area. The presence of artificially high densities of other fish creates unacceptably high levels of predatory and competitive pressure on juvenile salmon. Escapes from fish farms are a form of uncontrolled introduction and should be prevented.

*Population dynamics	Exploitation	All exploitation should be sustainable without compromising any components of the stock.	Controls on exploitation should include migratory passage to the SAC within territorial waters, including estuarine and coastal net fisheries, as well as exploitation within the SAC from rod fisheries.
*Physical integrity	Disturbance of habitat	No artificial barriers significantly impairing adults from reaching existing and historical spawning grounds, and smolts from reaching the sea.	In all river types, artificial barriers should be made passable. Natural barriers to potentially suitable spawning areas should not be circumvented.
	River morphology	Maintain and where necessary restore the characteristic physical features of the river channel, banks & riparian zone.	The characteristic channel morphology provides the diversity of water depths, current velocities and substrate types necessary to fulfil the spawning, juvenile and migratory requirements of the species. The close proximity of different habitats facilitates movement to new preferred habitats with age. Operations that widen, deepen and/or straighten the channel reduce variations in habitat. New operations that would have this impact are not acceptable within the SAC, whilst restoration *may/will* be needed in some reaches.

	River Substrate	Clean gravels should dominate channels. <10% fines in top 30cm of spawning gravels	Elevated levels of fines can interfere with egg & fry survival through suffocation of eggs and loss of interstitial refugee for fry. Sources of fines include; run-off from arable land, land (especially banks) trampled by livestock, sewage and industrial discharges.

Water quantity	Flow	Flow regime should be characteristic of the river. As a guideline, at least 90% of the naturalised daily mean flow should remain in the river throughout the year Existing flow criteria already laid down for salmon should also be complied with.	River flow affects a range of habitat factors of critical importance to designated interest features, including current velocity, water depth, wetted area, substrate quality, dissolved oxygen levels and water temperature. The maintenance of both flushing flows and baseflows, based on natural hydrological processes, is vital. Detailed investigations of habitat-flow relationships may indicate that a more or less stringent threshold may be appropriate for a specified reach; however, a precautionary approach would need to be taken to the use of less stringent values. Naturalised flow is defined as the flow in the absence of abstractions and discharges. The availability and reliability of data is patchy - long-term gauged data can be used until adequate naturalised data become available, although the impact of abstractions on historical flow records should be considered.

*Water quality:	Biological class. Environment Protection's General Quality Assessment scheme. Assess every year.	'a'	Generally, water quality should not be injurious to any life stage. A wide range of water quality parameters can affect the status of interest features, but standard biological monitoring techniques provide a reasonable integrated picture in relation to many parameters. The river quality classifications used in all parts of the UK have a biological component. All classified reaches within the site that contain, or should contain, the interest feature under conditions of high environmental quality should comply with the targets given.
	Ecosystem Class. Environment Protection's General Quality Assessment scheme. Assess every years	"a"	The River Ecosystem Classification 1995 sets standards for dissolved oxygen, biochemical oxygen demand, total and un-ionised ammonia, pH, copper and zinc. It therefore covers a number of water quality parameters that can cause problems within river systems. All classified reaches within the site that should contain the interest feature under conditions of high environmental quality should comply with the targets given.

	Soluble Reactive Phosphorus	*Targets should be set in relation to river/reach type(s and should be near background levels)* Annual mean <0.02mg/l - upland watercourses, <0.06mg/l mid-altitude watercourses on hard substrates and <0.2mg/l interim target for lowland rivers on clay substrates and large alluvial rivers.	The target of 25mgL^{-1} is based on the EC Freshwater Fish Directive a more precautionary figure has been used for salmon to help protect substrates used for salmon spawning. The mg/l used here are indicative values for rivers in England, the equivalent for Northern Ireland will have to be defined
*Water quality:	Pollution	None	Pollutants such as silage or Sheep dip can cause extreme mortality
	Suspended solids	Annual mean <10mgL^{-1} (spawning & nursery grounds) Annual mean <25mg L-1 (migratory passage)	Elevated levels of suspended solids can clog the respiratory structures of salmon.

APPENDIX 2

Designation information relevant to River Foyle and Tributaries SAC

Reasons for designation as a Special Area of Conservation

Area name: **River Foyle and Tributaries**

Administrative area: **Tyrone**

Component ASSI: **River Foyle and Tributaries**

This area has been designated as a Special Area of Conservation (SAC) because it contains habitat types and/or species which are rare or threatened within a European context. The ASSI citation describes the special interests for which the site was notified in the Northern Ireland context. [NB: not for marine interests below mean low water mark]. The interests for which the site was selected as ASSI may differ from the interests selected in a European context.

The habitats and/or species for which this area has been designated as a SAC are listed below. The reasons for their selection are listed, together with a brief description of the habitats and species as they typically occur across the UK. This area contains the interests described although it may not contain all the typical features.

European interest(s):

1. ***Lutra lutra***

- **for which the area is considered to support a significant presence.**

Otter. Otters are semi-aquatic mammals, requiring both good fishing grounds for food and suitable shelter on land for resting and breeding. Once widespread in Europe, the otter population declined sharply during the 1960s and 1970s. It is now showing signs of recovery in the UK and is spreading to repopulate its former areas. The UK, and in particular Scotland, supports some of the largest concentrations of otters in Europe, with both freshwater and coastal populations.

2. ***Salmo salar***

- **for which this is considered to be one of the best areas in the United Kingdom.**

Atlantic salmon. The Atlantic salmon is the largest of our migratory fish and spawns in the least polluted rivers of north-west Europe. It has declined due to over-fishing at sea, pollution and barriers to migration within its spawning rivers. The UK supports a large proportion of the salmon population in the European Union.

3. **Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation**

- **for which this is considered to be one of the best areas in the United Kingdom.**

Rivers with floating vegetation often dominated by water-crowfoot. Rivers that support characteristic communities of water-crowfoot *Ranunculus* species, which often dominate the plant community in the river channel. This vegetation occurs in relatively unpolluted waters, in a diverse range of river types.

The Register of European Sites in Northern Ireland	
Register reference number:	UK0030320
Date of Registration	30 March 2007
Signed by: G R Seymour	
on behalf of the Department of the Environment	

NATURA 2000 – STANDARD DATA FORM

Special Areas of Conservation under the EC Habitats Directive (includes candidate SACs, Sites of Community Importance and designated SACs).

Each Natura 2000 site in the United Kingdom has its own Standard Data Form containing site-specific information. The data form for this site has been generated from the Natura 2000 Database submitted to the European Commission on the following date:

22/12/2015

The information provided here, follows the officially agreed site information format for Natura 2000 sites, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

The Standard Data Forms are generated automatically for all of the UK's Natura 2000 sites using the European Environment Agency's Natura 2000 software. The structure and format of these forms is exactly as produced by the EEA's Natura 2000 software (except for the addition of this coversheet and the end notes). The content matches exactly the data submitted to the European Commission.

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

Further technical documentation may be found here
http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal

As part of the December 2015 submission, several sections of the UK's previously published Standard Data Forms have been updated. For details of the approach taken by the UK in this submission please refer to the following document:
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

More general information on Special Areas of Conservation (SACs) in the United Kingdom is available from the SAC home page on the JNCC website. This webpage also provides links to Standard Data Forms for all SACs in the UK.

Date form generated by the Joint Nature Conservation Committee
25 January 2016.

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK0030320**

SITENAME **River Foyle and Tributaries**

TABLE OF CONTENTS

- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
B	UK0030320

1.3 Site name

River Foyle and Tributaries

1.4 First Compilation date	1.5 Update date
2004-07	2015-12

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY

Email:

Date site proposed as SCI:	2004-07
Date site confirmed as SCI:	2004-12
Date site designated as SAC:	2005-05
National legal reference of SAC designation:	Regulations 6-7 and 10-12 of The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (http://www.legislation.gov.uk/nisr/1995/380/contents/made) as amended by The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2004 (http://www.legislation.gov.uk/nisr/2004/435/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-7.451666667	54.73611111

2.2 Area [ha]:

771.8

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

120.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKN0	Northern Ireland

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
3260			126.88		G	B	C	B	B

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site					Site assessment	
		Scientific									

G	Code	Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
F	1099	Lampetra fluviatilis			p				P	DD	D			
F	1096	Lampetra planeri			p				P	DD	D			
M	1355	Lutra lutra			p				P	DD	C	B	C	C
I	1029	Margaritifera margaritifera			p				P	DD	D			
F	1095	Petromyzon marinus			p				P	DD	D			
F	1106	Salmo salar			p	1001	10000	i		G	B	B	C	B

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N17	0.9
N16	5.8
N14	3.0
N08	7.9
N07	7.3
N06	31.6
N02	38.2
N10	4.5
N23	0.8
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: metamorphic,sandstone,alluvium,limestone,peat,acidic 2 Terrestrial: Geomorphology and landscape: valley,lowland 3 Marine: Geology: slate/shale General site characteristics: Soil & geology: The catchment area is dominated by metamorphic rocks of the Dalradian Super Group. These are predominatly schists derived from altered sandstones and siltstones with minor metamorphosed-limestones and dolerites. Small units of young

4.2 Quality and importance

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation for which this is considered to be one of the best areas in the United Kingdom. Salmo salar for which this is considered to be one of the best areas in the United Kingdom. Lutra lutra for which the area is considered to support a significant presence.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	B02		I
H	I01		I
H	M01		O
M	C01		I
M	F02		I
H	H01		O
M	C03		I
H	J02		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	F02		I
H	J02		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the DOENI link below provides access to the Conservation Objectives for this site. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): https://www.doeni.gov.uk/sites/default/files/publications/doe/land-information-river-foyle-and-tributaries-conservation-ob

http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Northern Ireland Environment Agency
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

☐	Yes
☐	No, but in preparation
☒	No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the official European Union guidelines for the Standard Data Form. The relevant page is shown in the table below.

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	Designated Special Protection Area	53
B	SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)	53
C	SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar	53

3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent	57
B	Good	57
C	Significant	57
D	Non-significant presence	57

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha□ rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	15%-100%	58
B	2%-15%	58
C	< 2%	58

3.1 Conservation status habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global grade habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	15%-100%	62
B	2%-15%	62
C	< 2%	62
D	Non-significant population	62

3.2 Conservation status species (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' Or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non breeding waterfowl assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK02	Marine Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67

RIVER FOYLE & TRIBUTARIES SAC
UK0030320

CONSERVATION OBJECTIVES

Document Details

Title	*River Foyle & Tributaries SAC Conservation Objectives*
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Approved By	*P. Corbett*
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V1	June 2013	Internal working document	PC
V2	January 2015	Complete review	RMK
V3	July 2017	Minor edit	PC

Site Relationships

The River Foyle and Tributaries SAC boundary adjoins the boundary of the Owenkillew River SAC.

1. INTRODUCTION

EU Member States have a clear responsibility under the Habitats and Birds Directives[1] to ensure that all habitats and species of Community Interest are maintained or restored to Favourable Conservation Status (FCS). Natura 2000 sites have a crucial role to play in achieving this overall objective since they are the most important core sites for these species and habitats. Each site must therefore be managed in a way that ensures it contributes as effectively as possible to helping the species and habitats for which it has been designated reach a favourable conservation status within the EU.

To ensure that each Natura 2000 site contributes fully to reaching this overall target of FCS, it is important to set clear conservation objectives for each individual site. These should define the desired state, within that particular site, of each of the species and habitat types for which the site was designated.

Once a site has been included in the Natura 2000 network, Member States are required to implement, on each site, the necessary conservation measures which correspond to the ecological requirements of the protected habitat types and species of Community Interest present, according to Article 6.1 of the Habitats Directive. They must also prevent any damaging activities that could significantly disturb those species and habitats (Article 6.2) and to protect the site from new potentially damaging plans and projects likely to have a significant effect on a Natura 2000 site (Article 6.3, 6.4).

Conservation measures can include both site-specific measures (i.e. management actions and/or management restrictions) and horizontal measures that apply to many Natura 2000 sites over a larger area (e.g. measures to reduce nitrate pollution or to regulate hunting or resource use).

In Northern Ireland, Natura 2000 sites are usually underpinned by the designation of an Area of Special Scientific Interest (ASSI) under the Environment (NI) Order 2002 (as amended).

[1] 92/43/EEC and 2009/147/EC (codified version of Directive 79/409/EEC as amended)

2. ROLE OF CONSERVATION OBJECTIVES

Conservation Objectives have a role in

- Conservation Planning and Management – guide management of sites, to maintain or restore the habitats and species in favourable condition

- Assessing Plans and Projects, as required under Article 6(3) of the Habitats Directive - Habitats Regulations Assessments (HRA) are required to assess proposed plans and projects in light of the site's conservation objectives.

- Monitoring and Reporting – Provide the basis for assessing the condition of a feature, the factors that affect it and the actions required.

3. DEFINITION OF FAVOURABLE CONSERVATION STATUS

Favourable Conservation Status is defined in Articles 1(e) and 1(i) of the Habitats Directive:

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable as defined in Article 1(i).

For species, favourable conservation status is defined in Article 1(i) as when:

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

3.1 DEFINITION OF FAVOURABLE CONDITION

Favourable Condition is defined as "**the target condition for an interest feature in terms of the abundance, distribution and/or quality of that feature within the site**".

The standards for favourable condition (Common Standards) have been developed by JNCC and are applied throughout the UK. Achieving Favourable Condition on individual sites will make an important contribution to achieving Favourable Conservation Status across the Natura 2000 network.

4. SITE INFORMATION

COUNTY: TYRONE

GRID REFERENCE: IH 36768792

Upper G.R. IH07938403
IH09497610
IH10738760
IH29049358
IH40968624

Lower G.R. IC39091103

AREA: 773 ha

LENGTH: 120 km

5. SUMMARY SITE DESCRIPTION

The SAC includes the River Foyle and its tributaries i.e. that part of the River Finn which lies within Northern Ireland, the River Mourne and its tributary the River Strule (up to its confluence with the Owenkillew River) and the River Derg, along with two of its sub-tributaries, the Mourne Beg River and the Glendergan River. In total, the area encompasses 120km of watercourse and is notable for the physical diversity and naturalness of the banks and channels, especially in the upper reaches, and the richness and naturalness of its plant and animal communities. Of particular importance is the population of Atlantic Salmon *Salmo salar*, which is one of the largest in Europe. Research has indicated that each sub-catchment within the system supports genetically distinct populations.

The area is also important as a river habitat. In their upper catchments, the rivers are all fast-flowing spate rivers with dynamic flow regimes characterised by sequences of rapid, riffle and run. Although the banks may have been modified in the past, the channels are natural and composed of large cobble substrate with scattered boulders and sandy marginal deposits, while cobble side and point bars

and discrete sand deposits are common features. At the top end of the River Derg and its two tributaries, the aquatic flora reflect the highly acidic character of the water, with mosses and liverworts dominant. Beds of Stream Water Crowfoot *Ranunculus penicillatus* var. *penicillatus* occur where the flow is less dynamic. The River Foyle below Strabane is slow-flowing and is influenced by a tidal regime, rising and falling with the tidal cycle. Aquatic plants in the channel are extremely limited, particularly in the more saline areas; here, fucoids make up the main component.

Otter *Lutra lutra* is found throughout the system.

A small population of the now rare Freshwater Pearl Mussel *Margaritifera margaritifera* was still present in the Mourne River in the mid-nineties.

Further details of the site are contained in the ASSI Citation and Views About Management statement, which are available on the DAERA website (www.daera-ni.gov.uk).

5.1 BOUNDARY RATIONALE

Defining the extent of site boundaries for rivers is variable across the UK. The four options currently in use are:-

1. whole catchments
2. main river stem from source to mouth, tributaries and upland catchment
3. main river stem from source to mouth and tributaries
4. main river stem from source to mouth only

The option used is dependent on the qualifying features for that site and the current knowledge of distribution of that feature.

In the case of the Foyle, the qualifying features are its internationally important population of Atlantic Salmon and its *Ranunculus* community, which is found in lower sections of the River Derg and Mourne Beg River and along the Strule and Mourne Rivers down to Strabane. The River Foyle is included downstream to provide a linkage to the sea.

Much of the River Finn system occurs within the Republic of Ireland and will be included within the Republic of Ireland SAC series.

Within Northern Ireland, the upper limits for all the tributaries and sub-tributaries are determined by the international border, except for the Strule where it joins with the Owenkillew River SAC. The downstream limit of the site is largely determined by the limit of saline influence (Directive refers to Salmon *in freshwater only*), but includes a small part of the migration corridor on the River Foyle.

The lateral boundary beyond the river channel follows the same guidelines as that for all ASSIs, which is dependent on the type and quality of adjacent habitat. Much of the SAC has limited adjacent habitat. Therefore, the boundary is frequently restricted to the top of the riverbank.

Due to the size of the area, the boundary was largely derived from video footage acquired during a helicopter flight. Some information on adjacent habitats was derived from previous surveys.

The boundary uses permanent man-made features where possible. However, along some stretches of the river and woodland edge, such boundaries were absent and recognisable topographical or physical features such as breaks in slope, scrub or tree line were used.

6. SAC SELECTION FEATURES

Feature Type	Feature	Global Status	Size/ extent/ pop~
Species	Atlantic Salmon *Salmo salar*	B	10,001-100,000
Habitat	Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation	B	16.44 ha
Species	Otter *Lutra lutra*	C	C
Species	Sea Lamprey	D	P
Species	River Lamprey	D	P
Species	Brook Lamprey *Lampetra planeri*	D	P
Species	Freshwater Pearl Mussel *Margaritifera margaritifera*	D	R

Table 1. List of SAC selection features. Those with global status A-C will be referred to in ANNEX I.

The global status is an expert judgement of the overall value of the site for the conservation of the relevant Annex I habitat. Sites have been graded A, B or C - in the UK these gradings have been interpreted as follows:

A - Sites holding outstanding examples of the habitat in a European context.

B - Sites holding excellent stands of the habitat, significantly above the threshold for SSSI/ASSI notification but of somewhat lower value than grade A sites.

C - Examples of the habitat which are of at least national interest (i.e. usually above the thresholdfor SSSI/ASSI notification on terrestrial sites) but not significantly above this. These habitats are not the primary reason for SACs being selected.

D - Habitat present but not of sufficient extent or quality to merit listing as SAC feature.

There is therefore a distinction between the principal features for which sites have been selected (those graded A or B) and those which are only of secondary interest (those graded C). This is a useful distinction but it is important to note that all three grades are qualifying SAC interest features.

Click here to go to the Natura 2000 Standard Data Form for River Foyle & Tributaries SAC.

6.1 ASSI SELECTION FEATURES

River Foyle & Tributaries ASSI

Feature Type	Feature	Size/ extent/
Habitat	Series of river types present with corresponding macrophyte assemblages, ranging from ultra-oligotrophic, mesotrophic to estuarine types.	120km
Species	Atlantic Salmon *Salmo salar*	
Species	Otter *Lutra lutra*	

Table 2. List of ASSI features.

7. CONSERVATION OBJECTIVES

The ***Conservation Objective*** for this site is:

To maintain (or restore where appropriate) the

- Atlantic Salmon *Salmo salar*
- Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation
- Otter *Lutra lutra*

to favourable condition.

For each SAC feature, there are a number of component objectives which are outlined in the table below. These include a series of attributes, measures and targets which form the basis of *Condition Assessment*. The results of this will determine whether the feature is in favourable condition or not. The feature attributes and measures are found in the attached annex.

8. SAC SELECTION FEATURE OBJECTIVE REQUIREMENTS

Feature	Grade	Objective
Atlantic Salmon *Salmo salar*	B	Maintain and if possible expand existing population numbers and distribution (preferably through natural recruitment), and improve age structure of population.
		Maintain and if possible enhance the extent and quality of suitable Salmon habitat - particularly the chemical and biological quality of the water and the condition of the river channel and substrate.
Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation	B	Maintain and if possible enhance extent and composition of community.
		Improve water quality
		Improve channel substrate quality by reducing siltation.
		Maintain and if feasible enhance the river morphology
Otter *Lutra lutra*	C	Maintain and if possible increase population numbers and distribution.
		Maintain the extent and quality of suitable Otter habitat, in particular the chemical and biological quality of the water and all associated wetland habitats

9. ASSI FEATURE OBJECTIVE REQUIREMENTS

Feature	Component Objective
Series of river types present with corresponding macrophyte assemblages,	Maintain and if possible enhance extent and composition of communities.
	Improve water quality
	Improve channel substrate quality by reducing siltation.
	Maintain and if possible enhance the river morphology

ranging from ultra-oligotrophic to eutrophic and brackish types.	Maintain the diversity and quality of habitats associated with the river, e.g. bog, wet grasslands, scrub and oak woodland.
Atlantic Salmon *Salmo salar*	See SAC Selection Feature Objective Requirements table.
Otter *Lutra lutra*	See SAC Selection Feature Objective Requirements table

10. MANAGEMENT CONSIDERATIONS

Ownership

There are several hundred individuals or organisations with ownership or other rights associated with the area.

Adjoining Land Use

The Glendergan and upper reaches of the Derg and Mourne Beg rivers are generally unenclosed and flow through a predominantly upland peatland landscape used for rough grazing or commercial forestry. Along the mid and lower reaches of the Derg and Mourne Beg, the rivers flow through improved or semi-improved pasture used for silage and grazing.

The river is generally fenced from the surrounding land at least along one bank top. Along the Mourne and Strule, the main adjacent agricultural uses include tilled land and silage production, in addition to stock grazing. Here, a significant proportion of the river is bounded by woodland, either as discrete woodland blocks along the valley side or as a thin bank-top belt. The river channel or the adjacent woodlands are only partially fenced.

11. MAIN THREATS, PRESSURES AND ACTIVITIES WITH IMPACTS ON THE SITE

Both on-site and off-site activities can potentially affect SAC/ASSI features. The list below is not exhaustive, but deals with the most likely factors that are either affecting River Foyle & Tributaries, or could affect it in the future.

Although **Atlantic Salmon *Salmo salar,* Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation and Otter *Lutra lutra*** are the qualifying SAC features, factors affecting ASSI features are also considered.

NOTE - Carrying out any of the Notifiable Operations listed in the ASSI schedule could affect the site.

Water Quality/Eutrophication

Water quality is probably the most important single factor for the SAC and ASSI selection features, with both point and diffuse sources of pollution potentially damaging. These are dependent on human activities throughout the catchment, the majority of which are largely beyond the direct control of the current designation. The total catchment area feeding into the river system is 300,000ha, 78,000ha of which fall within the Republic of Ireland and consists of 27 sub-catchment areas in Northern Ireland. The designation only includes the main channels of the Strule, Mourne, Derg, Mourne Beg, Glendergan, Finn and Foyle rivers and has excluded several tributaries.

Analysis of biological water quality monitoring data from 1991 to 1998 indicates that water quality is good to very good on all rivers and there has been no deterioration in quality over this period. Chemical water quality monitoring data indicates that water quality is moderate in the Derg and its tributaries, but varies from moderate to poor in the Mourne and Strule.

A significant portion of the upper catchments of the tributaries are afforested; there is a potential for enrichment of the river during forestry operations (planting and fertiliser application).

Stock have open access to the channel in many sections and have caused poaching of the bank and channel. This represents another possible source of enrichment.

ACTION: Reduce enrichment of the water column by minimising point source pollution and through a catchment-wide campaign, encourage land owners to avoid excessive fertiliser inputs, thus reducing diffuse pollution. Restrict stock access to less sensitive watering points.

Channel & Bank Modification

A number of sections of the river channels have been extensively altered by man in the past. These modifications have changed the natural flow regime of the river, resulting in a reduction of the natural channel area available to aquatic vegetation or for spawning Atlantic Salmon. However, the river continues to recover from the effects of re-sectioning.

ACTION: Future in-river works should be minimised as they reduce habitat and species diversity. Due to the dynamic nature of rivers, work carried out at any point on the river may have a significant impact on the catchment as a whole. Initiate discussions with Rivers Agency to co-ordinate action.

Habitat enhancement schemes, such as the 'Salmonid Enhancement Programme' should be thoughtfully planned. Properly executed enhancement schemes can significantly improve the wildlife potential of rivers, but it is important to effectively manage the installation of structures such as weirs, as they may have a negative effect on species diversity by causing excessive damming of the channel. In the past, the construction of weirs by fishing clubs

as part of the programme has locally altered the morphology of the river. Enhancement work should be limited to areas of river that have been extensively modified by past drainage schemes and which have lost much of their natural dynamic character.
ACTION: Initiate discussions with DARD Fisheries Division and Environmental Protection to co-ordinate action.

Substrate Siltation
A significant portion of the area is afforested (especially the upper catchments), with a potential risk of sediment release during forestry operations, especially clear-felling.
ACTION: Liaise with Forest Service during felling and re-stocking programmes to minimise potential impacts (including potential eutrophication from planting and fertiliser application).

Sand wash from a number of commercial sandpits in the upper reaches of the tributary rivers has resulted in siltation of the riverbed downstream.
ACTION: Monitor and control sediment input levels in tributaries and immediately downstream of sandpits.

Where the bank and channel of the river are accessible to stock, damage to both the Atlantic Salmon spawning grounds and the macrophyte community may occur. Trampling has an obvious direct impact but in some sections of the river, trampling and poaching of the river bank and channel have caused erosion, resulting in siltation of the riverbed downstream.
ACTION: Restrict livestock access to drinking areas only.

Sand Extraction
Small-scale sand extraction from the riverbed has been an ongoing practice by farmers, particularly in the lower reaches of the river. This disturbance results in damage to the river morphology and increase in sediment loading, thus directly and indirectly affecting spawning beds and the macrophyte community.
ACTION: Under the Notifiable Operations, this activity is prohibited - ensure compliance with the ASSI Schedule.

Fish Farms
Fish farms can have a very serious impact on rivers. Fish farms normally abstract water from the river and release effluent downstream. Where the abstraction is large relative to streamflow, the channel between points of abstraction and release may have a much reduced discharge and water velocity. The effect can be so extreme that the upstream movement of migrating fish and other water-borne wildlife is obstructed. In addition, effluents from intensive fish farms may have a modified temperature and pH, may be contaminated with toxic materials and may carry waste and partly decomposed food and the metabolic products of the fish. This can lead to increased oxygen demand (and hence a low oxygen

concentration in the water), increased suspended solids and enrichment of the recipient stream.

NIEA is aware of two fish farms in the area, but they do not appear to be having any damaging effects on the river or the Atlantic Salmon population. Proposals for any further fish farms in the area will require very careful environmental assessment. In particular, it is imperative to ensure that an adequate compensatory flow is maintained and that that the effluent is adequately treated.
ACTION: Review existing Water Act consents.

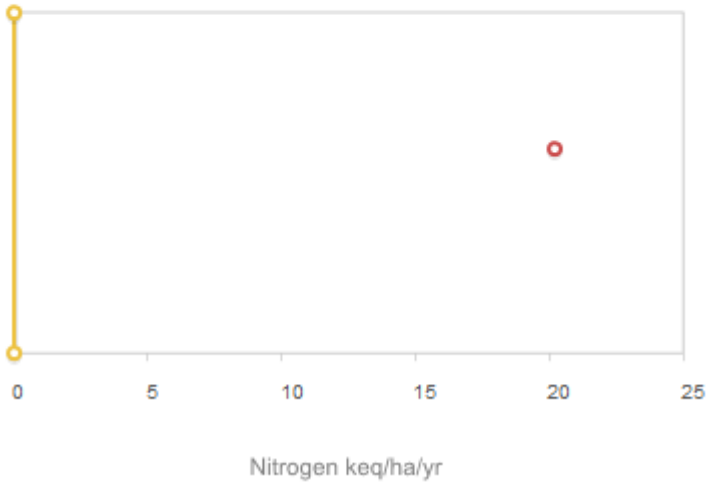
Water Extraction
A natural flow regime is essential for the maintenance of many of the selection features. There are several extraction sites along the river. Proposals for further water extraction in the area will require very careful environmental assessment.
ACTION: Review existing Water Act consents.

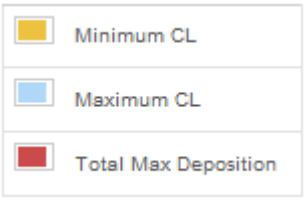
Fly-tipping
Small-scale fly tipping has occurred in places along the river banks and in the river channel, as well as in adjacent woodland.
ACTION: Where practical, remove dumped material from the banks, channel and adjoining woodland to prevent the build up of debris and discourage further tipping.

Alien species
Japanese Knotweed *Fallopia japonica*, Giant Hogweed *Heracleum mantegazzianum* and Indian Balsam *Impatiens glandulifera* are present along the riverbanks of the major rivers.
ACTION: Monitor and if necessary, control the spread of alien species.

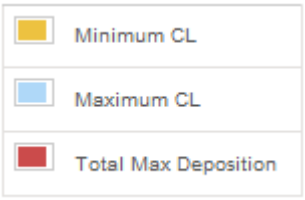
Nitrogen Deposition
Excess nitrogen deposition can favour the growth of competitive plants and lead to changes in ecosystem structure or function and to a reduction in biodiversity. National scale studies show the potential adverse effects of excess nitrogen on natural and semi-natural habitats to be widespread across the UK. Lower and upper critical loads have been calculated for the River Foyle & Tributaries SAC.

Feature: Salmo salar - Atlantic salmon
Critical Load Class: No comparable habitat with established critical load estimate available
Critical Loads (kg N/ha/yr): no critical loads available for this feature
Nitrogen Deposition (kg N/ha/yr):
Maximum: 20.2 Minimum: 5.6 Average: 8.4

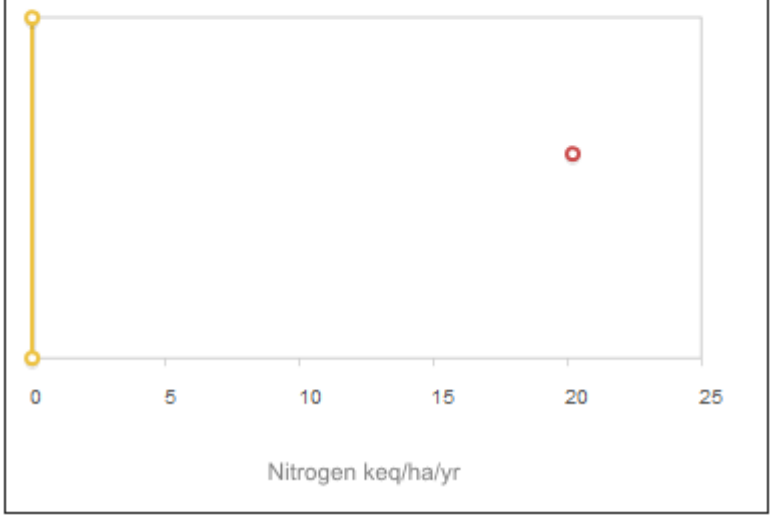


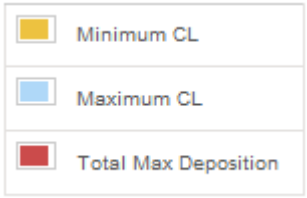


Feature: Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
Critical Load Class: No comparable habitat with established critical load estimate available
Critical Loads (kg N/ha/yr): no critical loads available for this feature
Nitrogen Deposition (kg N/ha/yr):
Maximum: 20.2 Minimum: 5.6 Average: 8.4



Feature: Lutra lutra - Otter
Critical Load Class: No comparable habitat with established critical load estimate available
Critical Loads (kg N/ha/yr): no critical loads available for this feature
Nitrogen Deposition (kg N/ha/yr):
Maximum: 20.2 Minimum: 5.6 Average: 8.4





(Source: Air Pollution Information System (APIS) website- www.apis.ac.uk)

ACTION: Seek to maintain or where necessary, restore concentrations and deposition of air pollutants to at or below the site-relevant critical load.

Changes to surrounding land use
Any changes in local land-use e.g. agricultural intensification, drainage works and development) may be detrimental to the SAC.
ACTION: Reduce the risk of surrounding agricultural intensification by encouraging the adjacent owner/occupiers to enter into agri-environment schemes. Use Habitats Regulations Assessments (HRAs), through the planning process, to minimise any development risks adjacent to the SAC.

Climate Change
Northern Ireland faces changes to its climate over the next century. Indications are that we will face hotter, drier summers, warmer winters and more frequent extreme weather events.

ACTION: When developing SAC management plans, the likely future impacts of climate change should be considered and appropriate changes made.

12. MONITORING

Monitoring of SACs takes place using two monitoring techniques.

Site Integrity Monitoring (SIM) is carried out to ensure compliance with the ASSI/ SAC Schedule. The most likely processes of change will either be picked up by SIM (e.g. dumping, burning, turf cutting, grazing etc.) or will be comparatively slow (e.g. gradual degradation of the habitat).

These longer-term changes will be picked up by monitoring of the feature via Site Condition Assessment - this is carried out on a rolling basis to pick up subtle changes in the condition of the feature.

The method for Site Condition Assessment was agreed by the relevant JNCC-led Lead Co-ordination Network although the methodology has been modified to reflect individual site attributes in Northern Ireland.

12.1 MONITORING SUMMARY

1. Monitor the integrity of the site (SIM or Compliance Monitoring)

Complete boundary survey to ensure that the boundary features, where present are still intact. Ensure that there has been no tree felling, ground or riverbed disturbance, fly-tipping or inappropriate burning carried out within the SAC boundary. Evaluation of stocking densities would also be desirable, whilst a check for feral goat damage should be carried out throughout the site. Inspection of river reaches with Freshwater Pearl Mussel colonies should be undertaken to ensure there has not been any pearl fishing.The SIM should be carried out once a year.

2. Monitor the condition of the site (Condition Assessment)

Monitor the key attributes for each of the SAC selection features. This will detect if the features are in favourable condition or not. See Annex I.

The favourable condition table provided in Annex 1 is intended to supplement the conservation objectives only in relation to management of established and ongoing activities and future reporting requirements on monitoring condition of the site and its features. It does not by itself provide a comprehensive basis on which to assess plans and projects, but it does provide a basis to inform the scope and nature of any Habitats Regulations Assessment (HRA) that may be needed. It should be noted that completion of a HRA is a separate activity to

condition monitoring, requiring consideration of issues specific to individual plans or projects.

13. REFERENCES

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ANNEX I

SAC Feature 1 – Atlantic salmon (*Salmo salar*) (Status B)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attribute	Measure	Targets	Comments
*Population dynamics	Number	Stable or increasing	
	Adult Run	Total run size at least matching an agreed reference level, including a seasonal pattern of migration characteristic of the river and maintenance of the multi-sea-winter component.	The Northern Ireland equivalent of Environment Agency MBAL (Minimum Biological Acceptable Level) should be set for each catchment. Expectation needs to be tempered by the intrinsic ability of the river type to support salmon. Fish classification schemes operated regionally and nationally should permit an interpretation of performance.
	Juvenile population densities	These should not differ significantly from those expected for the river type/reach under conditions of high physical and chemical quality.	

	Biological disturbance: Introductions	The population should be naturally self-sustaining. There should be a presumption against stocking of salmon unless it is agreed to be necessary as an emergency interim measure to maintain population viability whilst underlying ecological problems are being addressed. No introduction or stocking of other species or sub-species at excessively high densities in salmon spawning and nursery areas. Effective screening on all fish farm intakes and discharges.	The nature conservation aim is to provide conditions in the river that support a healthy and natural population, achieved through habitat protection/restoration and the control of exploitation as necessary. Stocking represents a loss of naturalness and if successful, obscures the underlying causes of poor performance (potentially allowing these risks to perpetuate). It carries various ecological risks, including the loss of natural spawning from broodstock, competition between stocked and naturally produced individuals, disease introduction and genetic alterations to the population. For these reasons, consideration of stocking is only justifiable in cases where population viability is threatened. Stock must come from within the same catchment area. The presence of artificially high densities of other fish creates unacceptably high levels of predatory and competitive pressure on juvenile salmon. Escapes from fish farms are a form of uncontrolled introduction and should be prevented.
*Population dynamics	Exploitation	All exploitation should be sustainable without compromising any components of the stock.	Controls on exploitation should include migratory passage to the SAC within territorial waters, including estuarine and coastal net fisheries, as well as exploitation within the SAC from rod fisheries.
*Physical integrity	Disturbance of habitat	No artificial barriers significantly impairing adults from reaching existing and historical spawning grounds and smolts from reaching the sea.	In all river types, artificial barriers should be made passable. Natural barriers to potentially suitable spawning areas should not be circumvented.

	River morphology	Maintain and where necessary restore the characteristic physical features of the river channel, banks and riparian zone.	The characteristic channel morphology provides the diversity of water depths, current velocities and substrate types necessary to fulfil the spawning, juvenile and migratory requirements of the species. The close proximity of different habitats facilitates movement to new preferred habitats with age. Operations that widen, deepen and/or straighten the channel reduce variations in habitat. New operations that would have this impact are not acceptable within the SAC, whilst restoration *may/will* be needed in some reaches.
	River Substrate	Clean gravels should dominate channels. <10% fines in top 30cm of spawning gravels	Elevated levels of fines can interfere with egg and fry survival through suffocation of eggs and loss of interstitial refuges for fry. Sources of fines include run-off from arable land, land (especially banks) trampled by livestock, sewage and industrial discharges.
*Water quantity	Flow	Flow regime should be characteristic of the river. As a guideline, at least 90% of the naturalised daily mean flow should remain in the river throughout the year Existing flow criteria already laid down for salmon should also be complied with.	River flow affects a range of habitat factors of critical importance to designated interest features, including current velocity, water depth, wetted area, substrate quality, dissolved oxygen levels and water temperature. The maintenance of both flushing flows and baseflows, based on natural hydrological processes, is vital. Detailed investigations of habitat-flow relationships may indicate that a more or less stringent threshold may be appropriate for a specified reach; however, a precautionary approach would need to be taken to the use of less stringent values. Naturalised flow is defined as the flow in the absence of abstractions and discharges. The availability and reliability of data is patchy - long-term gauged data can be used until adequate naturalised data become available, although the impact of abstractions on historical flow records should be considered.

*Water quality:	Biological class. Environmental Protection's General Quality Assessment scheme. Assess every year.	'A'	Generally, water quality should not be injurious to any life stage. A wide range of water quality parameters can affect the status of interest features, but standard biological monitoring techniques provide a reasonably integrated picture in relation to many parameters. The river quality classifications used in all parts of the UK have a biological component. All classified reaches within the site that contain, or should contain, the interest feature under conditions of high environmental quality should comply with the targets given.
	Ecosystem Class. Environmental Protection's General Quality Assessment scheme. Assess every year	"A"	The River Ecosystem Classification 1995 sets standards for dissolved oxygen, biochemical oxygen demand, total and un-ionised ammonia, pH, copper and zinc. It therefore covers a number of water quality parameters that can cause problems within river systems. All classified reaches within the site that should contain the interest feature under conditions of high environmental quality should comply with the targets given.
	Soluble Reactive Phosphorus	*Targets should be set in relation to river/reach type(s and should be near background levels)* Annual mean <0.02mg/l - upland watercourses, <0.06mg/l mid-altitude watercourses on hard substrates and <0.2mg/l interim target for lowland rivers on clay substrates and large alluvial rivers.	The target of 25mgL^{-1} is based on the EC Freshwater Fish Directive. A more precautionary figure has been used for salmon to help protect substrates used for salmon spawning. The mg/l used here are indicative values for rivers in England. The equivalent for Northern Ireland will have to be defined
	Pollution	None	Pollutants such as silage or sheep dip can cause extreme mortality

	Suspended solids	Annual mean <10mgL^{-1} (spawning & nursery grounds) Annual mean <25mg L-1 (migratory passage)	Elevated levels of suspended solids can clog the respiratory structures of salmon.

Feature 2 (SAC) – Water courses of plain to montane levels with the *Ranunculus fluitans* and *Callitricho-Batrachion* vegetation (Status B)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attribute	Measure	Targets	Comments
*Population dynamics	Extent	Coverage should be characteristic of river type.	High cover of *Ranunculus spp* is not necessarily indicative of favourable condition.
	Reproduction *(only applies where control measures are implemented)*	*Ranunculus* should be able to flower and set seed, in suitable habitat.	Flowering outside the normal period and weed cutting or other activities that do not leave patches (at least 25% in every 100 metres of river) to flower and set seed are indicators of unfavourable condition. Use of herbicides should be avoided.
*Macrophyte assemblage	Composition	Characteristic plant species should dominate the assemblage. Indicators of unfavourable condition should be rare.	The absence of *Ranunculus* and high frequency of occurrence of blanketweed and other algae, or dominance of *Potamogeton pectinatus* are signs of unfavourable condition.
Water quantity	Flow	Flow regime should be characteristic of the river. As a guideline, at least 90% of the naturalised daily mean flow should remain in the river throughout the year.	
Physical integrity	River morphology	Maintain and where necessary restore [*to an extent characteristic of the river/reach*]	

	River substrate	Channels should be dominated by clean gravels. Maximum fines content should not be too great to prevent the establishment of new plants.	Siltation of riverine sediments, caused by high particulate loads and/or reduced scour within the channel, is a major threat to interest features. Elevated fines levels can interfere with the establishment of *Ranunculus* plants. Sources of fines include; run-off from arable land, land (especially banks) trampled by livestock, sewage and industrial discharges.
*Water quality:	Biological class. Environment Protection's General Quality Assessment scheme. Assess every ? years.	'A'	
	Ecosystem Class. Environment Protection's General Quality Assessment scheme. Assess every ? years	'A'	
	Suspended solids	Annual mean <10mg L-1	
	Soluble Reactive Phosphorus	*Targets should be set in relation to river/reach types (and should be near background levels)* <0.02mg/l - upland watercourses <0.06mg/l mid-altitude watercourses on hard substrates	

Feature 3 (SAC) – Otter *Lutra lutra* (Status C)

(* = primary attribute. One failure among primary attribute = unfavourable condition)

Attribute	Measure	Target	Notes
Presence of otters	Presence of one or more of the following signs within the site: Positive identification of otter spraint, footprints, tracks, paths, lying-up sites or feeding signs.	Signs of otters found at least once per year	Use data from other surveys or Ulster Museum, if available
	Sightings of otters.		
	Positive identification of holt(s).		
Bankside/ Waterside cover	Presence of cover: Mature trees, woodland, scrub, other tall bankside vegetation, reed and sedge beds.	No overall permanent decrease	Some change acceptable as long as it is appropriately mitigated
Water quality	EP water quality scale	Water quality should be at least category A or B, according to EP guidelines, with no pollution incidents	Refer to Environment Protection for data
Food Sources	Assessment of fish stocks and other food sources (e.g.amphibians)	Fish stocks appropriate to the nutrient status of the river, with no significant decline in fish biomass or species diversity	Refer to appropriate Agency for sample data if available (This information may need to be inferred from the water quality category).
Disturbance	Extent of public access to river	No significant change to river or bankside usage; no significant	

Attribute	Measure	Target	Notes
		development	
Flow rate	Mean annual flow rate	No reduction attributable to increased abstraction.	Refer to data from Rivers Agency if available
Site integrity	Total area	No reduction or fragmentation of area	

APPENDIX 3

Designation information relevant to Lough Foyle SPA (UK)

ENVIRONMENT AND HERITAGE SERVICE

Register entry UK 9020031 under regulation 10 of The Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995.

This is the register entry for the European site known as Lough Foyle Special Protection Area. The site has been classified by the Department of the Environment for Northern Ireland pursuant to Article 4(1) and/or 4(2) of Council Directive 79/409/EEC on the conservation of wild birds as a Special Protection Area.

The register reference number for this European site is UK 9020031 and a folder, kept under this reference as part of the register, contains a map of the European site and a citation giving the reasons for the classification of the site as a Special Protection Area. The map and citation are identified by the register reference number and signed by me on the date of registration.

Other details of the European site are as follows:

Date of classification: 27 January 1999

Site centre location (1):

longitude: 07° 01' 37" W
latitude : 55° 05' 24" W

Area: 2204.36 hectares

Priority status(2):

Date of registration: 29 JANUARY 1999

J. Cleary.
Civil Servant,
Clarence Court

Sealed with the Official Seal of the Department of the Environment for Northern Ireland on

Si[redacted]

on behalf of the Department of the Environment for Northern Ireland

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1. This indicates the approximate centre of the site. Where the European site consists of several distinct areas, the co-ordinates of the most important sub-area are entered.

2. Indicates if the site has been identified under Article 4.2 of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora as hosting one or more priority natural habitat types or priority species.

S393_KPA

Commonwealth House, 35 Castle Street
BELFAST BT1 1GU
Tel: 01232 251477. Fax: 01232 546660

An Agency within the Department of the Environment for Northern Ireland

ENVIRONMENT AND HERITAGE SERVICE

EC DIRECTIVE 79/409 ON THE CONSERVATION OF WILD BIRDS

LOUGH FOYLE SPECIAL PROTECTION AREA

Area: 2204.36 hectares

Geographic co-ordinates: 07° 01' 37" W
55° 05' 24" N

Lough Foyle is situated on the north coast of Northern Ireland immediately downstream and extending to the north-east of the city of Londonderry. The site is comprised of a large shallow sea lough which includes the estuaries of the rivers Foyle, Faughan and Roe. The site contains extensive intertidal areas of mudflats and sandflats, saltmarsh and associated brackish ditches.

The Special Protection Area includes the whole of Lough Foyle Area of Special Scientific Interest (ASSI) and the intertidal area of Magilligan ASSI in Lough Foyle extending south of Magilligan Point. The boundary of the Special Protection Area is entirely coincident with that of the Lough Foyle Ramsar site and it overlaps with Magilligan candidate Special Area of Conservation.

The site qualifies under Article 4.1 of EC Directive 79/409 on the Conservation of Wild Birds by regularly supporting, in winter, internationally important numbers of the following 3 species: Whooper Swan *Cygnus cygnus* (the five year peak mean for the period 1991/92 to 1995/96 was 890, which comprises 5.6% of the international population); Light-bellied Brent Goose *Branta bernicla hrota* (the five year peak mean for the period 1991/92 to 1995/96 was 3730 which comprises 18.7% of the international population) and Bar-tailed Godwit *Limosa lapponica* (the five year peak mean for the period 1991/92 to 1995/96 was 1896 which comprises 1.9% of the international population).

The site also qualifies under Article 4.2 of the Directive by supporting over 20,000 migratory waterfowl. Peak numbers averaged 36,599 birds in the five years between 1991/92 and 1995/96. This total includes the internationally important species listed above and the following waterfowl species which are nationally important in an all-Ireland context: Red-throated Diver *Gavia stellata* (an average of 27 birds, 2.7% of the all-Ireland wintering population), Great Crested Grebe *Podiceps cristatus* (220, 7.3%), Mute Swan *Cygnus olor* (97, 1.8%), Bewick's Swan *C. columbianus* (78, 3.1%), Greylag Geese *Anser anser* (67, 1.7%), Shelduck *Tadorna tadorna* (287, 4.1%), Teal *Anas crecca* (751, 1.2%), Mallard *Anas platyrhynchos* (1694, 3.4%), Wigeon *Anas penelope* (8107, 6.5%), Eider *Somateria mollissima* (50, 2.5%), Red-breasted Merganser *Mergus serrator* (73, 3.7%), Oystercatcher *Haematopus ostralegus* (2045, 4.1%), Golden Plover *Pluvialis apricaria* (4999, 2.5%), Grey Plover *P. squatarola*

(43, 1.1%), Lapwing *Vanellus vanellus* (3084, 1.2%), Knot *Calidris canutus* (412, 1.1%), Dunlin *Calidris alpina* (4847, 3.9%), Curlew *Numenius arquata* (2152, 2.5%), Redshank *Tringa totanus* (791, 3.2%) and Greenshank *T. nebularia* (30, 3.3%).

In recent years a notable wintering population of the Annex 1 Slavonian Grebe *Podiceps auritus* has been observed in Lough Foyle (a peak of 103 birds was recorded in 1995/96 which comprises 2.1% of the international population).

The Register of European Sites in Northern Ireland
Register reference number UK9020031
Date of registration _____

Signed [redacted]
on behal
for Northern Ireland

Lough Foyle

EC Site Code: UK9020031

Special Protection Area (SPA) shown thus: _____

ENVIRONMENT AND HERITAGE SERVICE

An Agency within the Department of the Environment for Northern Ireland

The SPA includes all lands and intertidal areas seawards of the solid red line to the limits of territorial waters. Marine areas below mean low water are not included.
The SPA also includes those lagoons shaded red which lie to the landward side of the solid red line between points A-B and C-D.
The boundary of the SPA follows the top of the sand cliffline between points X-Y and the mean high water mark between Y-Z.

Longitude: 07° 01' 37" W

Latitude: 55° 05' 24" N

Area of SPA: 2204.36 ha.

Map 1 of 1

Version number: 2 (19/1/99)

Projection: Irish National Grid

N

The Register of European Sites in Northern Ireland
Register reference number: UK9020031

Date of Registration: 29 January 1999

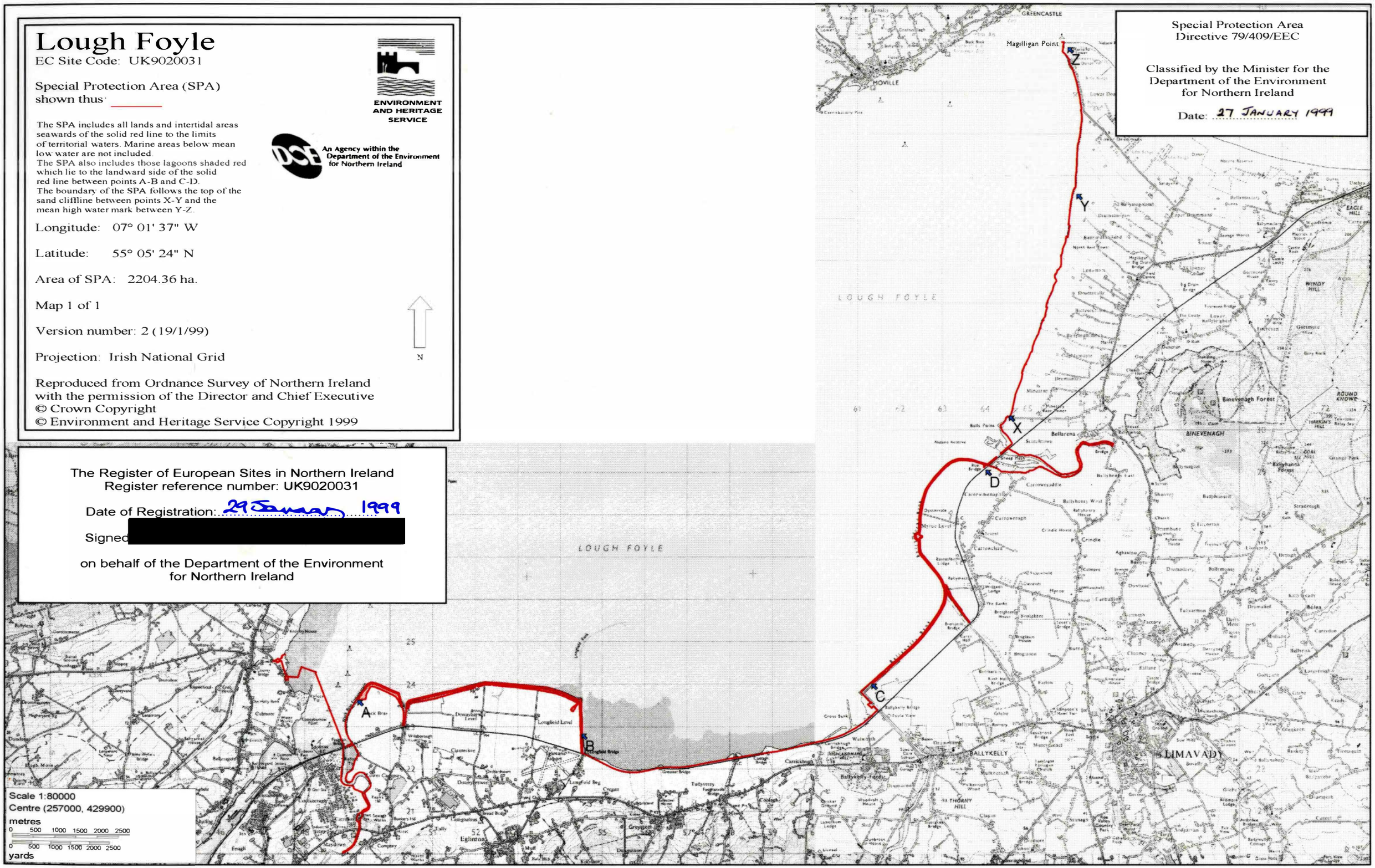
Signed [redacted]

on behalf of the Department of the Environment for Northern Ireland

Special Protection Area
Directive 79/409/EEC

Classified by the Minister for the Department of the Environment for Northern Ireland

Date: 27 JANUARY 1999



NATURA 2000 – STANDARD DATA FORM

Special Protection Areas (SPAs) classified under Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version), also known as the 'Birds Directive'

and

Special Areas of Conservation (SACs) (includes candidate SACs, Sites of Community Importance (SCIs) and designated SACs) designated under Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, also known as the 'Habitats Directive'

Each Natura 2000 site in the United Kingdom has its own Standard Data Form containing site-specific information.

The information provided here follows the officially agreed site information format for Natura 2000 sites, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

The Standard Data Forms are generated automatically for all of the UK's Natura 2000 sites using the European Environment Agency's Natura 2000 software. The structure and format of these forms is exactly as produced by the EEA's Natura 2000 software (except for the addition of this coversheet and the end notes). The content matches exactly the data submitted to the European Commission.

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

Further technical documentation may be found here:
http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal

In December 2015, several sections of the UK's previously published Standard Data Forms were updated. For details of the approach taken by the UK in this submission please refer to the following document:
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf.
These changes formed part of the UK Submission to the European Commission on 22/12/2015.

More general information on Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) in the United Kingdom, including in Gibraltar, is available from the SPA homepage and SAC homepage on the JNCC website. These webpages also provide links to Standard Data Forms for all Natura 2000 sites in the UK.

Date Standard Data Form generated by the Joint Nature Conservation Committee:	17th September 2018 (UK Tranche 57)

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **UK9020031**

SITENAME **Lough Foyle**

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- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES
- 6. SITE MANAGEMENT
- 7. MAP OF THE SITE

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
A	UK9020031

1.3 Site name

Lough Foyle

1.4 First Compilation date	1.5 Update date
1999-01	2018-09

1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY

Email:

1.7 Site indication and designation / classification dates

Date site classified as SPA:	1999-01
National legal reference of SPA designation	Regulations 8A-8B and 10-12 of The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (http://www.legislation.gov.uk/nisr/1995/380/contents/made) as amended by The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2004 (http://www.legislation.gov.uk/nisr/2004/435/contents/made) and The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2011 (http://www.legislation.gov.uk/nisr/2011/216/contents/made).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
-7.0269	55.09

2.2 Area [ha]:

2194.22

2.3 Marine area [%]

92.8

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKN0	Northern Ireland

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

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3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo
B	A674	Branta bernicla hrota [Canada/Ireland]			w	3730	3730	i		G	A		C	
B	A038	Cygnus cygnus			w	890	890	i		G	B		C	
B	A157	Limosa lapponica			w	1896	1896	i		G	B		C	

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C|R|V|P	IV	V	A	B	C	D
B	WATR	Waterbird assemblage			36599	36599	i						X	

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see reference portal)
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories: IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N03	3.6
N02	96.4
Total Habitat Cover	100

Other Site Characteristics

1 Terrestrial: Soil & Geology: sand,mud 4 Marine: Geomorphology: lagoon,estuary,intertidal sediments (including sandflat/mudflat).

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC): Over winter the area regularly supports: Cygnus cygnus (Iceland/UK/Ireland) 8.6% of the all-Ireland population (5 year peak mean 1991/92-1995/96), Limosa lapponica (Western Palearctic - wintering) 11.9% of the all-Ireland population (5 year peak mean 1991/92-1995/96). ARTICLE 4.2 QUALIFICATION (79/409/EEC): Over winter the area regularly supports: Branta bernicla hrota [Canada/Ireland] 18.7% of the biogeographic population (5 year peak mean 1991/92-1995/96). ARTICLE 4.2 QUALIFICATION (79/409/EEC): An internationally important assemblage of birds. In the non-breeding season the area regularly supports: 36,599 waterfowl (5 year peak mean 1991/92-1995/96) including the species listed above plus: Gavia stellata, Podiceps cristatus, Cygnus columbianus bewickii, Anser anser, Tadorna tadorna, Anas crecca, Anas platyrhynchos, Anas penelope, Somateria mollissima mollissima, Mergus serrator, Haematopus ostralegus, Pluvialis apricaria, Pluvialis squatarola, Vanellus vanellus, Calidris canutus, Calidris alpina alpina, Numenius arquata, Tringa totanus, Tringa nebularia, Podiceps auritus.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	H01		O
M	A02		O
M	F03		B
H	M02		B
M	D04		O
M	G01		I
M	H03		O
H	J03		B
L	F01		I
M	D02		B
M	I01		I
H	M01		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
M	A02		O
L	G01		I
M	F03		B

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

See the UK Approach document for more information (link via the JNCC website).

Link(s): http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0	UK01	20.0		

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Northern Ireland Environment Agency
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

7. MAP OF THE SITES

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INSPIRE ID:

Map delivered as PDF in electronic format (optional)

☐ Yes ☒ No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).

EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the official European Union guidelines for the Standard Data Form. The relevant page is shown in the table below.

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: in the UK Natura 2000 submission, this is only used in Gibraltar)	53

3.1 Habitat representatively

CODE	DESCRIPTION	PAGE NO
A	Excellent representatively	57
B	Good representatively	57
C	Significant representatively	57
D	Non-significant presence representatively	57

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67
UK05	Marine Conservation Zone	67
UK06	Nature Conservation Marine Protected Area	67
UK86	Special Area (Channel Islands)	67
UK98	Area of Special Scientific Interest (NI)	67
IN00	Ramsar Convention site	67
IN08	Special Protection Area (SPA, EC Birds Directive)	67
IN09	Special Area of Conservation (SAC, EC Habitats Directive)	67

LOUGH FOYLE-
SPECIAL PROTECTION AREA (SPA)

UK9020031

CONSERVATION OBJECTIVES

Document Details

Title	Lough Foyle SPA Conservation Objectives
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V1	02/02/1999	Internal working document	IE	
V1.1	August 2013	Review	IE	
V2.0	February 2015	Draft	IE	Complete review

Site relationship

To fully understand the site conservation requirements for this site it may be necessary to also refer to other site Conservation Objectives

This SPA partially overlaps or adjoins with the following SACs
Magilligan
River Roe and Tributaries
River Faughan and Tributaries

The SPA also matches the boundary of the Lough Foyle Ramsar site.

See also Boundary Rationale

The SPA is also close to, or adjoins, European designations in the Republic of Ireland. This is Lough Foyle SPA

1. INTRODUCTION

EU Member States have a clear responsibility under the Habitats and Birds Directives[1] to ensure that all habitats and species of Community Interest are maintained or restored to Favourable Conservation Status (FCS). Natura 2000 sites have a crucial role to play in achieving this overall objective since they are the most important core sites for these species and habitats. Each site must therefore be managed in a way that ensures it contributes as effectively as possible to helping the species and habitats for which it has been designated reach a favourable conservation status within the EU.

To ensure that each Natura 2000 site contributes fully to reaching this overall target of FCS, it is important to set clear conservation objectives for each individual site. These should define the desired state, within that particular site, of each of the species and habitat types for which the site was designated.

Once a site has been included in the Natura 2000 network, Member States are required to implement, on each site, the necessary conservation measures which correspond to the ecological requirements of the protected habitat types and species of Community Interest present, according to Article 6.1 of the Habitats Directive. They must also prevent any damaging activities that could significantly disturb those species and habitats (Article 6.2) and to protect the site from new potentially damaging plans and projects likely to have a significant effect on a Natura 2000 site (Article 6.3, 6.4).

Conservation measures can include both site-specific measures (i.e. management actions and/or management restrictions) and horizontal measures that apply to many Natura 2000 sites over a larger area (e.g. measures to reduce nitrate pollution or to regulate hunting or resource use).

In Northern Ireland, terrestrial/inter-tidal Natura 2000 sites are usually underpinned by the designation of an Area of Special Scientific Interest (ASSI) under the Environment (NI) Order 2002 (as amended).

2. ROLE OF CONSERVATION OBJECTIVES

Conservation Objectives have a role in

- Conservation Planning and Management – guide management of sites, to maintain or restore the habitats and species in favourable condition

- Assessing Plans and Projects, as required under Article 6(3) of the Habitats Directive - Habitats Regulations Assessments (HRA) are required to assess proposed plans and projects in light of the site's conservation objectives.

- Monitoring and Reporting – Provide the basis for assessing the condition of a feature, the factors that affect it and the actions required.

[1] 92/43/EEC and 2009/147/EC (codified version of Directive 79/409/EEC as amended)

3. DEFINITION OF FAVOURABLE CONSERVATION STATUS

Favourable Conservation Status is defined in Articles 1(e) and 1(i) of the Habitats Directive:

The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable as defined in Article 1(i).

For species, favourable conservation status is defined in Article 1(i) as when:

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

3.1 DEFINITION OF FAVOURABLE CONDITION

Favourable Condition is defined as "**the target condition for an interest feature in terms of the abundance, distribution and/or quality of that feature within the site"**.

The standards for favourable condition (Common Standards) have been developed by JNCC and are applied throughout the UK. Achieving Favourable Condition on individual sites will make an important contribution to achieving Favourable Conservation Status across the Natura 2000 network.

4 GENERAL INFORMATION

COUNTY: Londonderry

G.R. C621 273 AREA: 2204.36 ha.

5 SUMMARY SITE DESCRIPTION

This major sea lough is remarkably shallow, with extensive mud and sand flats exposed at low tide. Though considerably diminished by historical reclamation schemes, notably around Myroe, Ballykelly and Longfield, it hosts the second largest area of inter-tidal habitat in Northern Ireland. The shoreline is generally engineered except around the Roe Estuary and northwards. Adjoining agricultural land is of importance as high tide roosts and in supporting wintering geese and swans.

5.1 BOUNDARY RATIONALE

The site principally includes the inter-tidal habitats within Lough Foyle, taking in all of the Lough Foyle ASSI and the adjoining coastal section of Magilligan ASSI/SAC north to Magilligan Point. Landward, the site is delimited by coastal defences. Sections of minor river estuaries have been included as they contain natural/semi-natural habitat of importance as bird roosts and feeding areas. Roost sites occurring outside the extent of natural or semi-natural habitat, together with those agriculturally improved areas utilised by swans and geese, have not been included but their importance must not be underestimated.

6 SPA SELECTION FEATURES

Feature Type	Feature	Population (5 year average 1995-2000)	Population at time of designation (ASSI)	Population at time of designation (SPA)	SPA Review population	Common Standards Monitoring baseline
Species	Bewick's Swan wintering population [b]	43	74	New (78)	78	10
Species	Whooper Swan wintering population [a]	811	905	890	890	566
Species	Golden Plover wintering population [b]	4511	4614	New	4891	2960
Species	Bar-tailed Godwit wintering population [a]	2059	2097	1896	1896	1535
Species	Light-bellied Brent Goose wintering population [a]	3765	3603	3730	3730	1765
Assemblage species	Great Crested Grebe wintering population	148	278	220	220	28
Assemblage species	Cormorant wintering population	106	120	Not listed	118	67
Assemblage species	Greylag Goose wintering population	391	85	67	67	22
Assemblage species	Shelduck wintering population	468	321	287	287	174
Assemblage species	Wigeon wintering population	9011	6153	8107	8107	3513
Assemblage species	Teal wintering population	660	718	751	751	403
Assemblage species	Mallard wintering population	1606	1802	1694	1694	1154
Assemblage species	Eider wintering population	143	154	50	50	8
Assemblage species	Red-breasted Merganser wintering population	135	96	73	73	26
Assemblage species	Oystercatcher wintering population	3101	2335	2045	2028	1683
Assemblage species	Lapwing wintering population	4024	3601	3084	3084	1078
Assemblage species	Knot wintering population	499	433	412	441	135
Assemblag	Dunlin wintering	4991	5606	4847	5606	3666

e species	population					
Assemblage species	Curlew wintering population	2263	2079	2152	2038	1710
Assemblage species	Redshank wintering population	988	811	791	812	386
Waterfowl assemblage	Waterfowl Assemblage wintering population [a] (Component species: Bewick's Swan, Whooper Swan, Golden Plover, Bar-tailed Godwit, Light-bellied Brent Goose, Great Crested Grebe, Cormorant, Greylag Goose, Shelduck, Wigeon, Teal, Mallard, Eider, Red-breasted Merganser, Oystercatcher, Lapwing, Knot, Dunlin, Curlew, Redshank)	24952	36416	36599	37310	14905
Habitat[1]	Habitat extent					
Habitat[1]	Roost site locations					

Table 1. List of SPA selection features.

[1] Habitat is not a selection feature but is a factor and is more easily treated as if it were a feature.

Notes on SPA features – may not be applicable to all SPAs

The above table lists all relevant qualifying species for this site. As the identification of SPA features has and continues to evolve, species may have different status but all should be considered in the context of any HRA process. Ultimately all SPAs will be renotified to formalise species features.

[a] – species cited in current SPA citation and listed on current N2K dataform

[b] – species selected post SPA designation through UK SPA Review 2001

[c] – species highlighted as additional qualifying features through the UK SPA Review 2015 or the UK marine SPA programmes.

6.1 ADDITIONAL ASSI SELECTION FEATURES -

Feature Type (i.e. habitat, species or earth science)	**Feature**	**Size/ extent/ pop[.]**
Habitat	Coastal saltmarsh	
Habitat	Saline lagoon	
Earth Science	Coastal processes	
Species	Great Crested Grebe wintering population	
Species	Cormorant wintering population	
Species	Greylag Goose wintering population	
Species	Shelduck wintering population	
Species	Wigeon wintering population	
Species	Teal wintering population	
Species	Mallard wintering population	
Species	Eider wintering population	
Species	Red-breasted Merganser wintering population	
Species	Oystercatcher wintering population	
Species	Lapwing wintering population	
Species	Knot wintering population	
Species	Dunlin wintering population	
Species	Curlew wintering population	
Species	Redshank wintering population	
Species	Mute Swan	

Table 2. List of ASSI features, additional to those that form all or part of SPA selection features. These will be referred to in ANNEX II.

[1] These species are selected as they contribute to the waterfowl assemblage feature. They are not SPA features in their own right. All exceed national population threshold and so are of ASSI significance.

7 CONSERVATION OBJECTIVES

The Conservation Objectives for this site are:

To maintain each feature in favourable condition.

For each feature there are a number of component objectives which are outlined in the tables below. Component objectives for Additional ASSI Selection Features are not yet complete. For each feature there are a series of attributes and measures which form the basis of *Condition Assessment*. The results of this will determine whether a feature is in favourable condition, or not. The feature attributes and measures are found in the attached annexes.

8 LOUGH FOYLE SPA CONDITION ASSESSMENT 2014

Species	2005/06	2006/07	2007/08	2008/09	2009/10	CSM	5 yr mean	% CSM	Status
Golden Plover	7640	9534	9211	8486	5091	2960	7992.40	**270.01**	Favourable
Bewick`s Swan	18	0	0	0	0	10	3.60	**36.00**	Unfavourable
Whooper Swan	1030	1042	1167	1240	2033	566	1302.40	**230.11**	Favourable
Bar-tailed Godwit	1133	2672	2300	2789	1501	1535	2079.00	**135.44**	Favourable
Light-bellied Brent Goose	3641	1778	3251	2550	3875	1765	3019.00	**171.05**	Favourable
Waterbird assemblage	38372	35032	33155	37562	28535	28494	34531.20	**121.19**	Favourable

9 SPA SELECTION FEATURE OBJECTIVES

To maintain or enhance the population of the qualifying species
To maintain or enhance the range of habitats utilised by the qualifying species
To ensure that the integrity of the site is maintained;
To ensure there is no significant disturbance of the species and
To ensure that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species

Feature	Component Objective
Bewick's Swan wintering population	As above
Whooper Swan wintering population	As above

Golden Plover wintering population	As above
Bar-tailed Godwit wintering population	As above
Light-bellied Brent Goose wintering population	As above
Great Crested Grebe wintering population	As above
Cormorant wintering population	As above
Greylag Goose wintering population	As above
Shelduck wintering population	As above
Wigeon wintering population	As above
Teal wintering population	As above
Mallard wintering population	As above
Eider wintering population	As above
Red-breasted Merganser wintering population	As above
Oystercatcher wintering population	As above
Lapwing wintering population	As above
Knot wintering population	As above
Dunlin wintering population	As above
Curlew wintering population	As above
Redshank wintering population	As above
Waterfowl Assemblage wintering population	As above
Waterfowl Assemblage wintering population	Maintain species diversity contributing to the Waterfowl Assemblage
Habitat Extent	Maintain or enhance the area of natural and semi-natural habitats used or potentially usable by Feature bird species. (2056.13 ha intertidal area) subject to natural processes
Habitat Extent	Maintain the extent of main habitat components subject to natural processes
Roost sites wintering population	Maintain or enhance sites utilised as roosts

Table 4. SPA Component objectives

9.1 ADDITIONAL ASSI SELECTION FEATURE OBJECTIVES

Feature	Component Objective
Coastal saltmarsh	To maintain or extend, as appropriate, the area of saltmarsh, subject to natural processes
	To maintain or enhance, as appropriate, the composition of the saltmarsh communities
	To maintain transitions between saltmarsh communities and to other adjoining habitats
	To permit the continued operation of formative and controlling natural processes acting on the saltmarsh communities
Brackish lake	To maintain or enhance, as appropriate, the composition of the brackish water communities
Coastal processes	Permit the continued operation of formative and controlling natural processes acting on the inter-tidal system. Maintain natural site morphology subject to natural processes.

Table 5. ASSI Component objectives

10 MANAGEMENT CONSIDERATIONS

See also Views About Management for relevant ASSIs

Owner/Occupier's **–** (to be used to identify any key management considerations arising from ownership e.g. owners/organisations having an obvious bearing on conservation matters or from management agreements).

Approximately 58 individuals/organisations own land within the SPA. Major landowners and leasees within the SPA, relevant to the site management, include Crown Estate Commissioners, NIEA RSPB and Private Individuals. There may be conflicts of interest between the requirements of individual/organisations, both within and adjacent to the SPA, and the site management needs.

Adjacent commercial operations which may impact upon the SPA include Derry City Airport, Derry City Port and Du Pont. Specifically, ongoing works associated with the runway facility at Derry City Airport, may lead to further loss of the intertidal area within the SPA. Other threats include unregulated sea defence works by individual landowners and the potential expansion of the port facilities. Du Pont a chemical and synthetic fibre manufacturing company sited close to Lough Foyle SPA, is a Part A Process under the Industrial Pollution Control Order. Du Pont also own land within the SPA.

11. MAIN THREATS, PRESSURES, ACTIVITES WITH IMPACTS ON THE SITE OR SITE FEATURES

Notifiable Operations **-** Carrying out <u>any</u> of the Notifiable Operations listed in the schedule could affect the site. The list below is not exhaustive, but deals with the most <u>likely</u> factors that are either affecting Lough Foyle SPA, or could affect it in the future. Although, features 1, 2, 3, 4 etc, are the qualifying SPA features, factors affecting ASSI features are also considered.

<u>Generic site/feature issues</u>

These principally relate to the SPA features – the list may be extended to take account of additional ASSI features on the site.

No	Issue	Threat/comments	Local considerations	Action
1	Adjoining habitat	Particularly important for swans and geese as well as providing high tide roost locations. Significant changes in land management and disturbance are key considerations. Such areas lie without the site making effective management of developments other than those for which planning permission is required, difficult.	Extensive areas of arable land with varying crop type means field usage varies.	Assess planning applications. Identify key areas and promote site management schemes. Review use of Wildfowl Refuges. Consider the collective impact.
2	Aquaculture	Disturbance is a minor consideration unless carried out deliberately to minimise losses to shell-feeding waterfowl. Alteration of natural littoral and sub-littoral communities through seeding, tray/trestle cultivation,	Lough Foyle has been identified as having substantial additional potential for aquaculture development. Major mussel beds at Longfield	Liaise with DARD Fisheries Division. Assess all license applications individually. Consider the collective impact.

		dredging/control of pest species. Naturalisation of introduced species – both the shellfish themselves and associated species e.g. algae and disease vectors.	Point coincide with areas of considerable waterfowl importance.	
3	Bait digging – commercial or 'recreational' and shellfish gathering.	Disturbance and impact on sediment and invertebrate fauna – may be positive through making deeper prey items available on surface. Shellfish gathering represents a net loss to the system in terms of biomass. Generally unregulated.	Unclear as to extent of activity in this area.	Monitor scale of activity. Consider the collective impact.
5	Beach sand and gravel extraction.	Disturbance issue together with loss of biologically active upper sediments. Most beach systems are sedimentalogically closed thus material removed may not be renewed making the activity unsustainable. May lead to changed sediment character of beach ultimately impacting on birds.	Unclear as to extent of activity in this area. The coastline north of Balls Point could be particularly adversely affected by significant extraction.	'Permitted' extraction of beach sand and gravel should be halted through management agreements. Ad hoc removal should be addressed in conjunction with local authorities.
6	Boating activity – commercial	Disturbance and potential for impact from high-speed liners.	Commercial shipping is limited to the main channel. The Magilligan ferry is functional No high-speed boats currently operate.	Formal consultation likely relating to new schemes. Consider the collective impact.
7	Boating activity – recreational	Disturbance and potential for impact especially from jet skis. Generally relevant to particularly sensitive areas within site.	Not thought to be an issue here. Most boating activity is on the ROI side of the Lough.	Liaise with appropriate authority with codes of good practice, zoning and use of by-laws as necessary. Consider the collective impact.
8	Coastal protection schemes	Where there is no history of this, it impacts on natural beach systems with loss of habitat.	Major problem between Balls Point and Point Road, Magilligan.	Liaise with Planning Service and other parties with an involvement in coastal management.
11	Drainage	Potential impact on water flooding regime. Potentially significant in relation to adjoining habitat if it leads to reduction in traditional areas of flooding.	Extent of potential impact unknown – swans and geese mainly use improved arable and pasture land.	Identify key areas and promote site management schemes to protect and enhance site features. Consider the collective impact.
12	Dredging	Generally only an issue in relation to commercial shipping channels. Issues include disturbance, loss of sediment from the system, remobilisation of contaminated sediment and spoil dumping zones.	Routine annual dredging occurs to Derry Port. Spoil is currently dumped outside of Lough Foyle. Ideally dredged spoil should be retained within the system.	Liaise with port authority and Environmental Protection as required with regard to water quality issues and pollution incidents.
13	Enhanced bird competition	Activities onsite or offsite that influences or results in a shift in balance of species utilising a site.	The main tip at Culmore is now closed. This was a major gull roost/feeding site.	Liaise with Planning Service. Review wider countryside changes.
14	Fishing – commercial or recreational	Minimal disturbance consideration but may represent 'competition' for piscivorous birds. Represents a net loss to the system in terms of biomass.	Limited commercial fishing within the Lough.	Liaise with DARD and fishing authority as required. Liaise with angling clubs as required.
15	Habitat	Loss of habitats through development,	'Approved' losses through	Assess planning

	extent – inter-tidal	changes in coastal processes. Loss of inter-tidal habitat is a critical issue as this is the feeding zone for the majority (numbers and species) of birds.	City of Derry runway extension, DARD sea defences and Magilligan ferry development have all resulted in some degree of loss of inter-tidal habitat. Further losses must be carefully assessed.	applications. Monitor using aerial photography.
16	Habitat extent – open water	Loss likely to be limited, but expansion of commercial port facilities can impact on key localities.	Minimal impact from Magilligan ferry development. Not likely to be a significant issue.	Assess planning applications. Consider the collective impact.
17	Habitat quality – inter-tidal	Alteration of habitat quality through diminution of water quality, invasive species or changes in coastal processes.	Principle threat is through spread of Spartina. Chemical and other industries in Derry area may present a threat through build-up of routine discharges or accidental spillage.	Assess planning applications. Deal with invasive alien species by preventing their spread or reducing their impact. Liaise with Environmental Protection as required with regard to water quality issues and pollution incidents. Consider the collective impact.
18	Habitat quality – open water	Alteration of habitat quality through diminution of water quality or invasive species.	Chemical and other industries in Derry area may present a threat through accidental spillage.	Assess planning applications. Deal with invasive alien species by preventing their spread or reducing their impact. Liaise with Environmental Protection as required with regard to water quality issues and pollution incidents. Consider the collective impact.
20	High tide roosts	An essential component of sites hosting waders. Development of adjoining ground or actual traditional roost localities may adversely impact on the sites carrying capacity. Many such sites lie without the site making effective management of developments, other than those for which planning permission is required, difficult.	Localities should be mapped.	Assess planning applications. Identify key areas and promote site management schemes. Review use of Wildfowl Refuges. Consider the collective impact.
21	Introduced species	Range of threats from loss of habitat, feeding competition, disease, hosting species presenting a threat outside of the site.	Spartina is the main issue with unrestricted spread resulting in loss of more significant inter-tidal and saltmarsh habitats.	Liaise with appropriate authority. Consider feasibility of elimination. Participate in national/international initiatives.
22	Power cables	Specifically a problem in relation to swans and geese. Threat is through impact. Need to consider flight lines, as well as feeding and loafing areas, which ideally should be avoided.	Review line marking.	Liaise with NIE. Minimum need is for line marking based on best current practice. Consider the collective impact.
24	Recreational activities.	Disturbance is the main consideration although vehicle access may also lead to beach compaction and impacts on beachhead habitats.	Cumulative disturbance impacts (e.g. boating, wildfowlers, walkers, dogs etc) may be a significant	Liaise with local authorities and other managing parties.

			factor for wintering bird populations impacting on both feeding (inter-tidal) and roosting birds Not currently thought to be a problem.	
25	Research activities.	Census and ringing activities especially have the potential to impact on bird populations, particularly at breeding sites.	Routine winter WEBS counts.	Census and ringing activities to be undertaken by competent individuals, appropriately trained. In case of ringers, appropriate license must be held.
28	System dynamics	Cuts across many other issues. Dynamic systems, especially coastal, can be affected by many factors especially engineered structures and significant changes in dominant wind direction or storm frequency. Many systems may indeed still be undergoing responses to historical developments e.g. partial reclamation, seawall construction. Changes may include alteration in sediment grade, shifts in patterns of erosion and deposition etc. Consequences for habitat and species utilisation of the site can be profound.	Extensive historical reclamation along much of the shore together with coastal engineering works from the Roe towards Derry. New developments include the ferry at Magilligan and the runway extension at Longfield. Aquaculture developments may be significant.	Human induced change should be minimised. Assess planning applications and liaise with other relevant authorities. Ad hoc dumping and removal of natural materials should be managed. Major natural shifts in system behaviour may be identified through analysis of aerial photographs and site monitoring. Major and consistent changes to patterns of habitat distribution and bird utilisation of the site should be noted.
30	Wildfowling	Has direct effect through bag sizes/bag species and wider disturbance issue. Issue of regulated (through recognised shooting clubs) and ad hoc shooters. Lead shot on grazing lands.	Shooting is concentrated over Ballykelly, Longfield and Roe areas. Urgent review of wildfowling required over existing Nature Reserves.	Liaise with relevant shooting bodies (BASC especially) to define areas for wildfowling, the development of Wildfowlers Codes of Good Practice and encourage bag returns. Support pressure to stop use of lead shot. Review use of Wildfowl Refuges. Consider the collective impact.

Table 3. List of site/feature management issues

12. MONITORING

Monitoring of our Special Protection Areas takes place at a number of levels, using a variety of methods. Methods for both Site Integrity Monitoring and Condition Assessment can be found in the Monitoring Handbook (To be written).

Maintain the integrity of the site. Undertake Site Integrity Monitoring (SIM) at least annually to ensure compliance with the SPA/ASSI schedule. The most likely processes of change (e.g. dumping, infilling, gross pollution) will either be picked up by Site Integrity Monitoring, or will be comparatively slow (e.g. change in habitat such as growth of mussel

beds). More detailed monitoring of site features should therefore be carried out by Site Condition Assessment on a less frequent basis (every 6 years initially to pick up long-term or more subtle changes). A baseline survey will be necessary to establish the full extent of the communities present together with the current condition of the features, against which all further condition assessments will be compared.

In addition, detailed quality monitoring or verification monitoring may be carried out from time to time to check whether condition assessment is adequate to detect long-term changes that could affect the site. This type of quality monitoring may involve assessment of aerial photographs to determine site morphological changes. Methodology for this is being developed.

12.1 MONITORING SUMMARY

1. Monitor the integrity of the site (Site Integrity Monitoring or SIM) – Complete boundary survey to ensure integrity of site and that any fencing is still intact. Ensure that no sand extraction or dumping has been carried out within the SAC boundary. This SIM should be carried out once a year.

2. Monitor the condition of the site (Condition Assessment) - Monitor the key attributes for each selection feature (dune, saltmarsh, species). This will detect if the features are in favourable condition or not. See Annexes I and II for SAC and Additional ASSI Features respectively.

   The favourable condition table provided in Annex 1 is intended to supplement the conservation objectives only in relation to management of established and ongoing activities and future reporting requirements on monitoring condition of the site and its features. It does not by itself provide a comprehensive basis on which to assess plans and projects, but it does provide a basis to inform the scope and nature of any appropriate assessment that may be needed. It should be noted that appropriate assessments are a separate activity to condition monitoring, requiring consideration of issues specific to individual plans or projects.

12.2. ADDITIONAL MONITORING ACTIONS UNDERTAKEN FOR SITES IN UNFAVOURABLE CONDITION

Monitoring actions set out in section 6 and Annex 1 will use, amongst other attributes, bird population data to determine site condition. In the event of a significant population decline being detected, a series of subsequent actions will be initiated. The following list is not exhaustive, actions will be site dependant, but the order of these points IS hierarchical i.e. consider point 1, then 2, etc.

1. Assess the site population in a wider geographical context – Northern Ireland, Ireland, UK, world. Refer to BTO ALERT limits etc. Liaise with other competent bodies to meaningfully assess wider pattern. No site action if site decline mirrors regional pattern the cause of which is not related to the site. Action may be required at regional or larger scale. If the cause of the regional population decline (e.g. eutrophication) is found at the site then action may be necessary, but this may

need to form part of a network of strategic species action. Further research may be required.

2. Assess the site population in a wider geographical context – Northern Ireland, Ireland, UK, Europe, world. Determine if site losses are balanced by gains elsewhere e.g. breeding terns. Review site condition to determine if losses are due to site deterioration. Determine if possible whether population has relocated within SPA series (national, biogeographical, European). Note that the reasons for such locational changes may not be readily identifiable. Further research may be required.
3. For passage/wintering species assess breeding information. No site action if site decline is due to breeding ground failure, unless breeding ground failure is related to poor adult condition resulting from factors affecting wintering / passage birds.
4. Determine whether a major incident has affected the site e.g. toxic impact on prey items, predation event or geographical shift in available prey. Ability to respond to impacts may be limited.
5. Assess condition of principal site habitats e.g. vegetational composition and structure, change in habitat balance e.g. mudflats reduced by encroaching mussel beds.
6. Assess prey availability. Issues to consider are both within site e.g. water quality, broad site management, and without site e.g. climatically driven factors.
7. Assess whether there have been any changes in any other site features or management practices (see Table 3) that may have affected populations of site selection features.
8. Long-term site value must be considered even when it is found to be in unfavourable condition for a number of reporting cycles. This is particularly important for breeding seabird and wader sites where ongoing appropriate management may ultimately encourage re-establishment of a favourable population.

13 SELECTION FEATURE POPULATION TRENDS

Site trends are reported using running 5 year means of annual maximum count (WeBS and other data). Long term trends in index values have been used to assess changes in overall wintering populations for Northern Ireland and UK (WeBS data). Caution is always necessary in the interpretation and application of waterfowl counts given the limitations of these data. The lower number of both sites and birds in Northern Ireland, result in a greater degree of fluctuation. Trends for Ireland are based on five years of data 1994-1999 (I-WeBS data). Consequently short-term fluctuations apparent in the data series may reflect changes not indicative of actual population change.

SPECIES	SITE TREND	NI TREND	ROI TREND	UK TREND	COMMENTS
Bewick's Swan	Declining	Declining	Large Fluctuation	Fluctuating	High Alert for NI
Whooper Swan	Stable	Declining	Moderate Fluctuation	Increasing	Moderate Alert for NI
Golden Plover	Stable		Slight Fluctuation		Golden Plover is not included in the indexing proce
Bar-tailed Godwit	Stable	Declining	Large Fluctuation	Stable/Declining	High Alert for NI
Light-bellied Brent Goose	Stable	Fluctuating	Slight Fluctuation		
Great Crested Grebe	Fluctuating	Increasing	Moderate Fluctuation	Increasing/Stable	
Cormorant	Fluctuating	Increasing	Stable	Increasing/Stable	
Greylag Goose	Fluctuating		Moderate Fluctuation	Increasing/Stable	
Shelduck	Increasing	Fluctuating/Increasing	Slight Fluctuation	Stable	
Wigeon	Fluctuating	Fluctuating	Stable	Stable	In the early 1980s in NI, counts of over 20,000 birds were regular. Numbers now peak well below this level.
Teal	Fluctuating	Fluctuating	Increasing	Increasing	
Mallard	Declining	Stable	Stable	Stable	Declining since 1990 in UK. Moderate Alert for UK.
Eider	Fluctuating	+/- Stable		Stable	
Red-breasted Merganser	Increasing	Stable	Stable	Fluctuating/Increasing	
Oystercatcher	Increasing	Increasing	Stable	Stable	
Lapwing	Increasing		Slight Fluctuation		Lapwing is not included in the indexing processes.
Knot	Stable	Fluctuating	Large Fluctuation	Stable	High Alert for NI. Moderate Alert for UK.
Dunlin	Stable	Stable	Slight Fluctuation	Fluctuating	Moderate Alert for UK
Curlew	Stable	Stable	Slight Fluctuation	Stable	
Redshank	Fluctuating	Fluctuating/Increasing	Stable	Stable/Fluctuating	
Waterfowl Assemblage	Fluctuating				

ANNEX I

Feature (SPA) – Wintering waterfowl

* = primary attribute. One failure among primary attribute = unfavourable condition
# = optional factors – these can be in unfavourable condition without the site being in unfavourable condition

Attribute	Measure	Targets	Comments
* Bewick's Swan wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
* Whooper Swan wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
* Golden Plover wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
* Bar-tailed Godwit wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
* Light-bellied Brent Goose wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Great Crested Grebe wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

Attribute	Measure	Targets	Comments
# Cormorant wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Greylag Goose wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Shelduck wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Wigeon wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Teal wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Mallard wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Eider wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

Attribute	Measure	Targets	Comments
# Red-breasted Merganser wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Oystercatcher wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Lapwing wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Knot wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Dunlin wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Curlew wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Redshank wintering population	Bird numbers	No significant decrease in population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

* Waterfowl Assemblage wintering population	Bird numbers	No significant decrease in Waterfowl Assemblage population against national trends	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Waterfowl Assemblage wintering population	Species diversity	Maintain species diversity contributing to the Waterfowl Assemblage	

Feature (SPA) - Non-avian factors

Attribute	Measure	Targets	Comments
* Habitat extent	Area of natural and semi-natural habitat	Maintain the area of natural and semi-natural habitats used by notified species, within the SPA, subject to natural processes.	Monitor once every reporting cycle by aerial photography.
# Extent of different habitats	Extent of different habitats	Maintain the extent of main habitat components subject to natural processes	Evaluate habitat quality should bird populations decline due to on site factors. Map any changes in area. This may include mapping areas with different vegetation structures where this would lead to different usage by notified species.
# Roost sites	Location and number of roost sites	Maintain or enhance sites utilised as roosts	Map roost site locations. Visit once every reporting cycle to ensure sites are available.

ANNEX II

Feature (ASSI)

* = primary attribute. One failure among primary attribute = unfavourable condition
# = optional factors – these can be in unfavourable condition without the site being in unfavourable condition

Attribute	Measure	Targets	Comments
Coastal saltmarsh			
Brackish Lake			

Coastal processes			

APPENDIX 4

Designation information relevant to Lough Foyle SPA (ROI)

SITE SYNOPSIS

SITE NAME: LOUGH FOYLE SPA

SITE CODE: 004087

The site comprises a section of the western shore of Lough Foyle from Muff to north of Vances Point in Co. Donegal. The site is part of the larger cross-border Lough Foyle complex which regularly supports in excess of 20,000 wintering waterbirds. The majority of the wintering waterbirds that utilise this site occur along the southern and eastern shoreline of Lough Foyle in Derry, which is also designated as an SPA in Northern Ireland.

The site is selected as a Special Protection Area (SPA) under the E.U. Birds Directive, as it is part of an internationally important wetland site that regularly supports in excess of 20,000 wintering waterbirds. The assemblage of birds that utilise Lough Foyle includes internationally important populations of Whooper Swan (917), Light-bellied Brent Goose (3,765) and Bar-tailed Godwit (2,059), and nationally important populations of a further 20 species: Red-throated Diver (28), Great Crested Grebe (148), Bewick's Swan (43), Greylag Goose (391), Shelduck (468), Wigeon (9,011), Teal (660), Mallard (1,635), Eider (143), Red-breasted Merganser (82), Oystercatcher (3,101), Golden Plover (4,562), Lapwing (4,024), Knot (499), Dunlin (4,991), Curlew (2,265), Redshank (988), Black-headed Gull (2,212), Common Gull (2,846) and Herring Gull (1,261) – all counts are five year mean peaks for the entire Lough Foyle complex during the period 1995/96 to 1999/2000. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Lough Foyle SPA is of high ornithological importance as it is part of an internationally important wetland site that regularly supports internationally important populations of Whooper Swan, Light-bellied Brent Goose and Bar-tailed Godwit, and nationally important populations of a further 20 species. Of note is that five of the species which occur regularly, i.e. Red-throated Diver, Bewick's Swan, Whooper Swan, Golden Plover and Bar-tailed Godwit are listed on Annex I of the E.U. Birds Directive.

30.5.2015

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **IE0004087**

SITENAME **Lough Foyle SPA**

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1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
A	IE0004087

1.3 Site name

Lough Foyle SPA

1.4 First Compilation date	1.5 Update date
2004-04	2018-09

1.6 Respondent:

Name/Organisation:	National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht
Address:	90 King Street North, Dublin 7, D07 N7CV, Ireland
Email:	datadelivery@chg.gov.ie

1.7 Site indication and designation / classification dates

Date site classified as SPA:	1996-10
National legal reference of SPA designation	No data

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude	Latitude

-7.212647574 55.10266573

2.2 Area [ha]:

587.6737469

2.3 Marine area [%]

94.646

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
IE01	Border, Midland and Western
IEZZ	Extra-Regio

2.6 Biogeographical Region(s)

Atlantic (%)

3. ECOLOGICAL INFORMATION

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3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A050	Anas penelope			w	115	115	i		G	C	C	C	C
B	A053	Anas platyrhynchos			w	91	91	i		G	C	C	C	C
B	A169	Arenaria interpres			w	29	29	i		G	C	C	C	C
B	A046	Branta bernicla			w	79	79	i		G	C	C	C	C
B	A143	Calidris canutus			w	47	47	i		G	C	C	C	C
B	A137	Charadrius hiaticula			w	28	28	i		G	C	C	C	C
B	A130	Haematopus ostralegus			w	275	275	i		G	C	C	C	C
B	A182	Larus canus			w	130	130	i		G	C	C	C	C
B	A179	Larus ridibundus			w	174	174	i		G	C	C	C	C
B	A069	Mergus serrator			w	11	11	i		G	C	C	C	C

B	A160	Numenius arquata			w	390	390	i		G	C	C	C	C
B	A017	Phalacrocorax carbo			w	38	38	i		G	C	C	C	C
B	A005	Podiceps cristatus			w	21	21	i		G	C	C	C	C
B	A048	Tadorna tadorna			w	17	17	i		G	C	C	C	C
B	A164	Tringa nebularia			w	9	9	i		G	C	C	C	C
B	A162	Tringa totanus			w	31	31	i		G	C	C	C	C

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C|R|V|P	IV	V	A	B	C	D
B		Larus argentatus			535	535								X
B		Larus marinus			109	109								X

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see reference portal)
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories: IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N05	2.0
N02	98.0
Total Habitat Cover	100

Other Site Characteristics

The site comprises a section of the western shore of Lough Foyle between Muff and White Castle. Habitat is almost entirely intertidal mudflat, with small areas of sand and shingle. The quality of intertidal habitat is not known but it may be somewhat enriched due to the proximity of Derry City (less than 10 km upstream).

4.2 Quality and importance

This site is a relatively small part of the Lough Foyle estuarine complex, a site of high ornithological importance. The Lough Foyle SPA provides feeding habitat for a range of wintering waterfowl species but all are in relatively low numbers. Gulls are regular in winter, with substantial numbers of Larus argentatus and Larus marinus.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	E01		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
L	X		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Colhoun, K. (2001). I-WeBS Report 1998-99. BirdWatch Ireland, Dublin. Hunt, J., Derwin, J., Coveney, J. and Newton, S. (2000). Republic of Ireland. Pp. 365-416 in Heath, M.F. and Evans, M.I. (eds). Important Bird Areas in Europe: Priority Sites for Conservation 1: Northern Europe. Cambridge, UK: BirdLife International (BirdLife Conservation Series No. 8). Irish Wetland Birds Survey (I-WeBS) Database, 1994/95-2000/01. BirdWatch Ireland, Dublin. Sheppard, R. (1993). Ireland's Wetland Wealth. IWC, Dublin.

6. SITE MANAGEMENT

Back to top

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

7. MAP OF THE SITES

Back to top

INSPIRE ID: IE.NPWS.PS.NATURA2000.SPA.IE0004087

Map delivered as PDF in electronic format (optional)

[ ] Yes [X] No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).

ISSN 2009-4086

National Parks and Wildlife Service

Conservation Objectives Series

Lough Foyle SPA 004087

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

National Parks and Wildlife Service,
Department of Arts, Heritage and the Gaeltacht,

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Introduction

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

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

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

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

Favourable conservation status of a habitat is achieved when:

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

The favourable conservation status of a species is achieved when:

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

Notes/Guidelines:

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

Qualifying Interests

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

004087 Lough Foyle SPA

A001	Red-throated Diver *Gavia stellata*
A005	Great Crested Grebe *Podiceps cristatus*
A037	Bewick's Swan *Cygnus columbianus bewickii*
A038	Whooper Swan *Cygnus cygnus*
A043	Greylag Goose *Anser anser*
A046	Brent Goose *Branta bernicla hrota*
A048	Shelduck *Tadorna tadorna*
A050	Wigeon *Anas penelope*
A052	Teal *Anas crecca*
A053	Mallard *Anas platyrhynchos*
A063	Eider *Somateria mollissima*
A069	Red-breasted Merganser *Mergus serrator*
A130	Oystercatcher *Haematopus ostralegus*
A140	Golden Plover *Pluvialis apricaria*
A142	Lapwing *Vanellus vanellus*
A143	Knot *Calidris canutus*
A149	Dunlin *Calidris alpina alpina*
A157	Bar-tailed Godwit *Limosa lapponica*
A160	Curlew *Numenius arquata*
A162	Redshank *Tringa totanus*
A179	Black-headed Gull *Chroicocephalus ridibundus*
A182	Common Gull *Larus canus*
A184	Herring Gull *Larus argentatus*
A999	Wetlands

Supporting documents, relevant reports & publications

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

NPWS Documents

Year :	2014
Title :	Lough Foyle SPA (site code: 4087) Conservation objectives supporting document V1
Author :	NPWS
Series :	Conservation objectives supporting document

A005 Great Crested Grebe *Podiceps cristatus*

To maintain the favourable conservation condition of Great Crested Grebe in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

A037 Bewick's Swan *Cygnus columbianus bewickii*

To maintain the favourable conservation condition of Bewick's Swan in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

A038 Whooper Swan *Cygnus cygnus*

To maintain the favourable conservation condition of Whooper Swan in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

Conservation Objectives for : Lough Foyle SPA [004087]

A043 Greylag Goose *Anser anser*

To maintain the favourable conservation condition of Greylag Goose in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

Conservation Objectives for : Lough Foyle SPA [004087]

A046 **Brent Goose *Branta bernicla hrota***

To maintain the favourable conservation condition of Light-bellied Brent Goose in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

Conservation Objectives for : Lough Foyle SPA [004087]

A048 **Shelduck *Tadorna tadorna***

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

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

A050 Wigeon *Anas penelope*

To maintain the favourable conservation condition of Wigeon in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

A052 Teal *Anas crecca*

To maintain the favourable conservation condition of Teal in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

Conservation Objectives for : Lough Foyle SPA [004087]

A053 Mallard *Anas platyrhynchos*

To maintain the favourable conservation condition of Mallard in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

Conservation Objectives for : Lough Foyle SPA [004087]

A063 **Eider *Somateria mollissima***

To maintain the favourable conservation condition of Eider in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

A069 Red-breasted Merganser *Mergus serrator*

To maintain the favourable conservation condition of Red-breasted Merganser in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

Conservation Objectives for : Lough Foyle SPA [004087]

A130 Oystercatcher *Haematopus ostralegus*

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

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

Conservation Objectives for : Lough Foyle SPA [004087]

A140 **Golden Plover *Pluvialis apricaria***

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

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

A142 Lapwing *Vanellus vanellus*

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

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

A143 **Knot *Calidris canutus***

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

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

A149 Dunlin *Calidris alpina alpina*

To maintain the favourable conservation condition of Dunlin in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

A157 Bar-tailed Godwit *Limosa lapponica*

To maintain the favourable conservation condition of Bar-tailed Godwit in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

A160 Curlew *Numenius arquata*

To maintain the favourable conservation condition of Curlew in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

A162 Redshank *Tringa totanus*

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

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

A179 Black-headed Gull *Chroicocephalus ridibundus*

To maintain the favourable conservation condition of Black-headed Gull in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

Conservation Objectives for : Lough Foyle SPA [004087]

A182 Common Gull *Larus canus*

To maintain the favourable conservation condition of Common Gull in Lough Foyle SPA, which is defined by the following list of attributes and targets:

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

A184 Herring Gull *Larus argentatus*

To maintain the favourable conservation condition of Herring Gull in Lough Foyle SPA, which is defined by the following list of attributes and targets:

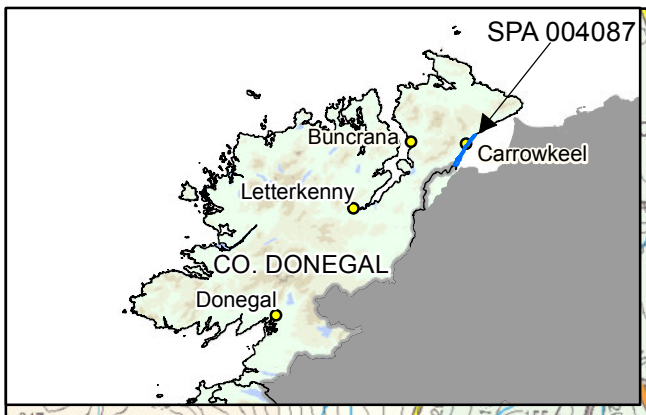
Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease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

Conservation Objectives for : Lough Foyle SPA [004087]

A999 Wetlands

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

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 588 hectares, other than that occurring from natural patterns of variation	The wetland habitat area was estimated as 588ha using OSi data and relevant orthophotographs. For further information see part three of the conservation objectives supporting document



MAP 1:
LOUGH FOYLE SPA
CONSERVATION OBJECTIVES
SPA DESIGNATION

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

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

SITE CODE:
SPA 004087; version 2.01. CO. DONEGAL

0 0.5 1 km

N

Map Version 1
Date: Sep 2014

Legend

Lough Foyle SPA 004087

APPENDIX 5

Designation information relevant to Lough Foyle Ramsar site

An Agency within the Department of the Environment for Northern Ireland

ENVIRONMENT AND HERITAGE SERVICE

RAMSAR CONVENTION

LOUGH FOYLE RAMSAR SITE

Area: 2204.36 hectares *Geographic co-ordinates*: 07° 01' 37" W
55° 05' 24" N

Lough Foyle is situated on the north coast of Northern Ireland immediately downstream and extending to the north-east of the city of Londonderry. The site is comprised of a large shallow sea lough which includes the estuaries of the rivers Foyle, Faughan and Roe. The site contains extensive intertidal areas of mudflats and sandflats, saltmarsh and associated brackish ditches.

The Ramsar site includes the whole of Lough Foyle Area of Special Scientific Interest (ASSI) and the intertidal area of Magilligan Area of Special Scientific Interest in Lough Foyle extending south of Magilligan Point. The boundary of the Ramsar site is entirely coincident with that of the Lough Foyle Special Protection Area and it overlaps with Magilligan candidate Special Area of Conservation.

The site qualifies under Criterion 1a of the Ramsar Convention by being a particularly good representative example of a wetland complex including intertidal sand and mudflats with extensive seagrass beds, saltmarsh, estuaries and associated brackish ditches.

The site also qualifies under Criterion 1c by being a particularly good representative example of a wetland, which plays a substantial hydrological, biological and ecological system role in the natural functioning of a major river basin which is located in a trans-border position.

The littoral communities found in Lough Foyle reflect the dominance of intertidal sands and muds. While rocky substrate is very limited, the extensive beds of Common Mussel *Mytilus edulis* provide a stable surface for Acorn Barnacle *Semibalanus balanoides* and Edible Periwinkle *Littorina littorea*. The polychaete Green Leaf Worm *Eulalia viridis* is a common associate. The soft shores hold a range of invertebrates typical of mud and sand shores, with a number of species, such as the polychaete worm *Hediste diversicolor*, indicative of reduced salinity conditions. Balls Point has the highest diversity of sediment and community types in Lough Foyle and holds large populations of the bivalves Sand Gaper *Mya arenaria* and Peppery Furrow Shell *Scrobicularia plana*.

The extensive mudflats support large beds of both Common Mussel *Mytilus edulis* and Eelgrass *Zostera* spp. The latter are amongst the largest colonies of this vegetation type in Northern Ireland and includes two species, Narrow-leaved Eelgrass *Zostera angustifolia* and Dwarf Eelgrass *Z. noltii*. Large stands of saltmarsh vegetation occur along the foreshore, displaying a transitional sequence of community types. The lower colonising saltmarsh consists of a community dominated by Common Saltmarsh-grass *Puccinellia maritima*. As tidal influence declines up the shore, this is replaced by a "middle-marsh" community, characterised by Red Fescue *Festuca rubra* and Mud Rush *Juncus gerardii*. Localised stands of Sea Club-rush *Schoenoplectus maritimus* and Common Reed *Phragmites australis* also occur. The uppermost saltmarsh features a community dominated by Common Couch *Elytrigia repens*. Just west of the Ballykelly Bank, on the large intertidal mudflats which form part of a larger creek network, the lower saltmarsh communities are replaced by extensive stands of Common Cord-grass *Spartina anglica*. Brackish dykes behind the shore support a maritime aquatic and swamp vegetation, including the Reflexed Saltmarsh-grass *Puccinellia distans* and Spiral Tasselweed *Ruppia cirrhosa*.

The site qualifies under Criterion 2a because it supports an appreciable assemblage of rare, vulnerable or endangered species or sub-species of plant and animal. A range of notable fish species have been recorded for the Lough Foyle estuary and the lower reaches of some of its tributary rivers. These include Allis Shad *Alosa alosa*, Twaite Shad *A. fallax fallax*, Smelt *Osmerus eperlanus* and Sea Lamprey *Petromyzon marinus*, all of which are Irish Red Data Book species. In addition, important populations of Atlantic Salmon *Salmo salar* migrate through the system to and from their spawning grounds.

The site qualifies under Criterion 3a of the Directive by supporting over 20,000 waterfowl. Peak numbers averaged 36,599 birds in the five years between 1991/92 and 1995/96.

The site qualifies under Criterion 3b by regularly supporting substantial numbers of individuals from particular groups of waterfowl which are indicative of wetland values, productivity and diversity. These include internationally important populations of Whooper Swan *Cygnus cygnus*, Light-bellied Brent Goose *Branta bernicla hrota* and Bar-tailed Godwit *Limosa lapponica* (see below). Additional wildfowl species which are nationally important in an all-Ireland context are Red-throated Diver *Gavia stellata* (an average of 27 birds, 2.7% of the all-Ireland wintering population), Great Crested Grebe *Podiceps cristatus* (220, 7.3%), Mute Swan *Cygnus olor* (97, 1.8%), Bewick's Swan *C. columbianus* (78, 3.1%), Greylag Geese *Anser anser* (67, 1.7%), Shelduck *Tadorna tadorna* (287, 4.1%), Teal *Anas crecca* (751, 1.2%), Mallard *Anas platyrhynchos* (1694, 3.4%), Wigeon *A. penelope* (8107, 6.5%), Eider *Somateria mollissima* (50, 2.5%) and Red-breasted Merganser *Mergus serrator* (73, 3.7%). Nationally important wader species are Oystercatcher *Haematopus ostralegus* (2045, 4.1%), Golden Plover *Pluvialis apricaria* (4999, 2.5%), Grey Plover *Pluvialis squatarola* (43, 1.1%), Lapwing *Vanellus vanellus* (3084, 1.2%), Knot *Calidris canutus* (412, 1.1%), Dunlin *C. alpina* (4847, 3.9%), Curlew *Numenius arquata*

(2152, 2.5%), Redshank *Tringa totanus* (791, 3.2%) and Greenshank *T. nebularia* (30, 3.3%).

In recent years a notable wintering population of Slavonian Grebe *Podiceps auritus* has been observed in Lough Foyle (a peak of 103 birds was recorded in 1995/96 which comprises 2.1% of the international population).

The site qualifies under Criterion 3c by regularly supporting internationally important numbers of Whooper Swan *Cygnus cygnus* (the five year peak mean for the period 1991/92 to 1995/96 was 890, which comprises 5.6% of the international population), Light-bellied Brent Goose *Branta bernicla hrota* (the five year peak mean for the period 1991/92 to 1995/96 was 3730 which comprises 18.7% of the international population) and Bar-tailed Godwit *Limosa lapponica* (the five year peak mean for the period 1991/92 to 1995/96 was 1896 which comprises 1.9% of the international population).

Lough Foyle

Ramsar Site Code: 7UK130

Wetland of International Importance
Ramsar Convention shown thus:

The Ramsar Site includes all lands and intertidal areas seawards of the solid red line to the limits of territorial waters. Marine areas below mean low water are not included.
The Ramsar Site also includes those lagoons shaded red which lie to the landward side of the solid red line between points A-B and C-D.
The boundary of the Ramsar Site follows the top of the sand cliffline between points X-Y and the mean high water mark between Y-Z.

ENVIRONMENT AND HERITAGE SERVICE

An Agency within the Department of the Environment for Northern Ireland

Longitude: 07° 01' 37" W

Latitude: 55° 05' 24" N

Area of Ramsar Site: 2204.36 ha.

Map 1 of 1

Version number: 2 (19/1/99)

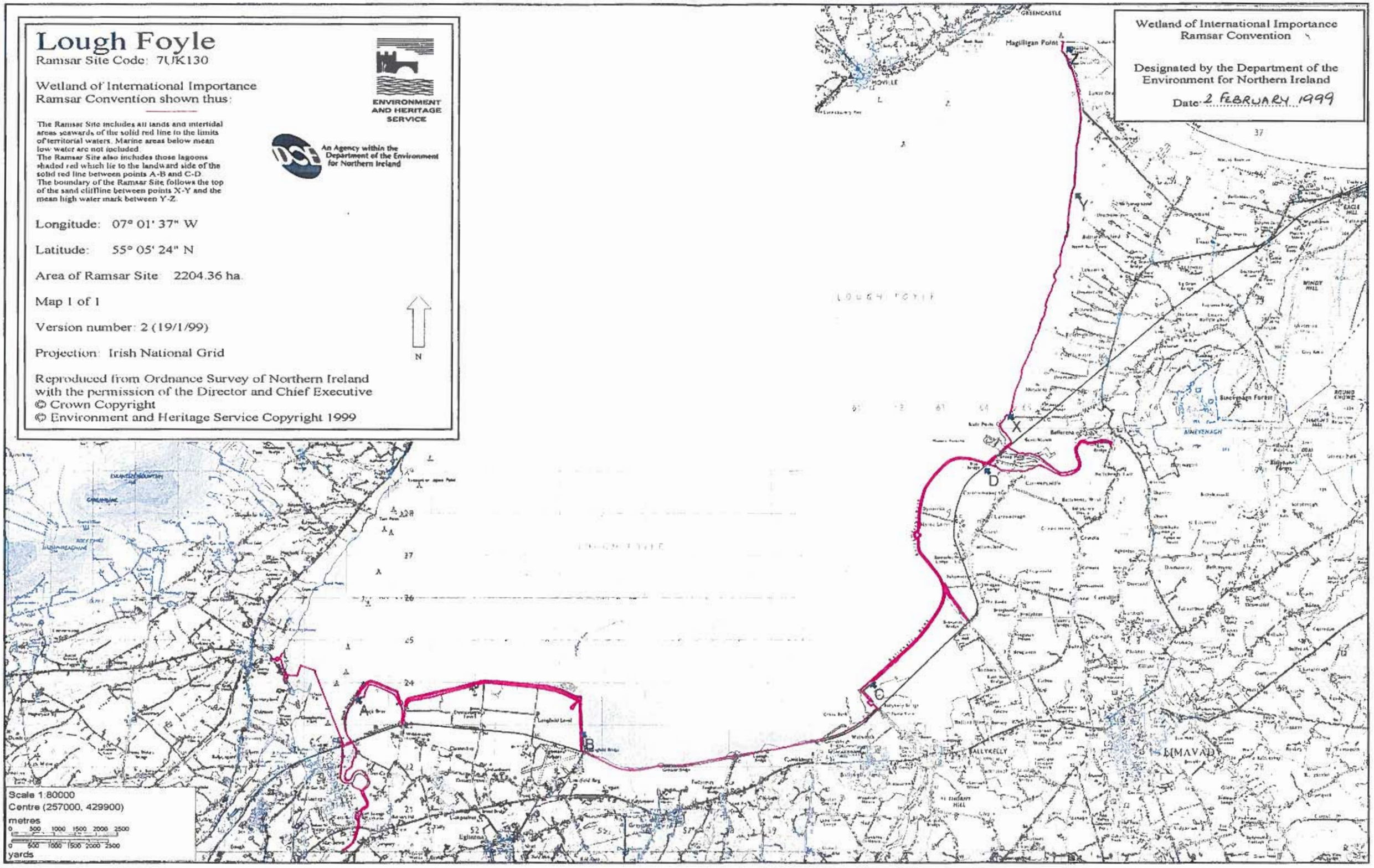
Projection: Irish National Grid

N

Wetland of International Importance
Ramsar Convention

Designated by the Department of the Environment for Northern Ireland

Date: 2 FEBRUARY 1999



Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7, as amended by Resolution VIII.13 of the Conference of the Contracting Parties.

Note for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers are strongly urged to provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of maps.

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.

DD MM YY

Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:

Designated: 02 February 1999 / updated 12 May 2005

3. Country:

UK (Northern Ireland)

4. Name of the Ramsar site:

Lough Foyle

5. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps.

a) hard copy (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no* □

b) digital (electronic) format (optional): Yes

6. Geographical coordinates (latitude/longitude)**:**

55 05 24 N 07 01 37 W

7. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

Nearest town/city: Londonderry

Lough Foyle is situated on the north coast of Northern Ireland immediately downstream and extending to the north-east of the city of Londonderry.

Administrative region: Derry; Derry City; Limavady

8. Elevation (average and/or max. & min.) (metres)**:**

Min. 0
Max. 10
Mean 0

9. Area (hectares)**:** 2204.36

10. Overview:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The site is comprised of a large shallow sea lough which includes the estuaries of the rivers Foyle, Faughan and Roe. The site contains extensive intertidal areas of mudflats and sandflats, saltmarsh and associated brackish ditches.

11. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 2, 3, 5, 6

Secretariat comment: The RIS provides information requiring the application of Criterion 4. This needs to be included in the next update.

12. Justification for the application of each Criterion listed in 11. above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1

This is a particularly good representative example of a wetland complex including intertidal sand and mudflats with extensive seagrass beds, saltmarsh, estuaries and associated brackish ditches.

This is a particularly good representative example of a wetland, which plays a substantial hydrological, biological and ecological system role in the natural functioning of a major river basin which is located in a trans-border position.

Ramsar criterion 2

The site supports an appreciable assemblage of rare, vulnerable or endangered species or sub-species of plant and animal. A range of notable fish species have been recorded for the Lough Foyle estuary and the lower reaches of some of its tributary rivers. These include allis shad *Alosa alosa*, twaite shad *A. fallax fallax*, smelt *Osmerus eperlanus* and sea lamprey *Petromyzon marinus*, all of which are Irish Red Data Book species. In addition, important populations of Atlantic salmon *Salmo salar* migrate through the system to and from their spawning grounds.

Ramsar criterion 3

The site supports a diverse assemblage of wintering waterfowl which are indicative of wetland values, productivity and diversity. These include internationally important populations of Whooper Swan *Cygnus cygnus*, Light-bellied Brent Goose *Branta bernicla hrota* and Bar-tailed Godwit *Limosa lapponica*. Additional wildfowl species which are nationally important in an all-Ireland context are Red-throated Diver *Gavia stellata*, Great crested Grebe *Podiceps cristatus*, mute swan *Cygnus olor*, Bewick's Swan *C. columbianus*, Greylag Geese *Anser anser*, Shelduck *Tadorna tadorna*, Teal *Anas crecca*, Mallard *Anas platyrhynchos*, Wigeon *A. penelope*, Eider *Somateria mollissima*, and Red-breasted Merganser *Mergus serrator*. Nationally important wader species are Oystercatcher *Haematopus ostralegus*. Golden Plover *Pluvialis apricaria*, Grey Plover *Pluvialis squatarola*, Lapwing *Vanellus vanellus*, Knot *Calidris canutus*, Dunlin *C. aplina*, Curlew *Numenius arquata*, Redshank *Tringa tetanus* and Greenshank *T. nebilaria*.

Ramsar criterion 5

The site supports about 29000 migrating birds.
Species and numbers are listed in section 20

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):

Species with peak counts in spring/autumn:

Whooper swan , *Cygnus cygnus*, Iceland/UK/Ireland	882 individuals, representing an average of 4.2% of the population (5 year peak mean 1998/9-2002/3)
Light-bellied brent goose, *Branta bernicla hrota*, East Canada/Ireland	2270 individuals, representing an average of 11.3% of the population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Bar-tailed godwit , *Limosa lapponica lapponica*, W Palearctic	2028 individuals, representing an average of 1.6% of the population (5 year peak mean 1998/9-2002/3)

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.
See Sections 19/20 for details of noteworthy species
Details of bird species occuring at levels of National importance are given in Section 20

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13. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation)**:**

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

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14. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	sand, mud
Geomorphology and landscape	intertidal sediments (including sandflat/mudflat), estuary, lagoon
Nutrient status	no information
pH	no information
Salinity	brackish / mixosaline, saline / euhaline
Soil	no information
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Carmoney, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/carmoney.html) Max. daily temperature: 12.1° C Min. daily temperature: 5.9° C Days of air frost: 27.6 Rainfall: 993.0 mm Hrs. of sunshine: 1179.0

General description of the Physical Features:

Lough Foyle comprises a large, shallow sea lough that includes the estuaries of the rivers Foyle, Faughan and Roe. The site contains extensive intertidal mudflats and sandflats (with mussel *Mytilus edulis* beds), saltmarsh and associated brackish ditches.

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15. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

Lough Foyle comprises a large, shallow sea lough that includes the estuaries of the rivers Foyle, Faughan and Roe. The site contains extensive intertidal mudflats and sandflats (with mussel *Mytilus edulis* beds), saltmarsh and associated brackish ditches.

The Foyle Basin comprises eastern Co. Donegal from Inishowen Head to Lough Derg, western Co. Derry from Binevenagh through to Fintona in West Co. Tyrone.

16. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

No special values known

17. Wetland types

Marine/coastal wetland

Code	Name	% Area
G	Tidal flats	94.4
H	Salt marshes	3.6
J	Coastal brackish / saline lagoons	2

18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site.

The littoral communities found in Lough Foyle reflect the dominance of intertidal sands and muds. While rocky substrate is very limited, the extensive beds of common mussel *Mytilus edulis* provide a stable surface for acorn barnacle *Semibalanus balanoides* and edible periwinkle *Littorina littorea*. The polychaete green leaf worm *Eulalia viridis* is a common associate. The soft shores hold a range of invertebrates typical of mud and sand shores, with a number of species, such as the polychaete worm *Hediste diversicolor*, indicative of reduced salinity conditions. Balls Point has the highest diversity of sediment and community types in Lough Foyle and holds large populations of the bivalves sand gaper *Mya arenaria* and peppery furrow shell *Scrobicularia plana*.

The intertidal area consists of extensive mudflats, which support large beds of both common mussel *Mytilus edulis* and eelgrass *Zostera* spp. The latter are amongst the largest colonies of this vegetation type in Northern Ireland and includes two species, narrow-leaved eelgrass *Zostera angustifolia* and dwarf eelgrass *Z. noltei*. Large stands of saltmarsh vegetation occur along the foreshore, displaying a transitional sequence of community types. The lower colonising saltmarsh consists of a community dominated by common saltmarsh-grass *Puccinellia maritima*. As tidal influence declines up the shore, this is replaced by a 'middle-marsh' community, characterised by red fescue *Festuca rubra* and mud rush *Juncus gerardii*. Localised stands of sea club-rush *Bolboschoenus maritimus* and common reed *Phragmites australis* also occur. The uppermost saltmarsh features a community dominated by common couch *Elytrigia repens*. Just west of the Ballykelly Bank, on the large intertidal mudflats which form part of a larger creek network, the lower saltmarsh communities are replaced by extensive stands of common cord-grass *Spartina anglica*. Brackish dykes behind the shore support a maritime aquatic and swamp vegetation, including the rare reflexed saltmarsh-grass *Puccinellia distans* and spiral tasselweed *Ruppia cirrhosa*.

19. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

None reported

20. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species currently occurring at levels of national importance:

Species with peak counts in spring/autumn:

Great crested grebe , *Podiceps cristatus cristatus*, NW Europe	179 individuals, representing an average of 5.1% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Great cormorant , *Phalacrocorax carbo carbo*, NW Europe	102 individuals, representing an average of 2% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Eurasian wigeon , *Anas penelope*, NW Europe	7259 individuals, representing an average of 5.8% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Eurasian teal , *Anas crecca*, NW Europe	1232 individuals, representing an average of 1.8% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Mallard , *Anas platyrhynchos platyrhynchos*, NW Europe	1214 individuals, representing an average of 2.4% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Common eider , *Somateria mollissima mollissima*, NW Europe	231 individuals, representing an average of 11.5% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Ringed plover , *Charadrius hiaticula*, Europe/Northwest Africa	199 individuals, representing an average of 1.5% of the all-Ireland population (5 year peak mean 1998/9-2002/3 - spring peak)
Ruff , *Philomachus pugnax*, Europe/W Africa	5 individuals, representing an average of 25% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Whimbrel , *Numenius phaeopus*, Europe/Western Africa	6 individuals, representing an average of 40% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Common greenshank , *Tringa nebularia*, Europe/W Africa	44 individuals, representing an average of 4.8% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Mew gull , *Larus canus canus*, Europe to N Africa	3760 individuals, representing an average of 5.5% of the all-Ireland population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Red-throated diver , *Gavia stellata*, NW Europe	14 individuals, representing an average of 1.4% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Slavonian grebe , *Podiceps auritus*, Northwest Europe	6 individuals, representing an average of 20% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Greylag goose , *Anser anser anser*, Iceland/UK, Ireland	67 individuals, representing an average of 1.7% of the all-Ireland population (5 year peak mean 1991/92-1995/96)
Common shelduck , *Tadorna tadorna*, NW Europe	382 individuals, representing an average of 5.4% of the all-Ireland population (5 year peak mean 1998/9-2002/3)

Red-breasted merganser , *Mergus serrator*, NW & C Europe	36 individuals, representing an average of 1.8% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Eurasian oystercatcher , *Haematopus ostralegus ostralegus*, Europe & NW Africa -wintering	2809 individuals, representing an average of 5.6% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Northern lapwing , *Vanellus vanellus*, Europe - breeding	3430 individuals, representing an average of 1.3% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Dunlin , *Calidris alpina alpina*, W Siberia/W Europe	4595 individuals, representing an average of 3.6% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Eurasian curlew , *Numenius arquata arquata*, N. a. arquata Europe (breeding)	2162 individuals, representing an average of 2.4% of the all-Ireland population (5 year peak mean 1998/9-2002/3)
Common redshank , *Tringa totanus totanus*,	1286 individuals, representing an average of 5.2% of the all-Ireland population (5 year peak mean 1998/9-2002/3)

Species Information

Nationally important species occurring on the site.

Fish.

Alosa alosa, Alosa fallax, Osmerus eperlanus, Petromyzon marinus

21. Social and cultural values:

e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Environmental education/ interpretation
Fisheries production
Livestock grazing
Scientific research
Sport hunting
Tourism

22. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	
Local authority, municipality etc.	+	
National/Crown Estate	+	
Private	+	+
Public/communal	+	

23. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Tourism		+
Recreation	+	
Current scientific research	+	
Gathering of shellfish	+	

Bait collection	+	
Hunting: recreational/sport	+	
Industrial water supply	+	
Sewage treatment/disposal	+	
Harbour/port		+
Flood control	+	
Transport route		+
Urban development		+

24. Factors adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Introduction/invasion of non-native plant species	2		+		+

For category 2 factors only.
What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Introduction/invasion of non-native plant species - Conservation Objectives for the site have been developed. These highlight the need for addressing the *Spartina* issue. Extent of *Spartina* extent being monitored. Future trials of selective herbicides to be undertaken ASAP.
Site to be assessed to determine effectiveness of *Spartina* spraying. Rotovating techniques may be trialed.

Is the site subject to adverse ecological change? YES

25. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
National Nature Reserve (NNR)	+	
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	

Management agreement	+	
Site management statement/plan implemented	+	
Other		+
Area of Outstanding National Beauty (AONB)	+	
Special Area of Conservation (SAC)	+	

26. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

27. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

The site is occassionally used by local academic institutions.

28. Current conservation education:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

A small education centre at Magilligan occasionally uses the Lough for study and research.

29. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities.
Magilligan Point is a popular recreation venue for bathing.

Facilities provided.
Discussions regarding a passenger ferry from Magilligan Point to Greencastle on the Southern Irish shores of the Lough have been on-going.

Seasonality.
During the summer months

30. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Department of the Environment (Northern Ireland), Environment and Heritage Service, Commonwealth House, Castle Street, Belfast, Northern Ireland, BT1 1GU

31. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Department of the Environment (Northern Ireland), Environment and Heritage Service, Commonwealth House, Castle Street, Belfast, Northern Ireland, BT1 1GU

32. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see **13** above), list full reference citation for the scheme.

Site-relevant references

Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP, Davidson, NC & Buck, AL (eds.) (1997) *Coasts and seas of the United Kingdom. Region 17. Northern Ireland*. Joint Nature Conservation Committee, Peterborough. (Coastal Directories Series.)

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Cooper, EA, Crawford, I, Malloch, AJC & Rodwell, JS (1992) *Coastal vegetation survey of Northern Ireland*. (Contractor: University of Lancaster, Unit of Vegetation Science). Unpublished report to Department of the Environment (Northern Ireland), Belfast

Cranswick, PA, Waters, RJ, Musgrove, AJ & Pollitt, MS (1997) *The Wetland Bird Survey 1995–96: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge

Crowe, O (2005) *Ireland's wetlands and their waterbirds: status and distribution*. BirdWatch Ireland, Newcastle, Co. Wicklow

Lacambra, C, Cutts, N, Allen, J, Burd, F & Elliott, M (2004) *Spartina anglica*: a review of its status, dynamics and management. *English Nature Research Reports*, No. **527**. www.english-nature.org.uk/pubs/publication/PDF/527.pdf

Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999–2000: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge. www.wwt.org.uk/publications/default.asp?PubID=14

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Way, LS, Grice, P, MacKay, A, Galbraith, CA, Stroud, DA & Pienkowski, MW (1993) *Ireland's Internationally Important Bird Sites: a review of sites for the EC Special Protection Area network*. Joint Nature Conservation Committee, Peterborough, for Department of the Environment (Northern Ireland), Belfast, and Irish Wildlife Service, Dublin

Weighell, AJ, Donnelly, AP & Calder, K (eds.) (2000) *Directory of the Celtic coasts and seas.* Joint Nature Conservation Committee, Peterborough

Wilkinson, M, Fuller, IWA, Telfer, TC, Moore, CG & Kingston, PF (1988) *Northern Ireland Littoral Survey: A conservation-orientated survey of the intertidal seashore of Northern Ireland*. Institute of Offshore Engineering, Heriot-Watt University, Edinburgh

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Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
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APPENDIX 6

Designation information relevant to River Finn SAC (ROI)

SITE SYNOPSIS

Site Name: River Finn SAC

Site Code: 002301

This site comprises almost the entire freshwater element of the River Finn and its tributaries the Corlacky, the Reelan sub-catchment, the Sruhamboy, Elatagh, Cummirk and Glashagh, and also includes Lough Finn, where the river rises. The spawning grounds at the headwaters of the Mourne and Derg Rivers, Loughs Derg and Belshade and the tidal stretch of the Foyle north of Lifford to the border are also part of the site. The Finn and Reelan, rising in the Bluestack Mountains, drain a catchment area of 195 square miles. All of the site is in Co. Donegal. The underlying geology is Dalradian Schists and Gneiss for the most part though quartzites and Carboniferous Limestones are present in the vicinity of Castlefinn. The hills around Lough Finn are also on quartzite. The mountains of Owendoo and Cloghervaddy are of granite felsite and other intrusive rocks rich in silica. There are many towns along the river but not within the site, including Lifford, Castlefinn, Stranolar and Ballybofey.

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

[3110] Oligotrophic Waters containing very few minerals
[4010] Wet Heath
[7130] Blanket Bogs (Active)*
[7140] Transition Mires
[1106] Atlantic Salmon (*Salmo salar*)
[1355] Otter (*Lutra lutra*)

Upland blanket bog occurs throughout much of the upland area of the site along the edges of the river. However, more extensive examples are found at Tullytresna and in the Owendoo/Cloghervaddy bogs. The blanket bog is dominated by Common Cottongrass (*Eriophorum angustifolium*), Deergrass (*Scirpus cespitosus*), Purple Moor-grass (*Molinia caerulea*) and bog mosses (*Sphagnum* spp.). Pool and hummock systems are a feature of the flatter areas, with Heather (*Calluna vulgaris*), mosses (*Racomitrium lanuginosum, Sphagnum capillifolium* and *S. papillosum*), lichens (e.g. *Cladonia portentosa*) and the liverwort *Pleurozia purpurea* occurring abundantly on the hummocks. The scarce bog boss *S. imbricatum* is a component of some hummocks. *Sphagnum magellanicum* is found in wet flats by pools, while *S. cuspidatum* occurs abundantly within the pools themselves.

Towards the base of the northern slope and on the southern slope at Tullytresna flushes occur with bright green lawns of bog mosses and abundant rushes, particularly Soft Rush (*Juncus effusus*) and Jointed Rush (*J. articulatus*). On the summit is an undulating system of hummocks and hollows, and Heather is more common.

A valley bog fills the low lying areas to the north-east of Lough Finn which is dominated by Deergrass, cottongrass, Purple Moor-grass and Heather. Mossy hummocks occur in the wetter areas.

Transition mires (or quaking bogs or scraws) occur at several locations, usually at the interface between bog and lake or stream. In Owendoo/Cloghervaddy there are many examples of small lakes south of Belshade. Some of the lakes contain floating scraws of the bog moss *S. recurvum*, Bottle Sedge (*Carex rostrata*), Bog-sedge (*C. limosa*) and Bogbean (*Menyanthes trifoliata*). West of Owendoo River there is an extensive area of scraw with a similar suite of species but in differing abundances. Quaking areas are also associated with blanket bog at Cronamuck and Cronakerny. At Cronamuck, a small, level flushed area occurs at the base of a slope leading into a flushed stream. Diversity, including diagnostic species, is good.

Wet heath is associated with the blanket bog throughout the site and is found on the shallow peats and better drained slopes. In Owendoo/Cloghervaddy this is mostly characterised by Cross-leaved Heath (*Erica tetralix*), Heather, Mat-grass (*Nardus stricta*), Heath Rush (*Juncus squarrosus*) and Tormentil (*Potentilla erecta*). The heath often grades into flush vegetation dominated by Black Bog-rush (*Schoenus nigricans*).

Lowland oligotrophic lakes are found at Loughs Finn, Belshade and Derg, as well as in many of the smaller lakes within the site. Lough Derg is a large oligotrophic lake situated north of Pettigo. An extensive area of blanket bogs and conifer plantations make up the lake catchment. Typical species seen at the three lakes include a sparse covering of Shoreweed (*Littorella uniflora*) along the lake shores, Water Lobelia (*Lobelia dortmanna*), the moss *Fontinalis antipyretica,* Bog Pondweed (*Potamogeton polygonifolius*) and Water Horsetail (*Equisetum fluviatile*), with Bulbous Rush (*Juncus bulbosus*) and Broad-leaved Pondweed (*P. natans*) in the margins.

On the tidal stretches within the site the main habitats are the river itself, mudflats and the extensive reedbeds that have colonised the former mudflats. The habitats found are typically freshwater in nature. The large reedbeds are dominated by Common Reed (*Phragmites australis*), with some Bulrush (*Typha latifolia*), Reed Canary-grass (*Phalaris arundinacea*) and Tufted Hair-grass (*Deschampsia cespitosa*). Succession is demonstrated nicely within a small area, with the change from mudflats to reedbeds, and on to willow (*Salix* spp.) and Alder (*Alnus glutinosa*) scrub.

Other habitats present within the site include a fringe of wet grassland/marsh along some river stretches dominated by rushes, grading into species-rich marsh in which sedges are common. Among the other species found in this habitat are Yellow Iris (*Iris pseudacorus*), Water Mint (*Mentha aquatica*), Purple Loosestrife (*Lythrum salicaria*) and Soft Rush. Around Lough Derg wet fen type vegetation occurs in places with

Purple Moor-grass, Bog-myrtle (*Myrica gale*), Jointed Rush and Meadowsweet (*Filipendula ulmaria*). There is also some Royal Fern (*Osmunda regalis*), Wild Angelica (*Angelica sylvestris*) and Marsh-marigold (*Caltha palustris*).

Where banks are steeper, particularly around Lough Derg and along the deep mountain valley of the upper stretches, dry, steep slopes support Great Wood-rush (*Luzula sylvatica*), Heather, Bell Heather (*Erica cinerea*), Bilberry (*Vaccinium myrtillus*) and Bracken (*Pteridium aquilinum*). There are areas of scrub surrounding parts of the lake margins, along the channels and on the ungrazed islands. These are composed of Alder, willows, Rowan (*Sorbus aucuparia*) and Silver Birch (*Betula pendula*). Understorey plants include abundant ferns and mosses. The rare Narrow-leaved Helleborine (*Cephalanthera longifolia*) occurs on the shores of Lough Derg. This species is listed in the Irish Red Data Book and is protected under the Flora (Protection) Order, 1999.

Small pockets of conifer plantation, close to the lakes and along the strip both sides of the rivers, are included in the site.

Lough Finn holds a population of Arctic Char (*Salvelinus alpinus*). This fish is a relative of salmon and trout, and represents an arctic-alpine element in the Irish fauna. In Ireland this fish occurs only in a few cold, stony, oligotrophic lakes. It is listed in the Irish Red Data Book as threatened. The Arctic Char in Lough Finn are unusual in that they are dwarfed. These only occur in one other lake in Ireland, Lough Coornasahom, Co. Kerry and they are therefore of national importance. Arctic Char are very sensitive to water quality and therefore changes in the catchment such as afforestation should be avoided to maintain this population. Lough Derg is also important for Arctic Char, though the species was last recorded there in 1990/91.

The Finn system is one of Ireland's premier salmon waters. Although the Atlantic Salmon (*Salmo salar*) is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the E.U. Habitats Directive. Commercial netting on the Foyle does not begin until June and this gives spring fish a good opportunity to get into the Finn. The Finn is important in an international context in that its populations of spring salmon appear to be stable, while they are declining in many areas of Ireland and Europe. The salmon fishing season is 1st March to 15th September. Fishing for spring salmon is best east of Stranolar while the grilse run through to the upper reaches. The grilse run peaks here, depending on water, usually in mid June. The estimated rod catch from the Finn is approximately 500-800 spring salmon and 4,000 grilse annually, producing about 40% of the total Foyle count. The Loughs Agency has a management regime in place called the 'control of fishing regulations'. If enough salmon are not past the counter at Killygordon at a certain key date then both the angling and commercial fishing can be closed for set periods.

The site is also important for Otter (*Lutra lutra*), another species listed on Annex II of the E.U. Habitats Directive. It is widespread throughout the system. In addition, the site also supports many more of the mammal species occurring in Ireland. Those

which are listed in the Irish Red Data Book include the Badger and the Irish Hare. Common Frog, another Red Data Book species, also occurs within the site.

Golden Plover, Peregrine and Merlin, threatened species listed on Annex I of the E.U. Birds Directive, breed in the upland areas of the site. The Red Listed species Red Grouse occurs on the site, while the scarce Ring Ouzel, another Red List species, is also known to occur.

Agriculture, with particular emphasis on grazing, is the main land use along the Finn and its tributaries. Much of the grassland is unimproved but improved grassland and silage are also present, particularly east of Ballybofey. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river, particularly in this region as the river is subject to extensive flooding. Fishing is a main tourist attraction on the Finn and there are a large number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. The River Finn is a designated Salmonid Water under the E.U. Freshwater Fish Directive. Other aspects of tourism such as boating are concentrated around Lough Finn.

Afforestation is ongoing, particularly along the western sections of the site adjacent to the headwaters and around the shores of Lough Derg. Recent planting has been carried out along the Cronamuck River. Forestry poses a threat in that sedimentation and acidification occurs. Sedimentation can cover the gravel beds resulting in a loss of suitable spawning grounds.

The site supports important populations of a number of species listed on Annex II of the E.U. Habitats Directive, and several habitats listed on Annex I of this Directive, as well as examples of other important habitats. Blanket bog is a rare habitat type in Europe and receives priority status on Annex I of the E.U. Habitats Directive. The overall diversity and ecological value of the site is increased by the presence of populations of several rare or threatened birds, mammals, fish and plants.

NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **IE0002301**

SITENAME **River Finn SAC**

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- 1. SITE IDENTIFICATION
- 2. SITE LOCATION
- 3. ECOLOGICAL INFORMATION
- 4. SITE DESCRIPTION
- 6. SITE MANAGEMENT
- 7. MAP OF THE SITE

1. SITE IDENTIFICATION

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1.1 Type	1.2 Site code
B	IE0002301

1.3 Site name

River Finn SAC

1.4 First Compilation date	1.5 Update date
2003-06	2019-09

1.6 Respondent:

Name/Organisation:	National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht
Address:	90 King Street North, Dublin 7, D07 N7CV, Ireland
Email:	datadelivery@chg.gov.ie

Date site proposed as SCI:	2003-06
Date site confirmed as SCI:	No data
Date site designated as SAC:	No data
National legal reference of SAC designation:	No data

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude
-7.954357

Latitude
54.788023

2.2 Area [ha]:

5498.464905

2.3 Marine area [%]

0.247

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
IE01	Border, Midland and Western
IEZZ	Extra-Regio

2.6 Biogeographical Region(s)

Atlantic (%)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
3110			880.29		M	B	B	B	B
4010			165.05		M	B	C	C	C
7130	X		880.29		M	B	C	C	B
7140			55.02		M	B	C	B	B

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive

92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A052	Anas crecca			w	573	573	i		G	C	B	C	B
B	A050	Anas penelope			w	64	64	i		G	C	B	C	C
B	A053	Anas platyrhynchos			w	349	349	i		G	C	B	C	B
B	A043	Anser anser			w	1	349	i		M	B	B	C	B
B	A061	Aythya fuligula			w	87	87	i		G	C	B	C	B
B	A067	Bucephala clangula			w	78	78	i		G	C	B	C	B
B	A067	Bucephala clangula			w	133	133	i		G	C	B	C	B
B	A037	Cygnus columbianus bewickii			w	1	13	i		G	C	B	C	C
B	A038	Cygnus cygnus			w	1	571	i		M	B	B	C	B
B	A098	Falco columbarius			p	1	2	p		G	C	B	C	C
B	A103	Falco peregrinus			p	2	2	p		G	C	B	C	C
B	A183	Larus fuscus			r	500	500	p		G	B	A	C	A
M	1355	Lutra lutra			p				P	DD	C	A	C	A
B	A069	Mergus serrator			w	27	27	i		G	C	B	C	B
B	A160	Numenius arquata			w	457	457	i		G	C	B	C	B
B	A140	Pluvialis apricaria			w	371	371	i		G	C	B	C	C
F	1106	Salmo salar			r				C	DD	C	A	C	A
B	A162	Tringa totanus			w	56	56	i		G	C	B	C	C
B	A282	Turdus torquatus			r	1	2	p		G	C	B	C	C
B	A142	Vanellus vanellus			w	401	401	i		G	C	B	C	C

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and

codes in accordance with Article 12 and 17 reporting (see reference portal)

- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C|R|V|P	IV	V	A	B	C	D
B		Ardea cinerea			24	24							X	
P		Cephalanthera longifolia									X			
B		Cygnus olor			30	30							X	
R		Lacerta vivipara											X	
B		Lagopus lagopus									X			
B		Lagopus lagopus											X	
M		Lepus timidus hibernicus									X			
M		Lepus timidus hibernicus										X		
M		Lepus timidus hibernicus											X	
M		Meles meles											X	
M		Meles meles									X			
A		Rana temporaria									X			
A		Rana temporaria											X	
F		Salvelinus alpinus									X			

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see reference portal)
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories: IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N12	5.0
N16	1.0
N22	1.0
N19	1.0
N06	27.0
N07	25.0
N20	1.0
N14	15.0
N10	10.0
N08	7.0
N23	1.0
N02	6.0
Total Habitat Cover	100

Other Site Characteristics

This site comprises almost the entire freshwater element of the River Finn and its tributaries - the Corlacky, the Reelan sub-catchment, the Sruhamboy, Elatagh, Cummirk and Glashagh, and also includes Lough Finn, where the river rises. Lough Derg and a section of River Derg, and the tidal stretch of the Foyle north of Lifford to the border, are also part of the site. The underlying geology is Dalradian Schists and Gneiss for the most part though quartzites and Carboniferous Limestones are present in the vicinity of Castlefinn. The hills around Lough Finn are also on quartzite. The mountains of Owendoo and Cloghervaddy are of granite felsite and other intrusive rocks rich in silica. The rivers in the western, upland part of the site flow mainly through peat based soils, while eastwards of the Ballybofey area the main Finn channel passes though fairly intensive agricultural land. In addition to rivers, lakes, bog and heath, the site includes native broad-leaved and mixed woodland, scrub, wet grassland and freshwater marsh. Intertidal mudflats and extensive reedbeds occur along the River Foyle. Improved grassland and arable land are included for water quality reasons. The Finn passes through a number of medium sized towns, notably Lifford, Castlefinn, Stranolar and Ballybofey.

4.2 Quality and importance

This extensive site contains good examples of the Annex 1 habitats lowland oligotrophic lakes, blanket bog, transition mires and wet heath. Water quality of the lakes is good, as is that in most of the rivers and streams (majority classified as unpolluted). The blanket bog, which is best developed in the Owendoo/Cloghervaddy area, is typical upland bog and is fairly extensive in area. The Finn is an important system for Salmo salar, being an excellent grilse river with extensive spawning habitats. The Finn system sustains one of the only stable spring salmon populations in the country. The rivers and lakes support important populations of Lutra lutra. The upland habitats support a number of important bird species, notably Falco peregrinus and Falco columbarius (Annex I species) and Lagopus lagopus and Turdus torquatus (both Red Data Book species). Lough Derg supports the largest colony of Larus fuscus in Ireland. The section of the River Foyle within the site, along with a contiguous stretch in of the river in Northern Ireland, supports important populations of waterfowl in autumn and winter, with an internationally important population of Cygnus cygnus, and nationally important numbers of Anser anser, Anas crecca and Phalacrocorax carbo. Salvelinus alpinus occurs in Lough Finn and possibly Lough Derg. A Red Data Book plant species, Cephalanthera longifolia, is known from the site.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
	Threats	Pollution	

Positive Impacts			
	Activities,	Pollution	inside/outside

Rank	and pressures [code]	(optional) [code]	inside/outside [i|o|b]
L	F05.04		i
L	E04		i
H	C01.01		i
H	A04.01		i
M	K01.01		i
M	E03.01		i
M	H01.05		i
H	C01.03.01		i
H	B02.02		i

Rank	management [code]	(optional) [code]	[i|o|b]
M	B02.01.01		i
M	J02.05		i
H	B02.01.01		i

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Bracken, J. J. and O'Grady, M. E. (1992). A review of freshwater fisheries research in Ireland. In Feehan, J. (ed.) Environment and Development in Ireland, pp 499-510. The Environmental Institute, UCD, Dublin. Colhoun, K. (2001). I-WeBS Report 1998-99. BirdWatch Ireland, Dublin. Central Fisheries Board (2001). Irish Salmon Catches 2000. http://www.cfb.ie/: February 2001. Creme, G.A., Walsh, P.M., O'Callaghan, M. and Kelly, T.C. (1997). The changing status of the lesser black-backed gull Larus fuscus in Ireland. Biology and Environment. Proceedings of the Royal Irish Academy 97B: 149-156. Doris, Y., McGarrigle, M.L., Clabby, K.J., Lucey, J., Neill, M., Flanagan, M., Quinn, M.B., Sugrue, M. and Lehane, M. (1999). Water quality in Ireland 1995-1997. Statistical Compendium of River Quality Data. Electronic Publication on Disk. Environmental Protection Agency, Wexford. Doris, Y., Clabby, K.J., Lucey and Lehane, M. (2002). Water Quality in Ireland 1998-2000. Statistical Compendium of River Quality Data. Electronic Publication on Disk. Environmental Protection Agency, Wexford. Douglas, C., Dunnells, D., Scally, L. and Wyse Jackson, M. (1990). A Survey to Locate Blanket Bogs of Scientific Interest in Counties Donegal, Cavan, Leitrim and Roscommon. Unpublished report to the National Parks and Wildlife Service, Dublin. Flanagan, P.J. and Toner, P. F. (1975). A Preliminary Survey of Irish Lakes. An Foras Forbartha, Dublin. Hunt, J., Derwin, J., Coveney, J. and Newton, S. (2000). Republic of Ireland. Pp. 365-416 in Heath, M.F. and Evans, M.I., (eds.) Important Bird Areas in Europe: Priority Sites for Conservation 1: Northern Europe. Cambridge, UK: BirdLife International (BirdLife Conservation Series No. 8). Lloyd, C. (1982). Inventory of Seabird Breeding Colonies in Republic of Ireland. Unpublished report, Forest and Wildlife Service, Dublin. Loughs Agency (2000). Mr P. Boylan provided information in a letter to Duchas dated the 4th September 2000. Loughs Agency, 2001. Personal correspondence from Danny Loughridge to Marie Dromey, Duchas. McGarrigle M.L., Bowman J.J., Clabby K.J., Lucey J., Cunningham P., MacCarthaigh M., Keegan M., Cantrell B., Lehane M., Clenaghan C. & Toner P.F. (2002). Water Quality in Ireland 1998-2000. Environmental Protection Agency, Wexford. Merne, O.J. (1989). Important Bird Areas in the Republic of Ireland. In: Grimmett, R.F.A. and Jones, T.A. (eds.). Important Bird Areas in Europe. ICBP Technical Publication No. 9, Cambridge. Mooney, E., Goodwillie, R.N. and Douglas, C. (1991). Survey of Mountain Blanket Bogs of Scientific Interest. Unpublished draft to the National Parks & Wildlife Service, Dublin. O'Reilly, P. (1998). Trout and Salmon Rivers of Ireland: an Anglers Guide. Merlin Unwin Books, London. Praeger, R.L. (1934) . The Botanist in Ireland. Hodges, Figgis & Co, Dublin. Reynolds, J.D. (1998). Ireland's Freshwaters. The Marine Institute, Dublin 1998. Sheppard, R. (1993). Ireland's Wetland Wealth. IWC, Dublin. Young, R. (1973). A Preliminary Report on Areas of Scientific Interest in County Donegal. An Foras Forbartha, Dublin.

6. SITE MANAGEMENT

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6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

7. MAP OF THE SITES

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INSPIRE ID: IE.NPWS.PS.NATURA2000.SAC.IE0002301

Map delivered as PDF in electronic format (optional)

[ ] Yes [X] No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).

ISSN 2009-4086

National Parks and Wildlife Service

Conservation Objectives Series

River Finn SAC 002301

An Roinn Ealaíon, Oidhreachta,
Gnóthaí Réigiúnacha, Tuaithe agus Gaeltachta

Department of Arts, Heritage,
Regional, Rural and Gaeltacht Affairs

National Parks and Wildlife Service,
Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs,

7 Ely Place, Dublin 2, Ireland.

Web: www.npws.ie
E-mail: nature.conservation@ahg.gov.ie

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Introduction

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

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

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

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

Favourable conservation status of a habitat is achieved when:

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

The favourable conservation status of a species is achieved when:

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

Notes/Guidelines:

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

Qualifying Interests

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

002301	River Finn SAC
1106	Salmon *Salmo salar*
1355	Otter *Lutra lutra*
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)
4010	Northern Atlantic wet heaths with *Erica tetralix*
7130	Blanket bogs (* if active bog)
7140	Transition mires and quaking bogs

Please note that this SAC overlaps with Derryveagh and Glendowan Mountains SPA (004039) and Lough Derg (Donegal) SPA (004057) and adjoins Meentygrannagh Bog SAC (000173), Dunragh Loughs/Pettigo Plateau SAC (001125) and Cloghernagore Bog and Glenveagh National Park SAC (002047). See map 2. The conservation objectives for this site should be used in conjunction with those for the overlapping and adjoining sites as appropriate.

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

NPWS Documents

Year :	1990
Title :	A survey to locate lowland blanket bogs of scientific interest in county Donegal and upland blanket bogs in counties Cavan, Leitrim and Roscommon
Author :	Douglas, C.; Dunnells, D.; Scally, L.; Wyse Jackson, M.
Series :	Unpublished report to NPWS
Year :	2006
Title :	Otter survey of Ireland 2004/2005
Author :	Bailey, M.; Rochford, J.
Series :	Irish Wildlife Manual No. 23
Year :	2007
Title :	Supporting documentation for the Habitats Directive Conservation Status Assessment - backing documents. Article 17 forms and supporting maps
Author :	NPWS
Series :	Unpublished report to NPWS
Year :	2012
Title :	Ireland Red List No. 8: Bryophytes
Author :	Lockhart, N.; Hodgetts, N.; Holyoak, D.
Series :	Ireland Red List series, NPWS
Year :	2013
Title :	National otter survey of Ireland 2010/12
Author :	Reid, N.; Hayden, B.; Lundy, M.G.; Pietravalle, S.; McDonald, R.A.; Montgomery, W.I.
Series :	Irish Wildlife Manual No. 76
Year :	2013
Title :	The status of EU protected habitats and species in Ireland. Volume 2. Habitats assessments
Author :	NPWS
Series :	Conservation assessments
Year :	2014
Title :	Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland, Version 2.0
Author :	Perrin, P.M.; Barron, S.J.; Roche, J.R.; O'Hanrahan, B.
Series :	Irish Wildlife Manual No. 79
Year :	2015
Title :	Habitats Directive Annex I lake habitats: a working interpretation for the purposes of site-specific conservation objectives and Article 17 reporting
Author :	O Connor, Á.
Series :	Unpublished document by NPWS
Year :	2016
Title :	Ireland Red List No. 10: Vascular Plants
Author :	Wyse Jackson, M.; FitzPatrick, Ú.; Cole, E.; Jebb, M.; McFerran, D.; Sheehy Skeffington, M.; Wright, M.
Series :	Ireland Red Lists series, NPWS
Year :	2017
Title :	River Finn SAC (site code: 2301) Conservation objectives supporting document- blanket bog and associated habitats V1
Author :	NPWS
Series :	Conservation objectives supporting document

Other References

Year :	1934
Title :	The Botanist in Ireland
Author :	Praeger, R.L.
Series :	Hodges, Figgis and Co., Dublin
Year :	1982
Title :	Otter survey of Ireland
Author :	Chapman, P.J.; Chapman, L.L.
Series :	Unpublished report to Vincent Wildlife Trust
Year :	1982
Title :	Eutrophication of waters. Monitoring assessment and control
Author :	OECD
Series :	OECD, Paris
Year :	1991
Title :	The spatial organization of otters (*Lutra lutra*) in Shetland
Author :	Kruuk, H.; Moorhouse, A.
Series :	Journal of Zoology, 224: 41-57
Year :	2000
Title :	Colour in Irish lakes
Author :	Free, G.; Allott, N.; Mills, P.; Kennelly, C.; Day, S.
Series :	Verhandlungen Internationale Vereinigung für theoretische und angewandte Limnologie, 27: 2620-2623
Year :	2002
Title :	Deterioration of Atlantic soft water macrophyte communities by acidification, eutrophication and alkalinisation
Author :	Arts, G.H.P.
Series :	Aquatic Botany, 73: 373-393
Year :	2006
Title :	Otters - ecology, behaviour and conservation
Author :	Kruuk, H.
Series :	Oxford University Press
Year :	2006
Title :	A reference-based typology and ecological assessment system for Irish lakes. Preliminary investigations. Final report. Project 2000-FS-1-M1 Ecological assessment of lakes pilot study to establish monitoring methodologies EU (WFD)
Author :	Free, G.; Little, R.; Tierney, D.; Donnelly, K.; Coroni, R.
Series :	EPA, Wexford
Year :	2008
Title :	Water Quality in Ireland 2004-2006
Author :	Clabby, K.J.; Bradley, C.; Craig, M.; Daly, D.; Lucey, J.; McGarrigle, M.; O'Boyle, S.; Tierney, D.; Bowman, J.
Series :	EPA, Wexford
Year :	2009
Title :	The identification, characterization and conservation value of isoetid lakes in Ireland
Author :	Free, G.; Bowman, J.; McGarrigle, M.; Little, R.; Coroni, R.; Donnelly, K.; Tierney, D.; Trodd, W.
Series :	Aquatic Conservation: Marine and Freshwater Ecosystems, 19 (3): 264–273

Year :	2010
Title :	Otter tracking study of Roaringwater Bay
Author :	De Jongh, A.; O'Neill, L.
Series :	Unpublished draft report to NPWS
Year :	2010
Title :	Water quality in Ireland 2007-2009
Author :	McGarrigle, M.; Lucey, J.; Ó Cinnéide, M.
Series :	EPA, Wexford
Year :	2015
Title :	Water quality in Ireland 2010-2012
Author :	Bradley, C.; Byrne, C.; Craig, M.; Free, G.; Gallagher, T.; Kennedy, B.; Little, R.; Lucey, J.; Mannix, A.; McCreesh, P.; McDermott, G.; McGarrigle, M.; Ní Longphuirt, S.; O'Boyle, S.; Plant, C.; Tierney, D.; Trodd, W.; Webster, P.; Wilkes, R.; Wynne, C.
Series :	EPA, Wexford
Year :	2016
Title :	The Status of Irish Salmon Stocks in 2015 with Precautionary Catch Advice for 2016
Author :	SSCS (Standing Scientific Committee on Salmon)
Series :	Independent Scientific Report to Inland Fisheries Ireland

Spatial data sources

Year :	2008
Title :	OSi 1:5000 IG vector dataset
GIS Operations :	WaterPolygons feature class clipped to the SAC boundary. Expert opinion used to identify Annex I habitat and to resolve any issues arising
Used For :	3110 (map 3)
Year :	2010
Title :	OSi 1:5000 IG vector dataset
GIS Operations :	Creation of 80m buffer on the aquatic side of lake data; creation of 10m buffer on the terrestrial side of lake data. These datasets combined with the derived OSi Discovery Series river and canal datasets. Overlapping regions investigated and resolved; resulting dataset clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising. Creation of 250m buffer on aquatic side of the lake boundary to highlight potential commuting points
Used For :	1355 (map 4)
Year :	2005
Title :	OSi Discovery series vector data
GIS Operations :	Creation of a 10m buffer on the terrestrial side of river banks data; creation of 20m buffer applied to canal centreline data. Creation of 20m buffer applied to river and stream centreline data; These datasets combined with the derived OSI 1:5000 vector lake buffer data. Overlapping regions investigated and resolved; resulting dataset clipped to SAC boundary. Expert opinion used as necessary to resolve any issues arising
Used For :	1355 (no map)

3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)

To restore the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) in River Finn SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Lake habitat 3110 is likely to occur in the larger lakes in River Finn SAC, such as Loughs Derg, Finn and Belshade. Lake habitat 3130 may also occur in Loughs Derg and Finn. The exact distribution of lake habitat 3110 in the SAC is unknown however, as little specific information on the lake vegetation is currently available. Lake habitat 3110 may co-occur with lake habitat 3160 in small and upland lakes. In line with Article 17 reporting (NPWS, 2013), all lakes larger than 1ha have been mapped as 'potential 3110' (see map 3). Two measures of extent should be used: 1. the area of the lake itself and; 2. the extent of the vegetation communities/zones that typify the habitat. Further information relating to all attributes is provided in the lake habitats supporting document for the purposes of site-specific conservation objectives and Article 17 reporting (O Connor, 2015)
Habitat distribution	Occurrence	No decline, subject to natural processes	As noted above, the exact distribution of lake habitat 3110 in River Finn SAC is not known. In map 3, all lakes larger than 1ha (based on 1:5,000 data) have been mapped as potential 3110
Typical species	Occurrence	Typical species present, in good condition, and demonstrating typical abundances and distribution	For lists of typical plant species, see the Article 17 habitat assessment for lake habitat 3110 (NPWS, 2013) and the lake habitats supporting document (O Connor, 2015). The moss *Fontinalis antipyretica*, quillwort (*Isoetes lacustris*), bulbous rush (*Juncus bulbosus*), shoreweed (*Littorella uniflora*), water lobelia (*Lobelia dortmanna*), broad-leaved pondweed (*Potamogeton natans*) and floating bur-reed (*Sparganium angustifolium*) have been recorded in Lough Derg (Praeger, 1934; internal NPWS and EPA files). Environmental Protection Agency (EPA) biologists have also recorded slender naiad (*Najas flexilis*) in Lough Derg, suggesting lake habitat 3130 may occur. EPA records for stonewort (*Chara* sp.), intermediate water starwort (*Callitriche hamulata*) and pondweeds (*Potamogeton berchtoldii, P. gramineus* and *P. perfoliatus*) in Lough Finn are also indicative of lake habitat 3130
Vegetation composition: characteristic zonation	Occurrence	All characteristic zones should be present, correctly distributed and in good condition	Further work is necessary to describe the characteristic zonation and other spatial patterns in lake habitat 3110 (see O Connor, 2015)
Vegetation distribution: maximum depth	Metres	Maintain maximum depth of vegetation, subject to natural processes	The maximum depth of vegetation is likely to be specific to the lake shoreline in question. Further work is necessary to develop indicative targets for lake habitat 3110. Water clarity is expected to be high in upland 3110 lakes, resulting in a large maximum depth of vegetation
Hydrological regime: water level fluctuations	Metres	Maintain appropriate natural hydrological regime necessary to support the habitat	Fluctuations in lake water level are typical in Ireland, but can be amplified by activities such as abstraction and drainage. Increased water level fluctuations can increase wave action, up-root vegetation, increase turbidity, alter the substratum and lead to release of nutrients from the sediment. The hydrological regime of the lakes must be maintained so that the area, distribution and depth of the lake habitat and its constituent/characteristic vegetation zones and communities are not reduced

Lake substratum quality	Various	Maintain appropriate substratum type, extent and chemistry to support the vegetation	Research is required to further characterise the substratum types (particle size and origin) and substratum quality (notably pH, calcium, iron and nutrient concentrations) favoured by each of the five Annex I lake habitats in Ireland. It is likely that lake habitat 3110 is associated with a range of nutrient-poor substrates, from stones, cobble and gravel, through sands, silt, clay and peat. Substratum particle size is likely to vary with depth and along the shoreline within a single lake
Water quality: transparency	Metres	Maintain appropriate Secchi transparency. There should be no decline in Secchi depth/transparency	Transparency relates to light penetration and, hence, to the depth of colonisation of vegetation. It can be affected by phytoplankton blooms, water colour and turbidity. Specific targets have yet to be established for lake habitat 3110 (O Connor, 2015). Habitat 3110 is associated with very clear water, particularly upland examples. The OECD fixed boundary system set transparency targets for oligotrophic lakes of ≥6m annual mean Secchi disk depth, and ≥3m annual minimum Secchi disk depth. Free et al. (2009) found high isoetid abundance in lakes with Secchi depths of more than 3m
Water quality: nutrients	µg/l P; mg/l N	Maintain the concentration of nutrients in the water column at sufficiently low levels to support the habitat and its typical species	As a nutrient-poor habitat, oligotrophic and Water Framework Directive (WFD) 'high' status targets apply. Where a lake has nutrient concentrations that are lower than these targets, there should be no decline within class, i.e. no upward trend in nutrient concentrations. For lake habitat 3110, annual average total phosphorus (TP) concentration should be ≤10µg/l TP, average annual total ammonia concentration should be ≤0.040mg/l N and annual 95th percentile for total ammonia should be ≤0.090mg/l N. See also The European Communities Environmental Objectives (Surface Waters) Regulations 2009
Water quality: phytoplankton biomass	µg/l Chlorophyll *a*	Maintain appropriate water quality to support the habitat, including high chlorophyll *a* status	Oligotrophic and WFD 'high' status targets apply to lake habitat 3110. Where a lake has a chlorophyll *a* concentration that is lower than this target, there should be no decline within class, i.e. no upward trend in phytoplankton biomass. The average growing season (March-October) chlorophyll *a* concentration must be <5.8µg/l. The annual average chlorophyll *a* concentration should be <2.5µg/l and the annual peak chlorophyll *a* concentration should be ≤8.0µg/l. See also The European Communities Environmental Objectives (Surface Waters) Regulations 2009
Water quality: phytoplankton composition	EPA phytoplankton composition metric	Maintain appropriate water quality to support the habitat, including high phytoplankton composition status	The EPA has developed a phytoplankton composition metric for nutrient enrichment of Irish lakes. As for other water quality indicators, lake habitat 3110 requires WFD high status
Water quality: attached algal biomass	Algal cover and EPA phytobenthos metric	Maintain trace/absent attached algal biomass (<5% cover) and high phytobenthos status	Nutrient enrichment can favour epiphytic and epipelic algae that can out-compete the submerged vegetation. The cover abundance of attached algae in lake habitat 3110 should, therefore, be trace/absent (<5% cover). EPA phytobenthos can be used as an indicator of changes in attached algal biomass. As for other water quality indicators, lake habitat 3110 requires high phytobenthos status
Water quality: macrophyte status	EPA macrophyte metric (The Free Index)	Maintain high macrophyte status	Nutrient enrichment can favour more competitive submerged macrophyte species that out-compete the typical and characteristic species for the lake habitat. The EPA monitors macrophyte status for WFD purposes using the 'Free Index'. The target for lake habitat 3110 is high status or an Ecological Quality Ratio (EQR) for lake macrophytes of ≥0.90, as defined in Schedule Five of the European Communities Environmental Objectives (Surface Waters) Regulations 2009

Acidification status	pH units; mg/l	Maintain appropriate water and sediment pH, alkalinity and cation concentrations to support the habitat, subject to natural processes	Acidification can impact on species abundance and composition in soft water lake habitats. In Europe, acidification of isoetid lakes can lead to loss of isoetids and dominance by submerged *Sphagnum* mosses and *Juncus bulbosus* (Arts, 2002). The specific requirements of lake habitat 3110, in terms of water and sediment pH, alkalinity and cation concentration, have not been determined. For lake habitat 3110, and adopting a precautionary approach based on Arts (2002), minimum pH should not be <5.5 pH units. Maximum pH should be <9.0 pH units, in line with the surface water standards established for soft waters (where water hardness is ≤100mg/l calcium carbonate). See Schedule Five of the European Communities Environmental Objectives (Surface Waters) Regulations 2009
Water colour	mg/l PtCo	Maintain appropriate water colour to support the habitat	Increased water colour and turbidity decrease light penetration and can reduce the area of available habitat for lake macrophytes, particularly at the lower euphotic depths. The primary source of increased water colour in Ireland is disturbance to peatland. No habitat-specific or national standards for water colour currently exist. Studies have shown median colour concentrations in Irish lakes of 38mg/l PtCo (Free et al., 2000) and 33mg/l PtCo (Free et al., 2006). It is likely that the water colour in all Irish lake habitats would naturally be <50mg/l PtCo. Water colour can be very low (<20mg/l PtCo or even <10mg/l PtCo) in lake habitat 3110, where the peatland in the lake's catchment is intact
Dissolved organic carbon (DOC)	mg/l	Maintain appropriate organic carbon levels to support the habitat	Dissolved (and particulate) organic carbon (OC) in the water column is linked to water colour and acidification (organic acids). Increasing DOC in water has been documented across the Northern Hemisphere, including afforested peatland catchments in Ireland. Damage and degradation of peatland, leading to decomposition of peat is likely to be the predominant source of OC in Ireland. OC in water promotes decomposition by fungi and bacteria that, in turn, releases dissolved nutrients. The increased biomass of decomposers can also impact directly on the characteristic lake communities through shading, competition, etc.
Turbidity	Nephelometric turbidity units/ mg/l SS/ other appropriate units	Maintain appropriate turbidity to support the habitat	Turbidity can significantly affect the quantity and quality of light reaching rooted and attached vegetation and can, therefore, impact on lake habitats. The settlement of higher loads of inorganic or organic material on lake vegetation communities may also have impacts on sensitive, delicate species. Turbidity can increase as a result of re-suspension of material within the lake, higher loads entering the lake, or eutrophication. Turbidity measurement and interpretation is challenging. As a result, it is likely to be difficult to set habitat-specific targets for turbidity in lakes
Fringing habitat: area and condition	Hectares	Maintain the area and condition of fringing habitats necessary to support the natural structure and functioning of habitat 3110	Most lake shorelines have fringing habitats of reedswamp, other swamp, fen, marsh or wet woodland that intergrade with and support the structure and functions of the lake habitat. In River Finn SAC, active blanket bog and heath, transition mire, fen, flush or grassland could also occur. Equally, fringing habitats are dependent on the lake, particularly its water levels, and support wetland communities and species of conservation concern. Many of the fringing wetland habitats support higher invertebrate and plant species richness than the lake habitats themselves

4010 Northern Atlantic wet heaths with Erica tetralix

To restore the favourable conservation condition of Northern Atlantic wet heaths with *Erica tetralix* in River Finn SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Northern Atlantic wet heaths with *Erica tetralix* has not been mapped in detail for River Finn SAC but from current available data the total area of the qualifying habitat is estimated to be approximately 187ha, covering 3% of the SAC (NPWS internal files). Further details on this and the following attributes can be found in the River Finn SAC conservation objectives supporting document for blanket bogs and associated habitats
Habitat distribution	Occurrence	No decline, subject to natural processes	Wet heath occurs in association with blanket bog, upland grassland and exposed rock within the SAC. It occupies shallower peats and better drained slopes. It occurs quite widely at Owendoo/ Cloghervaddy (Douglas et al., 1990; NPWS internal files). Further information can be found within Douglas et al. (1990), NPWS internal files and the blanket bogs and associated habitats supporting document
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil nutrient status within natural range	See the blanket bogs and associated habitats supporting document for further details
Community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes	A variety of wet heath vegetation communities have been recorded in this SAC (Douglas et al., 1990; NPWS internal files), three of which correspond to communities recorded in the National Survey of Upland Habitats and listed in the provisional list of vegetation communities described in Perrin et al. (2014). Further information on vegetation communities associated with this habitat is presented in Perrin et al. (2014)
Vegetation composition: cross-leaved heath	Occurrence within 20m of a representative number of monitoring stops	Cross-leaved heath (*Erica tetralix*) present within a 20m radius of each monitoring stop	Attribute and target based on Perrin et al. (2014)
Vegetation composition: positive indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of positive indicator species at least 50%	Attribute and target based on Perrin et al. (2014), where the list of positive indicator species for this habitat is also presented
Vegetation composition: lichens and bryophytes	Percentage cover at a representative number of 2m x 2m monitoring stops	Total cover of *Cladonia* and *Sphagnum* species, *Racomitrium lanuginosum* and pleurocarpous mosses at least 10%	Attribute and target based on Perrin et al. (2014)
Vegetation composition: ericoid species and crowberry	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of ericoid species and crowberry (*Empetrum nigrum*) at least 15%	Attribute and target based on Perrin et al. (2014)
Vegetation composition: dwarf shrub species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of dwarf shrubs less than 75%	Attribute and target based on Perrin et al. (2014)
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Total cover of negative indicator species less than 1%	Attribute and target based on Perrin et al. (2014), where the list of negative indicator species for this habitat is also presented

Vegetation composition: non-native species	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of non-native species less than 1%	Attribute and target based on Perrin et al. (2014). The non-native moss *Campylopus introflexus* has been recorded from the SAC (Douglas et al., 1990), but this species cannot be assigned specifically to wet heath
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 20%	Attribute and target based on Perrin et al. (2014)
Vegetation composition: bracken	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of bracken (*Pteridium aquilinum*) less than 10%	Attribute and target based on Perrin et al. (2014)
Vegetation composition: soft rush	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of soft rush (*Juncus effusus*) less than 10%	Attribute and target based on Perrin et al. (2014)
Vegetation structure: *Sphagnum* condition	Condition at a representative number of 2m x 2m monitoring stops	Less than 10% of the *Sphagnum* cover is crushed, broken and/or pulled up	Attribute and target based on Perrin et al. (2014)
Vegetation structure: signs of browsing	Percentage of shoots browsed at a representative number of 2m x 2m monitoring stops	Less than 33% collectively of the last complete growing season's shoots of ericoids, crowberry (*Empetrum nigrum*) and bog-myrtle (*Myrica gale*) showing signs of browsing	Attribute and target based on Perrin et al. (2014)
Vegetation structure: burning	Occurrence in local vicinity of a representative number of monitoring stops	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning	Attribute and target based on Perrin et al. (2014)
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of disturbed bare ground less than 10%	Attribute and target based on Perrin et al. (2014)
Physical structure: drainage	Percentage area in local vicinity of a representative number of monitoring stops	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%	Attribute and target based on Perrin et al. (2014)
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	This includes species listed in the Flora (Protection) Order, 2015 (FPO) and/or the red data lists (Lockhart et al., 2012; Wyse Jackson et al., 2016). There is a historic record for the FPO listed and Vulnerable marsh clubmoss (*Lycopodiella inundata*) (Wyse Jackson et al., 2016) from Lough Belshade in the SAC (NPWS internal files), but this species cannot be assigned specifically to wet heath

7130 Blanket bogs (* if active bog)

To restore the favourable conservation condition of Blanket bogs (*if active bog) in River Finn SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Blanket bog has not been mapped in detail for River Finn SAC but from current available data the total area of the qualifying habitat is estimated to be approximately 519ha, covering 9% of the SAC (NPWS internal files). Further details on this and the following attributes can be found in the River Finn SAC conservation objectives supporting document for blanket bogs and associated habitats
Habitat distribution	Occurrence	No decline, subject to natural processes	Blanket bog is documented to occur throughout much of the upland areas of the SAC and along the edges of the river. The most extensive examples are found at Tullytresna and Owendoo/Cloghervaddy. A valley bog is present to the north-east of Lough Finn (Douglas et al., 1990; NPWS internal files). Further information can be found within Douglas et al. (1990), NPWS internal files and the blanket bogs and associated habitats supporting document
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil nutrient status within natural range	See the blanket bogs and associated habitats supporting document for further details
Ecosystem function: peat formation	Active blanket bog as a proportion of the total area of Annex I blanket bog habitat	At least 99% of the total Annex I blanket bog area is active	See the blanket bogs and associated habitats supporting document for further details
Ecosystem function: hydrology	Flow direction, water levels, occurrence of drains and erosion gullies	Natural hydrology unaffected by drains and erosion	Further details and a brief discussion of restoration potential is presented in the blanket bogs and associated habitats supporting document
Community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes	A variety of blanket bog vegetation communities have been recorded in this SAC (Douglas et al., 1990; NPWS internal files), four of which correspond to communities recorded in the National Survey of Upland Habitats and listed in the provisional list of vegetation communities described in Perrin et al. (2014). Further information on vegetation communities associated with this habitat is presented in Perrin et al. (2014)
Vegetation composition: positive indicator species	Number of species at a representative number of 2m x 2m monitoring stops	Number of positive indicator species present at each monitoring stop is at least seven	Attribute and target based on Perrin et al. (2014), where the list of positive indicator species for this habitat is also presented
Vegetation composition: lichens and bryophytes	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of bryophytes or lichens, excluding *Sphagnum fallax*, at least 10%	Attribute and target based on Perrin et al. (2014)
Vegetation composition: potential dominant species	Percentage cover at a representative number of 2m x 2m monitoring stops	Cover of each of the potential dominant species less than 75%	Attribute and target based on Perrin et al. (2014). See the blanket bogs and associated habitats supporting document for the list of potential dominant species
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Total cover of negative indicator species less than 1%	Attribute and target based on Perrin et al. (2014), where the list of negative indicator species for this habitat is also presented
Vegetation composition: non-native species	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of non-native species less than 1%	Attribute and target based on Perrin et al. (2014). The non-native moss *Campylopus introflexus* has been recorded from the SAC (Douglas et al., 1990), but this species cannot be assigned specifically to blanket bog

Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 10%	Attribute and target based on Perrin et al. (2014)
Vegetation structure: *Sphagnum* condition	Condition at a representative number of 2m x 2m monitoring stops	Less than 10% of the *Sphagnum* cover is crushed, broken and/or pulled up	Attribute and target based on Perrin et al. (2014)
Vegetation structure: signs of browsing	Percentage of shoots browsed at a representative number of 2m x 2m monitoring stops	Last complete growing season's shoots of ericoids, crowberry (*Empetrum nigrum*) and bog-myrtle (*Myrica gale*) showing signs of browsing collectively less than 33%	Attribute and target based on Perrin et al. (2014)
Vegetation structure: burning	Occurrence in local vicinity of a representative number of monitoring stops	No signs of burning in sensitive areas, into the moss, liverwort or lichen layer or exposure of peat surface due to burning	Attribute and target based on Perrin et al. (2014), where the list of sensitive areas for this habitat is also presented
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of disturbed bare ground less than 10%	Attribute and target based on Perrin et al. (2014)
Physical structure: drainage	Percentage area in local vicinity of a representative number of monitoring stops	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%	Attribute and target based on Perrin et al. (2014)
Physical structure: erosion	Percentage area in local vicinity of a representative number of monitoring stops	Less than 5% of the greater bog mosaic comprises erosion gullies and eroded areas	Attribute and target based on Perrin et al. (2014)
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	This includes species listed in the Flora (Protection) Order, 2015 (FPO) and/or the red data lists (Lockhart et al., 2012; Wyse Jackson et al., 2016). There is a historic record for the FPO listed and Vulnerable marsh clubmoss (*Lycopodiella inundata*) (Wyse Jackson et al., 2016) from Lough Belshade in the SAC (NPWS internal files), but this species cannot be assigned specifically to blanket bog

7140 Transition mires and quaking bogs

To restore the favourable conservation condition of Transition mires and quaking bogs in River Finn SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes	Transition mires and quaking bogs have not been mapped in detail for River Finn SAC and thus total area of the qualifying habitat is unknown. Further details on this and the following attributes can be found in the River Finn SAC conservation objectives supporting document for blanket bogs and associated habitats
Habitat distribution	Occurrence	No decline, subject to natural processes	The habitat occurs at the interface between bog and waterbodies. An extensive area of this habitat is found at Owendoo/Cloghervaddy to the west of the Owendoo River. It is also though to occur in quaking areas associated with Cronakerny and Cronamuck. Other locations that support this habitat include Tullytresna and the lake edges of Lough Fad, Lough Finn, Lough Gulladuff and the small lakes south of Lough Belshade (Douglas et al., 1990; NPWS internal files). Further information can be found within Douglas et al. (1990), NPWS internal files and the blanket bogs and associated habitats supporting document
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil nutrient status within natural range	See the blanket bogs and associated habitats supporting document for further details
Community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes	A variety of transition mire vegetation communities have been recorded in this SAC (NPWS internal files), two of which correspond to communities recorded in the National Survey of Upland Habitats and listed in the provisional list of vegetation communities described in Perrin et al. (2014). Further information on vegetation communities associated with this habitat is presented in Perrin et al. (2014)
Vegetation composition: number of positive indicator species	Vegetation composition: number of positive indicator species	Number of positive indicator species at each monitoring stop is at least three for infilling pools and flushes and at least six for fens	Attribute and target based on Perrin et al. (2014), where the list of positive indicator species for this habitat is also presented
Vegetation composition: number of core positive indicator species	Number of species at a representative number of 2m x 2m monitoring stops	At least one core positive indicator species present	Attribute and target based on Perrin et al. (2014), where the list of positive indicator species for this habitat is also presented
Vegetation composition: cover of positive indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Total cover of positive indicator species is at least 25%	Attribute and target based on Perrin et al. (2014), where the list of positive indicator species for this habitat is also presented
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2m x 2m monitoring stops	Total cover of negative indicator species less than 1%	Attribute and target based on Perrin et al. (2014), where the list of negative indicator species for this habitat is also presented
Vegetation composition: non-native species	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of non-native species less than 1%	Attribute and target based on Perrin et al. (2014)

Vegetation structure: height	Percentage of leaves/shoots at a representative number of 2m x 2m monitoring stops	Proportion of live leaves and/or flowering shoots of vascular plants that are more than 15cm above the ground surface should be at least 50%	Attribute and target based on Perrin et al. (2014). This attribute is only applicable to fen and flush examples of the habitat, not to infilling pool examples
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of 2m x 2m monitoring stops	Cover of disturbed bare ground less than 10%	Attribute and target based on Perrin et al. (2014)
Physical structure: drainage	Percentage area in local vicinity of a representative number of monitoring stops	Area showing signs of drainage from heavy trampling, tracking or ditches less than 10%	Attribute and target based on Perrin et al. (2014)
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat	This includes species listed in the Flora (Protection) Order, 2015 and/or the red data lists (Lockhart et al., 2012; Wyse Jackson et al., 2016)

1106 Salmon *Salmo salar*

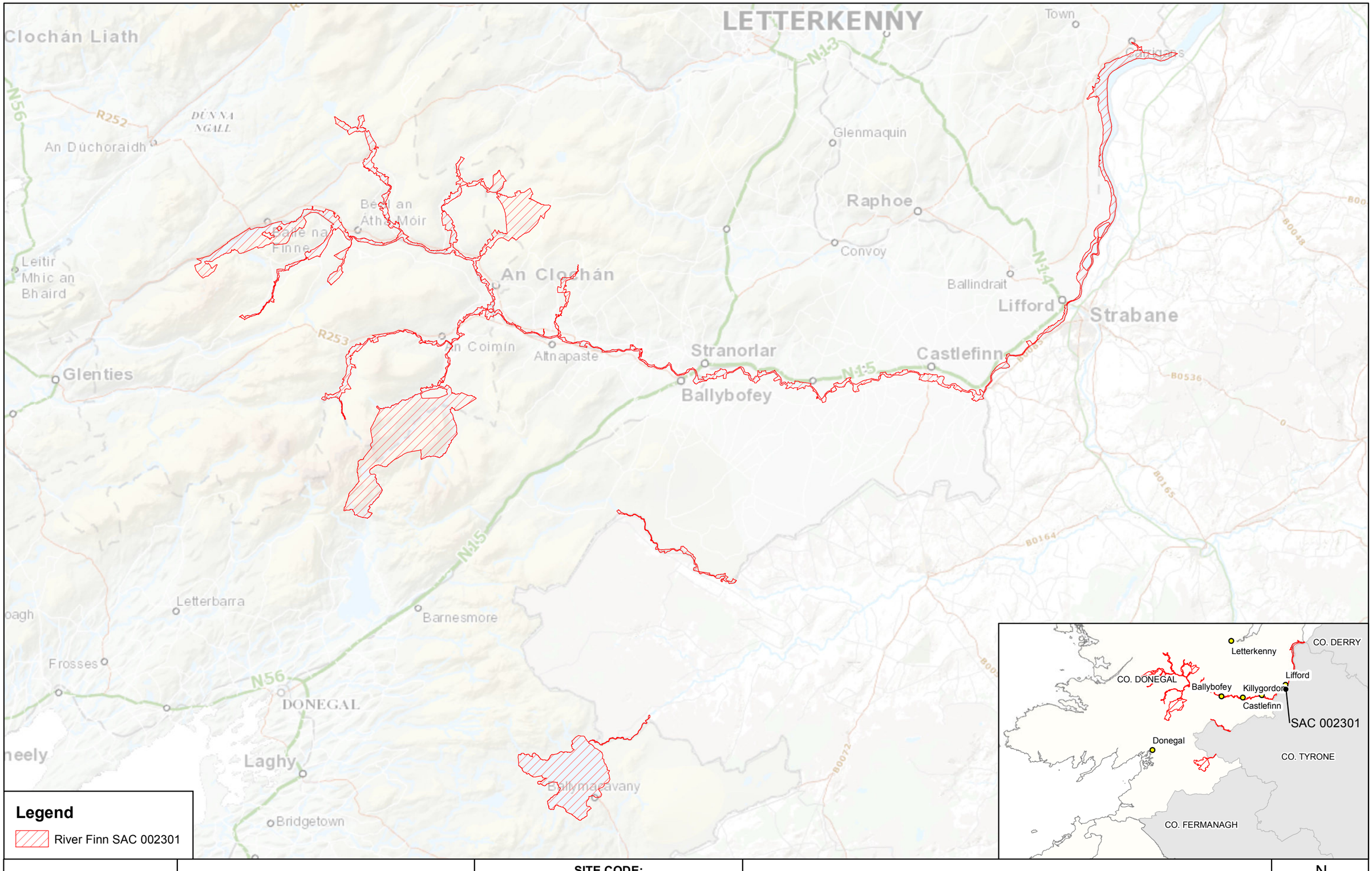
To maintain the favourable conservation condition of Atlantic Salmon in River Finn SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution: extent of anadromy	Percentage of river accessible	100% of river channels down to second order accessible from estuary	Artificial barriers block salmons' upstream migration, thereby limiting species to lower stretches and restricting access to spawning areas
Adult spawning fish	Number	Conservation limit (CL) for each system consistently exceeded	A conservation limit (CL) is defined by the North Atlantic Salmon Conservation Organisation (NASCO) as "the spawning stock level that produces long-term average maximum sustainable yield as derived from the adult to adult stock and recruitment relationship". The target is based on the Standing Scientific Committee on Salmon (SSCS) annual model output of CL attainment levels. See SSCS (2016). Attainment of CL estimates are derived from direct counts of adults (rod catch, fish counter) or indirectly by fry abundance counts
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 minutes sampling	The target is the threshold value for rivers currently exceeding their conservation limit (CL)
Out-migrating smolt abundance	Number	No significant decline	Smolt abundance can be negatively affected by a number of impacts such as estuarine pollution, predation and sea lice (*Lepeophtheirus salmonis*)
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes	Salmon spawn in clean gravels
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA	Q values based on triennial water quality surveys carried out by the Environmental Protection Agency (EPA)

1355 Otter *Lutra lutra*

To maintain the favourable conservation condition of Otter in River Finn SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. Favourable Conservation Status (FCS) target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 390ha along river banks/lake shoreline/ around ponds	No field survey. Areas mapped to include 10m terrestrial buffer along river banks and around water bodies identified as critical for otters (NPWS, 2007)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 182.2km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 354ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk and Moorhouse, 1991; Kruuk, 2006)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006; Reid et al., 2013)
Barriers to connectivity	Number	No significant increase. For guidance, see map 4	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed



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MAP 1:
RIVER FINN SAC
CONSERVATION OBJECTIVES
SAC DESIGNATION

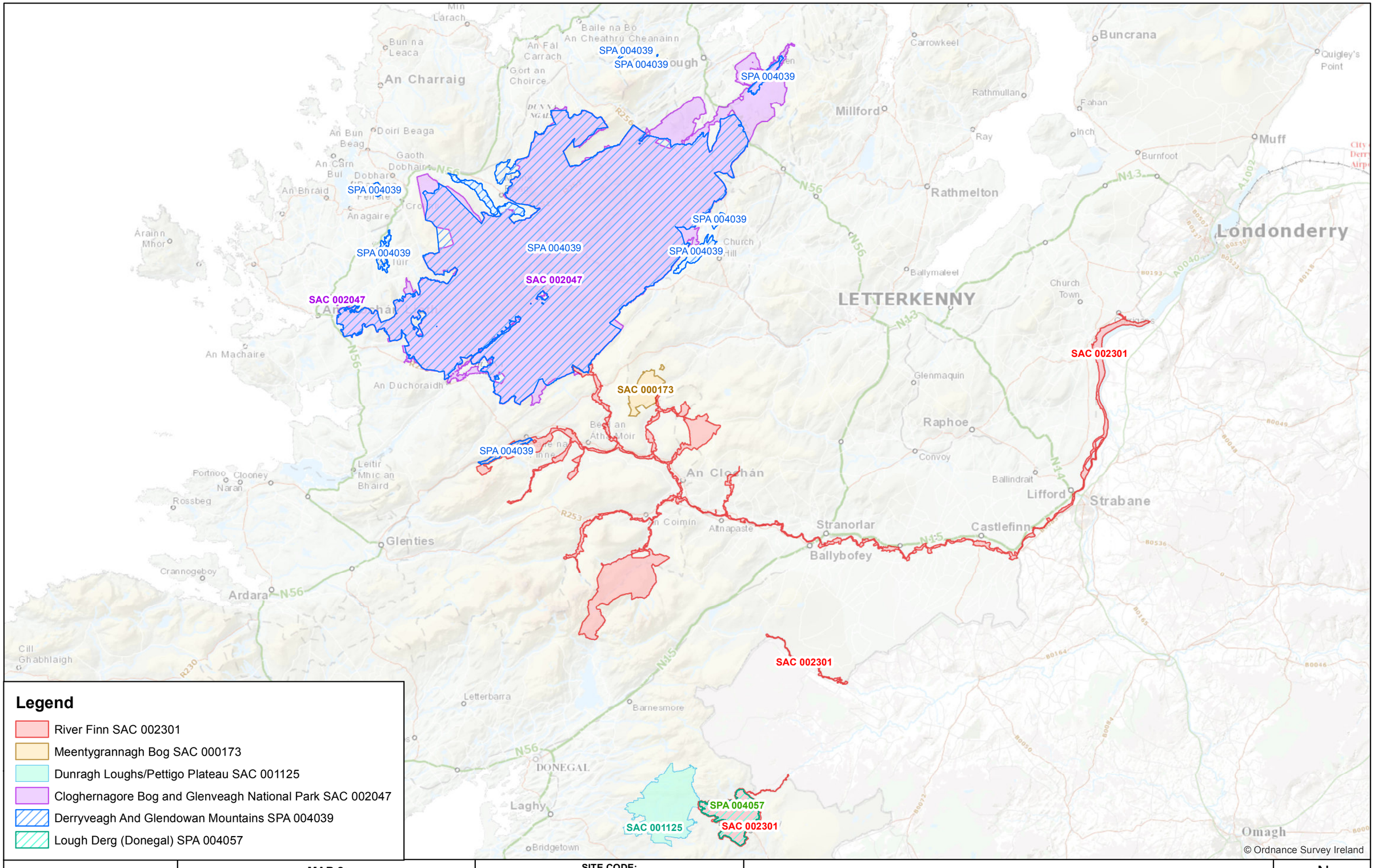
Map to be read in conjunction with the NPWS Conservation Objectives Document.

SITE CODE:
SAC 002301; version 3.01
CO. DONEGAL

0 2 4 6 8 km

N

Map Version 1
Date: May 2017



Legend

- River Finn SAC 002301
- Meentygrannagh Bog SAC 000173
- Dunragh Loughs/Pettigo Plateau SAC 001125
- Cloghernagore Bog and Glenveagh National Park SAC 002047
- Derryveagh And Glendowan Mountains SPA 004039
- Lough Derg (Donegal) SPA 004057

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MAP 2:
RIVER FINN SAC
CONSERVATION OBJECTIVES
ADJACENT / ADJOINING AND OVERLAPPING DESIGNATIONS

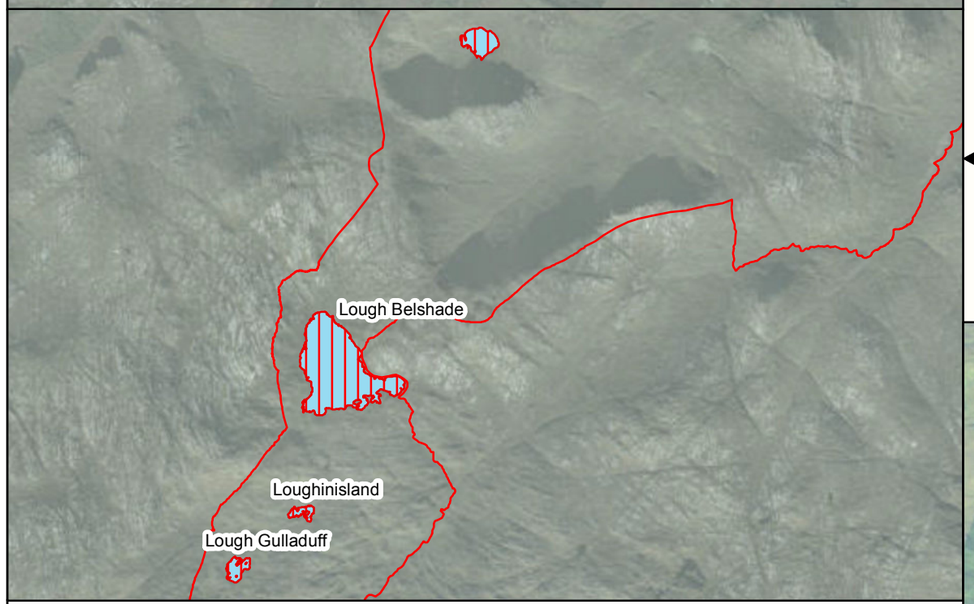
Map to be read in conjunction with the NPWS Conservation Objectives Document.

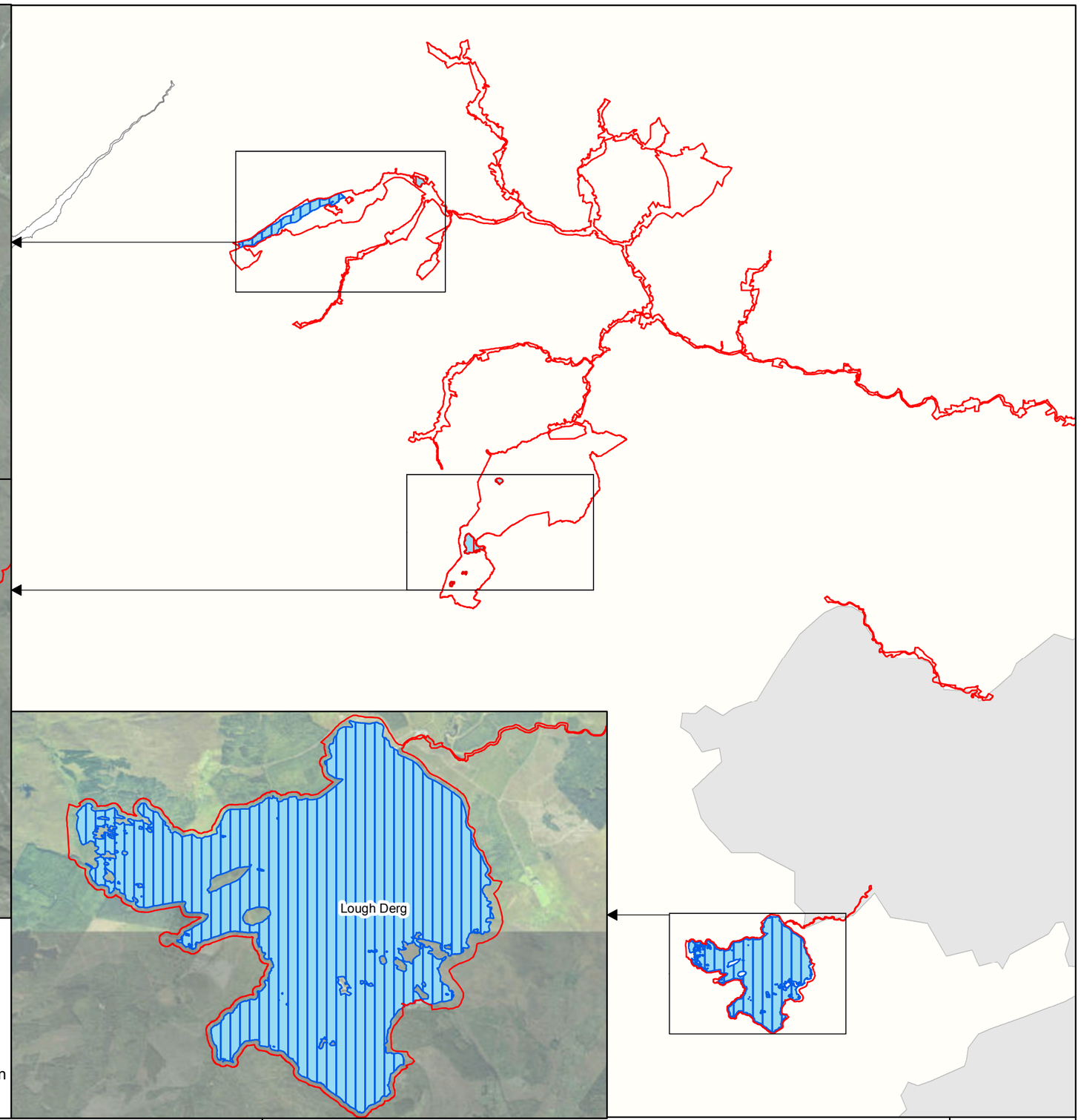
SITE CODE:
SAC 002301; version 3.01. SAC 000173; version 3.01.
SAC 002047; version 3. SAC 001125; version 3.
SPA 004039; version 3. SAC 004057; version 3.
CO. DONEGAL

0 3 6 9 12 15 km

N

Map Version 1
Date: May 2017





Legend

- River Finn SAC 002301
- Potential 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- Potential 3110 / Potential 3130 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) / Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*

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MAP 3:
RIVER FINN SAC
CONSERVATION OBJECTIVES
INDICATIVE LAKE HABITATS

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

SITE CODE:
SAC 002301; version 3.01.
CO. DONEGAL

0 2 4 6 8 10 km

N

Map Version 1
Date: May 2017

Legend

- 1355 Otter *Lutra lutra* Commuting
- River Finn SAC 002301
- OSi Discovery Series County Boundary
- Northern Ireland

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MAP 4:
RIVER FINN SAC
CONSERVATION OBJECTIVES
OTTER COMMUTING

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

SITE CODE:
SAC 002301; version 3.01
CO. DONEGAL

0 1.5 3 4.5 6 7.5 km

N

Map Version 1
Date: May 2017

APPENDIX 7

Copy of Internal memo dated 13th February 2015
produced by NIEA

NIEA Northern Ireland Environment Agency
www.ni-environment.gov.uk

Internal Memo

From: **Terry A'Hearn**
Chief Executive

Your Ref: K/2013/0072/F

Date: **13th February 2015**

To: **Scott Symington**
Planning Service

DALRADIAN GOLD LTD PLANNING APPROVAL

I am writing to confirm that NIEA are content that conditions 25 and 26 can be removed from Planning Approval K/2013/0072/F. NIEA will protect the Owenkillew River through the regulation of the Water Order Discharge Consent.

The principle objective of conditions 25 and 26 of the Planning Approval, and that of the discharge consent, are the protection of the integrity of the Owenkillew SAC and to maintain favourable condition status of the Freshwater Pearl Mussel. The Natural Environment Division of NIEA recommended inclusion of conditions 25 and 26 in the Habitats Regulations Assessment (HRA) as a precaution in the absence of any other controls.

As part of the Water Order Consent application, Water Management Unit of NIEA carried out modelling to determine the potential impact of the proposed discharge on the suspended solids levels in the Owenkillew. The proposed discharge enters the Owenkillew via the Curraghinalt Burn. The discharge is therefore diluted firstly by the existing flow in the Curraghinalt Burn, then by that in the Owenkillew upon the confluence of the two waterways. The modelling indicated that compliance with the Water Order consent condition of 50mg/litre will protect the 10 mg/litre suspended solids objective in the Owenkillew, subject to the upstream concentrations in the Owenkillew not exceeding this level. The Water Order Consent is therefore considered to be appropriate mitigation to the risks identified in the HRA.

In line with the precautionary approach a number of other parameters relating to the Owenkillew River have been listed within condition 25 of the Planning Permission. These parameters are taken from Table 2.5 of the report "Proposals for Owenkillew Sub Basement Management Plan" and are designed to achieve favourable status for the Freshwater Pearl Mussel. Subsequent to drafting of the planning conditions, WMU of NIEA has carried out a detailed assessment as part of the Water Order Consent application process.

This assessment found that the proposed activities would not present a risk to the standards listed and as a result no additional conditions have been set within the consent.

[signed]

TERRY A'HEARN

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