

IED-NCP-P-02

**Guidance on the Assessment of Ammonia
Emissions from PPC Intensive Agricultural
Installations on Designated Conservation Sites**

September 2018

Internal Guidance

IED-NCP-P-02 – GUIDANCE ON THE ASSESSMENT OF AMMONIA EMISIONS FROM PPC INTENSIVE AGRICULTURAL INSTALLATIONS ON DESIGNATED CONSERVATION SITES

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The assessment of potential impacts on designated sites of atmospheric emissions of ammonia from PPC intensive agriculture installations:

Guidance on the implementation of SEPA's statutory duties for the protection of Special Areas of Conservation, Special Protection Areas, Ramsar Sites and Sites of Special Scientific Interest

Introduction

Ammonia emissions from intensive agriculture are a major contributor to localised nitrogen deposition that can potentially adversely affect the integrity of designated habitats. The Habitats Regulations (Conservation (Natural Habitats, &c.) Regulations 1994) and the Nature Conservation (Scotland) Act 2004 introduced duties for SEPA for the protection of designated sites. In general terms, when granting permits, SEPA must assess the potential for damaging effects on designated sites, potentially consult with Scottish Natural Heritage, as required by the relevant legislation, and seek to avoid or mitigate damage to designated sites through conditions on permits, where necessary.

The approach promoted by SEPA for the assessment of atmospheric nitrogen (N) deposition impacts on habitats uses the critical loads and critical levels approach. This approach can provide an initial estimate of the exceedence of critical loads and levels at specific designated sites and provide a risk assessment of air pollution impacts on the integrity of designated sites. The critical loads approach is, however, limited to indicating an increased risk of environmental impact, as exceedence of critical loads does not equate *directly* to an impact on 'site integrity'.

Purpose of the guidance

This guidance document provides a staged approach to assist Environmental Protection and Improvement staff with the assessment of potential impacts on designated sites (Special Areas of Conservation, Special Protection Areas, Ramsar Sites, and Sites of Special Scientific Interest) from atmospheric emissions of ammonia from PPC pig and poultry installations. The guidance has been produced to ensure that the statutory requirements for the Habitats Regulations 1994 and the Nature Conservation (Scotland) Act 2004 are met during the assessment of applications and variations for intensive pig and poultry PPC permits, and that a clear audit trail is created for the nature conservation elements of the final regulatory decision. The guidance also identifies where Scottish Natural Heritage requires to be consulted and where appropriate scientific support should be sought from SEPA Environmental Science.

How to use the guidance

The step-by-step instructions are clear and should be easy to follow. The approach promoted in the guidance consists of up to three main steps:

- GIS screening on distance of installation from designated sites
- Simple modelling of nitrogen deposition and gaseous ammonia at the designated site boundary using the SCAIL model
- More detailed assessment of potential implications for the designated site of the proposed emission, for either singular installations or in combination with other PPC intensive agriculture installations.

The third, more detailed, assessment stage is, itself, composed of up to three phases, each one having the potential to conclude the assessment process and allow the coordinating officer to proceed to permit determination.

Where consultation with SNH is required, the co-ordinating EPI officer is encouraged to ensure this is done as early as possible to ensure maximum time for discussion with SNH.

Sources of help and further guidance

Hypertext links are provided throughout to more detailed guidance in the Annexes of the document. Specific guidance or background information to support individual sections in the flowchart can be accessed through the following symbol (note that the example below is not actually linked anywhere, but is just for illustrative purposes!):

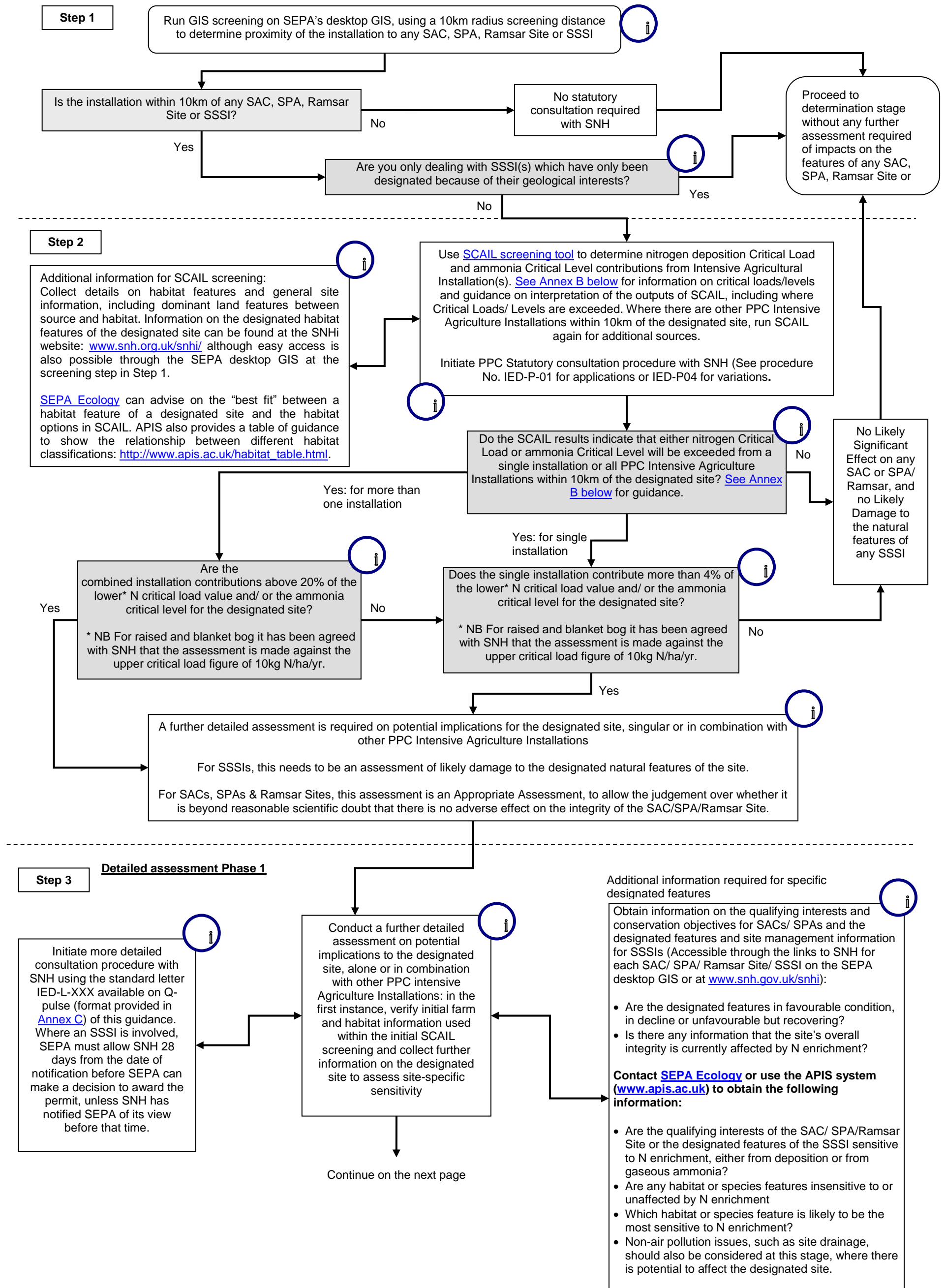


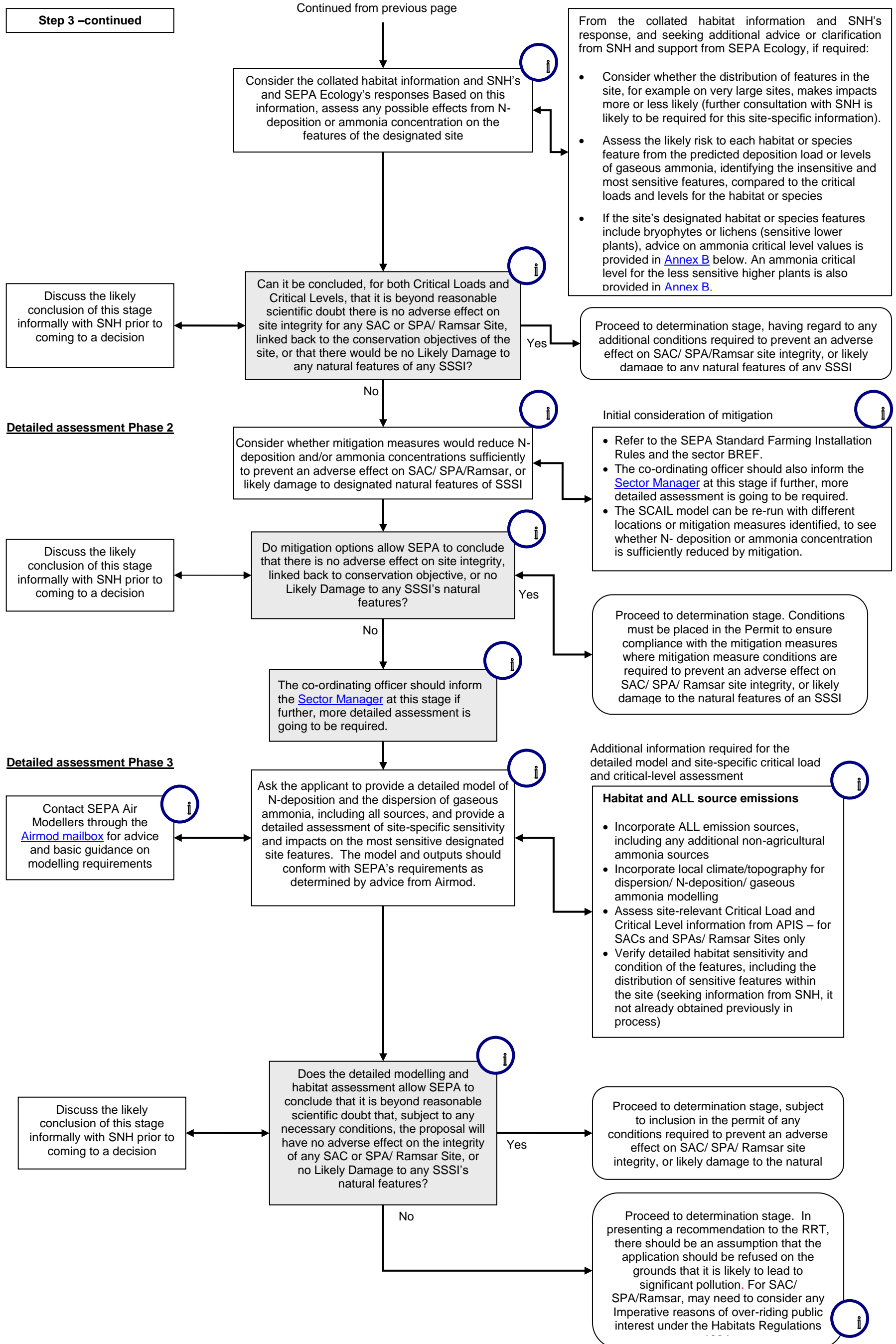
There are also links in the flowchart to external websites, where the SCAIL model can be accessed and site-specific information on designated sites can be obtained. Note that the SEPA GIS also provides links to SNH's facility for providing information on the qualifying features, site condition and other information for SACs, SPAs and SSSIs.

When ecological advice is required from SEPA Ecology, the first point of contact for EPI staff should be with their local [Senior Ecologist](#). The Ecology Intranet site [lists the Senior Ecologist for each area](#). The Senior Ecologist will ensure the involvement of appropriate Ecology specialists, e.g. terrestrial, wetland, soil ecology, etc. The consultation process with Ecology should be initiated by completion of a work request form (refer to [Q-PULSE](#) document OBF 044.01) emailed to the local Senior Ecologist. During times of absence/leave, the Senior Ecologist is responsible for arranging staff cover for Ecology consultation responses. If you contact a member of Ecology staff directly, e.g. one of the terrestrial ecologists, you should ensure that the work request form is completed and emailed to the relevant Senior Ecologist, as they may wish to involve additional areas of Ecology expertise to develop a response.

Requests for air modelling advice in respect of detailed dispersion and deposition modelling in Phase 3 of Step 3 should be directed to the [AIRMOD e-mailbox](#).

The assessment of potential impacts of PPC intensive agriculture installations on designated sites





Annex A - Guidance on individual stages of PPC pig and poultry designated site risk assessment

Step 1 – [GIS screening](#)

SEPA's overall approach to assessing impacts of ammonia emissions is initiated through the use of the SEPA desktop GIS to screen for designated sites in the vicinity of the proposed emission, as a crude initial screening step. The screening distance of 10km is a precautionary distance based on the outputs of the SCAIL model which indicates that, for some larger examples of intensive agriculture installations, depending on local wind conditions, modelled deposition of nitrogen could be expected at this distance. Many smaller installations will only deposit at much shorter distances than this and many designated sites within the 10 km radius should be easily eliminated from further consideration once the SCAIL model is used. More [detailed guidance](#) on use of the SEPA desktop GIS for this process has been provided in [Annex D](#) of this document. "Within 10km" means from the installation to the nearest boundary of the designated site.

A.1 Sites of Special Scientific Interest with only geological interests

At the GIS screening stage, where the only designated site interest identified within 10km of the installation is a Site of Special Scientific Interest (SSSI) and where all of the designated features of interest on that SSSI (as identified on the citation for the SSSI) are for geological/ geomorphological/ earth science interests, it is extremely unlikely that increased N-deposition or elevated ammonia concentrations will cause damage to these features. As such, there is no further requirement to assess implications or impacts for designated site interests.

A.2 Running the SCAIL Model

SCAIL (Simple Calculation of Ammonia Impact Limits) is a screening tool for assessing the impact from livestock units on designated areas like SSSIs and SACs. The model provides an estimate of the amount of nitrogen deposited, in form of NH₃, on a habitat from the livestock unit, storage area or spreading technique. This value can then be used to assess whether impact limits for the habitat are exceeded or not. SCAIL was developed for SEPA and partners by the Centre for Ecology and Hydrology and is maintained on CEH's web server (at www.scail.ceh.ac.uk) for open access by SEPA, conservation agencies, applicants and their agents, or anyone else wishing to undertake simple modelling of ammonia emissions from pig and poultry installations near designated sites. Detailed guidance is not provided here on how to run the SCAIL model as there is a comprehensive user guide on the [SCAIL](#) site. The SCAIL user guide provides information on critical loads and the model, as well as providing a walk-through of the system itself. You will be shown how to complete a query using the web form and how to interpret the results. More detailed guidance on using GIS to obtaining distance measurements and bearings for input into SCAIL is provided below in [Annex E](#). More detailed guidance on interpreting the results is also provided below in [Annex B](#).

A.3 Presence of additional PPC Intensive Agriculture Installations within 10km of the designated site

If there are additional PPC Intensive Agriculture Installations within 10km of the designated site, SEPA is required to assess the effects of the emissions from these on the designated site, in combination with the emission from the site under

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consideration. This is done by adding the relevant information for the additional sites to the SCAIL model run using the “Add More” option, and re-running the model. Note that identifying whether there are additional PPC Intensive Agriculture installations within 10km of the designated site under consideration is likely to require use of the desktop GIS. The grid reference to be used for the designated site is that of the boundary nearest to the initial installation (as this is the point for which SCAIL has calculated the single installation results and we are interested, at this stage, in additive effects at this location).). Some designated sites can be very large. When considering whether a site lies within 10km you are asking whether the installation is within 10km of the point on the designated site which is closest to the installation which is subject to the application.

A.4 Critical Load Threshold Figures for Single and Combined Installations

This step aims to screen off from further consideration those cases where the granting of a PPC permit will not lead to either nitrogen Critical Load or ammonia Critical Level being exceeded. In the first instance, this is where the process contribution plus background deposition or concentration are below the Critical Load and level values.

Where Critical Load or Level are exceeded, the threshold figures used here, of 4% of Critical Load/ Critical Level for a single installation and 20% for combined installations as a trigger for further more detailed consideration were agreed with Scottish Natural Heritage before the Intensive Agriculture sector deadline for PPC applications. These figures were intended as precautionary threshold values, below which the emission from an existing installation can be regarded as having no Likely Significant Effect on any SAC or SPA/Ramsar Site, and not likely to cause damage to the natural features of any SSSI. They are adopted in the interim for current purposes pending a joint scientific review with the Environment Agency, SNH and the other GB conservation agencies later in 2009. You should note that there is a reasonable chance that, following the above review and given current scientific opinion on the sensitivity of many habitats to long-term nitrogen exposure above critical loads or levels, the 20% threshold provided here as an interim value for combined installations’ emissions will be reduced later in 2009.

A.5 Requirement for further detailed assessment

This step in the procedure has been reached as the simple SCAIL modelling indicates that either:

- Critical Load/ Level is already being exceeded prior to the application being made, or
- there is a likelihood of the critical load for nitrogen deposition and/or the gaseous ammonia critical level being breached by the addition the emission from the installation under consideration.

This latter breach may be as a result of either the emission on its own or when the emission is combined with other nearby intensive agriculture emissions.

A further detailed assessment is required, therefore, of the potential implications of the emission for the designated site, alone or in combination with other PPC intensive agriculture installations. In keeping with the statutory requirements of the Nature Conservation (Scotland) Act 2004, section 15, where the designated site is an

SSSI, this more detailed assessment needs to be an assessment of likely damage to the designated natural features of the SSSI. Under the requirements of the Habitats Regulations 1994 (Regulation 48), where the designated site is an SAC or SPA/ Ramsar Site, this assessment is an Appropriate Assessment, the principal purpose of which is to allow SEPA to make a judgement over whether it is beyond reasonable scientific doubt that there is no adverse effect of the proposed emission on the integrity of the SAC or SPA/ Ramsar Site.

A.6 More detailed consultation with SNH

Although SNH has already been notified under PPC requirements about the application or variation earlier in this process (through PPC procedure no. IED-P-01 in Step 1), now that an appropriate assessment is required for an SAC/SPA and/or there is a risk of likely damage to the features of an SSSI, SEPA is required under conservation legislation to consult with SNH for its views. The standard letter in Annex C should be used. These advise SNH of the reason for consultation, along with identifying the information that SEPA is requesting SNH to provide in response.

Given that information on SAC/SPA/Ramsar and SSSI features and SAC/SPA conservation objectives is readily accessible on-line, as indicated elsewhere in this guidance, what SNH will often need to provide advice on is distribution of features in the site - detailed maps are not always readily available or necessary - what is really needed is local specialist knowledge of how close any sensitive features are to the nearest boundary to the installation.

A.7 Further detailed assessment – Phase 1

This initial phase of the Step 3 detailed assessment allows an opportunity to assess whether it is possible to identify no adverse effect on an SAC/SPA/Ramsar Site or likely damage to an SSSI through collation of more information about the designated site, without any further need for more detailed modelling and the need for additional consideration of mitigation. For example, as the modelling output from the SCAIL model is relatively simple, it assumes that sensitive features are evenly distributed across the site and present at the point at which the deposition and ammonia concentration are calculated, i.e. at the boundary of the site nearest to the emission.

One caveat to add to the use of SNH's Site Condition Monitoring Assessment data at this stage is that it will not necessarily pick up impacts of nitrogen on the habitats or species for which the site is designated, so a Site Condition Assessment as "favourable" is not conclusive, but could form the basis for a discussion with SNH as potentially part of the body of evidence about impacts, or otherwise.

If you need to see examples of previous more detailed assessment reports for pig or poultry permit applications, contact the [Sector Manager and Conservation Policy Staff](#).

A.8 Consideration of potential impacts on habitats and species from nitrogen deposition and ammonia concentrations

It is important at this stage to perform, as much as possible, an assessment based on specific information about the SAC/ SPA/ Ramsar Site/ SSSI, particularly in relation to the distribution of designated features in the site, which is information that SNH should be asked to provide. This is particularly important where a large designated site is implicated, as the most sensitive features could conceivably be several kilometres away from the boundary nearest to the emission and those at the

boundary might be insensitive to nitrogen. It is also important to ensure that the information used in the SCAIL modelling concerning the intervening land use is correct. If, for example, the presence of a tree belt or woodland is not accounted for in the SCAIL modelling, between the emission and the designated site, then N deposition may be considerably overestimated. In the event that improved information is obtained, SCAIL can be re-run to see the effects on deposition and ammonia concentration at the designated site boundary.

A.9 Step 3/ Phase 1 Determination of adverse effect on integrity of SAC/ SPA or likely damage to SNH

This is the first of three opportunities in the Step 3 assessment at which it may be possible to conclude that there is no adverse effect on the integrity of any SAC or SPA/Ramsar and/or no likely damage to the natural features of any SSSI. As this is simply a refinement of the assessment undertaken at the SCAIL modelling stage, but based on improved local information and consultation with SNH, it is possible that no additional conditions or mitigation may be required specifically for the prevention of adverse effects on SACs/SPAs/Ramsar Sites or likely damage to SSSIs. This is a decision that should be reached following discussion with SNH, taking further advice from [SEPA Ecology](#) if necessary.

A.10 Further detailed assessment – Phase 2. Consideration of mitigation options

It is at this stage that the co-ordinating officer may be able to discuss with the applicant or permit holder what is possible in terms of location, ventilation, etc (for new applications) or stocking level/ management options (e.g. manure storage, spreading, etc) for both new and existing installations. Some changes in existing or proposed location/stocking can be remodelled using SCAIL to see whether the nitrogen deposition or ammonia concentration would be sufficiently reduced to avoid potentially damaging levels of N deposition or ammonia at the site boundary. Also, the effects of planting a tree belt as a form of mitigation to reduce N deposition or ammonia can also be modelled in SCAIL. The co-ordinating officer may need to explain to SNH how mitigation options secure the desired reduction in N-deposition and/or ammonia concentration, to ensure their agreement on a conclusion of no adverse effect on SACs/SPAs/Ramsar Sites or likely damage to SSSIs. The purpose of these considerations is to allow the co-ordinating officer to determine again if it is possible to conclude that there is no adverse effect on the integrity of any SAC or SPA/Ramsar Sites and/or no likely damage to the natural features of any SSSI. Again, this is a decision that should be reached following discussion with SNH, taking further advice from [SEPA Ecology](#) if necessary.

In the event that SEPA cannot conclude at this stage that there would be no adverse effect on the integrity of any SAC or SPA/Ramsar Sites and/or no likely damage to the natural features of any SSSI, the co-ordinating officer should also inform the [Sector Manager](#) at this stage if further, more detailed assessment is going to be required, as there may be implications for resources and determination timescales.

A.11 Requirement for more detailed modelling of emission dispersion and deposition

As with other PPC sectors, the co-ordinating officer should ask the applicant to submit a modelling report. The applicant will need to employ a consultant to conduct the modelling. SEPA [Air Modelling staff](#) can provide basic guidance but the consultant should be able to produce a method statement detailing their approach to

SEPA. When a method statement is submitted to SEPA, SEPA Air Modellers can review and agree this with the consultant – contact the [Airmod mailbox](#) to request this. The consultant can then produce work to the agreed method, which once submitted may be assessed in detail by SEPA Air Modelling staff, depending on the risks associated with the results – again, contact the [Airmod mailbox](#) to request this. SEPA does not favour or prescribe any particular dispersion model; it is up to applicants to justify that their choice of model will produce the modelling outputs necessary for this assessment.

A.12 Inputs for further detailed assessment – Phase 3 of detailed assessment

In specifying modelling requirements, SEPA should advise that all local non-agricultural ammonia sources, as well as agricultural sources, should be included in the modelling. In this phase of the assessment, representative meteorology should be used and special treatments, such as local topography and buildings should be considered, as well as more detailed information of the condition of the most sensitive features on the site and the distribution of habitat features within the site (information which may already have been collated for the phase 1 assessment).

For the assessment, site-relevant critical loads should be used. The Air Pollution Information System (APIS) [provides information](#) on site-relevant critical loads for all SACs and SPAs in Scotland. The Site Relevant Critical Loads tool in APIS provides critical loads for acidity and nitrogen for designated features within an SAC or SPA. A user can view an overview of each interest feature for each site. Critical loads are assigned to each feature if it is sensitive to either nutrient nitrogen or acidity. Furthermore, deposition data for nitrogen and sulphur at each site is provided, apportioned to major sources, and presented in pie charts. Users can also select a grid reference if they know the exact location of their feature. It is the critical load for nitrogen that is of most concern and relevance in these assessments but the modelled deposition of acidifying substances should also be considered through use of the Site Relevant Critical Loads tool and, where acidity critical load is exceeded, advice should be sought from SEPA Ecology and EOS Conservation staff.

Similar site-relevant information for SSSIs will be available through APIS in due course and is currently under development through a Sniffer contract.

A.13 Reaching a conclusion on adverse effect following Phase 3 detailed modelling and habitat assessment

Based on the modelling outputs provided by the applicant, the specific information on the designated site, the distribution of its features, the critical loads and levels that apply, proposed mitigation options and advice on any of this from SNH and SEPA Ecology and Airmod, the co-ordinating officer needs to decide, for an SAC or SPA/Ramsar Site, if it is beyond reasonable scientific doubt that the proposed emission will not have an adverse effect on the integrity of the designated site. For SSSIs, the decision is about whether the emission will be likely to damage any natural features for the SSSI. Such decisions will, in future, also be informed by the proposed Autumn 2009 review of scientific advice referred to in A.4 above.

Where Critical Load/Level in a site is exceeded, the Centre for Ecology and Hydrology has expressed its view in relation to a specific case in England that, given the large confidence limits on Critical Load/Level estimates, the refusal of a permit where the installation was contributing <10% of the Critical Load or Level would be difficult to justify. Note that this is not suggested as a specific threshold at this stage

(although identifying a threshold will be one objective of the proposed review workshop later in 2009) but is an indication that, where a small percentage contribution to Critical Load or Level exceedence results from an installation's emission, there is scope to consider this a *de minimis* addition. This decision should be reached only following discussion internally and with SNH but offers the possibility of permitting an installation where Critical Load or Level will be (or is already) exceeded.

A.14 Consideration of Imperative Reasons of Over-riding Public Interest

In the event that SEPA decides that it is minded to refuse to permit an application or variation for a PPC pig or poultry installation due to an assessment of adverse effect on an SAC or SPA/ Ramsar Site, it should be noted that the applicant may, under Regulation 49 of the Habitats Regulations, seek to claim that there are imperative reasons of over-riding public interest requiring the permit to be issued, even although there would be an adverse effect on the integrity of an SAC or SPA/Ramsar Site.

Before considering if there are Imperative Reasons of Over-riding Public Interest, the Co-ordinating Officer must consider whether there are alternative solutions, in discussion with the applicant, taking account of [existing guidance](#) and consulting with **SEPA's [Conservation Policy staff](#)**.

It should be noted that, in the history of implementation of the Habitats Regulations in Scotland (since 1994), there has only been one successful claim of imperative reasons of over-riding public interest, for a major trunk road scheme through an oak woodland SAC. This is because the Regulations allow only for such decisions where the proposed development concerns:

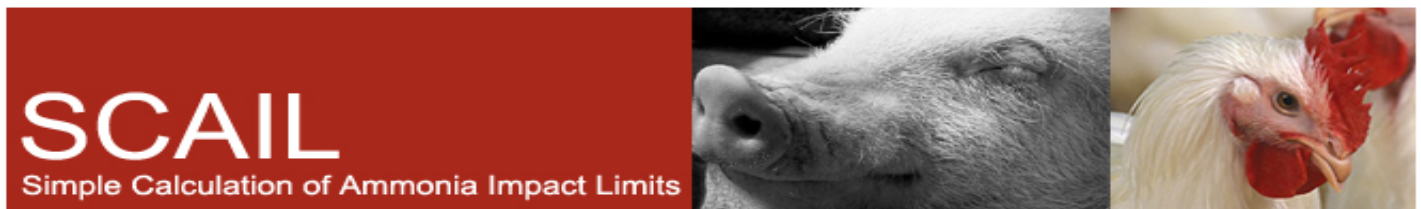
- the need to address a serious risk to human health and public safety,
- the interests of national security and defence,
- the provision of a clear and demonstrable direct environmental benefit on a national or international scale,
- a vital contribution to strategic economic development or regeneration, or
- where failure to proceed would have unacceptable social and/or economic consequences.

Even tighter criteria apply where an SAC supports one of a subset of habitats or species in the Habitats Directive listed as a priority. As such, it would seem to be extremely unlikely that such a development would qualify on these grounds, and extremely unlikely that either Scottish Ministers or the European Commission would agree that it constituted an imperative reason of over-riding public interest.

In the event that an applicant seeks to pursue this line of argument (*i.e.* that they should be given a permit as their development is required due to an imperative reason of over-riding public interest), the co-ordinating officer should immediately advise the [Sector Manager, EPI Legal and EOS Conservation Policy staff](#) of the issue, to enable involvement of all relevant interests from SEPA, as there are specific strict legal requirements for SEPA in such events.

Annex B: Interpretation of the outputs from SCAIL

SCAIL is a screening tool to determine if a more detailed assessment with more advanced modelling needs to be done or if it can be quickly concluded that a PPC intensive agriculture installation does or will not negatively affect a designated site. The figure below shows an example of a results page after modelling in SCAIL. On the SCAIL results page, explanations for the different rows on the output page, for example 'Deposition at habitat edge' and 'Background deposition to habitat', can be found by clicking on the **i** symbols (although these links do not work on the example given below, which is purely for illustrative purposes).



SCAIL Results Page

[User Guide](#) | [Region Map](#) | [Emission Factors](#)

Site Information:

County: Scotland - Southeast
 Habitat Type : Montane heaths and scrubs
 Grid reference of habitat : 320500,653500

Source Information:

Sr. No.	Existing/ New	Pig/ Poultry	Source	Category	Practice	Distance (metres)	Direction (degrees)	Landuse	Emissions Kg NH3	Avg Conc ug/m3	Avg Deposition Kg N/ha/yr
1	Existing	Poultry	Housing	Broilers	Litter	1000	270	Grassland	2000.0	0.07	0.4

Total Deposition and Exceedances:

Deposition at habitat edge: i	0.4 (0.4 - 0.4)	All Units in Kg N/ha/yr	Click on the info button (i) to view guidance on each result field.
Background deposition to habitat: i	20.9 (0.1)		
Total deposition: i	21.3		
Critical load for habitat: i	5-10		
Exceedance lower range: i	+16.3		
Exceedance upper range: i	+11.3		

Add Another Source?

Start Over with a New Query?

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Critical Load results:

The following sections describe how to interpret the results from SCAIL to assist you in making a decision on critical load exceedence.

The results from SCAIL indicate if the Critical Load for nitrogen deposition is exceeded, either before the deposition from the installation has been included (i.e. the background deposition) or once the deposition from the installation (and any other sources included) has been added (i.e. background deposition + deposition from the installation's emission, etc = total deposition). In the above example, the lower range (more sensitive/ worst-case) of the critical load for the designated site is 5 kg N/ha/yr (**red circle**). The background deposition (**green circle**) in the above example is already above the Critical Load for the selected habitat.

If the **total deposition is less than the Critical Load**, then there is no Critical Load exceedence and nitrogen deposition need not be considered further. You will still need to assess whether the ammonia Critical Level is exceeded (see Critical Level section below).

Where the **total deposition is greater than the Critical Load**, the Critical Load is exceeded and the following sections provide further guidance.

Where the critical load for a selected habitat will be exceeded, the trigger threshold level for requiring a more detailed assessment is when an agriculture installation on its own contributes more than 4% of the lower nitrogen critical load value for a site or, when it in combination with other PPC intensive agriculture installations within 10 km from a designated site, contributes more than 20% of the lower critical load for the site (by clicking 'Add' more than one source can be screened at the same time in SCAIL). **An exception for the use of the lower critical load limit agreed with SNH is that, for raised bog and blanket bog habitats in Scotland (nitrogen critical load range = 5-10 kg N/ha/yr), the upper critical load, in that case 10kg N/ha/yr, should be used.**

Above these thresholds, it is likely that the emissions from the installation/s significantly affect the designated site, and a more detailed assessment needs to be undertaken. For SSSIs, this needs to be an assessment of likely damage to the designated natural features of the SSSI. For SACs and SPAs/ Ramsar Sites, this assessment is an Appropriate Assessment, to allow the judgement over whether it is beyond reasonable scientific doubt that there is no adverse effect on the integrity of the SAC or SPA/ Ramsar Site.

In the example above, the intensive agriculture installation contributes 0.4 kg N/ha/yr at the habitat edge (**blue circle**), and the lower range (more sensitive/ worst-case) of the critical load for the designated site is 5 kg N/ha/yr (**red circle**). A separate calculation (which you need to do yourself) shows that the installation contributes $((0.4/5.0) \times 100)$ 8% of the lower critical load, and that an appropriate assessment is, therefore, required. Contact [SEPA Ecology](#) in the first instance for further information and help with the appropriate assessment.

*N.B. In the example above, the background deposition (**green circle**) is so high that the critical load for the designated site is exceeded even without the contribution from the agriculture installation. This does not necessarily mean that the installation cannot be permitted, depending on the condition of the designated site and possible abatement that can be used at the installation. An appropriate assessment will be needed to determine if the installation can be permitted or not. Contact [SEPA Ecology](#) in the first instance for further information and help if the background deposition on the designated site exceeds the critical load.*

Critical Level results:

SCAIL also estimates the average gaseous concentration of ammonia at the edge of the habitat, in this example $0.07 \mu\text{g}/\text{m}^3$ (**purple circle**). The critical level for air concentration of ammonia is $1 \mu\text{g}/\text{m}^3$ for lichens and bryophytes (mosses) and $3 \mu\text{g}/\text{m}^3$ for higher plants (range $2\text{-}4 \mu\text{g}/\text{m}^3$). In the example above, the concentration is considerably lower than $1 \mu\text{g}/\text{m}^3$ and does not give reason for further assessment on its own. Contact [SEPA Ecology](#) in the first instance for further information and help if the ammonia concentration result in SCAIL exceeds $1 \mu\text{g}/\text{m}^3$ where lichens and bryophytes (mosses) are among the listed habitat or species features, or above $2 \mu\text{g}/\text{m}^3$ for higher plant habitat or species features.

As with Critical Loads, one caveat to add to the use of SNH's Site Condition Monitoring Assessment data at this stage is that it will not necessarily pick up impacts of nitrogen on the habitats or species for which the site is designated, so a Site Condition Assessment of "favourable" is not conclusive, but could form the basis for a discussion with SNH as potentially part of the body of evidence about impacts, or otherwise.

Annex C: Standard letter for statutory consultation with SNH under the Habitats Regulations 1994 and the Nature Conservation (Scotland) Act 2004

Our Ref: **Our Reference**
Your Ref: **Your Reference**

Insert Name of Recipient
Insert Address
Insert Address
Insert Address
Insert Address
Insert Address

**Insert Date (Format = 22
March 2003)**

FAO: **Insert Name**

Dear **Insert Salutation**

**THE CONSERVATION (NATURAL HABITATS, & c.) REGULATIONS 1994 as amended
NATURE CONSERVATION (SCOTLAND) ACT 2004
POLLUTION PREVENTION AND CONTROL (SCOTLAND) REGULATIONS 2012
("The Regulations")**

DEPOSITION OF ATMOSPHERIC AMMONIA FROM INTENSIVE AGRICULTURAL INSTALLATIONS ON DESIGNATED SITES

**Application reference number: <<Reference number>>
Application by: <<Insert name of applicant or operator>>**

Since 1 November 2006, operators of large intensive pig and poultry rearing installations have been required to apply to SEPA for a permit under "the Regulations". As part of the determination of the above application, SEPA has made an initial assessment of the likely levels of ammonia deposition and concentration attributable to atmospheric emissions of ammonia from the above site(s), at sites designated as SAC, SPA, Ramsar Site or SSSI.

SEPA has identified the following SACs, SPAs, Ramsar Sites and/or SSSIs within 10km of the above site(s):

<< list the "SACs and/or SPAs and/or Ramsar Sites and/or SSSIs" identified by GIS screening>>

Please find enclosed a copy of the results from the initial screen carried out using the SCAIL model which was developed in partnership with the Centre for Ecology and Hydrology. The SCAIL model considers site-specific factors and predicts deposition

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and gaseous concentration of atmospheric ammonia, at the nearest habitat edge, attributable to the pig and poultry unit(s) being screened. The enclosed results show deposition and ammonia concentration in relation to the critical load and critical level most relevant for the designated site. Further information on critical loads and levels can be found at:

http://www.apis.ac.uk/overview/issues/overview_Cloadslevels.htm.

Please note that the results show that the critical load for nitrogen deposition and/or the critical level for ammonia will be exceeded by issue of the permit and that installation(s) screened contribute more than “4% of the lower Critical Load or Level”¹ or “20% of the lower Critical Load or Level”², in combination with other pig and poultry farms covered by “the Regulations”. These threshold limits were agreed between SEPA and SNH as indicative that, as modelled, dispersion and/or deposition of the ammonia emission from the installation(s) is likely to have a significant effect on a European site or be likely to damage natural features specified in an SSSI notification.

In response to these results, SEPA intends to carry out a more detailed assessment (for SACs/SPAs/ Ramsar Sites, an Appropriate Assessment) and requests that SNH provides the following information to assist in this process:

- SNH’s view on the sensitivity of the designated features to N enrichment, in view of any conservation objectives for the site(s)
- The location/distribution of the qualifying interests/ designated features within the boundaries of the designated site[s], in particular the locations of the nearest sensitive feature(s)
- The condition of the sensitive features i.e. favourable unfavourable (stable/ recovering/ declining)
- Whether, in SNH’s view, the overall integrity of the site is currently being affected by N enrichment.

In addition to supplying SEPA with the above information, and without prejudice to any representation that you may consider making, SEPA would be grateful for any information or opinion on the potential impact of atmospheric ammonia emissions from the above installation[s] on the integrity of the designated site and whether it is beyond reasonable scientific doubt that there would be “no adverse effect on integrity” of the site or whether “no likely damage to SSSI features” can be determined at this stage. In particular, SEPA would wish to identify:

- (a) for SACs and SPAs/ Ramsar Sites, whether or not there is likely to be an adverse effect on site integrity and whether more detailed modelling is required to inform the Appropriate Assessment and / or
- (b) for SSSIs, whether it is likely that damage will occur to notified features which will, therefore, also require further detailed modelling to determine the extent of potential damage to those features

¹ For raised and blanket bog it has been agreed that the assessment is made against the upper critical load figure of 10kg N/ha/yr

² For raised and blanket bog it has been agreed that the assessment is made against the upper critical load figure of 10kg N/ha/yr

(c) additionally, any non-air pollution aspects of the proposal which, in the view of SNH, may lead to an adverse effect on site integrity and/or likely damage to SSSI features.

In each of these cases, SEPA will review the information provided as requested above and consider the requirement to provide more detailed modelling to determine the impacts on protected sites. If SNH advises SEPA that the emissions from the installation[s] are likely to lead to an adverse effect on the integrity of the site or to damage of the SSSI features, and this cannot be avoided through mitigation measures, SEPA is likely to require the applicant to provide a more detailed model of the emissions and deposition. SEPA will discuss any likely conclusion from this more detailed modelling stage with SNH prior to coming to a decision.

If you have any questions regarding this letter please contact <<co-ordinating officer>> at <<office location>> office, telephone number <<telephone number>>.

Yours **Insert Closure (sincerely/faithfully)**

Insert Author's Name
Insert Author's Post Title

Enc

Annex D: Guidance on GIS screening of permit applications and variations

SEPA's overall approach to assessing impacts of ammonia emissions is initiated through the use of the SEPA desktop GIS to screen for designated sites in the vicinity of the proposed emission, as a crude initial screening step. The purpose of the GIS Screening step is to determine if the location of the proposed intensive agriculture emission is:

- within the boundary of a statutory designated site (SAC, SPA, Ramsar Site or SSSI), or
- within a relevant distance of such a site, such that the proposed activity might impact on the designated interests of the site.

Stages in undertaking a GIS Screening of permit application or variation.

Installation grid reference: Identify appropriate OS grid reference for the emission from the installation. Most intensive agricultural units have a number of ammonia emission points. Therefore, in most cases, it would be sensible to take the centre of the installation as your starting point. Where the installation is split between two or more discreet sites (more than one installation boundary) you will need to screen from the centre of each site.

2. Identify Relevant Screening Distance: Use a screening distance of 10km. This distance is based on the outputs of the SCAIL model which indicates that, for some larger installations, deposition of nitrogen could be expected beyond 5km. 10Km has been chosen as a precautionary distance.

This distance is based on the outputs of the SCAIL model which indicates that, for some larger examples of intensive agriculture installations, depending on local wind conditions, modelled deposition of nitrogen could be expected beyond the 5km screening distance that was originally proposed. Many smaller installations will only deposit at much shorter distances than this and many designated sites within the 10 km radius will be easily eliminated from further consideration once the SCAIL model is used.

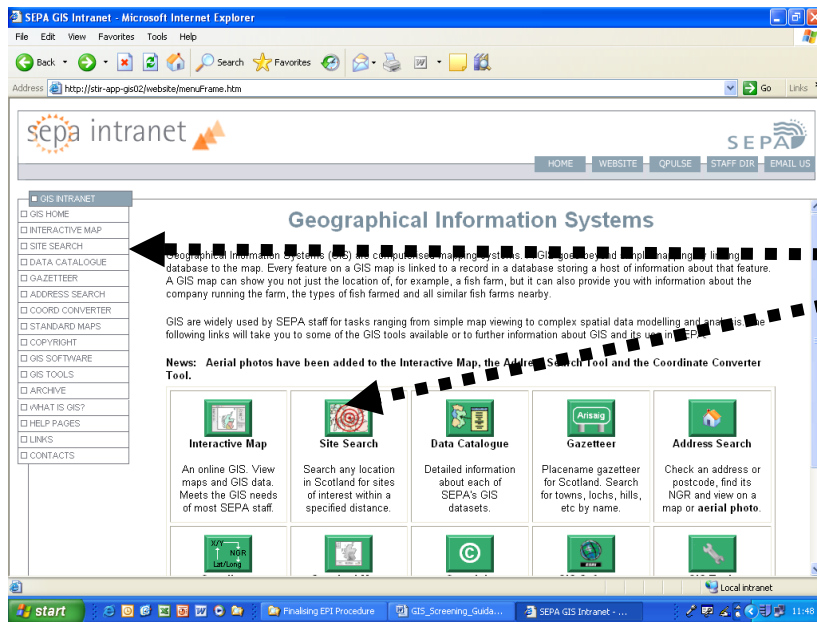
3. Open the SEPA desktop GIS from the SEPA Intranet page ([or click here to open the desktop GIS](#)). We recommend using the following approach to minimise the work involved in screening an application.

- a. Initial screening using the Site Search facility, to confirm whether or not there are any designated sites or biodiversity interests within the screening distance – this also allows you to generate a report with a map, showing whether or not there are relevant interests within a screening distance illustrated by a circle of appropriate diameter.
- b. Where there are identified designated sites or biodiversity interests within the screening distance, use the Interactive Map facility to query these and link to further information and guidance.

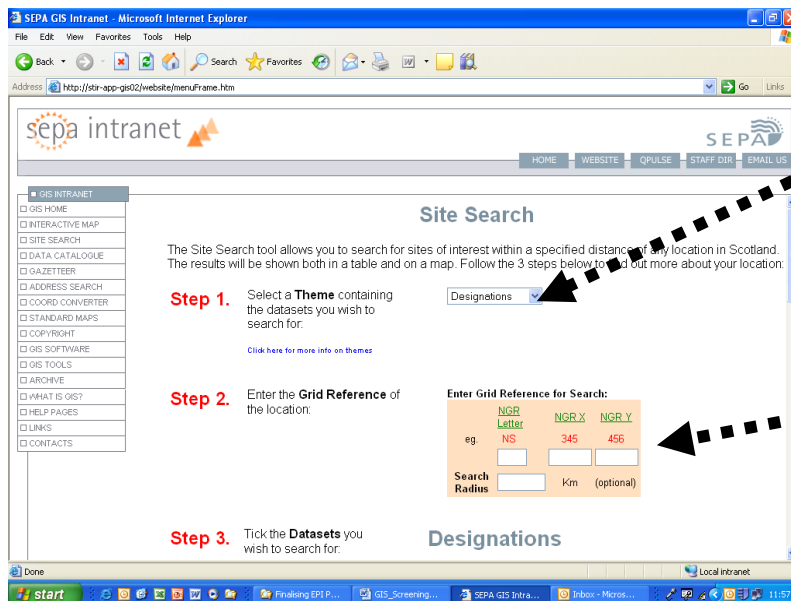
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All the individual actions required to carry out the two steps above are provided below, with annotated screenshots of typical views to illustrate the process.

4. Initial screening using the Site Search facility



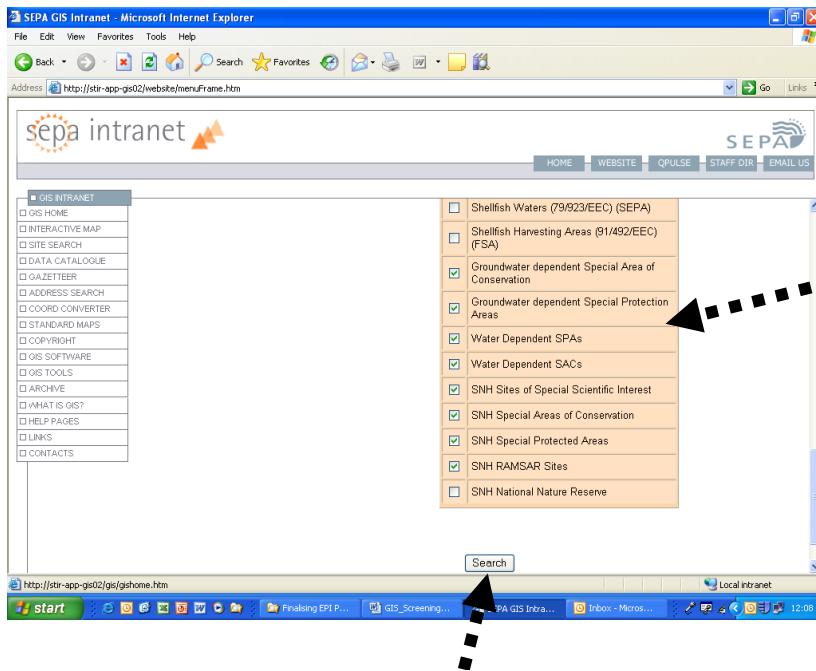
4a. Click on either the Site Search button or the SITE SEARCH link on the left-hand side bar



4b. Click the "Theme" button and select "Designations"

4c. Enter the OS grid reference and screening distance radius (10km) in the relevant boxes

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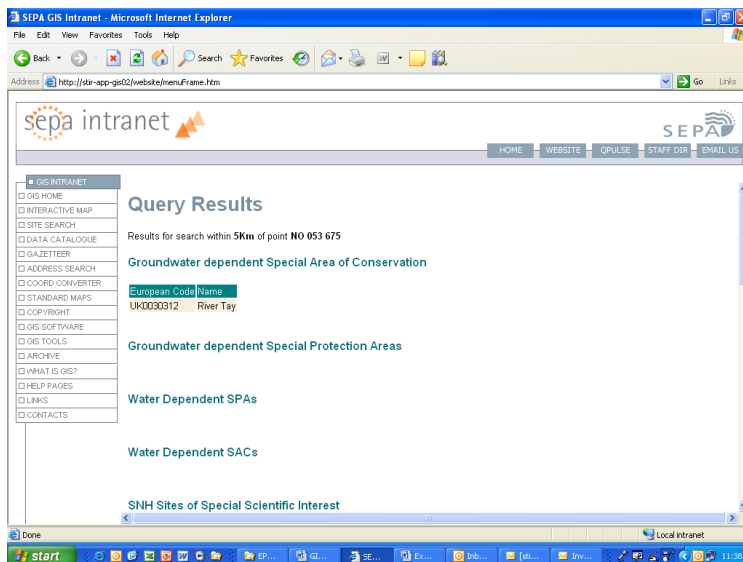
4d. Scroll to the bottom of the page and the “Designations” section and tick the boxes for:

- SNH Sites of Special Scientific Interest
- SNH Special Areas of Conservation
- SNH Special Protection Areas
- SNH Ramsar Sites

4e. Press the “Search” button to commence the automated search process

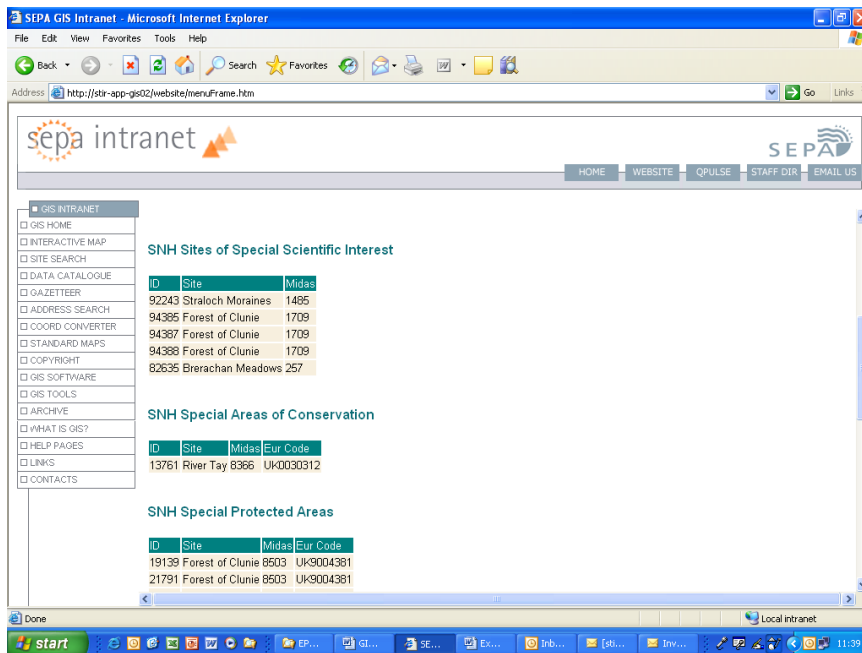
4f. Results from the Site Search

The search returns a results page that looks like this shown below, providing the name of any designated areas, located under each heading, within the screening distance of 10km from the point of emission.

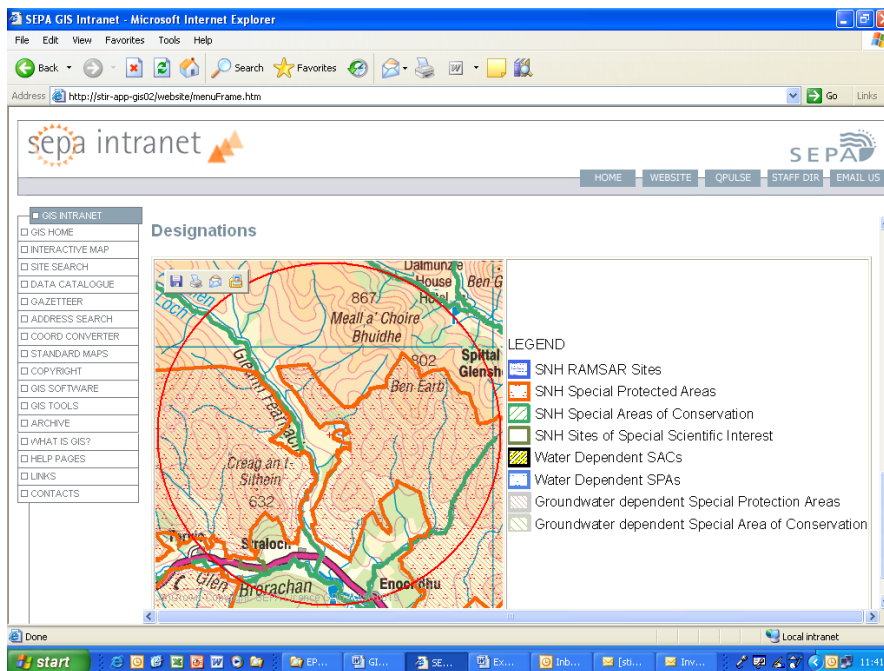


You may well need to scroll down the page to see all the results. In this case, scrolling down reveals additional locations, for a range of designations:

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Scrolling further down to the bottom of the page will reveal a map, showing the boundaries of each designated area, the circle indicating the area enclosed by the screening distance, and a legend of the different designated area types that were selected for the search in Step 4d above.



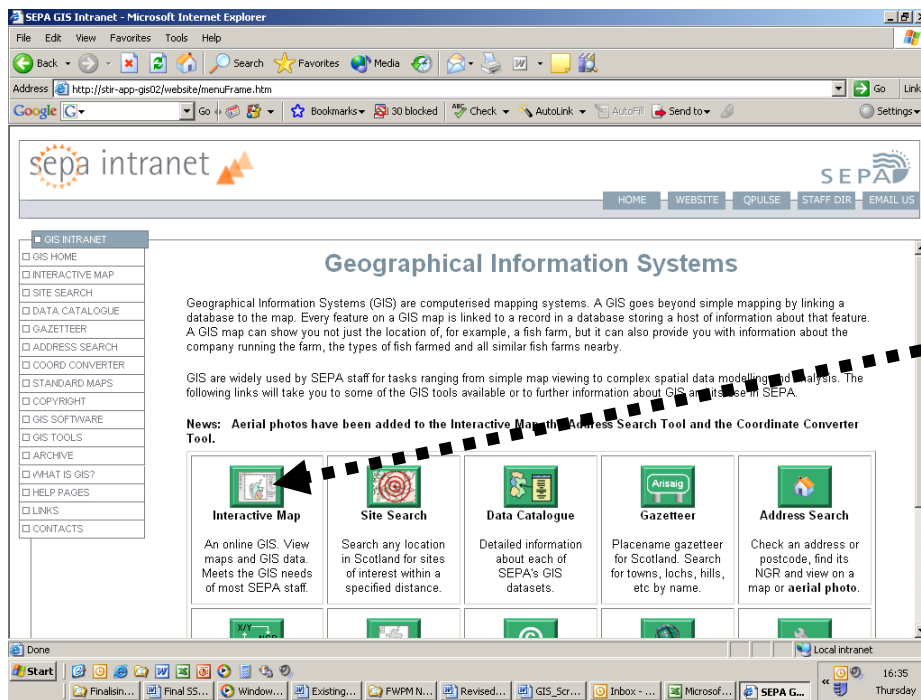
To create a record of this search for the working file, go to the tool bar at the top of the page, and click on "File", "Print Preview". Once in the "print preview" screen, change the layout to "landscape" using the "page setup" button on the toolbar (icon next to the word "print" which looks like a sheet of paper and a cog wheel). Then go along the toolbar and select the drop down option labelled: "As laid out on screen". Change this to "Only the selected frame" before printing a copy.

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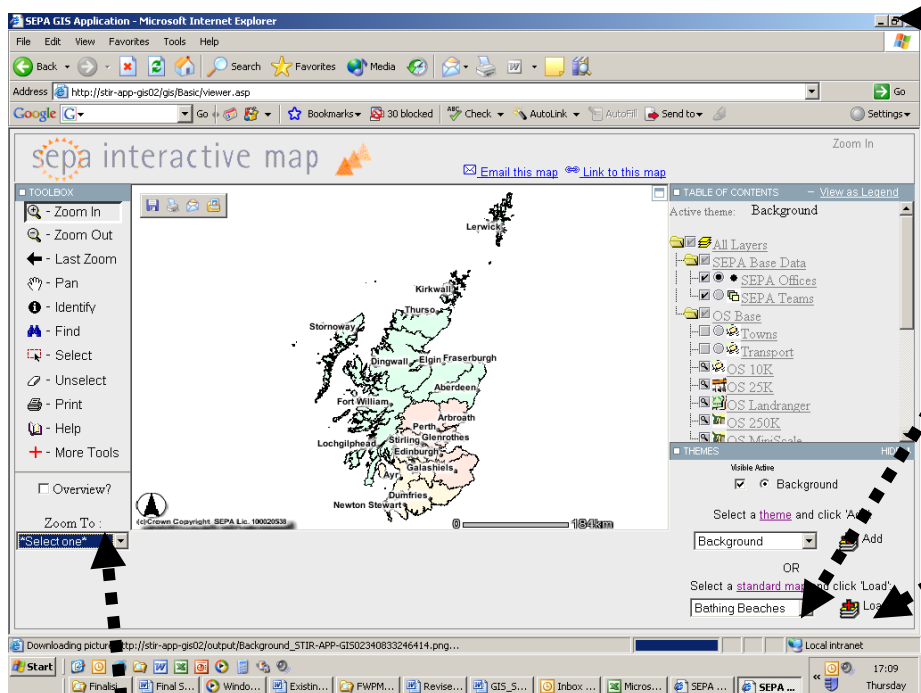
4g. Next steps after initial screening using the Site Search

At this stage, if you have identified that there are no designated sites or any part of a designated site (SSSI, SAC, SPA) within 10km of the installation (i.e. inside the 10km radius circle), the GIS screening stage is completed and you should return to Step one of this procedure with this information and proceed as directed. If there is a designated site within 10km, you will require further information on the designated habitat and/or species features of the site. Section 5 below provides step-by-step guidance on identifying this information.

5. Further screening using the Interactive Map facility



5a. Click on the interactive map button



5b. Maximise the screen

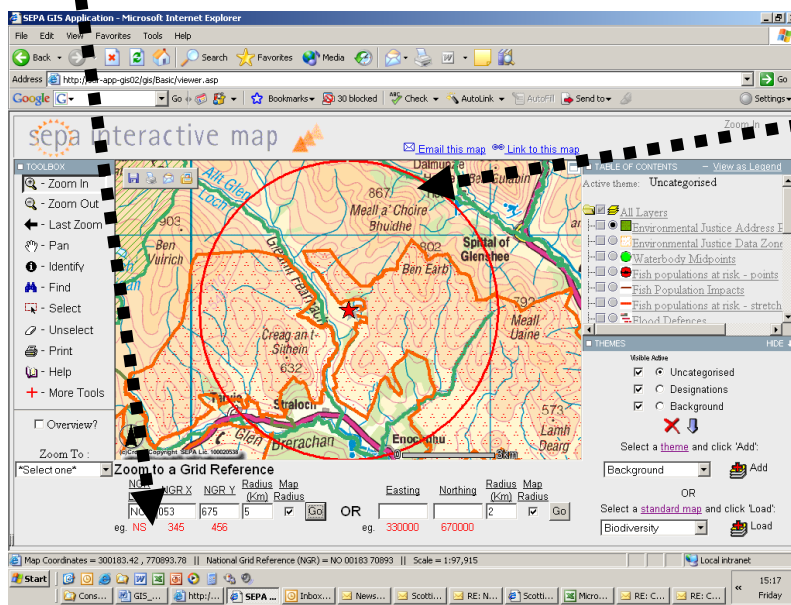
5c. Click on the "Standard Maps" menu and select "Biodiv-Reg"

5d. Click on the "Load" button to open the standard map "Biodiv-Reg"

5e. Click on the "Zoom To" button and select "Grid Ref" from the drop-down list

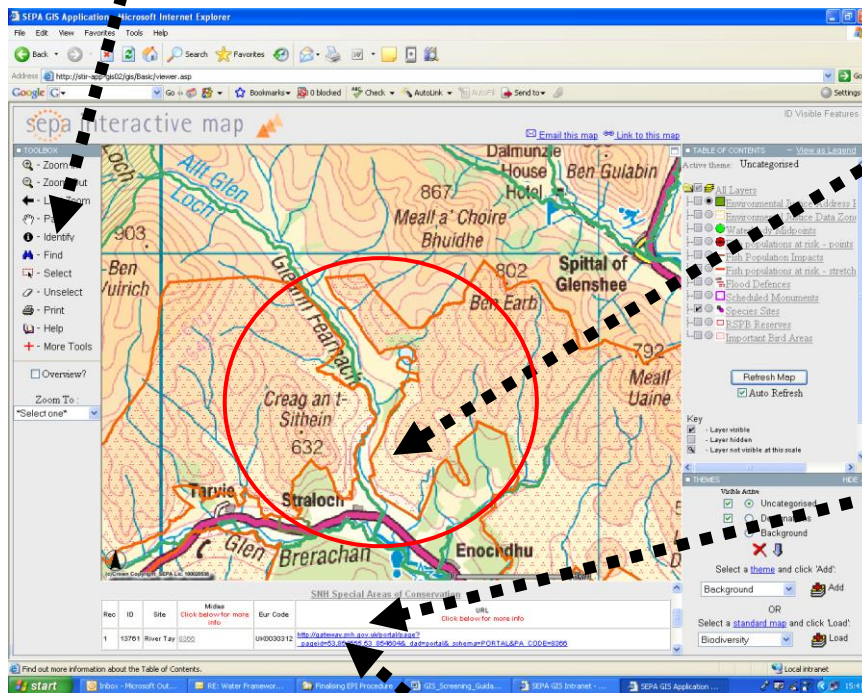
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5f. Enter the appropriate OS Grid Reference from stage 1 above, and the screening distance of 10km radius. Press “Go”.



5g. GIS has drawn a circle of radius 10km around the grid reference for the location

5h. Click the identify button, to enable you to query the map.



5i. Click on/ inside each of the designated features inside the circle to identify the designated site

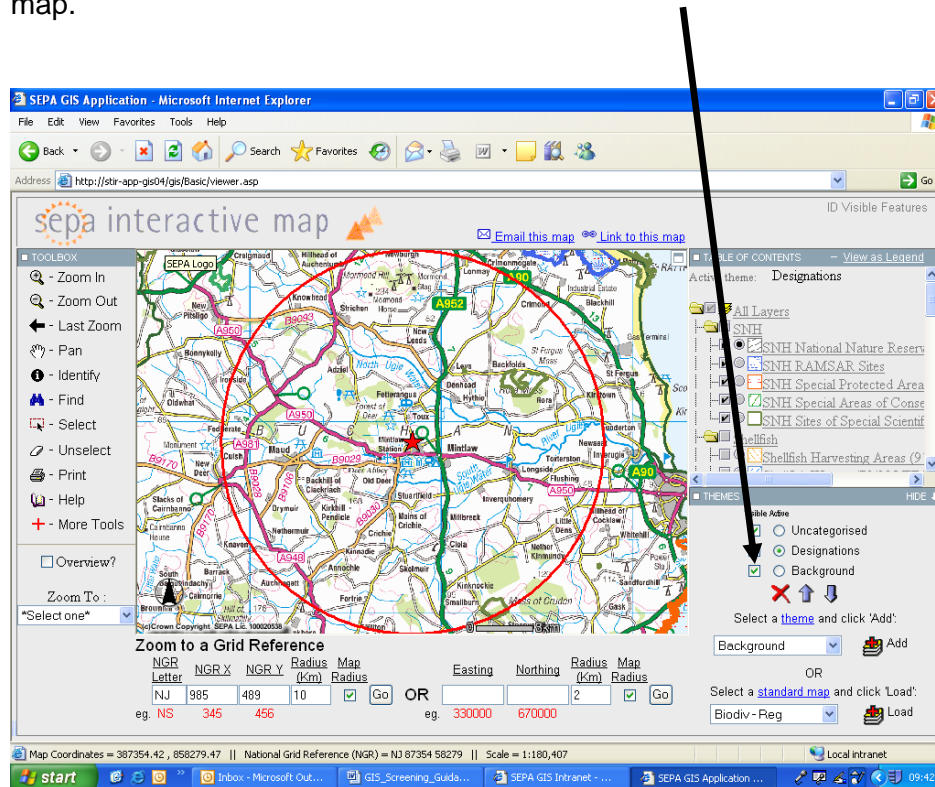
5j. The results of these queries will appear in the “Identify” results boxes at the bottom of the screen. You may have to scroll down to view all of these – many designated sites have more than one “label”.

6. Identifying further information: Click on the hypertext links in the “identify” results boxes to view:

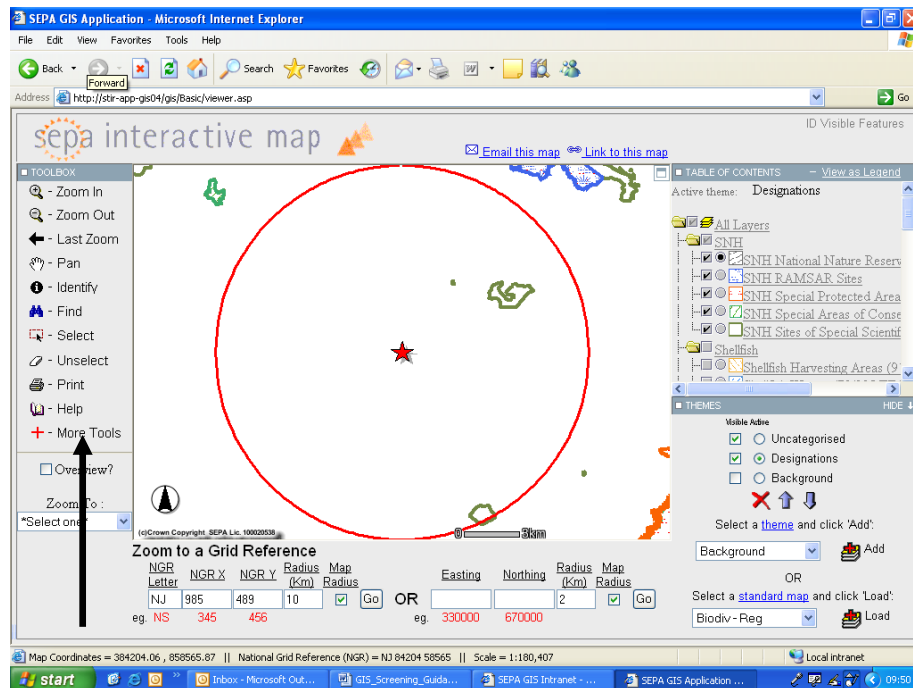
- for SACs, SPAs, and SSSIs, further, detailed information on the SNH SiteLink website

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On occasion, it can be quite difficult to see the designated sites amongst all the visual “clutter”. To make this easier, ‘un-tick’ the ‘background’ to remove the OS map.



Removing the background features makes identifying the designations easier



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7. Following this procedure should have provided all the necessary information required to allow you to return to Step 1 of the PPC Intensive Agriculture conservation procedure and continue as directed. If you are still unsure what to do next, contact SEPA Ecology for further advice on the screening and its outputs.

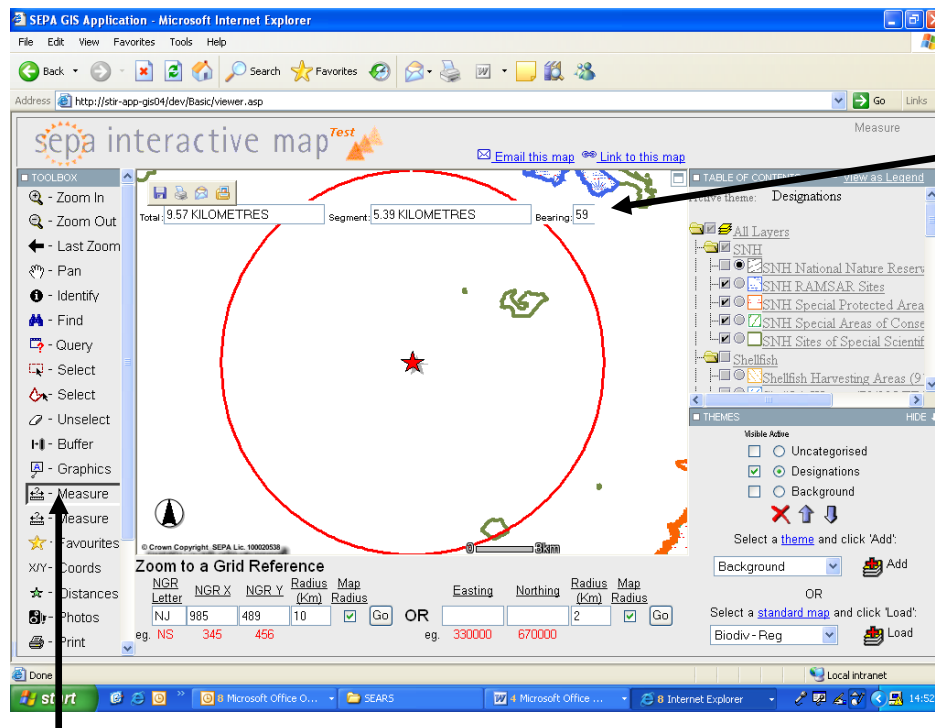
Annex E: Use of GIS to calculate distances and bearings for use in the SCAIL model

To run SCAIL you will need an accurate measurement of the distance between the installation and the designated site and the directional bearing from the installation to the designated site.

Calculation of distance and bearing

The SCAIL model will ask you for a distance between the emission points and the designated site. In most circumstances, it would be sufficient to measure from the centre of the installation to the closest point of the designated site. However, where emission points are geographically dispersed, you may need to input sources individually within the SCAIL model. In these circumstances, it will be necessary to measure between individual sources (sheds and manure stores) and the closest point of the designated area.

To get an accurate measurement of distance and directional bearing from the GIS, first click on the 'more tools' icon (see above) which will open a list of further options click on the 'measure' tool. If you then click on the star, you can drag the cursor to any point on the map and it will give you the distance from your start point and a directional bearing. Measure the distance and bearing from the installation to the **nearest point** of the designated site.



Distance in Km and bearing in degrees

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Annex F: Guidance on identifying alternative solutions prior to consideration of Imperative Reasons of Over-riding Public Interest

In the event that further advice is required on alternative solutions issues, contact, in the first instance, SEPA's Conservation Policy staff.

The following text identifies the existing Scottish and European guidance on consideration of alternative solutions.

Scottish-level guidance

SNH provides the following guidance on identifying alternative solutions prior to consideration of Imperative Reasons of Over-riding Public Interest:

“In cases where it cannot be ascertained that a proposal would not adversely affect the integrity of a Natura site, alternative solutions must be considered by the competent authority before any case is put forward for proceeding with the proposal for imperative reasons of overriding public interest. This consideration will be undertaken by the competent authority in discussion with the developer.”

Current guidance from Scottish Government is provided in Revised Circular 6/95, paragraph 14 (updated June 2000). Annex E, Appendix A of the Circular gives guidance as to what might be considered as alternatives. These include:

- suitable and available sites which are reasonable alternatives;
- other different, practicable approaches which would have a lesser impact.

SNH concludes its guidance by noting that “whichever types of alternatives are considered, inherent in the Scottish Executive guidance provided is the theme that alternatives should be **reasonable** and **practicable**. This is likely to depend on a variety of factors and will vary with individual circumstances.”

European-level guidance

The European Commission's guidance on this issue, "[Guidance document on Article 6\(4\) of the 'Habitats Directive' 92/43/EEC: Clarification of the concepts of: *alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, Opinion of the Commission, January 2007*](#)" states:

“...the competent authorities should examine the possibility of resorting to alternative solutions which better respect the integrity of the site in question*. All feasible alternatives, in particular, their relative performance with regard to the conservation objectives of the Natura 2000 site, the site's integrity and its contribution to the overall coherence of the Natura 2000 Network have to be analyzed. Such solutions should normally already have been identified within the framework of the initial assessment carried out under Article 6(3). They could involve alternative locations or routes, different scales or designs of development, or alternative processes.

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* At this point, the Commission refers to a relevant piece of European case law: “In its Opinion for the case C-239/04, the Advocate General (paragraph 44) considers that “among the alternatives short-listed “*the choice does not inevitably have to be determined by which alternative least adversely affects the site concerned. Instead, the choice requires a balance to be struck between the adverse effect on the integrity of the SPA and the relevant reasons of overriding public interest.*””

The Commission concludes its guidance on this issue as follows:

“In conformity with the principle of subsidiarity, it rests with the competent national authorities to assess the relative impact of these alternative solutions on the site concerned. It should be stressed that the reference parameters for such comparisons deal with aspects concerning the conservation and the maintenance of the integrity of the site and of its ecological functions. In this phase, therefore, other assessment criteria, such as economic criteria, cannot be seen as overruling ecological criteria.”

This Commission guidance builds on an older, but still current, Commission guidance document from 2001 (“[Assessment of plans and projects significantly affecting Natura 2000 sites](#)”). In Scotland, the advice on alternative solutions in this older European guidance was quoted in the Scottish Ministers’ [decision letter](#) for the refusal of the Lewis Peatlands windfarm proposal in April 2008:

“Ministers also note the guidance on the alternatives options test provided in the European Commission’s methodological guidance entitled “Assessment of plans and projects significantly affecting Natura 2000 sites” at paragraph 3.31, which states -

“The examination of alternative solutions requires, therefore, that the conservation objectives and status of the Natura 2000 site will outweigh any consideration of costs, delays or other aspects of an alternative solution. The competent authority should not, therefore, limit its consideration of alternative solutions to those suggested by the project or plan proponents. It is the Member State’s responsibility to consider alternative solutions, which could be located even in different regions/countries.” “