

Shropshire Council Interim Guidance Note GN2 (Version 1, April 2018)

Assessing the impact of ammonia and nitrogen on designated sites and Natural Assets from new and expanding livestock units (LSUs)

(Please note, for international and national designated wildlife sites this interim guidance is based largely on Natural Resources Wales Guidance Note (GN020), ‘Assessing the impact of ammonia and nitrogen on designated sites from new and expanding intensive livestock units: Technical guidance for determining environmental permit applications or responding to planning application consultations.’)

Why is Shropshire Council producing this interim guidance?

In the past, Shropshire Council has relied on the national guidance and thresholds for ammonia published by the Environment Agency (EA) to be followed when applying for an Environmental Permit for intensive livestock units (LSUs), published in 2012. Since this guidance was issued, a number of changes have occurred. These are:

- The very high number of permitted intensive livestock units in Shropshire (over 100 by 2017) compared with other English counties;
- An increase in the number of planning applications submitted per year for both EA permitted and non-permitted livestock units, which produce ammonia emissions;
- A relatively high number of internationally and nationally designated wildlife sites, together with ancient woodlands and local wildlife sites scattered across this largely rural county, which are protected by law and/or planning policy;
- ‘Clusters’ of LSUs existing and proposed in proximity to designated wildlife sites;
- Very high background levels of ammonia in the county with examples of international wildlife sites already at c. 200% to 600% of their Critical Levels or Critical Loads (i.e. the levels of ammonia and loads of nitrogen deposition above which species will be lost and habitats damaged);
- New guidance has been published (2017) by Natural Resources Wales (the intensive LSU permitting body for Wales) for considering ammonia emissions, which has lowered the significance thresholds used during the initial ammonia screening and in-combination assessments. Shropshire Council LPA must formally consult NRW on any LSU from which ammonia may impact on Welsh wildlife sites, whether or not they have a permit from the Environment Agency (the intensive LSU permitting body for England), i.e. different screening thresholds now apply for environmental permits depending in which country the affected sites lie;
- Recent caselaw (the ‘Wealden Case’ 2017) has called into question how sources of pollution are to be considered ‘in-combination’ for internationally protected wildlife sites;
- Recent research commissioned by Natural England, which has scientifically assessed the impacts of nitrogen pollution on habitats and species (see section 1.3);

- The requirement in the National Planning Policy Framework and the new government 25 year plan to seek biodiversity net gain.

Shropshire Council is currently liaising with Natural England, the Environment Agency, Natural Resources Wales, planning agents, applicants and the Marches Local Enterprise Partnership to seek a way forward for agricultural businesses, whilst complying with legislation and policy to protect Shropshire's wildlife and countryside.

What is this document about?

This document explains how to assess the impacts of ammonia emissions and nitrogen deposition from livestock units on designated sites and Natural Assets (Internationally and nationally designated sites and Natural Assets such as Ancient Woodland, other irreplaceable habitats and Local Wildlife Sites as listed under SAMDev Plan policy MD12: Natural Environment and the NPPF paragraph 118).

Who is this document for?

This guide is for applicants and their planning agents, ecology and air pollution consultants, seeking to apply for planning permission to build and operate livestock units and associated infrastructure (intensive or otherwise) in Shropshire, including changes to existing permissions. It will also serve to help Shropshire planning officers to assess such planning applications.

Contact for queries or feedback: ecology@shropshire.gov.uk

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1 Introduction

This document explains how Shropshire Council now assesses the impact of predicted ammonia emissions from livestock units (LSUs). An LSU may be classed as ‘intensive’ and require an Environmental Permit from the Environment Agency (EA) as well as planning permission, or it may fall outside the ‘intensive’ livestock criteria but by its nature may generate significant airborne ammonia.

This guidance covers the assessment of direct effects of ammonia and indirect impact from nitrogen deposition (eutrophication) on designated wildlife sites and Natural Assets. The assessment procedure involves the same modelling techniques used by the EA and Natural Resources Wales (NRW) when assessing environmental permits, but the thresholds for screening planning applications, for impacts on international and national designated sites, generally reflect those used by NRW, which have been more recently updated. NRW has introduced revised screening thresholds of insignificance and a new upper threshold for the process contributions of other plans or projects acting in-combination on designated sites (GN020 October 2017). They have also revised the screening distance for European Sites, reducing it from 10km to 5km.

Shropshire Council understands that the EA, Natural England (NE) and NRW are currently reviewing their guidance in the light of recent case law (Wealden Case, see section 1.3). Shropshire Council is actively liaising with these bodies and welcome technical suggestions from the industry and farming advisors to both mitigate the problems caused by high levels of ammonia and support the sustainable development of the farming sector. **This interim guidance will be reviewed at least annually and Shropshire Council will consider any changes in national guidance and scientific evidence as it becomes available. Please check Shropshire Council’s planning website for the most up to date guidance and the Validation Checklist for Livestock Units (LSU).**

<http://shropshire.gov.uk/environment/biodiversity-ecology-and-planning/>

The Validation Checklist also covers information which must be submitted with a planning application to allow the LPA to consider noise and odour impacts on local people.

This guidance describes the information required to be submitted with a planning application and takes you through the steps needed to carry out the assessment on sites with the following designations:

- European designated sites (Natura 2000 sites) - Special Areas of Conservation (SAC), Special Protection Areas (SPA)
- Other internationally designated sites - Ramsar Sites (as a matter of government policy)
- Nationally designated sites - Sites of Special Scientific Interest (SSSI)
- Natural Assets as defined in Shropshire’s Site Allocations and Management of Development Plan, policy MD12: Natural Environment (Local Nature Reserves, Local Wildlife Sites, Ancient Woodland (or Plantation Ancient Woodland) or other irreplaceable habitats, priority habitats and priority species).

N.B. In order to obtain an environmental permit from the Environment Agency (EA), applicants should follow the EA's guidance at: <https://www.gov.uk/topic/environmental-management/environmental-permits> as before.

This guidance document only applies to applications for planning permission from the Shropshire Local Planning Authority. Planning and Environmental Permitting are separate regimes considering differing criteria, and obtaining permission under one regime does not automatically ensure permission will be gained through the other.

1.1 Relevant legislation

Legislation relevant to this guidance note is:

- Environmental Permitting (England and Wales) Regulations 2016
- Conservation of Habitats and Species Regulations 2017
- Countryside and Rights of Way Act 2000
- Natural Environment and Rural Communities Act 2006
- Environmental Protection Act 1990
- Wildlife and Countryside Act 1981
- Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999

1.2 Relevant Planning Policy

Planning policy relevant to this guidance note is:

- Shropshire Site Allocation and Management of Development Plan (including policy MD12: Natural Environment)
- Shropshire Core Strategy (including policy CS17 Environmental Networks)
- National Planning Policy Framework (particularly paragraphs 14, 118 and 119)

1.3 Related documents

- a) Government Circular: Biodiversity and Geological Conservation – Statutory obligations and their impact within the planning system ODPM Circular 06/2005 (England)
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf
- b) Guidance on modelling concentration and deposition of ammonia emitted from intensive livestock units. Environment Agency, Air Quality Modelling Assessment Unit, 22 November 2010 v3
<http://webarchive.nationalarchives.gov.uk/20140328103829/http://www.environment-agency.gov.uk/business/sectors/40071.aspx>
- c) SCAIL: Simple Calculation of Atmospheric Impact Limits <http://www.scail.ceh.ac.uk/>
- d) Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance (23rd March 2016), Natural England Commissioned Report NECR210.
<http://publications.naturalengland.org.uk/publication/5354697970941952>

- e) Improvement Programme for England’s Natura 2000 Sites (IPENS) – Summary Report. Natural England 2015.
<http://publications.naturalengland.org.uk/publication/5757712073752576>
- f) Atmospheric Nitrogen theme plan – Developing a strategic approach for England’s Natura 2000 sites. Natural England 2015.
<http://publications.naturalengland.org.uk/file/5688662740172800>
- g) Commission Implementing Decision (EU) 2017/302 of 15 February 2017 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for the intensive rearing of poultry or pigs (*notified under document C(2017) 688*)
<https://publications.europa.eu/en/publication-detail/-/publication/968ab1da-f807-11e6-8a35-01aa75ed71a1/language-en>
- h) Wealden District Council v Secretary of State for Communities and Local Government, Lewes District Council, South Downs National Park Authority v Natural England [2017] EWHC 351 (Admin)
<http://www.bailii.org/ew/cases/EWHC/Admin/2017/351.html>

2 The assessment process

Table 1 below describes the screening procedure. Figure 1 illustrates the procedure in a flow chart. For each screening Step, additional clarification is provided in the remaining text, headed with the Step number.

Definitions of terms used in Table 1:

Abbreviation	Term	Description
BAT	Best Available Techniques	Measures to reduce ammonia emissions detailed in document 1.3 (g) above.
Cle	Critical level	Level of airborne ammonia above which damage to a specified habitat is likely to occur.
CLo	Critical Load	Amount of nitrogen deposition above which damage to a specified habitat is likely to occur.
PC	Process Contribution	Ammonia released to the air or nitrogen (N) deposited to the ground as a result of the LSU.
PEC	Predicted Environmental Concentration	Process Contribution plus the other PCs being considered in-combination, plus the background level or load at the sensitive receptor.
SC Ecology	Shropshire Council’s Ecology Team	Contact: ecology@shropshire.gov.uk
Sum of PCs	Sum of Process Contributions	The PC of the LSU being applied for plus the PCs of other sources being considered in-combination.

Table 1 Shropshire interim assessment process for livestock units emitting airborne Ammonia, partly based on NRW Guidance Note GN020 with modification to take account of the Wealden Case, legal advice and planning policy.

SIGNIFICANCE SCREENING		
Step 1: Distance screen	<p>Question: Is the livestock unit closer than 5 km from an international or national designated wildlife site (i.e. SAC, SPA, Ramsar, SSSI) and/ or 2km from a Natural Asset (e.g. Local Nature Reserves, Local Wildlife Sites, Ancient Woodland (or Plantation Ancient Woodland) or other irreplaceable habitats, priority habitats and priority species)?</p> <p>All the above are classed as ‘sensitive receptors’. A receptor is sensitive if it contains habitats or species which are adversely effected by airborne ammonia, deposited nitrogen or acidification, from whatever source.</p> <p>Information can be obtained from:</p> <ul style="list-style-type: none"> - http://www.magic.gov.uk/MagicMap.aspx - Natural England https://designatedsites.naturalengland.org.uk/SiteSearch.aspx APIS http://www.apis.ac.uk/src1 - Shropshire Wildlife Trust (for Local Wildlife Sites) https://www.shropshirewildlifetrust.org.uk/contact-us 	
	If...	then...
	Yes, it is within 5km from an international or national site, or 2km from a Natural Asset	Proceed to Step 2
	Yes, it is closer than 250m	Proceed to Step 3a Detailed Assessment. Detailed modelling will be required and must follow the agreed EA AQMAU 2010 v3 guidance (see 1.3 Related documents). (SCAIL/AST

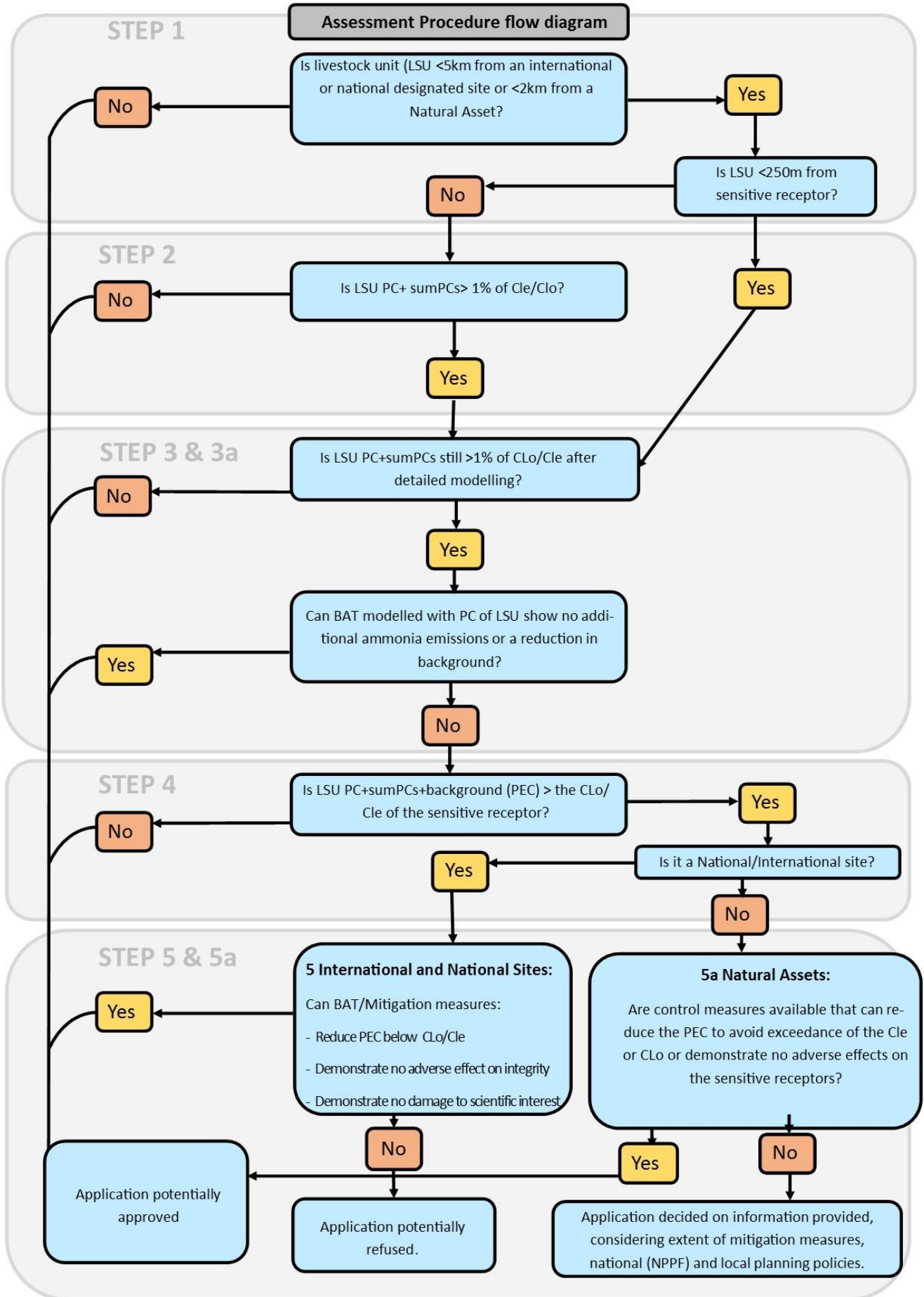
		cannot be used for sites < 250m from a sensitive receptor.)
	No	Further assessment will not be required in support of the application. The application can be determined without the need to assess the impact of aerial emissions of ammonia and nitrogen deposition.
Step 2: Simple screening threshold (based on SCAIL or AST modelling)	<p>Question: Does the process contribution (PC) + Sum of other PCs add up to over 1% of the Cle or Clo of the sensitive receptor?</p> <p>A summary table should be provided by the applicant detailing: The sensitive receptors potentially affected. The ammonia critical level and nitrogen critical load for each sensitive receptor and background levels for the locality. These can be obtained from one or more of the following sources:</p> <ul style="list-style-type: none"> • Air Pollution Information System (APIS); • Sensitive receptors established from site citations; • confirmed by relevant officer within SC Ecology or Natural England. <p>Other sources (other PCs) that could potentially act in combination must be identified such as:</p> <ul style="list-style-type: none"> • <i>Applications for planning or permitting that are submitted but not yet determined;</i> • <i>Developments that have planning permission and/or permits but are not yet (fully) operating;</i> • <i>Developments that started operating after the most recent update of background levels.</i> <p>Contact SC Ecology to identify any relevant sources of PCs in the planning or permitting systems.</p>	
	If...	then...

	Yes	Proceed to Step 3a: Detailed assessment . Detailed modelling will be required
	No	The application can be determined providing avoidance and mitigation measures can be conditioned.
DETAILED OR APPROPRIATE ASSESSMENT		
Step 3a Detailed assessment	Question: Does the PC plus Sum of PCs remain >1% following detailed modelling? A detailed model will be required to complete the assessment from this point forward and must follow the agreed EA AQMAU 2010 v3 guidance	
	If...	then...
	Yes	Proceed to Step 3b .
	No	The application can be determined providing avoidance and mitigation measures can be conditioned.
Step 3b: Avoidance of additional PC	Question: Does modelling of the PC, including BAT (Best Available Techniques) or other avoidance/mitigation measures show either no additional nitrogen Deposition or, a reduction in background nitrogen Deposition?	New sites would have to be N neutral. Extensions to existing sites would need to add no extra N deposition or, ideally, a reduction in the N background level, achieved by use of Best Available Techniques (BAT) or other mitigation measures.
	If...	then...
	Yes	The application can be determined providing avoidance and mitigation measures can be conditioned.
	No , modelling of the PC, including BAT (Best Available Techniques) or other avoidance/mitigation measures does not reduce the nitrogen Deposition by more than or equal to the Process Contribution.	Proceed to step 4

Step 4 Detailed assessment with background	<p>Question: Does the Predicted Environmental concentration, PEC (process contribution (PC) + Sum of other PCs + Background Ammonia concentrations / N deposition) cause an exceedance of the Cle or Clo of the sensitive receptor?</p> <p>Determine the background ammonia concentrations and nitrogen deposition at the sensitive receptors.</p> <p>Note: background levels of ammonia in Shropshire are already over most Critical Levels and Loads for sensitive receptors.</p>	
	If...	then...
	Yes, PC+Sum of PCs + Background levels are above the Cle or Clo of the sensitive receptor(s).	<p>Proceed to step 5 if international or national designated sites are affected.</p> <p>Proceed to step 5a if Natural Assets are effected.</p>
	No	Further assessment is not required (although BAT may be required). A decision can be made on the application.
Step 5: Consideration of control measures for developments affecting SACs, SPAs, Ramsar Sites or SSSIs.	<p>Question: Are control measures available that can:</p> <ul style="list-style-type: none"> • reduce the PEC to avoid exceedance of the ammonia critical level or nitrogen critical load or • demonstrate that there will be no adverse effect on the integrity of an international site or • demonstrate there will be no damage to the scientific interest of a national site? <p>Assessments will be made on a case by case basis with formal consultation with NE (and with NRW for designated sites in Wales).</p>	

	Where the PC or Sum of PCs are above 1% and when added to the background levels create the PEC which results in an exceedance of the CLe / CLo , or where background levels already exceeds the CLe / CLo, control measures will have to be considered to reduce the emissions so that no damage to the sensitive receptors will occur.	
	If...	then...
	Yes	The application can be potentially approved with conditioned control measures.
	No	The application will be potentially refused when all avenues to reduce the contributions are exhausted, and it cannot be shown that damage to the sensitive receptors will not occur.
Step 5a: Consideration of control measures for developments affecting Natural Assets.	<p>Question: Are control measures available that can reduce the PEC to avoid exceedance of the ammonia critical level or nitrogen critical load or demonstrate no adverse effects on the sensitive receptors?</p> <p>Where the PC and Sum of PCs are above 1% and when added to the background levels create the PEC which results in an exceedance of the critical level / load, or where the background level already exceeds the critical level / load, control measures will have to be considered to avoid or reduce the emissions.</p>	
	If...	then...
	Yes	The application can be potentially approved with conditioned control measures.
	No	A balanced planning decision will be taken based on the information

	<p>Provide sufficient information on the ecological impacts of the development by an ecological consultant on the specific sensitive receptor(s).</p> <p>Provide details of avoidance, mitigation and compensation measures proposed.</p> <p>Provide detailed reasoning as to why the socio-economic benefits outweigh the quantified residual harm to the sensitive receptor.</p> <p>Consult SAMDev Policy MD12 and NPPF paragraph 118.</p> <p>Submit written consideration of alternatives, indicating why the chosen project is the least damaging option.</p>	<p>provided, other material considerations and planning policy.</p>
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3 Simple distance and critical level/load screening

3.1 Step 1: Screening distance

Follow the steps below for assessing Livestock Unit (LSU) applications or variations to existing LSUs situated between 250m and 5km from a sensitive receptor. If there are no sensitive receptors within these distances, then there is no need to proceed to the following steps.

Where a livestock unit is **within 250m** of a sensitive receptor, detailed assessment using detailed modelling is automatically required for that development (**Step 3**). In such cases steps 1 and 2 are not required, however the relevant critical levels and loads **must** still be established. The detailed modelling must follow the agreed guidance (Guidance on modelling concentration and deposition of ammonia emitted from intensive livestock units Environment Agency Air Quality Modelling Assessment Unit, 22 November 2010 v3).

3.1.1 Identifying Sensitive Receptors

We expect applicants to carry out screening during pre-application using the most up-to-date information available on the distribution of sensitive receptors, sites, habitats and species important for biodiversity in England (and Wales for cross border receptors). The screening process will involve making a balanced judgement about the environmental and legal risks associated with each type of activity against the sensitivity of the nature conservation interest present in that location.

A map showing internationally (SACs, SPAs and Ramsar sites) and nationally (SSSIs) designated wildlife sites, together with Natural Assets such as Local Nature Reserves (LNRs), Priority Habitats and Ancient Woodland can be found at <http://www.magic.gov.uk/MagicMap.aspx>.

Site citation information stating which habitats and species are important for SACs, SPAs, Ramsar sites and SSSIs can be found through Natural England: <https://designatedsites.naturalengland.org.uk/SiteSearch.aspx> or for EU sites <http://publications.naturalengland.org.uk/category/5134123047845888>.

Site citation information for Local Wildlife Sites (Natural Assets) is available from Shropshire Wildlife Trust (as are Shropshire Ecological Data Network Priority Species data). <https://www.shropshirewildlifetrust.org.uk/contact-us>.

Further information on Ancient and Plantation Ancient Woodlands is available from: [https://www.forestry.gov.uk/pdf/AncientWoodsSA_v7FINALPUBLISHED14Apr3.pdf/\\$file/AncientWoodsSA_v7FINALPUBLISHED14Apr3.pdf](https://www.forestry.gov.uk/pdf/AncientWoodsSA_v7FINALPUBLISHED14Apr3.pdf/$file/AncientWoodsSA_v7FINALPUBLISHED14Apr3.pdf) or for Wales <https://naturalresources.wales/guidance-and-advice/environmental-topics/woodland-management/woodlands-and-the-environment/ancient-woodland-inventory/?lang=en>.

Shropshire Council may hold additional data on Priority Habitats (contact Ecology@Shropshire.Gov.Uk).

If the application has potential to impact on designated sites in Wales, or other neighbouring English Planning Authorities, then a formal planning consultation will be sent to the appropriate authority to identify ecological constraints and plans and projects which would act in-combination.

3.2 Step 2: Simple screening against critical level or critical load threshold

Screening carried out at the pre-application stage will determine whether detailed modelling is required from the applicant to support their planning application. This basic assessment can be completed using a free on-line tool, Simple Calculation of Atmospheric Impacts Limits (SCAIL <http://www.scail.ceh.ac.uk/>) using the conservative met mode. [NOTE: Other models are available (e.g. ADMS).] This will provide an estimation of the airborne ammonia potentially produced by the development or its Process Contribution (PC).

3.2.1 Assigning critical levels and loads

For all sensitive receptors the appropriate ammonia critical level and nitrogen critical load should be determined. Advice can be obtained from Natural England <https://www.gov.uk/guidance/developers-get-environmental-advice-on-your-planning-proposals>, or from SC Ecology via pre-application advice <https://www.shropshire.gov.uk/planning/applications/pre-application-advice-fags/>.

For ammonia critical levels where

- lichens and bryophytes (moss and liverworts) are integral to the sensitive receptor apply a critical level of 1µg/m³.
- lichens and bryophytes are not present then apply a critical level of 3µg/m³.
- Nitrogen critical loads are based on the sensitivity of each habitat and differ accordingly. Nitrogen critical loads are expressed as a range (e.g. 10 – 20 kgN/ha/yr). The lower value is used in all screening assessments. A good source of information in assigning a nitrogen critical load to a sensitive receptor is the Air Pollution Information System (APIS <http://www.apis.ac.uk/>), including APIS Site Relevant Critical Loads.

3.2.2 In-combination effects

The simple screening must take account of overlapping in-combination effects with other livestock units and other sources of nitrogen or ammonia. Other sources (other PCs) that could potentially act in combination are as follows:

- *Applications for planning or permitting that are submitted but not yet determined;*
- *Livestock units that have planning permission and/or environmental permits but are not yet (fully) operating.;*
- *Livestock units that started operating after the most recent update of background levels (see APIS website for date of last update).*

Information on the above can be found on the following websites:

https://consult.environment-agency.gov.uk/consultation_finder/,

<https://data.gov.uk/dataset/99ebf94f-5069-4470-9d27-09fe2d3a05c8/environmental-permitting-regulations-industrial-sites-quarterly-summary>,

<https://ea.sharefile.com/share/view/s7b87ee75b2044409>,

and the Planning Register on the Shropshire Council website

(<https://www.shropshire.gov.uk/planning/applications/viewing-planning-applications/>) .

Alternatively, contact SC Ecology to identify any relevant sources of PCs in the planning or permitting systems (an administration charge may apply). Add together the PCs of the other sources identified to obtain the overlapping in-combination concentration (sum PCs).

Shropshire Council Ecology Team will use the latest version of the ammonia screening tool (AST, provided by the EA) to check estimates of ammonia concentrations, and nitrogen deposition from neighbouring livestock units at the maximum concentration point of ammonia/nitrogen on the sensitive receptors derived from the proposed or expanding farm.

Proposed livestock units do not need detailed assessment for their planning application to be determined if they meet one of the following criteria:

- **The proposed LSU is more than 5km away from an international or national designated site, or 2km from a Natural Asset;**
- **the Process Contribution from the LSU, in-combination with PCs of other projects or plans, is less than 1% of the critical load or critical level for the sensitive receptor(s) identified within that radius,**

4 Steps 3, 3a and 4: Detailed Assessment requirements and information

The applicant will need to provide the information below to enable the detailed assessment of the impact of ammonia emissions and nitrogen deposition from their livestock development on sensitive receptors, as identified during screening. See the Validation Checklist for Livestock Units (LSU) <http://shropshire.gov.uk/environment/biodiversity-ecology-and-planning/>

for a summary of the items of information to be submitted with the planning application for a LSU. **The Validation List provides a useful checklist and a copy must be completed and attached to the planning application form for the application to be validated.** At this stage, a detailed ammonia modelling report must be submitted following the EA AQMAU 2010 v3 guidance.

4.1 Information on the proposed LSU

The following information about the proposed development should be supplied with the application:

- modelling input data and results, such as that required by the free on-line screening tool Simple Calculation of Atmospheric Impact Limits

- Ordnance Survey grid reference locations for the proposal and the name, address of the livestock unit
- what type of ventilation system is being proposed, for example fan or natural ventilation
- location of the ventilation, for example roof or side mounted (if roof mounted the height of the vents above the ground must also be provided), the number of fans, the fan diameter and radius in metres, the fan efflux velocity in metres per second and the fan flow rate in cubic metres per second
- area of floor space of the housing in square metres
- the quantity of manure stored on the livestock unit at any one time (in tonnes)
- the surface area in square metres of any slurry storage facility on the site (including lagoons) and the type of cover used
- a breakdown of animal numbers by type and by type of housing (e.g. the number of sows, growers and finishers on fully slatted floorings and the number on partly slatted flooring)
- the most appropriate ammonia emission factors for the type of animals reared
- the most appropriate ammonia emission factors for the housing type
- modelling with isopleth maps covering all relevant sensitive receptors, where pre-application screening indicates it is needed.
- Details of the Best Available Techniques and mitigation measures to be implemented and which of these have been included in the modelling.

4.2 Confirmation of the relevant ammonia critical level(s) and critical load(s) for sensitive receptor(s)

See section 3.2.1. Where there are no lower plant records (lichens, bryophytes), the critical level for higher plants is used, together with the appropriate nitrogen critical load. It is possible that emissions of ammonia between $1\mu\text{g}/\text{m}^3$ and $3\mu\text{g}/\text{m}^3$ would result in deposition above the minimum nitrogen critical loads for nutrient enrichment. Applying the critical level for ammonia only would not provide full protection of the nature conservation site.

Site-relevant critical loads represent the best available information on the sensitivity of individual international and SSSI features and are available from the Air Pollution Information System (APIS) website. The justification for the chosen critical level and (where appropriate) critical load as part of the detailed assessment is required. Where the applicant has proposed a different critical level or load in their detailed modelling report, they must provide a valid and auditable justification.

4.3 Confirmation of the background ammonia and nitrogen at the sensitive receptor(s)

Confirm the background ammonia concentrations and nitrogen deposition at the sensitive receptor and whether there is an exceedance of the ammonia critical level or nitrogen critical load. For most sensitive receptors in Shropshire the background level already exceeds the critical level / load and control measures will have to be considered to reduce the emissions.

Background pollution values can be obtained from DEFRA UK-AIR (<https://uk-air.defra.gov.uk/>), National Atmospheric Emissions Inventory (<http://naei.beis.gov.uk/>) and APIS (search by location to help confirm location specific background levels) (<http://www.apis.ac.uk/>).

Add the background level to the PC and the Sum of PCs to determine the Predicted Environmental Concentration (PEC) and compare this with the ammonia critical level and the nitrogen critical load.

4.4 Further Information on the sensitive sites and other environmental factors

Detailed assessment allows a case-specific investigation of the likely impacts of ammonia emissions and nitrogen deposition from a proposed development, based on the best available information. For a detailed assessment the following information will also need to be considered.

4.4.1 Site condition monitoring

All European sites and SSSIs are surveyed by NE (or NRW in Wales) as part of the Habitats Directive Article 17 reporting or common standards monitoring. See <http://incc.defra.gov.uk/page-2272> for general information on common standards monitoring. See <https://designatedsites.naturalengland.org.uk/SiteSearch.aspx> for condition monitoring of SSSIs. However, currently this monitoring is not designed to identify the specific effects of air pollution.

This information can still be used to inform a detailed assessment, for example the presence and location of sensitive habitats or species. However, even if the status of a feature is considered favourable it cannot be automatically assumed that there is no impact from the current emissions from the unit. Years may elapse before damage becomes detectable. Also, the effects from the ammonia emissions might be masked through the management of the SSSI, or they might not have been assessed.

4.4.2 Habitats Regulations review of consents

General information is available on the susceptibility of European sites to nutrient enrichment from the Habitats Directive review of consents programme. Any actions on air quality identified in the relevant site action plan must be considered, and ensure that these will not be compromised through the permitting of the LSU.

Under National Planning Policy Framework paragraph 122, Shropshire LPA assumes that the conditions of any existing Environmental Permit are fully complied with, to defined timescales, when considering the detailed assessment.

4.4.3 Conservation objectives and detailed site management objectives

Conservation objectives are management objectives developed for each European site (Natura 2000 site) and each feature designated within that site. For European sites the conservation objectives can be found at <http://publications.naturalengland.org.uk/category/5134123047845888>. Further details on

management objectives for EU sites are provided in the relevant Site Improvement Plan (SIP) at: <http://publications.naturalengland.org.uk/category/4879822899642368>, (or Core Management Plans in Wales on the NRW Designated Sites Search webpages). The objectives will allow the protected habitat or species to be restored to, or maintained in 'favourable condition', which is the desired state of the species or habitat. The air pollution conservation objectives for all features are not fully completed. Seek advice from relevant NE or NRW specialists if needed.

For English SSSIs, additional information is provided in in the Views About Management (VAMs) and for Welsh SSSIs in Site Management Statements (SMSs) explaining what is important and what management is required to help protect the site. For each SSSI a list of Operations Likely to Damage the Special Interest (OLDSI) has also been compiled. For these items see <https://designatedsites.naturalengland.org.uk/SiteSearch.aspx> website (or NRW Designated Site Search webpages).

It is important that the detailed assessment only considers the features sensitive to ammonia emissions and nitrogen deposition and their individual conservation objectives. The detailed assessment must ensure that the conservation objectives for each relevant sensitive feature will not be compromised by the proposed livestock unit.

4.4.4 Distribution of features within the designated site

As part of the screening process for livestock units a critical level (ammonia), and nitrogen critical load (nutrient enrichment and acidification) would have been applied to the conservation site based on the presence of sensitive features (lichen and bryophytes). However, no account will have been taken of the location of these features in relation to the pollution footprint from the unit.

The detailed assessment can be used to determine whether the sensitive features present at the nature conservation site fall within the pollution footprint of the unit. Pollution footprint isopleths should be included in the modelling submitted by the applicant.

Species and habitat information can be obtained from various sources, including:

- NE and JNCC (and NRW for Welsh sites) websites: <https://www.gov.uk/government/organisations/natural-england>, <http://naturalresources.wales/?lang=en>, and <http://jncc.defra.gov.uk/>
- NE habitat or species specialists (<https://www.gov.uk/guidance/developers-get-environmental-advice-on-your-planning-proposals>)
- NE or NRW site condition monitoring reports
- Independent survey work commissioned/obtained and submitted by the applicant.

The applicant may need to have ecological survey work carried out by an appropriately qualified and experienced consultant if:

- Limited or no site-specific information on the habitat types, or their extent or condition is available;
- the site was surveyed over 5 years ago (or before known changes occurred) and it is required for the detailed assessment of impacts. The survey report must be submitted with the planning application for consideration by the LPA. In this case SC

Ecology should be contacted to discuss the necessary level of survey work as standard surveys for planning applications (Extended Phase 1 surveys) are not appropriate in these cases. If possible, it should be determined if the site has already been surveyed for lichens or bryophytes (mosses and liverworts).

If it appears that there is no further readily available information on a sensitive receptor then, as a precautionary measure, assume that it occurs under the pollution footprint of the LSU.

4.4.5 Ellenberg values

Ellenberg indicator values have been produced for vegetation (ECOFACT Volume 2 <http://nora.nerc.ac.uk/id/eprint/6410/>) and for bryophytes (BRYOATT <https://www.brc.ac.uk/biblio/bryoatt-attributes-british-and-irish-mosses-liverworts-and-hornworts-spreadsheet>) in the British countryside. Bryoatt has also tabulated this information for many British bryophytes. Ellenberg scores can be used in a detailed assessment, where historical survey results are available for comparison, to determine whether:

- the nature conservation site has indicator species associated with nutrient enrichment or acidification;
- the lower plant or other species identified through survey are sensitive to the effects of ammonia.

Further guidance on ecological assessment of ammonia pollution effects can be found at: <http://shropshire.gov.uk/environment/biodiversity-ecology-and-planning/>

4.4.6 Local environmental factors

Local factors, including environmental conditions and site management, are not always considered when setting critical loads. Where they are assigned as a range of values, the lowest end of the range is usually selected to ensure sufficient levels of protection. However, local factors may modify the habitat or species sensitivity and response to a particular pollutant. For example, intensively managed heathland with frequent removal of vegetation may be less sensitive to nitrogen deposition due to the periodic removal of nutrients from the system. In such cases further consideration of which end of the critical load range may be more appropriate. APIS has provided additional information with indicative nitrogen critical loads to use for air pollution impact assessments.

Table 2 is indicative and not comprehensive, and not all factors will be relevant to all sites or all pollutants. It is not possible to quantify the effect these local factors have and to assign a new critical load on the basis of them. However, it may indicate that the higher or lower end of the critical load range is appropriate and further advice should be sought from Shropshire Council's Ecology Team.

Table 2 Environmental factors and potential influence on habitats

Environmental Factor	Habitat type and influence
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<p>Precipitation</p>	<p>UK experts have provided guidance on how to apply the appropriate nitrogen critical load for raised and blanket bog habitats for air quality assessments. APIS has provided a grid reference tool to identify the rainfall range the bog habitat is located in.</p>
<p>Exposure</p>	<p>Woodland edges generally experience higher concentrations and deposition rates of pollutants and are therefore more vulnerable. This must be taken into consideration when assessing the unit's pollution footprint.</p>
<p>Water supply</p>	<p>When considering nutrient nitrogen (N) deposition for wet habitats, other sources of nutrient inputs, such as diffuse pollution, should be considered which may be more important. In these cases, the relative contribution from atmospheric and land based sources may need to be considered further to inform any judgements. Seek advice from NE specialists as to whether a critical level or critical load is appropriate for the European site or SSSI.</p>
<p>Soil phosphorous (P) status</p>	<p>High P availability increases sensitivity to N whilst low P availability may decrease the response to N. Note that some species such as lower plant communities may be sensitive to direct inputs of N regardless of P availability.</p> <p>For example, alkaline fens and reed beds have low P availability in their systems, which helps protect them from the effects of N eutrophication. They are characterised by species with base rich, nutrient poor characteristics.</p>
<p>Limiting nutrients in freshwater</p>	<p>Many river and lake freshwater systems are often P limited (or N/P co-limiting). However, a number of systems are N limited and in these cases atmospheric sources may be significant. This is most likely to occur in upland catchments where agricultural inputs are lower.</p> <p>Seek advice from NE specialists as to whether a critical level or critical load is appropriate for the European site or SSSI. Critical level and critical load values are currently not provided for some standing waters or rivers. Critical levels and critical</p>

	<p>loads must be applied to any emergent vegetation or terrestrial feature that is within the designated site (e.g. floating water plantain is located on water surface and exposed to ammonia concentrations so the ammonia critical level would apply but not necessarily the nitrogen critical load because it is rooted under the water surface providing some protection.</p>
<p>Habitat management</p>	<p>Management regimes may obscure or modify some of the relationships between atmospheric deposition and habitat change. For example, intensive management of calcareous grassland can offset higher N inputs, to a certain extent, by removal through grazing, mowing or harvesting. Poor or infrequent management may increase vulnerability to N inputs.</p> <p>Consider whether there is active management of the nature conservation site in your detailed assessment and the level of commitment for its continuation in the future. If there is active management seek advice from NE specialists to determine which part of the nitrogen critical load range may be more appropriate to use. Are there any opportunities to provide wildlife site management in the long term as a mitigation measure?</p>

The exact nature and magnitude of these factors is not fully understood but it is important to take site-specific information into account where it is available.

4.4.7 Shared Nitrogen Action Plans

Shared Nitrogen Action Plans (SNAPs) were developed under the Improvement Programme for England’s Natura 2000 Sites (IPENS) by Natural England in partnership with the Environment Agency and they are described in the 2015 Atmospheric Nitrogen Theme Plan. (<https://www.gov.uk/government/publications/improvement-programme-for-englands-natura-2000-sites-ipens/improvement-programme-for-englands-natura-2000-sites-ipens>).

There are a number of pilot projects currently testing the SNAP approach. The Atmospheric Nitrogen Theme Plan states:

‘The intention is that SNAPs would demonstrate what appropriate measures are in place to secure the integrity of the Natura 2000 sites and would coordinate possible future local measures. By providing a timetabled trajectory towards favourable condition status, future SNAPs can have the potential to clarify what ‘headroom’ might be available for future developments, thereby providing a firmer basis for habitats regulations assessments. They can also help to inform a balanced and

proportionate approach to reduction measures across different emission source sectors.’

If Nitrogen Action Plans are developed for any sites in Shropshire these may enable additional mitigation measures to be undertaken and these will be taken into account during the detailed assessment of LSU proposals.

5 Step 5: Carrying out the detailed assessment

Particular habitat types or species are likely to react to atmospheric ammonia and nitrogen deposition in much the same way, whatever the site designation. This is why no distinction is made between international and national designated sites and Natural Assets until step 5 in the process. At step 5 the different legislation and planning policy governing the hierarchy of designated sites and other natural assets are taken into account, balanced against the likely impacts of Ammonia pollution.

5.1 Statutory and planning policy requirements for International Sites (European sites and Ramsar Sites)

Under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (Habitats Regulations) Shropshire Council has a legal obligation to carry out an appropriate assessment of any plan or permission that is ‘likely to have a significant effect’ on an international site (either alone or in combination with other plans or projects). An “appropriate assessment” is a term used under Habitats Regulations to describe an assessment that is more detailed than a screening exercise.

The appropriate assessment using detailed ammonia modelling and the other information under section 4 of this document will determine whether it is possible to conclude no adverse effect on the integrity of the International site. The assessment is carried out on the livestock unit alone, and where necessary in-combination with other plans and projects, in the context of prevailing environmental conditions. Prevailing environmental conditions include diffuse or background contributions to the European site and the residual effects of plans and projects that have been completed or implemented. The appropriate assessment must consider the conservation objectives for the features of the International site, and the associated favourable condition targets.

The appropriate assessment will need to determine whether an exceedance of 1% of the ammonia critical level or nitrogen critical load (alone or in-combination with other plans or projects) would result in an adverse effect, when considering the information set out in this document. The applicant must provide Shropshire LPA with the required information to allow officers to write the appropriate assessment and draw its conclusions. Failure to provide this information will lead to a conclusion of ‘uncertainty due to lack of information’ and planning permission will be refused. (See Validation Checklist – link.)

Natural England, the Environment Agency and where appropriate Natural Resources Wales will be consulted on the appropriate assessment. Representations made by Natural England, the Environment Agency or NRW must be taken into account before determining the application. **An application must be refused where it is not possible to conclude no**

adverse effect on site integrity, and there are no achievable options available to mitigate an effect.

The National Planning Policy Framework under paragraph 14 indicates that the presumption in favour of sustainable development does not apply if specific policies in the Framework indicate development should be restricted. Paragraph 119 states that ‘The presumption in favour of sustainable development (paragraph 14) does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined.’

5.2 Statutory and planning policy requirements for SSSIs

Sites of Special Scientific Interest are nationally designated nature conservation sites that have statutory protection under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000). Therefore, an assessment of an activity that could have the potential to damage the scientific interest of SSSIs is required.

The detailed assessment using detailed modelling will determine whether the emissions of ammonia and nitrogen from the intensive livestock unit are to be regarded as an OLDSI for the SSSI. Due to the nature of emissions from intensive livestock units and their rural setting, they need to be considered in combination with other activities and the background levels to ensure damage does not occur to the SSSI. The detailed assessment will need to determine whether an exceedance of 1% of the ammonia critical level or nitrogen critical load would damage the scientific interest of a SSSI, when considering the information set out in this document. A record of the applicant’s detailed assessment must be made and provided to Shropshire LPA with the planning application and any additional information requested by the LPA must be provided. The LPA will consult NE and EA (and NRW for sites in Wales). Representations made by Natural England, the Environment Agency or NRW must be taken into account before determining the application. **The application will normally be refused where the conclusion is that the proposal is an OLDSI, and there are no options available to mitigate against the expected damage.**

The National Planning Policy Framework under paragraph 14 indicates that the presumption in favour of sustainable development does not apply if specific policies in the Framework indicate development should be restricted. Paragraph 118 states that ‘proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a SSSI (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site’s notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs.’

5.3 Statutory and planning policy requirements for Natural Assets

Natural Assets are defined in Shropshire Council’s Site Allocations and Management of Development (SAMDev) Plan (in Development Management policy MD12: Natural Environment) <https://shropshire.gov.uk/planning-policy/local-planning/samdev-plan-2006-2026/>

Relevant Natural Assets are Local Nature Reserves, Local Wildlife Sites, Ancient Woodland (or Plantation Ancient Woodland) or other irreplaceable habitats, priority habitats, priority species, important woodlands and ecological networks.

Under policy MD12 harm to Shropshire's Natural Assets will be avoided by:
'Ensuring that proposals which are likely to have a significant adverse effect, directly, indirectly or cumulatively, on any of the following' Natural Assets 'will only be permitted if it can be clearly demonstrated that:
a) there is no satisfactory alternative means of avoiding such impacts through re-design or by re-locating on an alternative site and;
b) the social or economic benefits of the proposal outweigh the harm to the asset. In all cases, a hierarchy of mitigation then compensation measures will be sought.'

Hence, under Step 5a in Table 1, the LPA require a report to be submitted on the alternatives considered for the development and its socio-economic benefits as well as the information detailed in section 4 above. The report should provide detailed reasoning as to why the socio-economic benefits out-weigh the quantified residual harm to the sensitive receptor(s). The balance between residual adverse impacts on sensitive receptors and the benefits of the development will be considered by the LPA when making its planning decision.

The National Planning Policy Framework will also be applied to Natural Assets, particularly paragraph 118 which states:

118. When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- 'planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss;'

Shropshire Council has a Biodiversity Duty under the NERC Act 2006 when considering LSU planning applications.

6 Concluding the detailed assessment and determination of the planning application

Once the impact of the ammonia emissions from the proposed LSU has been fully assessed, determination will be undertaken in the context of the appropriate legislation (for example Habitats Regulations, CRoW Act, Environment Act, Town and Country Planning Act 1990 and the Town and Country Planning (Development Management Procedure) (England) Order 2015. Planning policy in the Local Plan and the National Planning Policy Framework will also be applied.

Where it can be shown that there will be no, or insignificant, adverse effects on designated wildlife sites or other important conservation features, Shropshire LPA can grant planning permission, providing all other material considerations have been addressed.

However, the LPA must consider refusing the application where an applicant is unable to supply sufficient information (see section 4 and the Validation List), or there are insufficient measures to reduce emissions, or following the assessment of their proposals there is a continued risk of adverse effect or damage on an international or national designated wildlife site. The LPA may also consider refusing permission for proposals affecting Natural Assets, if the alternatives have not been considered and/or the socio-economic benefits do not outweigh the residual harm. The decision as to whether the proposals are robust will be made taking into account any representations from NE and EA (or for Welsh sites from NRW).

7 Possible outcomes for planning applications

The following possible outcomes are not exhaustive and only indicative. They will only be considered once steps 1 to 5 listed above have been completed and a detailed assessment carried out and submitted where required.

1. Planning permission granted without conditions relating to ammonia emissions

2. Planning permission with additional conditions or legal agreements

- Conditions should mitigate against the effect of releases at the nature conservation site.
- Conditions could also include a requirement for emissions and/or biological monitoring near to or within the conservation site (depending on legislative regime).
- Where an existing farm is expanding it may be necessary to include a commitment to improvements linked to a legal agreement (s106) to ensure existing sheds are retrofitted with agreed ammonia abatement equipment within a specified timescale.

3. Planning permission refused

Planning permission is likely to be refused if:

- it is not possible to conclude no adverse effect on site integrity for international designated sites;
- if the activity is an operation likely to damage the scientific interest for nationally designated sites.
- Significant adverse impacts are likely to occur on Ancient Woodlands, other irreplaceable habitats, Local Wildlife Sites and other Natural Assets, despite avoidance, mitigation and compensation measures and where the socio-economic benefits of the development are considered not to outweigh the residual harm.

The assessment is likely to have been based on the outcome of a modelling exercise. Consideration will be given to alternatives to refusal if the predicted impacts are lower than the uncertainties in the assessment. If refusal is based on nature conservation grounds,

consultation responses from NE, the EA and NRW will be carefully considered to ensure all possible steps to reduce ammonia impacts have been considered by the applicant, prior to refusal.

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This interim guidance is largely based, with gratitude, on the NRW guidance note GN020 and consultations with NE and EA.

However, any queries or feedback on this document should be addressed to Ecology@shropshire.gov.uk

Appendix 1

Abbreviations and terms;

AST – Ammonia Screening Tool
APIS – Air Pollution Information Site
AW – Ancient Woodland
BAT – Best Available Techniques
Cle – Critical Level
CLo – Critical Load
EA – Environment Agency
JNCC – Joint Nature Conservancy Council
LNR – Local Nature Reserve
LPA – Local Planning Authority
LSU – Livestock Unit
LWS – Local Wildlife Site
NE – Natural England
NPPF – National Planning Policy Framework
NRW – Natural Resources Wales
PAW – Plantation Ancient Woodland
PC – Process Contribution
PEC – Predicted Environmental Contribution
SAC – Special Area of Conservation
SAMDev – Shropshire’s Site Allocations and Development Management Plan 2016-2026
SCAIL – Simple Calculation of Atmospheric Impacts Limits
SPA – Special Protection Area
SSSI – Site of Special Scientific Interest
SumPCs – sum of process contributions from sites ‘in -combination’.