



**New England Resource Recovery Centre
Nr. Lee Mill, Devon**

Technical Appendix 12-10 – Evaluation and Impact Assessment Methodologies



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1.0 INTRODUCTION

The following summarises the methods used by SLR Consulting to undertake an Ecological Impact Assessment of the proposed Resource Recovery Centre at the New England Quarry site in Devon, on behalf of Viridor.

Methods used are based largely on best practice guidelines published by the Institute of Ecology and Environmental Management¹, and set out how ecological receptors at the site have been identified and their ecological significance evaluated. The development plans have also been reviewed and any potential impacts upon significant ecological receptors identified and assessed in terms of direction and magnitude. The methods and criteria for doing so are set out below.

¹ IEEM (2005) *Guidelines for Ecological Impact Assessment in the UK* (IEEM, Winchester)

2.0 EVALUATION

Recent IEEM guidelines suggest that to ensure a consistency of approach, ecological features are valued in accordance with their geographical frame of reference as follows:

- International;
- UK;
- National (England);
- Regional (South-West);
- County (Devon);
- District (South Hams);
- Parish (Yealmpton); and/or
- within immediate zone of influence only (Site Value).

These categories are then applied to the features identified in baseline surveys and desk-top studies. Some features can already be recognised as having ecological value and as such they may be designated as a statutory or non statutory wildlife site, other features may require an evaluation based upon their previously un-assessed biodiversity value.

The baseline information obtained has been used in undertaking an assessment of the value of ecological features within the study area. Ecological features are defined as:

- statutorily protected (Natura 2000 sites, Sites of Special Scientific Interest, National Nature Reserve) or locally designated (e.g. County Wildlife Sites) sites and features;
- recognised sites and features of biodiversity value not designated in this way, e.g. areas listed on published inventory of priority biodiversity habitats (e.g. Ancient Woodland Inventory, lowland grassland inventory) or areas of habitats subject to UK or Local Biodiversity Action Plan targets (see Table 1 below); and
- species of biodiversity value or significance, including those protected and controlled by law (see Table 2 below).

An evaluation of the above ecological features has been based upon the IEEM guidelines as follows.

Geographic Frame of Reference	Examples of Non-Designated Habitats and Features that are Ecologically Significant at that Level
International	<p>Areas of habitats of International importance, i.e. those included on Annex 1 of the Habitats Directive should have been designated, or identified for designation, as SAC. Where a site supporting Annex 1 habitats carries a lower level of designation, e.g. SSSI, it should be considered important at that level.</p> <p>A viable area of an Annex 1 habitat not designated in this way may be valuable at this level, for instance where the habitat is in a management state such that it does not meet SAC criteria for selection, but is capable of being restored in a reasonable timeframe to a state that could be designated as such.</p>
National	<p>All sites of national ecological importance should have been designated at this level by the country agency. Where a site carries a lower level of designation it should be considered important at that level.</p> <p>A viable area of a priority habitat identified in the UK BAP where the UK BAP states that all areas of that habitat are to be protected may be important at a National level.</p> <p>Sites supporting a viable area of a habitat of priority biodiversity action, as identified in EN published habitat inventories, where the habitat has been identified as being scarce at a national level.</p> <p>A site where field survey shows that the site would meet published SSSI guidelines or has the potential to meet these guidelines within a reasonable timeframe.</p>
Regional	<p>Sites supporting a viable area of a habitat of priority biodiversity action, e.g. UK or Regional HAP or included in EN published habitat inventories, where the habitat has been identified as being scarce at a regional level or where they are essential to maintain the viability of a larger area.</p> <p>Viable areas of key habitat identified as being of Regional value in the appropriate Natural Area profile.</p> <p>A site where field survey shows that the site would meet published Regional ecological selection criteria or has the potential to meet these guidelines within a reasonable timeframe.</p>
County/ Metropolitan	<p>A site where field survey shows that the site would meet published County/Metropolitan ecological selection criteria or has the potential to meet these guidelines within a reasonable timeframe.</p> <p>A viable area of habitat identified in County BAP or appropriate Natural Area profile where the protection of all areas of that habitat is a published target of the BAP or the habitat is identified as scarce at a County level.</p>
District/ Borough	<p>Areas of habitat identified in a sub-county (district/borough) BAP or in the relevant Natural Area profile that are scarce within the district/borough.</p> <p>Sites/features that are scarce within the district/borough or which appreciably enrich the district/borough habitat resource, e.g. an ecologically diverse hedgerow network.</p>
Parish/ Neighbour- hood	<p>Areas of habitat considered to enrich appreciably the habitat resource within the context of the Parish or the neighbourhood, e.g. species-rich hedgerows, municipal parklands or individual veteran trees.</p> <p>Areas of habitat with limited intrinsic ecological value, but that buffer the negative effects of a more valuable feature, e.g. a County-designated site.</p>

Table 1 – Ecological Evaluation of Non-designated Habitats and Features

Frame of Reference	Examples of Species that are Ecologically Significant at that Level
International	<p>A regularly occurring population of an internationally important species, which is threatened or rare in the UK. i.e. it is a UK Red Data Book species or listed as occurring as 15 or fewer 10km squares in the UK or of uncertain conservation status or of global conservation in the UK BAP.</p> <p>A regularly occurring, nationally significant population/number of any internationally important species, e.g. a bird population representing greater than 1% of the international population.</p>
National	<p>A regularly occurring, regionally or county significant population/number of a nationally important species.</p> <p>A regularly occurring population of a nationally important species on the edge of its natural range.</p> <p>A species assemblage of national significance.</p>
Regional	<p>A regularly occurring, locally significant population of a species listed as being nationally scarce. For example, a species which occurs in 16-100 10km squares in the UK, or is highlighted in a Regional BAP, Red Data Book or relevant Natural Area on account of its regional rarity or localisation.</p> <p>A regularly occurring, locally significant number of a regionally important species.</p> <p>A species assemblage of regional significance.</p>
County/ Metropolitan	<p>Any regularly occurring, locally significant population of a species which is listed in a county/metropolitan Red Data Book or BAP on account of its regional rarity or localisation.</p> <p>A regularly occurring, locally significant number of a county/metropolitan important species.</p>
District/ Borough	<p>A population of a species that is listed in a district/borough BAP because of its rarity in the locality or in the relevant Natural Area profile because of its regional rarity or localisation.</p> <p>A regularly occurring, locally significant number of a district/borough important species during a critical phase of its life cycle.</p>
Parish/ Neighbour- hood	<p>Populations or species assemblages considered to enhance the local ecological resource, e.g. a breeding bird assemblage</p>
Negative	<p>The presence of injurious or legally-controlled weeds, e.g. those identified under The Weeds Act 1959, Schedule 8 of the WCA1981 (e.g. Japanese knotweed, giant hogweed), or the Ragwort Control Act 2003 would be considered an ecological, commercial or social disbenefit, usually at a local or site level.</p>

Table 2 – Ecological Evaluation of Species

3.0 IMPACT ASSESSMENT

To assess the effects of a proposed development it is essential that the impacts that could arise are identified and characterised. The range of impacts that require consideration in the ecological impact assessment is based upon knowledge of the proposed development and knowledge of the receptors (features of ecological significance). This can only be undertaken with a thorough understanding of ecological processes and how flora and fauna react to the range of impacts that could occur.

The assessment of ecological impacts follows the process described by the IEEM, which can be summarised as:

- identification of the range of potential impacts that may arise resulting from the proposed development;
- consideration of the systems and processes in place to avoid, reduce or mitigate the possible effects of these impacts;
- identification of the opportunity for ecological enhancement associated with the proposals;
- assessment of the residual impacts, following consideration of the success of avoidance, mitigation and enhancement measures; and
- where necessary, identification of compensation required to offset any significant residual effects.

As previously highlighted, the significance of residual impacts is assessed on three separate levels. These can be summarised as:

- impacts upon biodiversity resources;
- consequences in terms of national and local nature conservation planning policy; and
- legal requirements relating to species and habitats.

3.1 Potential Impacts

Potential impacts are characterised in terms of their direction, probability, complexity, magnitude, duration and reversibility (see Table 3 below). An assessment is also made of the likely significance of the impact prior to mitigation, and the significance of the residual impact, i.e. after all agreed mitigation is implemented. The degree of confidence in the likely success of mitigation, based upon published studies and the experience of the assessor, is also made and any uncertainties are clearly expressed.

Descriptor	Definition ²
Direction of impact	Positive or negative impact.
Probability of occurring	Broadly defined on three levels: Certain, Probable or Unlikely.
Complexity	Direct, Indirect or Cumulative.
Extent and Context	Area/number affected and % of total.
Magnitude	Describe severity of effect in words.
Duration	Permanent or Temporary in ecological terms (e.g. within the lifetime of the species effected).
Reversibility	Whether or not the effect can be reversed in an ecological timescale.
Area	Expressed as area or percentage of the study area.

Table 3 - Key Considerations When Characterising Impacts

3.2 Mitigation, Enhancement and Additional Compensation

This section provides details of the mitigation measures that have been incorporated into the scheme to minimise identified impacts and it also describes those ecological enhancements or compensation measures that have been incorporated into the scheme design.

3.3 Assessment of Significance

The final section analyses the magnitude and significance of the residual effects of this scheme following mitigation in terms of their significance from an ecological perspective.

To fully evaluate the effects of a predicted impact upon those valued ecological receptors it is necessary to assess the magnitude of the impact upon that feature (identified in Table 4). The predicted impacts of the proposed development, following mitigation, i.e. the residual impacts are assessed using the following criterion which is based upon guidance provided by the IEEM.

² Definitions for these terms and further information relating the methods of assessment are given in Guidelines for Ecological Impact Assessment (IEEM, 2005).

Magnitude of Impact	Criteria
Major Negative	A change likely to cause a permanent adverse effect upon the integrity of the ecological receptor
Negative	A change adversely affects the valued ecological receptor but no with permanent effect on integrity
Neutral	No effect
Positive	A change is likely to benefit the receptor in terms of its conservation status, but not so far as to achieve favourable conservation status
Major Positive	A change is likely to restore an ecological receptor to favourable conservation status, or to create a feature of recognisable value

Table 4 - Criteria for Assessing the Magnitude of Impacts

The summary table of residual impacts and significance matrix (Table 5) provides a guide to aid the assessment of the significance of impacts. For example, negative impact on a site of national importance would be of minor through to major significance whereas a major negative impact upon a site of neighbourhood importance would be of minor to moderate.

The matrix, in many cases, provides a range of levels of significance that may occur; these can only be refined by the careful consideration of those factors at the site such as existing baseline, predicted trends, background level of impacts and the likely effectiveness of the proposed mitigation measures. Areas or features assessed as being of negligible value are excluded from this assessment.

Magnitude of impact	Value of Ecological Receptor						
	International	National	Regional	County	District	Neighbourhood	
Major Negative	Critical	Critical	Critical - Moderate	Major - Moderate	Moderate - Minor	Minor - Moderate	
Negative	Major - Minor	Major - Minor	Major - Minor	Moderate - Minor	Moderate - Minor	Minor	
Neutral	Not Significant						
Positive	Major - Minor	Major - Minor	Major - Minor	Moderate - Minor	Moderate - Minor	Minor	
Major Positive	Critical	Critical	Critical - Moderate	Major - Moderate	Moderate - Minor	Minor - Moderate	

Table 5 - Impact Significance Matrix