SEPA Technical Guidance Note
Habitats Regulations & The Landfill Regulations Guidance

1. Introduction

This guidance document[1] details the requirements of the Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations) and how they interact with the Landfill (Scotland) Regulations 2003. The document is aimed at providing information for SEPA staff and landfill operators in the process of applying for permits under the Pollution Prevention and Control (Scotland) Regulations 2000 (PPC permits) for landfills to replace existing waste management licences.

More general information on PPC assessment under the Habitats Regulations is also available in SEPA Guidance Note iPPC-PG-01-05.

2. Landfill (Scotland) Regulations 2003

The Landfill (Scotland) Regulations 2003 (the Regulations) implement the Landfill Directive and set new standards for the design and operation of landfills. They require operators of all existing landfill sites wishing to continue to operate after 16 July 2002 to submit a Site Conditioning Plan to SEPA. SEPA will assess the Conditioning Plans and determine if and when operators need to apply for PPC permits. These PPC permits will be used to regulate landfills in place of existing waste management licences.

3. Conservation (Natural Habitats & c) Regulations 1994

The Habitats Regulations implement in Great Britain the requirements of the European Habitats Directive and provide increased protection for areas classified under the Wild Birds Directive. These regulations aim to protect a network of sites in the UK that have rare or important habitats and species. These sites are known by a variety of European designations, but in this guidance document they are referred to as European Sites.

Under the Habitats Regulations, SEPA has a duty to ensure that all activities it regulates have no adverse effect on the integrity of any European Sites. Regulation 48 of the Habitats Regulations provide that all applications for new permits, including PPC permits for landfills, are screened for potential impacts on European sites. Permit applications for proposals that are likely to have a significant effect on a European site must undergo an appropriate assessment to ensure no adverse effect is caused to the integrity of these European sites as a result of the activities linked to the landfill site. Applications for PPC permits for existing landfill sites will be treated as new applications and undergo a Regulation 48 assessment as required by the Habitats Regulations.

[1] SEPA gratefully acknowledges the use of extracts from the Environment Agency document 'RGN 5' in production of this guidance document.

4. European Sites

European sites are defined by Regulation 10 of the Habitats Regulations and include:

- designated Special Areas of Conservation (SAC)
- classified Special Protection Areas (SPAs)
- a candidate Special Area of Conservation (cSAC) that has been adopted by the EC

It is Scottish Executive policy that potential SPAs and SACs that are currently being consulted on, cSACs that have been submitted to Europe, and Ramsar sites will be treated in the same way as classified SPAs. It has been suggested in the SE consultation on the proposed Technical Amendments to the Habitats Regulations that the definition of European Sites be amended to include cSACs.

Although the site selection process is nearing completion there are likely to be changes in the future. It is therefore important to ensure that up to date information is used when undertaking assessments. General information about classified SPAs and candidate SACs can be found on the Joint Nature Conservation Committee web site, **www.jncc.gov.uk**

SNH hold details of all European Sites in Scotland. Such information can be found through visiting their web site www.snh.org.uk which holds some information on European sites as well as local office contact details. If in doubt contact the local SNH office.

The Habitats Regulations require a review of all existing permissions that are likely to have a significant effect on European sites. SEPA is using an assessment of Site Conditioning Plans to set the timetable for PPC permit applications and these assessments may be considered to be appropriate reviews under the Habitats Regulations.

5. Four staged assessment process

The process of assessing any application against the requirements of the Habitats Regulations has four distinct stages.

Stage 1 – Relevance

On receipt of an application

Initially a general screening procedure is applied to assess relevance. A PPC permit application will progress to stage 2 if it falls within the buffer zones of a European Site (Box 1).

Box 1 – 'Buffer Zones'

Waste activities should be assessed for potential impact where;

- the location of the facility falls within 2km of a European Site, and / or
- the activity could attract gulls / corvids [II] and it falls within 5km of a SPA (or other site vulnerable to disturbance or predation by these pests)

Where specific distance criteria for a European Site have been developed and agreed with SNH, these should be applied in place of these generic criteria.

All criteria are indicative and should not prevent an appropriate assessment being initiated where there is real concern about potential impacts.

The 2km / 5km limit is a general guide to ensure that the landfills which may have the potential to affect a European site are properly considered.

[ii] **Corvids or Corvidae is the family name for the crow family. This group includes crows, ravens, rooks, jackdaws, choughs, magpies, and jays. The corvids of most concern to landfill sites are likely to be crows (carrion or hooded) and rooks.**

Early determination of no relevance

For the simpler activities, it may be clear that there are no emissions or effects that could be relevant to a European Site, despite initial concerns about proximity. However, this decision must never be made lightly, as it will be without the benefit of consultation with SNH.

When landfilling takes place on or immediately adjacent to a European Site, the following procedure must be implemented to determine the significance of the activity.

Continuing the determination of relevance

Where the landfill may be relevant to a European Site, consultation with SNH should be initiated / planned. The operator may need to provide further information to demonstrate the European Site has been considered as a receptor in the risk assessments.

Applications requiring planning permission

Since landfills require planning permission, the relevance of the Habitats Regulations should have been established and considered at the planning application stage.

Whilst the planning and the PPC permitting process are two separate processes it makes sense for information relevant to both to be submitted at the earliest possible stage in order to avoid confusion and waste of time and effort for all concerned. If an Environmental Assessment is required it should clearly identify impacts on the European Site. This is not always the case and it is therefore advised that a full scoping document is provided: if necessary consult SNH.

SEPA (through planning officers) should seek to be consulted on draft planning conditions. Should planning conditions impose an ineffectual condition on a particular subject which could impact on a habitat e.g. dust control, then it may be more difficult for SEPA to impose an effective/enforceable condition to regulate this impact and thus satisfy Stage 3.

Stage 2 – Significant Effect

Assessing likely Significant Effect

This assessment is a simple risk assessment in which the following relevant issues and associated hazards will need to be considered, including groundwater and surface water, leachate, landfill gas, dust and aerosols, birds / vermin / insects, litter, and disturbance (noise & vibration). The assessment should be based upon realistic worst case scenarios, data and assumptions. Refer to the guidance in Appendix 1 of this document.

Is there a potential hazard or mechanism by which the landfill could affect the interest features of the site? Are the interest features sensitive to this hazard?

Table 1 indicates the broad sensitivity of groups of interest features to potential hazards associated with landfills. Generic information on the potential hazards and their extent and impact is given in Appendix 1 of this document.

TABLE 1

	Lower plants	Higher plants	Invertebrates	Reptiles	Amphibians	Fish	Mammals	Birds
LFG	*	*	*					
LFG Flare	*	*						
Leachate	*	*	*	*	*	*	*	*
Surface water	*	*	*	*	*	*	*	*
Dust	*	*	*					
Litter	*	*	*	*	*	*	*	*
Access	*	*	*	*	*	*	*	*
Noise				*	*		*	*
Gulls								*

Notes to Table 1

* indicates that the group is potentially sensitive to one of the hazard outlined in Appendix 1, and the likely exposure of the interest feature to the hazard should be assessed. This should be an exploration of the hazard - pathway - receptor links.

It should be noted that the table is not comprehensive. There may be other hazards and sensitivities, which will vary according to circumstances. Plants and animal species have been divided into convenient groups. There is a direct read across to qualifying species that may be present. If higher or lower plants are considered to be at risk then any qualifying habitats should also be considered to be at risk and assessed accordingly. Consideration should also be given to the impact on typical species of a habitat as these can be important in their own right and in addition they may be important to the functioning of the qualifying feature.

Is the potential hazard likely to affect the features of the European site?

This step involves identifying the link or pathway by which the hazard could affect the sensitive interest features, and assessing the probability of harm to these features.

For each hazard is the potential scale or magnitude of any effect likely to be significant?

An effect should be considered significant when it is neither negligible (e.g. on a tiny scale relative to the site) nor inconsequential (e.g. having no demonstrable effect).

This judgement must be made on the basis of the proposed discharge/emission both alone and/or in combination with other impacts, including existing waste management licences, IPC authorisations, discharge consents, etc.

Stage 3 - Appropriate Assessment - Adverse Effect

The likely impacts identified under Stage 2 now need to be considered in sufficient detail to determine whether it can be ascertained that they will not adversely effect the integrity of a European site and is known as an appropriate assessment and is undertaken in light of the conservation objectives for the site. If they are not on file contact your local SNH office who will provide them. Assessment may involve quantitative risk assessment techniques. See Appendix 1 of this document for relevant issues.

As a result of this assessment the landfill may have to be designed and operated in ways that specifically protect against any risk of damage to the area.

Information for the appropriate assessment will need to be submitted at the same time as the PPC permit application. Potential impacts on European sites must be assessed both in isolation and in combination with other impacts. Assessment of effects in combination relates to all other permissions and activities, not just landfills. SEPA will assess potential impacts at the time of the permit application, while conducting the Appropriate Assessment with the information that has been supplied. This assessment will take into account any measures for the minimisation of risk of impact proposed or implemented by the operator(s).

Stage 4 – Determination of the Application

A permit should not be granted unless SEPA is satisfied it will not adversely affect the integrity of a European site. On review a permit should not remain in force if it is having or may have an adverse effect on the integrity of a European site. Where conditions can be attached to a permit which will ensure no adverse effect, the permit can be granted with those conditions, rather than refused.

A permit can be varied by SEPA after issue due to regular review and at any time to prevent pollution. Consideration should be given to potential impacts on the European Site during regular reviews of the environmental performance of the landfill and any consequential permit reviews.

Following SEPA's determination of no adverse effect, based upon the best available information, a permit may be granted with conditions that require monitoring of the potential hazard and its impact (if any) on the European site. It is important that the decision to permit the waste activity does not place reliance on monitoring to protect the features of the European Site if effects may not be detected until after harm has occurred.

A Permit can be granted, notwithstanding a negative assessment, if there are no alternative solutions and there are reasons of overriding public interest. This is determined by Scottish Ministers, who must then ensure compensatory measures are put in place to protect the

overall coherence of the European site. Note that what constitutes “reasons of overriding public interest” is more stringently defined if the European Site affected is designated for any “priority” habitat or species (identified as a priority in Annexes I and II respectively of the Habitats Directive). [Note no qualifying priority species in Scottish cSACs.]

6. Consideration of other designated conservation sites

Information relating to the prevention of potential effects on other designated conservation areas, for example Sites of Special Scientific Interest, may be sought in relation to any PPC permit application. This issue should be considered during pre-application discussions.

Appendix 1 Waste Management Hazards: Extent, Impact & Control

This section only deals with likely hazards and it is intended to be indicative rather than definitive. It identifies issues to consider in assessing likely significant effect and in the appropriate assessment.

1 Landfill gas

Extent and impact	Migration of landfill gas outside the perimeter of landfill sites taking biodegradable waste can occur where sites have been inadequately engineered. In such circumstances the gas will exclude oxygen from the soil and lead to the exposure and possible death of plants and soil fauna. Such effects are unlikely beyond a 0.5km radius.
Control Measures	Any permit must ensure appropriate gas management so that landfill gas does not contaminate areas outside of the application area. It should be noted that the Landfill (Scotland) Regulations 2003 require the collection and treatment of landfill gas at biodegradable landfills and this must be the subject of permit conditions [Regulation 10(3)(a)(i) and Schedule 3 Paragraph 4]. These 'pre-requisite' permit conditions should be kept in mind when considering the scope & scale of any appropriate assessment for this hazard.

2 Landfill gas flare emissions

Extent and impact	A landfill gas flare (or utilisation engine) will produce an emission of exhaust gases such as SOx, NOx, unburnt hydrocarbons, CO, HCl, etc. The volume of exhaust gases is likely to be small in comparison to other combustion facilities and at a distance of >1km from the European site may well be inconsequential.
Control Measures	Any permit must require appropriate performance standards for the flare / engines, such that the effects are inconsequential, or when modelled using air dispersion techniques can be shown to pose no adverse effect on the integrity of the European site.

3 Leachate

Extent and impact	Leachate can escape from landfill sites by leakage through a barrier / containment system, break out through a cap, or overtopping containment. If it enters surface or groundwater it can pollute those waters and be transported down gradient. It can cause toxic effects and nutrient enrichment.
Control Measures	The polluting effects of leachate are well known. New sites dealing with any waste other than inert waste must operate on a containment basis, with detailed barrier systems and leachate collection facilities unless a risk assessment justifies otherwise.

	Some facilities, particularly closed landfills, may have been constructed without containment. The potential impacts from these sites may justify the imposition of additional engineering requirements (such as capping, or leachate extraction) via modification of any extant licence. It should be noted that the Landfill (Scotland) Regulations 2003 require appropriate collection and treatment of leachate and the provision of barrier systems which must be the subject of permit conditions [Regulation 10(3)(a)(i) and Schedule 3]. The standards chosen must be justified on the basis of risk assessment, including consideration of the European site as a receptor. As a landfill permit is a relevant authorisation under the Groundwater Regulations there is an obligation to prevent discharges of List I substances to groundwater, and to prevent groundwater pollution by List II substances. These 'pre-requisite' permit conditions should be kept in mind when considering the scope & scale of any appropriate assessment for this hazard.

4 Surface water

Extent and impact	Surface water may become contaminated by contact with waste and leachate, construction materials, or chemicals used on site (fuels, pesticides, etc). The resulting water may be toxic, nutrient rich, or may carry a load of suspended solids that could lead to siltation. The physical passage of water may lead to scouring and erosion. While these effects can be dispersed throughout the downstream water catchment, they will be most visibly manifested within tens of metres to a few hundred metres of the site.
Control Measures	Surface water management systems should be installed at all waste sites, with the aim of segregating 'clean, uncontaminated water' from potentially contaminated water. The contaminated water should be subject to appropriate treatment (on site or via sewer), prior to release to the environment. The manner of all discharges may need to be controlled to prevent erosion or siltation. A range of control measures can be deployed to prevent siltation consisting either of filtration (e.g. swales, straw bales) or settlement (e.g. catch pits or lagoons), or a combination of both. Scouring and erosion (& the consequent siltation) can be prevented by appropriate design of the surface water management system, such as controlling the gradient of flow paths, providing a liner system to ditches, or directing flow via swales with vegetation cover.

5 Dust

Extent and impact	Dust can be associated with activities where waste materials such as soil or demolition wastes are screened or graded, or where combustion takes place. Smothering by dust can interfere with photosynthesis and transpiration and thus growth rates, seed set etc. Little work has been done on relative sensitivity of different species, but lichens and bryophytes are thought to be particularly sensitive (Farmer 1993). Dust size and chemical composition is important as smaller particles can enter or block stomata and thus interfere with gas exchange. Dust with a toxic component may have effects over a wide area and at low levels. This could be a particular issue for scrap metal recovery sites, waste transfer stations, or special waste processing activities. Dust can harm invertebrates indirectly by eliminating their habitat or food plants or making them effectively unavailable, and directly through being toxic or causing mechanical damage. Effects of dust will depend on the prevailing wind direction and the transport distance is related to particle size; Large particles (>30*u*m) will mostly deposit within 100m of the source Intermediate particles (10-30*u*m) are likely to travel up to 200 - 500m Smaller particles (<10*u*m) can travel up to 1km from the source. (DETR 2000)
Control Measures	Any permit must ensure appropriate dust management so that dust does not contaminate areas outside of the application area. Sources of dust should be identified and addressed – by damping, enclosure, or covering (e.g. vegetation cover for stockpiles).

6 Litter

Extent and impact	Litter can be expected to arise at all sites, except those handling solely inert wastes or specific industrial wastes. The amount of litter will depend on the handling of waste (compaction, degree of enclosure) and the prevailing wind direction and strength. An exceptionally large volume of litter would have to escape to give rise to smothering effects. This would not be acceptable purely on amenity grounds. More significantly perhaps, litter may escape to habitats where the physical access to collect litter could cause disturbance and habitat loss. In such circumstances total containment of litter may be required.

Control Measures	The permit should require litter to be controlled within the boundary of the site, potentially with remedial action (collection) required should it escape. However, where remedial collection is damaging to the Habitat or not otherwise possible, total containment of litter may be required. This could consist of totally enclosed netting or procedural measures such as the cessation of waste deposits when wind speed and direction threaten the escape of litter.

7 Physical access

Extent and impact	This will be an issue where the landfill directly impinges on a European Site. Damage may occur through access to monitoring points or in litter collection. Physical damage may also be associated by rare accidents such as explosions of landfill gas, and for emergency access etc.
Control Measures	A detailed site survey may be required to avoid damage to interest features. Where access has to be minimised alternative solutions should be considered to prevent the problem at source (e.g. litter containment rather than litter collection). Emergency planning measures should analyse the risks and ensure that contingency plans are in place to prevent damage in the event of an emergency.

8 Noise & visual intrusion

Extent and impact	Disturbance from noise or visual intrusion is likely to be most relevant if the location of the waste activity or access routes are within or immediately adjacent to an SPA or certain SACs (e.g. those designated for bat species), though impacts have been reported up to 1km away due to more intense sources such as busy highways. Disturbance from construction or operational activities may cause sensitive birds and mammals to deviate from their normal, preferred behaviour. It is difficult to make generalisations about the likely effects of disturbance because a wide range of factors are involved and different species react differently. For this reason, the capacity of the relevant habitats to support the qualifying species (that are effected by disturbance) should be assessed, rather than the effect on individual species numbers. The information on the effects of noise on wildlife is very limited and in the case of birds most of the studies relate to the effects of road traffic noise. It is likely that the effects will depend on the type and timing of disturbance and the proximity of the sources to the sensitive populations. It is thought that some birds adjust to long-term continuous noise levels or movement and that unpredictable or erratic noise events are more likely to cause disturbance. Other factors that could influence responses to noise could be: • The proximity of alternative roosting / resting / feeding areas; • The time of year (vulnerability may increase during particular periods such as the breeding season, or the autumn/winter migration); • During hard weather conditions when birds require more food than

	normal to balance energy budgets. There is little doubt that environmental noise levels can have an effect on wildlife and that the effects are almost certainly dependent upon the type of noise and species exposed. One way to establish the effect of a particular activity is to compare wildlife populations etc. on parts of the European site effected by noise with other parts of the site. However, great care must be taken to eliminate other potential influences such as availability of food, cover, visual or other human impacts.
Control Measures	Noise sources should be identified and control measures implemented to minimise adverse noise impact upon the habitat.

9 Gulls, corvids and rats

Extent and impact	Landfill sites taking domestic/biodegradable or putrescible wastes are likely to attract vermin. Birds are not only attracted to landfills as a source of food. They are also attracted by the presence of heat, standing water and by disturbed soils during restoration of the landfill site. Gulls, particularly larger species will predate upon the eggs and young of nesting birds. Dense colonies of breeding birds are likely to be particularly attractive to predators. The disturbance effect of gulls roosting in the vicinity of a landfill site may also deter other birds from nesting. The risk of predation will depend on the species involved. Terns are particularly vulnerable. The evidence for breeding waders is less clear. If a proposed site is within a few kilometres of a breeding site of a qualifying SPA species, an appropriate assessment is likely to be necessary. Rodents may also eat the eggs of ground nesting birds, but these impacts are only likely to occur over a short distance.
Control Measures	Bird control measures typically consist of - coverage of biodegradable waste every day for the life of the activity, - daily employment of bird scaring techniques, - daily presence of falcons (e.g. peregrine or gyrfalcon) These have to be employed on a daily basis to prevent gulls from becoming habituated to feeding on the site and, thus, may enable an adverse effect to be avoided. Alternative control measures have been described (Belant 1997) including – netting, overhead lines, chemical repellent, pyrotechnics and lethal controls (shooting and poison). Optimal loafing sites for gulls are characterised by large open areas with good visibility. Increasing grass height by limiting mowing can discourage gull use of these areas. (Belant 1997) However control measures may not be 100 percent effective and a

	decision will have to be made on a case - by - case basis. The effect of these measures themselves on qualifying bird populations should be addressed. Noisy bird scaring techniques can be provided with acoustic shielding to direct the impact away from the European Site. There is also evidence that use of falcons is a very localised effect, contained within the landfill site boundary, thus this is a sensible option when the landfill is located adjacent to the European site.