



National Planning Policy Guideline

NPPG 10 - PLANNING AND WASTE MANAGEMENT

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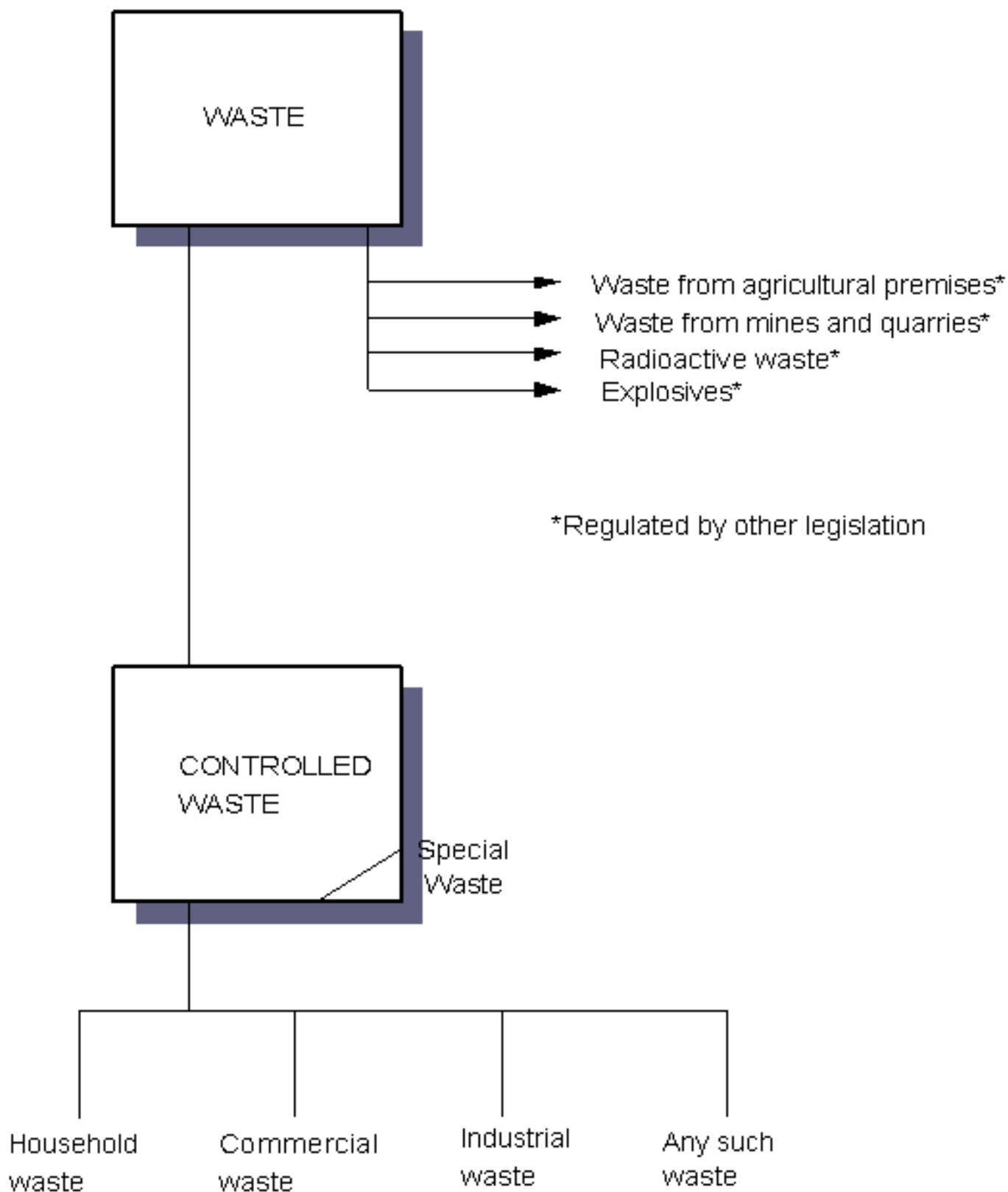
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Introduction

1. *Waste* is the unwanted by-product of industrial, commercial and domestic activities or anything otherwise discarded. It can be gaseous, liquid or solid. In Britain it has grown dramatically in volume and complexity over the last 50 years. Priority is now being given to the reduction of waste at source, its re-use, its recovery by *recycling* and to the use of waste as a source of energy (the glossary defines words shown in italics). Treatment and disposal of that which remains should be carried out in a safe and environmentally acceptable manner. All these activities need to be carried out in a manner consistent with the principle of sustainable development and without imposing an unnecessary burden on industry. The government's policy is to ensure that the planning system plays its part in implementing these goals. In recognition of all these changing circumstances this NPPG:

- **sets out the Government's planning policies for development involving the management of waste;**
- **defines the content of structure and local plans in respect of waste;**
- **explains how the planning system should operate in relation to other pollution controls.**

Types of waste. A detailed explanation of the definition of waste can be found in Annex 2 of The Scottish Office Environment Department Circular 10/94



Source: The Scottish Office Statistical Bulletin, Waste Collection, Disposal and Regulation Statistics 1993
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Policy And Legislative Context

2. **Planning authorities already have a duty to provide policies for suitable waste disposal sites or installations in order to supply the land necessary for waste treatment and disposal to take place.** That duty arises from the relevant objectives of European Council Directive 75/442/EEC (as amended by Directive 91/156/EEC); commonly referred to as the *Framework Directive on Waste*. These objectives require waste to be recovered or disposed of without endangering human health or harming the environment. Besides planning authorities, the "plan-making authorities" described by the Directive include the Scottish Environment Protection Agency (SEPA) in its role as waste regulation authority. From April 1996 SEPA also took responsibility for the previous pollution control functions of Her Majesty's Industrial Pollution Inspectorate and the river purification authorities. **Existing waste disposal plans previously prepared by local authorities will be succeeded by a single national waste strategy, to be prepared by SEPA.**

3. Further demands on the planning system are also emerging from the additional sewage treatment facilities needed to implement the EC *Urban Waste Water Treatment Directive* (91/271/EEC).

Sustainable Development

4. Achieving sustainable development is an integral part of the Government's domestic and international policies. It can be described as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". As such, it seeks to reconcile economic and environmental objectives.

5. *Sustainable Development: The UK Strategy* (Cm2426, HMSO, 1994) sets out a framework for waste management as a hierarchy of options:

- **reduction of waste at source;**
- **reuse;**
- **recovery (including recycling, composting and energy recovery); and**
- **environmentally sensitive disposal.**

6. The concept of sustainable development implies that waste management should move increasingly towards the first of these options. This movement should be achieved in a measured way governed by five principles on which any framework for waste management should be founded:

- **the proximity principle;**
- **regional self sufficiency;**
- **the precautionary principle;**
- **the polluter pays; and**
- **best practicable environmental option (BPEO).**

Paragraphs 31-37 deal with these individual principles in more detail.

Waste Management Policy

7. The Environmental Protection Act 1990 established three separate waste management functions:

Controlled waste means household, commercial industrial or any such waste including special waste.

- **waste collection**, including arranging for the collection of *household* waste (and where requested, *commercial* and *industrial* waste), provision of receptacles, drawing up and implementing waste recycling plans in respect of household and commercial waste;
- **waste disposal**, including arranging for the disposal of any waste collected by the authority, responsibility for waste recycling (including energy production) and "provision of places" (Environmental Protection Act 1990, section 51) at which to deposit waste before processing, recycling or final disposal. The waste disposal authority may operate its own sites but from 1 April 1996 must hold licences for waste management facilities which were previously operated by them under resolutions of the Council (Environment Act 1995, Schedule 23, paragraph 18); and
- **waste regulation** now carried out by SEPA, whose functions include: the preparation of a national waste strategy; decisions as to what arrangements are needed for the treatment or disposal of *controlled waste*; waste management licensing; supervision of the *duty of care*; the supervision of licensed activities; and inspection of closed landfills.

The Scottish Environment Protection Agency and Waste Management

8. The Government's main purpose in creating SEPA was to enable existing pollution control functions to be exercised in a way that brings greater benefit both to the environment and to those being regulated. SEPA's principal aim is to deliver well managed integrated environmental protection, not only as an end in itself but as a contribution to the Government's goal of sustainable development.

9. Under the Environment Act 1995, SEPA is responsible for waste regulation. Waste collection and disposal will remain the responsibility of the local authorities. SEPA's national waste strategy will replace individual waste disposal plans. Its responsibilities are described more fully in paragraphs 40-41. Current waste disposal plans should be regarded as valid until the strategy takes effect.

10. **Existing waste disposal plans and SEPA's national waste strategy are not land use documents.** Current waste disposal plans may be material to the preparation of development plans before SEPA's strategy becomes available. In addition, SEPA will consult on the national waste strategy and planning authorities should consult SEPA on development plans, thereby forging the relationship between development plans and the strategy. Development plans and the strategy will implement the EC Framework Directive on Waste.

Other Legislative Provisions

11. Waste management is also guided by other legislative and policy considerations. The Waste Management Licensing Regulations 1994 seek to ensure that adequate facilities are available for waste recovery and disposal. Waste once it is disposed of should not endanger human health or harm the environment, pose a risk of pollution or nuisance or adversely affect the countryside or places of special interest. Providing for waste treatment and disposal must also be consistent with the Government's wider environmental policies that seek to protect Scotland's natural and built heritage.

12. *Special waste* is included in the term controlled waste and presents disposal difficulties. Its transport and disposal are regulated by means of consignment notes in the Control of Pollution (Special Waste) Regulations 1980. To implement the EC *Hazardous Waste Directive*, the Regulations are being revised and this will widen the list of regulated wastes. The EC Directive on Urban Waste Water Treatment requires the dumping of sewage sludge at sea to be phased out by the end of 1998. All significant discharges of sewage are to be treated by various deadlines up to 2005. New sewage treatment works will be needed and existing ones expanded to provide

enhanced treatment. Where incineration is the preferred treatment option, plant may need to be located close to urban areas and existing sewerage infrastructure. Sludge spreading on land also takes place in relation to land reclamation, forestry and agriculture.

13. In the 1995 budget, the Chancellor announced a landfill tax. The tax is to be levied at £7 per tonne on general waste and £2 per tonne on inert waste and will be introduced in October 1996.

14. Some processes associated with waste treatment, recycling or disposal are subject to regulation by SEPA under the *Integrated Pollution Control (IPC)* provisions of the 1990 Act. SEPA also has duties under the Radioactive Substances Act 1993 which include the regulation of the disposal of radioactive waste. The Government's policy on the management of radioactive waste has now been published (*Review of Radioactive Waste Management Policy*, HMSO 1995) and this NPPG does not address the matter further.

15. Environmental assessment (EA) may be required for installations including landfill for the disposal of controlled waste, if judged likely to give rise to "significant environmental effects". The judging of "significance" is assisted by indicative criteria given in SDD Circular 13/1988. These criteria indicate that installations, including landfill sites, for the transfer, treatment or disposal of household, industrial and commercial wastes with a throughput of more than 75,000 tonnes a year may well be candidates for EA. An outline of alternatives should also be provided in the environmental statement if any have been studied. Except in the most sensitive locations, sites taking smaller tonnages of these wastes, civic amenity sites, and sites seeking only to accept inert waste (demolition rubble, etc.) are unlikely to be candidates for EA.

Planning Powers and Pollution Control Powers

16. The planning and pollution control systems are separate but complementary in that both are designed to protect the environment from the potential harm caused by development and operations. The dividing line between planning and pollution controls is not always clear cut but the planning system should:

- **focus on whether the development itself is an acceptable use of the land rather than the control of the processes or substances involved;**
- **regulate the location of the development and the control of operations in order to avoid or minimise adverse effects on the use of land and on the environment; and**
- **secure restoration to a condition capable of the agreed after-use.**

17. Matters relevant to a pollution control authorisation or licence may also be material planning considerations. The weight attached to those matters will depend on the scope of the pollution control system in each case. It is however a long established policy that planning controls should not duplicate other statutory controls, or be used to secure objectives achievable under other legislation. In using their discretion both planning and pollution control authorities should exercise their duties to consult, either as required by the GDPO, the 1994 Regulations or the 1995 Act. It is recommended that planning applications, licences and authorisations are discussed prior to submission (then determined in parallel wherever possible), to avoid delay and to enable conditions to be taken into account in each decision. Further advice on planning and pollution controls is to be issued.

- **planning authorities should not substitute their own judgement on pollution control issues for that of SEPA, which has the relevant expertise and statutory responsibility for that control.**
- **planning authorities should consult SEPA since in most cases both planning permission and a pollution control permit such as a waste management licence, will be needed before a waste facility can commence operation.**

18. Planning powers should now be used to implement the environmental objectives of the 1994

Regulations and to consider any "serious detriment to the amenities of the locality" (Environmental Protection 1990 Act, section 36). If however a planning permission was issued before the 1994 Regulations came into force, environmental objectives will not have been explicitly implemented. In these circumstances, and to avoid revoking the planning permission, SEPA has been given additional powers and can therefore implement all the environmental objectives.

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Background Information

19. Scotland's controlled *waste arisings* in 1993 were estimated at 13 million tonnes comprising industrial, household and commercial waste. Amounts vary from year to year but generally, more than half is industrial waste (which includes special waste), with the remainder divided almost evenly between household and commercial waste. Special waste arisings in Scotland were reported to be 100000 tonnes in 1993 representing less than 1% of controlled waste arising in Scotland. The Scottish Office Statistical Bulletins: Waste Collection, Disposal and Regulation Statistics provide more detailed information. The majority is landfilled but incineration for some categories takes place. Controlled waste arisings in Scotland are shown in Table 1.

Table 1 Controlled waste arisings by local authority area: Scotland 1993 (million tonnes)

Authority	Household	Commercial	Industrial		Total
			Construction/ Demolition	Other	
Aberdeen, City of	0.149	0.101	0.320	0.472	1.040
Aberdeenshire	0.090	0.071	0.159	0.093	0.412
Angus	0.048	0.025	0.107	0.013	0.193
Argyll & Bute	0.045	0.044	0.032	0.019	0.139
Borders, The	0.039	0.023	0.084	0.034	0.180
Clackmannan	0.038	0.014	0.062	0.054	0.167
Dumbarton & Clydebank	0.049	0.036	0.097	0.109	0.291
Dumfries & Galloway	0.059	0.037	1.297	0.115	1.507
Dundee, City of	0.064	0.061	0.202	0.034	0.361
East Ayrshire	0.067	0.049	0.038	0.024	0.178
East Dunbartonshire	0.042	0.015	0.083	0.008	0.148
East Lothian	0.039	0.007	0.040	0.127	0.214
East Renfrewshire	0.037	0.021	0.075	0.008	0.140
Edinburgh, City of	0.139	0.091	0.437	0.049	0.716
Falkirk	0.059	0.104	0.182	0.118	0.464
Fife	0.169	0.157	0.262	1.145	1.733
Glasgow, City of	0.179	0.219	0.206	0.021	0.625
Highland	0.110	0.076	0.224	0.053	0.462
Inverclyde	0.033	0.010	0.149	0.049	0.241
Midlothian	0.059	0.020	0.084	0.052	0.215
Moray	0.024	0.019	0.070	0.003	0.116
North Ayrshire	0.068	0.023	0.134	0.079	0.307
North Lanarkshire	0.137	0.071	0.122	0.062	0.393
Orkney Islands	0.013	0.006	0.040	0.003	0.062
Perthshire & Kinross	0.056	0.037	0.218	0.026	0.337
Renfrewshire	0.082	0.073	0.446	0.057	0.659
Shetland Islands	0.012	0.009	0.174	0.023	0.218
South Ayrshire	0.052	0.016	0.099	0.020	0.188
South Lanarkshire	0.164	0.072	0.578	0.060	0.875
Stirling	0.033	0.030	0.058	0.023	0.144
West Lothian	0.060	0.170	0.287	0.051	0.569

Western Isles	0.013	0.010	0.050	0.005	0.078
Total	2.228	1.718	6.418	3.007	13.371

Source: Scottish Office Development Department Figures may not sum due to rounding

20. Sewage sludge is either disposed of at sea or, after varying degrees of treatment, used on agricultural and forestry land, disposed of to landfill or incinerated. In 1992 sewage sludge arisings totalled some 89000 tonnes dry solids, of which 70% was disposed of at sea. However, after 1998, disposal of sewage sludge at sea will cease and alternative, land-based, disposal routes will have to be used. It is likely that the re-use of sludge on agricultural land will increase, hence also increasing the need for sludge treatment. Where sludge is disposed of on land (other than agricultural land) or incinerated, planning controls apply. Table 2 indicates the sludge disposal outlets adopted in 1992. By the turn of the century these levels will increase by approximately 60% as additional sewage treatment is installed.

Table 2 Disposal and reuse of sludge arising from urban waste water treatment, 1992

Quantity Disposed by Route expressed in tonnes of dry materials								
Authority	Sludge discharged to sea		Sludge reused		Sludge disposed			Total
	Pipelines	Ships	Soil/Agriculture	Other	Landfill	Incineration	Other	
Dumfries & Galloway RC			2,000					2,000
Central RC			300	250	2,450	900	500	4,400
Dumfries & Galloway RC			1,087		2,047			3,134
Fife RC			3,000					3,000
Grampian RC	3,000		3,000					6,000
Highland RC	244		912	60	306			1,522
Lothian RC		13,200			1,200			14,400
Strathclyde RC	840	46,365	2,000		120			49,325
Tayside RC			4,375					4,375
Orkney IC								
Shetland IC	935							935
Western Isles IC								
SCOTLAND	5,019	59,565	16,674	310	6,123	900	500	89,091

Source: Scottish Office Agriculture Environment and Fisheries Department Figures may not sum due to rounding

21. Much larger quantities of agricultural waste, together with mine and quarry waste and sea dredgings add to the overall annual total of waste arisings but are not defined as controlled waste. Agricultural waste is not subject to planning control unless a storage building for slurry or sewage sludge is proposed. New Regulations are to be introduced to define certain non-natural farm wastes (subject to a number of exclusions) as controlled waste. *NPPG 4 - Land for Mineral Working* describes how mine and quarry waste can be used as restoration material at surface mineral workings. This is normally permitted development. The material can also be used as constructional fill. The Scottish Office has published a code of good practice *Prevention of Environmental Pollution from Agricultural Activity*, HMSO, 1992 which offers appropriate advice. Controlled waste specified in the Radioactive Substances Act 1993 (i.e. low level radioactive *clinical* or research materials) continues to be landfilled or incinerated where the licence provides appropriate safeguards.

22. Better and more accurate information on wastes is being pursued through the implementation of a national waste classification scheme. This scheme is being developed for everyday use by

waste producers, holders, carriers and by SEPA.

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Policy Guidelines: General Principles

23. The waste management industry needs the assurance of clear, comprehensive and up to date development plans that take account of the wider waste management picture. Planning authorities also need to give effect to section 18A of the Town and Country Planning (Scotland) Act 1972 which confers a presumption in favour of development proposals which accord with the development plan, unless material considerations indicate otherwise. They also have a duty to include waste policies which identify the need for sites or installations in development plans and to make land allocations. Taken together these two provisions make it essential for development plans to contain a sound and well justified approach to waste management.

The Key Planning Contributions

24. Waste management requires three key contributions from planning authorities. They should:

- **implement the planning provisions of the Waste Management Licensing Regulations 1994;**
- **apply the appropriate aims of the Government's sustainable development strategy; and**
- **implement SEPA's forthcoming national waste strategy by appropriate land allocations.**

These contributions require to be met taking account of international, national and other policies for **safeguarding the natural and built environment** (see paragraphs 42-51).

Implementing the Planning Aspects of the Waste Management Licensing Regulations 1994

25. The 1994 Regulations apply the EC Framework Directive on Waste. They have amended the Town and Country Planning (Scotland) Act 1972, sections 5(3)(a) and 9(3)(a) in order to implement the Directive's plan-making provisions. This means that:

- **structure plans should express the general proposals for the development and use of land including policies for suitable waste disposal sites or installations. (see paragraph 98)**
- **local plan maps and written statements should formulate in detail these policies and proposals including those for suitable waste disposal sites or installations. (see paragraph 99)**

Planning law therefore already requires land use policies and proposals for waste disposal in structure and local plans.

26. A guide to the Directive and the Regulations is contained in *The Scottish Office Environment Department Circular 10/1994* (the 1994 Circular). The Directive's plan-making provisions relate to four issues, one of which; **provision of suitable waste disposal sites and criteria for new facilities, is a land use planning issue.** The other three issues; types, quantities and origin of waste; technical requirements; and special arrangements for particular wastes are dealt with in waste disposal plans and will be issues for SEPA's national waste strategy.

27. The 1994 Regulations (Schedule 4) also set out the environmental objectives of the Framework Directive. Paragraph 4(3) of the schedule relates to policies to encourage the prevention or reduction of waste production and harmfulness, clean technologies, technical and marketing strategies and techniques for disposal of dangerous substances in recovered waste. It will normally be for SEPA to implement this objective but development plan policies should be consistent with it.

28. Development plans can also assist in implementing paragraph 4(1) of Schedule 4 of the 1994 Regulations. This seeks to ensure that waste is recovered or disposed of without endangering human health and without using processes or methods which could harm the environment, and in particular without;

- **risk to water, air, soil, plants or animals,**
- **causing a nuisance through noise or odours,**
- **adversely affecting the countryside or places of special interest.**

These are not absolute tests since one of the Directive's objectives is to make provision for the safe disposal and recovery of waste. The 1994 Circular explains that authorities would have difficulty in permitting any operations if they had to be sure that there would be no risk to air, soil plants or animals.

29. The objectives in paragraph 4(2) of Schedule 4 of the 1994 Regulations are concerned with establishing an "integrated and adequate network of waste disposal installations taking account of the *best available techniques not entailing excessive cost*" (BATNEEC). The network should provide for self-sufficiency in waste disposal at the national and EC levels. It should allow for disposal in one of the nearest appropriate installations, by means of the most appropriate methods and technologies in order to ensure a high level of protection for the environment and to assist in reducing transport emissions. The 1994 Circular suggests that deciding whether there are already adequate facilities within a reasonable distance will depend on the type of waste concerned, quantities arising and geographical circumstances. These issues should be addressed by planning authorities in development plans and directly in determining planning applications.

30. The 1994 Regulations place duties on competent authorities that require these objectives to be implemented. Planning authorities are not required to implement any objectives which SEPA has power to enforce. This does not remove authorities' discretion to exercise their functions as described in the 1994 Circular.

Applying the Aims of Sustainable Development to Planning

31. The second key contribution from planning authorities concerns the achievement of sustainable development. Paragraph 6 above listed five principles on which any framework for sustainable development should be based and the role of each in land use planning is explained below. The principles have to be applied flexibly in order to allow for other regulatory controls or because the principles affect one another.

32. The **proximity principle** concerns the establishment of an adequate network of treatment and disposal installations to handle waste arisings as close as possible to the point of production. This encourages communities to take responsibility for locally produced household, commercial and industrial waste. The secondary concern is to reduce the transport of waste by road with a consequent reduction in CO₂ and other emissions. Planning authorities should apply the proximity principle alongside the environmental considerations of the 1994 Regulations. It will be relevant to take account of existing provision in neighbouring authorities but may not be the overriding principle to adopt where potentially damaging effects on the use of land could result from over-intensive development or inward transport of waste. Adoption of the proximity principle will need careful application to local circumstances. Provided a facility has the requisite planning permission and licence or authorisation and the waste is transported by a registered waste carrier, the choice over how or where waste is managed lies with the producer. However choice will be governed by the requirements of the SEPA national waste strategy, development plans and the network of

installations. Local sites that satisfy the requirements of the 1994 Regulations can apply the principle by reducing transport emissions and using local resources. Nationally important waste disposal installations may be reliant on low or periodic waste streams so they are likely to be few in number. In these circumstances it may be necessary to draw trade from distant producers, where locational or economic considerations rule out local provision.

33. **Regional self-sufficiency**, as a working guide, means in principle that structure plan areas should generally seek to provide sufficient facilities for managing local waste in establishing provision for the network. Planning authorities should take account of provision in neighbouring authorities' areas since it is reasonable to expect waste to be managed there if this reduces overall environmental impact. Conversely, neighbouring waste capacity should not be taken as a reason to avoid making provision close to the source of production. While disposal capacity may be adequate, there may be a shortfall in recycling and recovery opportunities making it more difficult to achieve the best practicable environmental option. Where self-sufficiency appears impractical it may be reasonable to draw on the proximity principle in order to make reasonable local provision. Self-sufficiency should not however be used to justify overruling the proximity principle.

34. The **precautionary principle** is defined as taking action now to avoid possible environmental damage when the scientific evidence for acting is inconclusive but the potential damage could be great. When the environmental implications of a waste management proposal are unclear but potentially damaging, planning authorities should consider whether the circumstances would justify planning permission being refused or subject to conditions. The environmental implications may be local or may concern the wider environment.

35. The **polluter pays** principle introduces economic measures to help to ensure that waste management options bear their full environmental costs and, in turn, that the polluter pays. The landfill tax is one such measure. This principle is indirectly applied through the proximity and regional self-sufficiency principles and more directly through ensuring that planning permissions, including conditions, make the developer responsible for dealing with environmental effects. For example the cost of collecting windblown litter around a landfill site should be borne by the developer. Further guidance is given in the section beginning at paragraph 103.

36. **The Best Practicable Environmental Option (BPEO)** is the option that provides the most benefit or the least damage to the environment as a whole, at acceptable cost, in the long term as well as in the short term. The best options will vary for each waste stream. The principle of BPEO may only be applicable to planning policy formulation in the widest sense since SEPA's national waste strategy will form the basis of the regulatory controls which generally play a more significant function in the operation of BPEO. Likewise, BPEO is not generally applicable to development control since the primary concern for planning is the use of the land. Pollution control will be for SEPA to regulate.

37. All forms of waste management offer some positive aspects of sustainable development. The options selected by developers should be considered by planning authorities in the light of the above principles. Planning authorities can also enhance prospects for the sustainable development of land within the options of the waste management hierarchy by considering it as a checklist: *Can the waste be reduced? Can it be re-used? Can some value be recovered from it?* Planning authorities can promote re-use and recycling by providing for civic amenity sites for the collection, sorting and transfer of waste. The development of waste treatment and disposal facilities such as incinerators that recover waste, destroy hazardous materials and reduce bulk can contribute to sustainable development. Even waste which has been landfilled is likely to undergo natural treatment and stabilisation processes in situ. Planning authorities should seek to ensure that waste is managed near where it is generated and SEPA's national waste strategy will be a material consideration for planning authorities in drawing up their development plans and in assessing individual planning applications.

38. For historical reasons, final disposal to landfill will for some time continue to account for the majority of Scottish waste. In this context, sustainable development becomes a matter of minimising the immediate environmental impact of waste; or employing landfill as a mechanism for

reducing the harmfulness of waste while at the same time recovering derelict land. However as a consequence of a planned approach, better engineered sites, the landfill tax and increased regulation, landfill is likely to become restricted and more expensive in the long term. New waste incinerators that also recover energy from waste may in time become more cost effective, with tighter pollution control militating against the use of existing incinerators for most controlled waste. The increasing cost of landfill and incineration may then begin to promote the top of the hierarchy by encouraging industry to provide increased capacity for re-use and recovery.

39. The UK sustainable development strategy also supports the development and use of renewable energy resources where they have prospects of being economically attractive and environmentally acceptable. *Landfill gas* and energy recovery from waste are two of the categories to which the Scottish Renewables Obligation (SRO) applies. *NPPG 6 - Renewable Energy* sets out planning policy guidance on renewable energy projects. Additional advice on renewable energy from waste incineration and landfill gas is given in *PAN 45 - Renewable Energy Technologies*.

Implementing SEPA's National Waste Strategy

40. The third key contribution of planning authorities is to express in their development plans the land use aspects of the national waste strategy. The strategy will include a statement of SEPA's policies and provisions on the type, quantity and origin of waste to be recovered or disposed of. It will also set out general technical requirements, and any special requirements for particular wastes but it will not make specific land allocations. In preparing the strategy, SEPA must consult the local authorities and will draw on the waste policies already contained in waste disposal plans and development plans. The strategy is unlikely to be available before 1998 and planning authorities should therefore consult SEPA during the preparation of development plans.

41. SEPA has a duty to have regard to guidance issued by the Secretary of State on the contribution which it should make towards achieving sustainable development. SEPA is also required, in formulating or considering any proposals relating to any of its functions to have regard to conserving the natural and built environment, to the social and economic needs of areas, and in particular the needs of rural areas; and of preserving public access to sites.

Safeguarding the Natural and Built Environment

42. Scotland's natural and built heritage is highly valued. The planning system and measures to control pollution are important in countering decline in biodiversity and in protecting the natural and built environment. Landscape, natural and built heritage conservation designations and countryside and green belt policies reflect the international and national obligations that can sustain the character and diversity of Scotland's environment. In all cases full regard should be given to those designations and to policies for the built heritage to take account of the varying potential effects of waste disposal development. Within Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) steps should be taken to avoid pollution or deterioration of the habitat. Scottish Natural Heritage (SNH) should be consulted where proposals are likely to affect designated sites or in the preparation of development plans.

International Designations

43. The Conservation (Natural Habitats etc.) Regulations 1994 implement the EC Directive on the Conservation of Wild Birds (SPAs) and the EC Directive on Flora, Fauna and Habitats (SACs). The Scottish Office Environment Department Circular 6/1995 - Habitats and Birds Directives - provides advice on implementation. Together the network of designated sites drawn up under the Birds and Habitats Directive is known as *Natura 2000*. As a matter of policy, for the purposes of considering specific proposals potential SPAs and SACs will be treated as if designated. Sites designated under the Ramsar Convention 1975 in relation to Wetlands of International Importance will also be treated in a similar manner to SPAs. The impact of development including permitted development outside these areas may also need to be taken into account.

- **waste treatment or disposal developments should only be permitted if the development does not significantly adversely affect the habitats or species being**

safeguarded unless there is an overriding public interest including public health and safety.

National Designations

44. Within national areas of landscape and nature conservation interest, Government policy seeks to protect, wherever possible, the environmental assets represented by the designations. While waste disposal is not prohibited, development proposals must be reconciled with conservation interests. The Government believes that particular care should be taken in assessing all development proposals located in or affecting such areas. The criteria for allowing development to proceed are only likely to be met in exceptional circumstances. Further protection is afforded through the consultation and notification procedures involving SNH and the Secretary of State.

45. Environmental designations of national importance include all National Scenic Areas (NSAs), National Nature Reserves (NNRs), Sites of Special Scientific Interest, Natural Heritage Areas (NHAs) and Regional Parks.

- **waste management developments should only be permitted where it can be demonstrated that the underlying objectives and overall integrity of the designated area will remain largely unaffected.**

46. Proposals in such areas should be justified by the information supplied by the developer, including where possible consideration of alternative methods or sites. Developers should explain any special circumstances that may justify an exception to the Government's normal policies to protect the best of Scotland's nationally important natural heritage. The precise nature of the evaluation is a matter of judgement to be decided between the developer and the planning authority in the light of individual circumstances. The information in support of the evaluation should be proportionate both to the importance of the particular designation and to the nature and scale of the development proposed.

Local Designations

47. Many local plans feature areas protected for their local habitat, or landscape importance. Their value may be an additional consideration to take into account when formulating waste policies and proposals, or in development control.

Built Heritage

48. The built heritage including listed buildings, ancient or historical monuments, conservation areas and their settings, historic gardens and designed landscapes and their settings are specially sensitive to change. Waste management proposals, including those that disturb archaeological remains will be subject to the rigorous examination of the statutory bodies who will be concerned to ensure that any impact is acceptable.

49. Where works involve the demolition of a building in a conservation area or a listed building, listed building consent is required. Proposals affecting a scheduled monument under the Ancient Monuments and Archaeological Areas Act 1979 require the prior written consent of the Secretary of State. In cases where damage or disturbance to unforeseen archaeological discoveries could occur, that Act cannot apply, so the guidance in *NPPG 5 - Archaeology and Planning* suggests that provision is made for skilled archaeologists to be given access to inspect and record these. The advice in *PAN 42 - Archaeology* is that if discoveries are made once development has commenced, the Regional Archaeologist should be informed immediately, with the possible suspension of works in these circumstances.

50. The GDPO is specific about the consultations that should be made before granting planning permission for development affecting aspects of the built heritage. Article 15 requires:

- **SNH to be consulted where development may affect a historic garden or designed landscape;**

- **Historic Scotland to be consulted where development may affect a historic garden or designed landscape, the site of a scheduled monument or its setting or a category A listed building or its setting.**

Green Belt Policy

51. Policy on green belts is set out in SDD Circular 24/1985. It seeks to maintain the landscape setting of towns; establish a clear definition of their physical boundaries, prevent coalescence; and provide countryside for recreational or institutional purposes. Waste treatment and disposal already takes place in green belt areas, normally in worked out minerals sites but this does not signal that future operations will always be acceptable. Waste development should not prejudice the visual amenity of green belts unless it can be shown that high standard restoration will lead to an improvement of landscape quality and compatible green belt after-uses. Proposals that restore degraded or derelict land in proximity to the main sources of waste arisings may fulfil those criteria. For those reasons;

- **waste treatment and disposal facilities in green belt areas should be compatible with green belt objectives;**
- **land restoration should be to an appropriate green belt use at a standard set by the planning authority;**
- **phased restoration should be a priority consideration in order to maintain or enhance landscape quality.**

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NPPG 10 - PLANNING AND WASTE MANAGEMENT

Additional Guidelines For Specific Waste Management Options

52. In the move towards reduction, reuse and recovery, the planning system can only play a facilitating role. Planning can assist by ensuring that land use provision supports the move towards better waste management. The following paragraphs are therefore ordered according to the waste hierarchy: waste reduction, reuse and recovery, treatment and disposal, to indicate ways in which land use planning may contribute to waste management objectives.

Waste Reduction

53. The waste management hierarchy places waste reduction above all other options. Waste reduction means for example adapting manufacturing processes to be less wasteful in their use of materials, avoiding unnecessary packaging, making longer lasting products or finding new uses for them. Buildings designed to last, or those that can be adapted to serve alternative purposes fall into the last category and can contribute to a sustainable approach to the built environment and waste management.

- **planning policy should encourage the retention and reuse of buildings wherever practicable.**

Further advice is given in *PAN 35 - Town Centres*.

Re-use and Recovery

54. The planning system has a supporting role to play in re-use and recovery but must continue to give attention on the provision of adequate sites for waste treatment and disposal. The Government has asked waste collection authorities to prepare recycling plans and will develop policy initiatives in the light of those plans and further research. Many local planning issues arise in the recycling field, relating mainly to scrap yards, recycling centres, bottle, can, plastic, paper and textile banks.

55. The use of demolition materials is widespread in civil engineering and building construction where specifications permit. Continued provision of facilities that allow for sorting and transfer of materials will spare the needless landfilling of such waste.

56. In respect of waste recycling, planning authorities should:

- **take account of waste recycling plans in preparing local plans and in development control work;**
- **secure environmental objectives and a high quality of design;**
- **require the provision of recycling facilities at new superstores and supermarkets to encourage energy conservation and to help avoid the need for separate car journeys to recycling centres.**

Waste Treatment

57. Treating waste in order to recover recyclable material and energy, or to render it less harmful before final disposal, will increasingly be required in order to meet sustainable development objectives. The planning system will need, where appropriate, to take account of these new waste management technologies. *Waste Management Paper 1 - A Review of Options*, HMSO, 1992 describes many new waste treatment technologies in detail. SEPA's national waste strategy will in future provide a lead on waste treatment options.

Incineration

58. Incineration is becoming commercially more attractive as it offers the prospect of treating waste that cannot be recycled while recovering its energy, which can be used on-site to heat buildings, in industrial processes or to generate electricity. However, incineration typically produces a third of the initial volume as ash which is usually disposed of to landfill. Further treatment is needed for ash containing high levels of contaminants such as heavy metals. While it is recognised that not all incinerators are capable of energy recovery, to be consistent with the sustainable development strategy, the possibility of energy recovery should be considered.

59. Incinerators processing urban waste are more likely to meet the objectives of sustainable development if they can be located close to associated infrastructure. For example sewage treatment works can supply sludge as a fuel stock and high volumes of combustible solid waste originate in urban areas. By being located close to sources of waste they also reduce the need for transportation. However in order to protect and enhance the urban environment careful site selection for incinerators will be required. Prospective sites including those which coincide with or lie adjacent to major sewage treatment works should be identified in development plans. Detailed aspects to be considered by planning authorities in development control include choice of locations, environmental and visual impact, chimney height, noise, storage facilities and transport requirements. Controlling atmospheric pollution and air quality is generally a matter for SEPA.

60. Incinerators designed to burn fuel such as chicken litter or wood are more likely to be proposed in rural areas where the distribution of intensive poultry rearing farms or forestry areas may determine the best locations. *PAN 45 - Renewable Energy Technologies* - gives appropriate advice on siting and design. In addition to the policy guidelines above, the location of incinerators should have full regard to their likely environmental impact.

61. The individual and cumulative impact of emissions from an incinerator are material planning considerations. Siting and design will be influenced by technical specifications, surrounding development and guidance from SEPA or the enforcing and regulatory authorities. An incinerator may require an environmental assessment. For incinerators:

- **the role of the planning authority is to deal only with the matters that are material considerations;**
- **regulation of the incineration process is the responsibility of SEPA;**
- **where a waste management licence is required e.g. for waste storage, SEPA will exercise control.**

Special Waste

62. More than half the special waste arisings in Scotland are exported to England and Wales. This is not likely to be a sustainable long term solution to Scotland's needs. Ultimately a practical approach to resolving Scotland's special waste needs will be led by SEPA's national waste strategy but in the meantime planning authorities will need to work with industry and SEPA to address this matter. Planning authorities currently altering development plans should take account of the objectives for environmental protection in the 1994 Regulations.

- **planning authorities should liaise with SEPA on any planning applications for facilities capable of taking special wastes.**
- **in due course, planning authorities particularly in the central belt should apply SEPA's national waste strategy in developing policies and proposals for sites and installations to treat or dispose of special waste.**

63. The waste management licence should define in detail which special wastes may be accepted. An environmental assessment under Schedule 1 of the Environmental Assessment (Scotland)

Regulations 1988, is required where it is proposed to dispose of special waste by incineration or chemical treatment. Applicants should also check the requirement for assessments supporting parallel *IPC* authorisations to avoid duplicating work.

Clinical Waste

64. The NHS in Scotland generates about 24000 tonnes of clinical waste every year. Further quantities arise from laboratories, private hospitals etc. The vast majority of clinical waste arisings derive from NHS Trusts. Crown Immunity was removed in April 1991 and NHS Trusts and other NHS bodies must therefore comply with all relevant statutes.

65. Prior to the removal of Crown Immunity, NHS clinical waste was disposed of by Health Boards in NHS owned incinerators. The removal of Crown Immunity, the revision of incinerator emission standards with effect from October 1995 and the organisational changes within the NHS, have had a major influence on the disposal of clinical waste. In some areas new plant has been commissioned by NHS Trusts and in others, NHS Trusts have formed consortia to buy a clinical waste disposal service from the private sector. That service may involve incineration or some other form of clinical waste treatment. Planning authorities should consult SEPA when preparing development plans and in considering applications.

- **planning policies applying to waste management in general, also apply to clinical waste.**
- **development plans should, in appropriate cases, include policies on locations for clinical waste treatment.**

66. Further sources of advice are The Health & Safety Commission's publication *Safe Disposal of Clinical Waste*, HMSO 1992 and *Management of Clinical Waste and Heat Treatment Processes, An Advisory Paper for Scotland*, Scottish Centre for Infection and Environmental Health, 1994. The Scottish Office Department of Health's NHS Management Executive has also issued guidance to NHS bodies in *Management Executive Letter (1994)88 - Clinical Waste Management*.

Sewage Treatment

67. The phasing out of sludge dumping at sea by the end of 1998 and the implementation of the EC Urban Waste Water Treatment Directive will lead to an increase in the area of land needed for sewage treatment. *NPPG 1 - The Planning System* outlines the Directive, recognises that all significant discharges of sewage should be treated, and states that:

"In some areas this will be an extra consideration of strategic importance in preparing the structure plan. More generally, sewerage authorities will require to find sites for the treatment and disposal of both sewage and sewage sludge. This will be an important issue for local plans..."

68. The Directive requires different levels of sewage treatment to be provided, by a wide variety of deadlines, depending on the size of the discharge and the type and sensitivity of the water into which the discharge is to be made. In general, secondary (biological) treatment is to be provided, but in certain circumstances (for about 40 schemes) less stringent treatment (with a minimum of primary settlement) may be sufficient if this can be shown to have no adverse effect on the environment. However schemes to implement the Directive will initially focus on seven urban areas where more stringent treatment (tertiary) is required to remove the nutrients and protect sensitive waters before the end of 1998. Treatment for many of the larger urban areas (populations over 15,000) is to be provided before the end of 2000, whilst treatment for all other discharges is to be provided before the end of 2005.

69. Sewage treatment works are 'bad neighbour developments' requiring planning authorities to advertise receipt of such applications in the local press. In addition many of the new or improved facilities will have to be located on the coast where there are likely to be sensitive siting and design issues. Some coastal waters have been identified as areas where there is good water exchange

providing a high level of natural dispersion. In these areas the Directive provides that less stringent treatment may suffice subject to studies indicating that discharges will not adversely affect the environment. SEPA will be able to advise on this matter.

70. Sewage treatment works are listed in Schedule 2 of the Environmental Assessment (Scotland) Regulations 1988 and require an assessment if they are likely to have significant effects on the environment. For new and extended sewage treatment works planning authorities should;

- **work in consultation with the water authorities to implement the Urban Waste Water Treatment Directive;**
- **include policies and known proposals in development plans; and**
- **provide for high standards of landscaping, planting and design particularly in sensitive environments such as coastal locations.**

Waste Disposal

Sewage Sludge

71. Disposal of sewage sludge at sea will cease by the end of 1998 and the main disposal routes for sewage sludge from that time will be by land spreading or incineration. The planning principles for a sewage sludge incinerator will be consistent with those which apply generally. The steady improvement in the quality of discharges from sewage treatment works has reduced the toxicity of sludge and compliance with the EC Urban Waste Water Treatment Directive should bring about further improvements. The scope for spreading may be influenced by the need to protect watercourses, the tenure or management of agricultural and forestry land or by prospects for land reclamation.

72. The spreading of sewage sludge on non-agricultural land, including forestry sites, is exempt from licensing under the 1994 Regulations (see Circular 10/1994, annex 5). Nevertheless the choice of sites should take account of other forest uses such as recreation, designated nature conservation areas, access routes and surrounding development. Planning authorities should:

- **have regard in their development plans to the potential implications of using sewage sludge in existing forests and in areas of new planting shown in indicative forestry strategies.**

73. Where waste is used solely for agricultural purposes, deposit is exempt from planning and licensing control but is guided by the Sludge (Use in Agriculture) Regulations 1989 and the *Code of Practice for Agricultural Use of Sewage Sludge 1989*. These lay down limits to the permissible concentrations of various heavy metals in soil and to the rate of application of those metals to soil. It also requires that sludge producers maintain registers containing certain particulars relating to their use of sludge on agricultural land.

74. A site for the depositing of sludge may require environmental assessment if judged to have significant environmental effects under Schedule 2 of the Environmental Assessment (Scotland) Regulations 1988.

Landfill

75. Currently some 90% of controlled waste in Scotland is landfilled. Waste reduction and recycling initiatives are beginning to have some impact but growth in waste arisings means that demand for *landfill capacity* is still increasing. It may therefore be some time before other means of disposal begin to influence the contribution landfill makes towards meeting waste management requirements. Well engineered and monitored landfill sites will therefore continue to present a successful means of treating and disposing of waste and of recovering land. They also offer the potential to improve the appearance of land and in some cases to bring land back into use.

76. Waste materials with the potential to generate *leachate* (e.g. biodegradable waste) are suited to

sites where leachate release is extremely low or can be controlled. These are known as 'containment sites' and to avoid the requirement to identify further sites, it is best practice to reserve these sites for waste that generates leachate while disposing of relatively inert waste to less well contained sites. The landfill tax will be set at a lower level for inert waste than for other types of waste and this could encourage separate disposal. In areas where waste arisings are small in quantity and geographically dispersed, as an exception containment sites may have to accept inert waste in accordance with the proximity principle. These considerations will be developed in SEPA's national waste strategy which may influence the selection of sites through the planning system. Standards including leachate control are dealt with by SEPA and guidance is contained in Waste Management Papers, notably *26B - Landfill Design, Construction and Operational Practice*, HMSO 1995) and *26D - Landfill Monitoring*, currently under revision.

77. The preparation of development plans should serve as a focus for joint working by planning authorities on waste issues. Plans should recognise the value of potential landfill sites and therefore help in the long term to avoid the supply difficulties that the waste management industry and some waste disposal authorities have experienced.

- **planning authorities should make long term provision for the safeguarding of potential landfill sites in development plans, having regard to SEPA's national waste strategy.**

78. The physical characteristics and operational aspects of landfill sites in relation to their surroundings vary considerably. Potential landfills often lie relatively close to sources of waste but distant from sensitive development, enabling them to achieve the environmental objectives of the 1994 Regulations. Large landfill sites often remain in use for a long time and operational aspects covered by the waste management licence conditions may be of interest to the future pattern of land use on-site and at adjacent sites.

- **landfill sites should be located and designed to provide for environmentally sensitive disposal.**

Land Raising

79. *Land raising* is a method of disposal on a previously undisturbed surface, creating in the process a new landform, rather than restoring excavated land to previous or near-original levels. It has a permanent effect on the landscape and may therefore be most suited to derelict or otherwise degraded sites where it can be the means to rehabilitation and the creation of a new landscape. Otherwise, and especially in areas designated for their landscape qualities, it is unlikely to be acceptable unless there are no suitable alternatives. Structural landscaping and planting are likely to be essential components of a land raising scheme, though existing landscape features should also be used. Properly engineered land raising schemes may in particular offer a more appropriate means of disposal if the alternative landfill sites have problems with leachate management and *groundwater* control.

80. Depositing waste on a landfill site above the original surface level will often raise similar issues and the above criteria may also apply. There will seldom be cases where the need for improvements to agricultural land justifies land raising.

- **development involving land raising may offer practical benefits over landfill and in some circumstances with appropriate environmental safeguards may be an acceptable waste disposal option.**

Restoration, Aftercare and After-Use of Landfill Sites

81. Restoration, aftercare and after-use proposals are components of any landfill planning application. It may be acceptable for the after-use of a site to be discussed at a later stage but where possible it should also form part of the planning application. It is normally possible to deal with these three issues by conditions but in certain circumstances a voluntary planning agreement under section 50 of the 1972 Act enforceable on successors in title may be appropriate to enable planning permission to be granted.

82. Planning policy should be based on the following principles:

- **during landfill operations progressive restoration should lead to the land being made suitable for other beneficial uses at the earliest opportunity;**
- **landfill sites should not contribute to the legacy of dereliction;**
- **restoration, aftercare and after-use should form an integral part of the overall assessment of any proposal;**
- **key elements of the landscape framework for the site should be determined at the outset and be the subject of phased development.**

83. Satisfactory landfill site completion and the issuing of a certificate of completion is dependent on sampling of leachate and gas. These are the best indicators of the stability of the site once it has closed and are matters for SEPA.

A waste management licence cannot be surrendered until SEPA is satisfied that the condition of the land is unlikely to cause pollution of the environment or harm to human health. In the case of a landfill an application to surrender a licence may contain information of use to a planning authority including the physical characteristics of the site and its surroundings and where special waste has been deposited. For other sites information is required on the contaminants likely to be present.

When the surrender of a licence is accepted, SEPA will issue a certificate of completion stating that it is satisfied with the condition of the land. This may contain information relevant for any consideration of the future use of the site but does not in itself provide authorisation for changing the use of the land. SEPA will consult the planning authority when it intends to accept the surrender of a licence and issue a certificate of completion. There are appeal procedures where SEPA does not accept the surrender of a licence.

Planning conditions should not make provision for monitoring and control of the site by the operator after landfill operations have ceased as this duty lies with SEPA. There may however be conditions attached to the planning permission that are relevant to surface characteristics, for example on restoration, after-care and after-uses.

Further details are contained in the Environmental Protection Act 1990, sections 39-43, and annex 4 of Circular 10/1994 in relation to the 1990 Act and the amendments brought about by the 1994 Regulations.

- **planning authorities should in consultation with landowners, operators and developers set out long term proposals for suitable after-uses of landfill sites.**

84. Waste management licences may give an indication of the pollution potential of the land that will determine appropriate end uses. Waste Management Papers and publications such as *The Potential for Woodland Establishment on Landfill Sites*, HMSO 1993 should be consulted. The development plan should show how the after uses of the site and its surroundings can be satisfactorily planned. Once a site has been restored and put to a new use, the responsibilities of the planning authority are limited to consultation procedures relating to adjacent development as detailed in paragraphs 109-110. (Further guidance is given in the annex).

Landfill Gas

85. Landfill gas is generated by the natural processes of decay in biodegradable waste (anaerobic decomposition). Methane is the main product, particularly in the later phases of gas generation. At larger sites, landfill gas may occur in commercial quantities and the economic level at which this occurs is the subject of continuing research but is already attracting funds through the Scottish Renewable Obligation. The levels and timescale of gas generation should be estimated in the licence application.

86. *Waste Management Paper 27 - The Control of Landfill Gas*, HMSO, 1991 is the recognised source of advice on the installation of gas control equipment to be regulated normally through waste licensing. The prospect of renewable energy projects associated with landfill gas is a further planning consideration over the life (and beyond) of a landfill site that may require additional off-site buildings, transportation or infrastructure. Local plans should take that long term possibility into account and permit only compatible uses on adjacent land. Both NPPG 6 and PAN 45 on renewable energy include information on siting and design of landfill gas equipment and buildings.

- **the migration of landfill gas is a material consideration that planning authorities should take into account in determining planning applications for landfill sites and for development in the vicinity.**
- **local plans should identify compatible uses on adjacent land and provide for possible renewable energy projects associated with landfill gas.**

Closed Landfills

87. *Closed landfill* sites may be a constraint on development because they could contain waste that has not yet stabilised and might therefore continue to cause surface movement or contamination, generate landfill gas or leachate and atmospheric pollution. These sites may pre-date modern standards of control and their associated licensing or planning conditions. Consequently it may not be possible for planning authorities to rely on licence reviews, surrender or the assurances of the completion certificate to provide for the safeguarding of the use of the land and its surroundings. In some cases restoration and possibly re-use may have taken place. In other cases the licence could allow reactivation and waste disposal authority records are the only source of accurate details. Aggregated information is given in The Scottish Office Statistical Bulletins on waste.

88. Identifying closed sites is not always an easy task. Where they require treatment, their inclusion in development plans will assist the allocation of appropriate uses for adjacent land. An indication of opportunities for the after-use of closed landfill sites that are currently lying vacant or derelict can also be given. The records of closed landfills inherited by SEPA will form the basis of that task. For closed landfills the key tasks for planning authorities are:

- **identifying in development plans closed landfills requiring treatment, to guide on-site and surrounding development; and**
- **consulting the records held by the waste disposal authority where any proposed development is within 250 metres of land which has at any time in the 30 years before the relevant application been used for the deposit of refuse or waste; (GDPO, Article 15(1)(l)).**

Groundwater Protection

89. Groundwater is an important resource which is susceptible to the effects of contamination that could result from the failure to prevent or control the release of leachate from landfill sites. SEPA has a duty to protect groundwater. A *Groundwater Protection Strategy for Scotland* was published by the Association of Directors and River Inspectors of Scotland in September 1995 (available from SEPA). It contains a groundwater vulnerability map of Scotland showing major aquifers. The strategy explains how the various catchment zones associated with groundwater abstraction points can be identified and which will be subject to further detailed investigation. The Strategy in addition to the overall protection of the groundwater resource, defines three *source protection zones (inner, outer and catchment)* which vary in extent according to the porosity of the strata and whether abstraction is by spring or borehole. Developers and planning authorities are encouraged to consider weakly permeable or non-permeable aquifers for new waste disposal activities. The zones should be taken into account in drawing up waste disposal policies and proposals in structure and local plans.

The Groundwater Protection Strategy states that RPAs (now SEPA) will normally object to planning applications for any activity requiring a waste management licence within inner source protection

zones. They will also normally object to planning applications for landfilling in outer source protection zones unless the pollution potential of the waste is not significant and the site will have acceptable operational safeguards. Less stringent controls will apply in catchment zones where the risk of pollution can be mitigated. On non-aquifers there will normally be no objection subject to consideration of surface water protection. Landfilling below the water table in source protection zones will normally raise an objection. Elsewhere the presence of an unsaturated zone below the landfill site will normally be required where containment principles prove inadequate.

90. Planning authorities should:

- **apply the Groundwater Protection Strategy and consult SEPA in preparing their development plans and determining planning applications;**
- **in Aberdeenshire, Moray, the Scottish Borders, East Ayrshire and South Lanarkshire where there are large numbers of springs and boreholes consider whether structure plan policies to protect groundwater from leachate pollution are appropriate; and**
- **in Aberdeenshire and Moray where the density of springs and boreholes is greatest consider whether site specific local plan policies are needed.**

91. It falls to SEPA under the 1994 Regulations to assess the effect on groundwater of waste disposal developments when determining licence applications. The planning authority need not be concerned about the effect on groundwater of a waste disposal planning application other than in the context of the relationship between the development plan and the ground water strategy. The Scottish Office Environment Department Circular 4/1994 provides guidance on the EC Directive on the Protection of Groundwater Against Pollution Caused by Certain Dangerous Substances (80/68/EEC).

Civic Amenity Sites

92. The Refuse Disposal (Amenity) Act 1978 places a duty upon local authorities to provide places where refuse, other than refuse falling to be disposed of in the course of a business, may be deposited free of charge by persons resident in the area of the authority. These are commonly known as civic amenity sites. They can provide for household waste including the disposal of bulky items suitable for recovery (for example cookers or car batteries) and for the safe removal of CFCs from refrigerators. In addition to recycling centres, they are also good locations for the collection of materials suitable for recycling. Adequate attention to access, screening and landscaping must ensure that residential amenity is not impaired. *A Survey of Local Authority Waste Recycling Plans in Scotland*, The Scottish Office, 1994 contains examples of good practice.

- **planning authorities should ensure that suitable and adequate provision is made for civic amenity sites in local plans.**

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NPPG 10 - PLANNING AND WASTE MANAGEMENT

Action Required

93. Legislation and national policies for waste set the context for the formulation of related land use policies and proposals. Development will be required to manage a wide variety of wastes in a manner consistent with the provisions of the Waste Management Licensing Regulations 1994, sustainable development objectives and obligations for the protection of the natural and built environment. By providing appropriate sites compatible with SEPA's national waste strategy, development plans should guide and assist the waste management industry.

Surveys for Development Planning

94. The 1972 Act, section 4 requires planning authorities to keep under review matters expected to affect planning for development. To provide the foundation for development plans that achieve more sustainable waste management solutions, surveys for development planning should be carried out to identify sites with and without prospects for waste management developments. In the majority of cases this will mean identifying sites for landfill. However in most areas it should also be possible to identify environmentally acceptable sites for waste recovery and waste treatment.

95. Much information already exists for example from waste disposal plans and a desk exercise may suffice. The Government endorses the existing practice in west central Scotland, the north east, the Highlands and east central Scotland, where groups of waste regulation authorities, planning authorities, and the health boards, have pooled resources. These arrangements may form a basis for surveys, notably where a number of authorities will be jointly preparing structure plans or where an adjoining structure plan area is expected to provide waste facilities. SEPA and local authority cleansing or environmental health departments may also be able to provide information and advice.

Surveys: an approach to classifying sites for waste management. Identify sites that are:

- **Operational** - indicating remaining capacity;
- **Not yet in use but with planning permission** - indicating total capacity;
- **Not yet permitted but with potential** - e.g. exhausted mineral workings, natural void spaces and land raising possibilities;
- **Constrained** - where technical or policy requirements make the site's use marginal;
- **Unacceptable** - for technical or policy reasons use is not possible;
- **Planned for alternative uses** - sites with a commitment or planning permission other than for waste management e.g. recreational or habitat use.

Recording sites in this way can illustrate an area's potential. From time to time, repeat surveys may be necessary as site capacity falls or where SEPA's national waste strategy so requires.

96. Surveys should concentrate on planning issues, leaving operational concerns aside unless that information is to hand. The purpose of surveys is to:

- **ensure that sites are identified through the development plan to satisfy the Waste Management Licensing Regulations 1994;**
- **focus interest in developing land for waste management towards more acceptable**

sites thereby assisting the planning system's contribution to raising environmental standards, and

- **identify (in reports of survey or in plans) sites where end-uses other than for waste management have been considered, are preferred or safeguarded.**

97. Ideally surveys should seek to identify a self-sufficient network in each structure plan area for controlled waste treatment and disposal. Fewer sites are needed for special waste treatment and disposal and their regional or national significance may require co-operation between authorities in order to identify them. That can still be consistent with the proximity principle where guided by other environmental constraints. Given the primacy of development which accords with the development plan, surveys can provide a more reasoned justification of land allocations.

Structure Plans

98. All structure plans should include land use policies for waste management that provide the strategic planning framework for more detailed policies and proposals in local plans. They should reflect, as appropriate, the existing waste disposal plans until they are superseded by SEPA's national waste strategy. Structure plans should:

- **provide a strategic view of waste management with regard to the level of waste arisings and implement SEPA's forthcoming national waste strategy (until that is available, the constituent waste disposal plans);**
- **identify the strategic areas suitable for waste treatment and disposal facilities;**
- **implement the findings of any joint working with other planning authorities in establishing the network of treatment and disposal installations consistent with the 1994 Regulations and the Sustainable Development Strategy;**
- **take account of the 'proximity principle' to reduce waste movements if possible, favouring access to facilities by rail over road where the potential exists;**
- **safeguard the natural and built environment including designated areas, green belts, open countryside and the coast; and**
- **guide other new developments in order that their amenity and environmental quality is not impaired by waste management facilities.**

Local Plans

99. Local plans should conform with structure plan policies and proposals to make provision on a site specific basis, indicating how new developments for waste treatment and disposal will be provided for and controlled. Policies for the uses of land surrounding waste disposal developments should also be shown. A clear and positive approach will assist local authorities and the waste management industry in matching investment to the programmes set out in waste disposal plans and subsequently SEPA's national waste strategy. Local plans should:

- **identify sites consistent with the national waste strategy when available or existing waste disposal plans where appropriate;**
- **include policies for waste management facilities;**
- **encourage development which assists in the reduction, re-use and recovery of waste for example through the re-use of buildings;**
- **provide for facilities as close as is reasonable to the source of waste production, taking into account the safeguarding of the natural and built environment;**
- **make provision for civic amenity sites and as appropriate, recycling centres;**

and for appropriate local plans:

- **provide for the expansion of existing sewage treatment plants to facilitate primary (physical) and secondary (biological) treatment;**
- **show locations for new sewage treatment plants taking account of surrounding land uses and designations;**
- **provide standards for landfill site restoration, aftercare and after-use;**
- **identify closed landfills on proposals maps specifying appropriate after-use taking into account SEPA's requirements, the existence or otherwise of a certificate of completion and the pollution potential of the types and quantities of waste deposited.**

Other Aspects of Development Planning

100. Existing and proposed land uses adjacent to prospective waste management facilities require careful consideration. The future use of land for other purposes should not be prejudiced by such development. Neither should the scope for a waste facility or the safeguarding of a potential landfill site be inhibited by inappropriate new and surrounding development. It is a key function of the development plan to avoid such potential conflicts.

101. Waste treatment or disposal sites and transfer stations that depend on a steady supply of waste from a wide catchment can provide for more than local needs. These versatile installations provide the economies of scale or environmental benefits which it may only be possible to realise across several council areas. To identify such sites and provide for them in development plans, planning authorities particularly when preparing structure plans, should work in consultation with other interested authorities.

102. Development plans should take into account the potential for recycling facilities and other means of treating or disposing of waste, including waste to energy projects and should provide for land based alternatives for sewage sludge disposal. The economic, social and environmental implications of a waste treatment or disposal facility, include its effect on air quality, water resources, land and the natural and built heritage. These need to be assessed and weighed against the possible benefits. These could include the provision of the service, the generation of trade or employment and the recovery of energy and materials.

Planning Applications, Development Control and Consultations

103. Planning authorities will determine planning applications in accordance with the development plan unless material considerations indicate otherwise. Planning applications for facilities to re-use, recycle, treat or dispose of waste will normally raise a number of sensitive issues that developers should take into account in preparing their applications. The planning authority may choose to impose conditions on application that do not properly address the issues (see SDD Circular 18/1986 - The Use of Conditions). They may also seek to enter into an agreement under section 50 of the Town and Country Planning (Scotland) Act 1972.

104. Aspects of an application that could give rise to the imposition of conditions include:

- **the character of the area including any designations, nature conservation or built heritage interests;**
- **an assessment of views and/or objections;**
- **the hours of operation and the number of heavy vehicle trips;**
- **the level of noise;**
- **the timescale and phasing of the operation;**

- **design of the site (including any landscaping or screening), buildings, floodlighting, nets for waste and pest control, visual impact and access;**
- **the physical nature of the waste which is acceptable,**
- **on-site wheel cleaning equipment for departing vehicles;**
- **public road washing and sweeping, as necessary;**
- **the off-site impact of any odours, discharges of gas, effluent or leachate;**

and for landfill or land-raising;

- **the land area involved and the volume to be filled;**
- **removal and preservation of topsoil and subsoil and their replacement during a scheme of progressive restoration;**
- **permanent boundary fencing to contain windblown litter, with periodic cleaning and the placement of temporary netting for daily operations;**
- **completion and aftercare;**
- **standards for minimum depths of soil cover material free of obstructions which would inhibit plant growth or cultivation;**
- **the specification of final contours allowing for settlement;**
- **aftercare management of the land for a maximum of five years following restoration appropriate to the intended after-use; and**
- **restoration where development has stopped before completion or a licence has been revoked.**

105. Planning permissions for landfill sites may include aftercare conditions for up to five years following closure, which the planning authority has a duty to enforce. Conditions relating to restoration and after-use should be quite separate from those of the waste management licence and specific to the planning permission (see Annex).

106. In determining an application for an incinerator, a waste treatment or waste disposal facility other than a landfill site, it may be appropriate for the planning authority to consider post-closure issues. These are long-term considerations complementing pollution control authorisations and licensing by SEPA.

- **providing they are material planning considerations, planning permissions should include conditions relating to site clearance, removal of buildings and clean-up of any contamination when operations cease or after closure.**

107. When planning permission or an established use certificate or a certificate of lawful use is required it must be granted or be in force before a waste management licence can be issued. This should not dissuade developers from discussing their proposals with the planning authority and SEPA in parallel. As applications for waste disposal can be some of the most lengthy to determine, updated development plans with waste policies and proposals will assist speedier decision making in this field. To expedite the development control process, planning authorities should encourage developers to discuss proposals prior to making applications.

108. The Town and Country Planning (General Development Procedure)(Scotland) Order 1992 (the GDPO) requires the advertising of certain development proposals, specified in Schedule 7 as "bad neighbour developments". These include "the construction of buildings...or use of land for the disposal of refuse or waste materials, or for the storage or recovery of reusable metal, for the

retention, treatment or disposal of sewage, trade waste or effluent...". Article 15(1)(h) of the GDPO (as substituted by Article 4(a) of The Town and Country Planning (General Development Procedure)(Scotland) Amendment Order 1996) now requires SEPA to be consulted where the development consists of or includes the use of land for the deposit of any kind of refuse or waste, including slurry or sludge.

109. SEPA should be consulted where there are development proposals for sites which are adjacent to waste treatment processes such as incineration. The planning authority should emphasise those issues on which they are seeking views. These may include local land uses, the impact on amenity and, without prejudice to the final decision, whether there is a reasonable likelihood of authorisations or licences being granted.

110. Consultations on licence applications are independent of those for planning applications. Where a local authority intends to operate its own site the provisions of the Town and Country Planning (Development by Planning Authorities)(Scotland) Regulations 1981 may apply. Informal consultations with the Forestry Commission, Scottish Natural Heritage or the Scottish Sports Council may assist where forestry, amenity or sports after-use of landfill sites is being considered.

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Conclusions

111. Planning legislation has been amended by the Waste Management Licensing Regulations 1994 requiring the town and country planning system to contribute to the achievement of waste management objectives consistent with sustainable development principles. Its key functions are to assist the waste management industry by providing sites for the future development of the Government's waste management strategy, to protect environmental quality and to complement the powers of the pollution control authorities. Up-to-date structure and local plans should provide a well-informed context for implementation through development control, so assisting with the wider environmental objectives of sustainable development.



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Note

112. Further copies and a list of current NPPGs, PANs and planning circulars may be obtained from The Scottish Office Development Department, Planning Services, Room 2H, Victoria Quay, Edinburgh EH6 6QQ, telephone 0131 244 7066. Any enquiries concerning this NPPG should be made to Graham Marchbank, The Scottish Office Development Department, Planning Services Division, Room 2H, Victoria Quay, Edinburgh EH6 6QQ, telephone 0131 244 7553.



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Annex: Restoration, Aftercare and After-Use of Landfill Sites for Agriculture, Amenity or Forestry

1. This Guideline indicates the importance of landfill sites for controlled waste disposal and that conditions concerning restoration, aftercare and after-use may be required when planning permission is granted. This annex provides further guidance where it is intended that the after-use should be agriculture, amenity or forestry.
2. The planning permission should provide for the restoration of the site and its final landform. Progressive restoration normally provides for more effective daily operations, reducing the working face to the minimum necessary, providing for effective vermin control, the movement of litter fencing and use of cover material. Depending on the waste deposited, uneven settlement may allow for additional surface deposits for re-grading but this may require explicit planning permission. Some parts of sites with natural heritage potential may be best left undisturbed by filling or restoration.
3. The planning permission should also provide for restoration of the growing medium (normally soil) to an appropriate standard, the establishment and management of vegetation and the satisfactory after-care of the land. Amenity after-use may include open grassland for informal recreation, basic preparation for more formal sports or leisure facilities, amenity woodland, landscaping and nature conservation. Any other after-uses such as built development would require a separate planning permission.
4. Requirements to achieve an acceptable after-use should normally be part of the planning permission for the landfill site, taking into account the likely requirements of the waste management licence and the duty of care. Given that a site has an appropriate final landform, there are two types of planning condition necessary to achieve proper after-use. A restoration condition is a requirement to restore the site by use of subsoil, topsoil or soil-making material. This must be implemented before any aftercare condition. An aftercare condition can only be imposed if there is also a restoration condition. Such a condition requires any necessary steps to be taken to bring land to the required standard for the use specified in that condition (i.e. use for agriculture or forestry or amenity). The steps may include planting, cultivating, fertilising, watering, draining or otherwise treating the land. The maximum aftercare period is 5 years from completion of the restoration condition on a site, or on the relevant part where there is a phased restoration. This maximum aftercare period can be varied by the Secretary of State by regulations and can therefore be reviewed in the light of experience.
5. Section 51 and Schedule 8 of the Planning and Compensation Act 1991 gave powers to planning authorities to impose aftercare conditions on planning permissions, revocation orders and discontinuance orders in respect of development involving the deposit of any types of refuse or waste materials. This applies to landfill sites. Advice on the imposition of aftercare conditions in respect of mineral workings is given in NPPG 4 - Land for Mineral Working and may be helpful in the reclamation of landfill sites.

Choice of After-Use

6. Planning conditions for the reclamation of a proposed landfill site should be drawn up with a particular after-use in mind. For a site with a long active life there may need to be provision to review the objectives in the light of changing policies and techniques and of operational experience. The choice of after-use may be influenced by a number of factors including:

- the present characteristics of the site;
- the wishes of the landowner and requirement of any leases or covenants;
- planning policies for the area;
- the nature and scale of the landfill proposals, including proposed systems for gas and leachate control and capping;
- advice from The Scottish Office Agriculture, Environment and Fisheries Department (SOAEFD) or the Forestry Commission; and
- advice from the relevant pollution control authority.

7. The use of planning conditions is important to ensure that the proposed after-use can be achieved. Agricultural, forestry and outdoor recreational or other after-uses will follow site completion, provided the restoration conditions are implemented and the land is undisturbed and maintained appropriately. If uneven settlement occurs or landfill gas is still present the completion certificate may be withheld. If it cannot be issued for any reason, any proposed built development should not take place until the site is deemed physically fit for those purposes. Consulting SEPA will ensure that site operation and the design of measures to control pollution are compatible with reclamation requirements. Where modern agricultural reclamation standards cannot be achieved at reasonable expense, planning authorities may consider whether the proposed after-use is still appropriate or whether an alternative use should be specified or whether planning permission should be refused. Other problems may follow from settlement of the landfill. It is therefore important to ensure that a site is capable of the proposed after-use.

8. The report *The Potential for Woodland Establishment on Landfill Sites* published by HMSO should be referred to over and above the advice in *WMP 26 - Landfilling Wastes*, HMSO 1986 which is being revised to reflect current research which indicates that there are possible measures that could enable successful tree planting on some sites - for either amenity or forestry purposes. More recent practical advice is provided in *Forestry Commission Bulletin 110 - Reclaiming Disturbed Land for Forestry*, published by the Forestry Authority.

9. A further report, *Amenity Reclamation of Mineral Workings* published by HMSO, includes some advice on the reclamation of landfill sites. It concludes that landfill sites can be used for a wide range of land-based amenity uses from formal sports to nature conservation, so long as:

- all problems associated with the landfill gas generation have been adequately dealt with;
- soil (or soil-making materials) of adequate depth has been provided over the fill;
- allowances have been made for settlement; and
- water quality is assured.

Planning Applications and Consultations

10. Informal discussions between an applicant for a landfill site and the planning authority can be very helpful. Other bodies such as SEPA and in some cases SOAEFD or the Forestry Commission may also be consulted at this stage. The applicant can then draw up proposals and undertake any necessary site assessments with a view to a chosen after-use, taking into account the likely requirements of the planning authority and other bodies. The planning application should be accompanied by clear proposals and plans for restoration and aftercare in preparation for the intended after-use. *WMP26* and *ICRCL Guidance Note 17/78* give further general advice but also stress that proposals and conditions should be drawn up to suit the particular requirement of an individual site.

11. Where land is to be returned to agricultural use following planning permission for use as a

landfill site, irrespective of the size of the site or the land quality, SOAEFD can provide advice and guidance on aftercare and after-use conditions. Similarly if it is considered that forestry is the most suitable after-use, the Forestry Commission can be consulted. Each of these organisations would be willing to advise planning authorities on whether a particular after-use is suitable, before planning permission can be granted and before an aftercare condition for agriculture or forestry can be imposed.

12. The statutory requirements to consult SOAEFD and the Forestry Commission do not apply to restoration conditions. Yet the achievement of good standards in the aftercare period must in part depend on appropriate and enforceable planning conditions relating to restoration covering, for example the stripping and movement of soils and their restoration upon completion of the landfill or phase of a landfill. SOAEFD and the Forestry Commission can therefore usefully comment or advise on restoration conditions. There is no statutory consultee for the broad range of amenity after-uses. However advice can be sought where appropriate from the Scottish Sports Council, Scottish Natural Heritage and the Scottish Tourist Board.

13. Conditions on aftercare can only be used to bring the land to a "required standard" which is defined in general terms according to the intended after-use. The necessary steps are set out in section 27A of the Town and Country Planning (Scotland) Act 1972. In respect of sites where an agricultural after-use is proposed, one of two alternative standards may be applied. Where it is necessary to restore a site as far as practicable to the physical characteristics of the land when last used for agriculture then the planning authority should be satisfied that it can ascertain the physical characteristics of the land before planning permission is granted, particularly if the proposal affects prime quality land in current agricultural use.

14. SOAEFD should normally be able to provide a statement of the physical characteristics of the site. Where a technical survey by the Macaulay Land Use and Research Institute is required the planning authority could approach MLURI direct but a charge would probably be made for their advice. In other cases and for other after-uses, the appropriate required standards will be that the land is "reasonably fit for that use". "Fitness for use" may also include landscape features, as specified in the restoration and aftercare conditions.

15. It is likely that pollution controls over a particular landfill site will remain in force long after the restoration and aftercare required under the planning permission will have been completed and the after-use of the site commenced. In such circumstances, if the pollution control monitoring and remedial activities affect such land, there may need to be provision to remedy any damage. This could be through amendments to the waste management licence, which will still be in force, or, in the case of a new planning permission, through a planning obligation or other agreement.

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Glossary

The descriptions given below are for general information only. These are not legal definitions.

Arisings - The amount of waste created within a given area over time (for convenience in waste planning, usually a year) requiring recovery or final disposal by various means.

BATNEEC - Best Available Techniques Not Entailing Excessive Cost includes technical means and technology, the number, qualifications, training and supervision of staff, design, construction and layout of buildings. It is related to *BPEO* and *IPC* (see below).

BPEO - The Best Practicable Environmental Option. This is arrived at by a 'systematic consultative and decision-making procedure which emphasises the protection and conservation of the environment across land, air and water' [Royal Commission on Environmental Protection 12th report, Best Practicable Environmental Option, HMSO, 1988].

Clinical waste - human and animal tissues and excretions, waste from hospitals, dental practices, clinics, veterinary surgeries and GPs including swabs, dressings, drugs and instruments being waste which unless rendered safe may prove hazardous or infectious. This waste is defined fully in the Controlled Waste Regulations 1992.

Closed landfill - land previously used for the deposit of waste. These may contain unknown materials, pre-dating any licensing or planning controls. They may have a licence in force but no longer be operational. SEPA holds records of known sites.

Commercial waste - from premises used for a trade or business or sport, recreation or entertainment.

Containment site - a landfill site where the rate of release of leachate into the environment is extremely low. Polluting components in wastes are retained within such landfills for sufficient time to allow biodegradation and attenuation processes to have occurred; thus preventing the escape of polluting species at unacceptable concentrations.

Controlled waste - means *household, commercial and industrial waste*.

Duty of Care - a requirement for anyone who has control of waste at any stage from the point of production right through to final disposal or recycling to take responsibility for the waste they produce or manage and to take all reasonable steps to ensure that it is dealt with safely and legally. Waste Management - The Duty of Care - A Code of Practice, currently under revision is given in the references section.

Groundwater - water that forms the part of the natural water cycle which is present within underground strata (aquifers) and which may provide a substantial part of the water supply.

Groundwater source - point of abstraction of water, e.g. well, borehole, spring.

Household waste - waste from a domestic property, caravan, residential home, university, school or other educational establishment or premises forming part of a hospital or nursing home (but excluding clinical waste).

Industrial waste - waste from a factory, premises used for public transport, supply of gas, water or electricity or the provision of sewerage services or provision to the public of postal or telecommunications services.

IPC - Integrated Pollution Control; a general requirement for authorisations under Part 1 of the Environmental Protection Act 1990 to prevent, or if that is not possible, minimise the release of prescribed substances and to render harmless any substances that might be released from certain processes including waste disposal and recycling, as set out by the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

Landfill capacity - the volume available in a landfill site for the disposal of waste (sometimes split by waste type). Sometimes referred to as "void space". There is no constant weight to volume ratio for waste owing to different compaction rates, although the most dense material (construction waste) equates to about 1 tonne to 1 cubic metre. Appropriate measurements also apply to allow void space to be matched to the throughput or capacity of incinerators.

Landfill gas - The end product of degradation of biodegradable wastes in a landfill site. Typically it is a mixture of up to 65% methane and 35% carbon dioxide plus trace concentrations of a range of organic gases and vapours. Methane is flammable at concentrations between 5% and 15% by volume in air.

Land raising - the deposit of waste on and above the existing contours of the ground.

Leachate - Liquid that seeps through a landfill and by so doing extracts substances from the deposited waste.

Natura 2000 - A network of marine and terrestrial areas designed to conserve natural habitats and species of plants and animals that are rare, endangered or vulnerable in the European Community. The term Natura 2000 comes from the 1992 EC Habitats Directive (92/43/EEC); it symbolises the conservation of precious natural resources for the year 2000 and beyond.

Recycling - defined in WMP 28 as the "collection and separation of materials from waste and the subsequent processing to produce marketable products". Recycling does not include the sale of second-hand books or clothes, the use of returnable or refillable bottles or containers or by-products of waste treatment or disposal such as landfill gas.

SEPA - the Scottish Environment Protection Agency brought into being on 1 April 1996 under the Environment Act 1995.

Source protection zones - three zones to protect groundwater in the Groundwater Protection Strategy for Scotland.

Inner source protection zone (zone 1) - located immediately adjacent to a groundwater source.

Outer source protection zone (zone 2) - larger than zone 1; the area defined by a 400 day travel time from any point below the water table to the source.

Catchment zone (zone 3) - the complete catchment of a groundwater source, or the area needed to support an abstraction from long term annual groundwater recharge (effective rainfall).

Special waste - The Control of Pollution (Special Waste) Regulations 1980 state that such waste may be dangerous to life or has a flash point of 21 deg. C or less, or is a medicinal product available only on prescription. New Regulations in preparation will expand the range of hazard properties increasing the number of wastes notified.

Waste - includes any substance which constitutes a scrap material or an effluent or other unwanted surplus substance arising from the application of any process; and any substance or article which requires to be disposed of as being broken, worn out, contaminated or otherwise spoiled (but does not include explosives).



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SDD Circular 13/1988; Environmental Assessment: Implementation of EC Directive, the Environmental Assessment (Scotland) Regulations 1988.

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SOEnD Circular 6/1995; Habitats and Birds Directive.

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26B. Landfill Design, Construction and Operational Practice. HMSO, 1995. ISBN 0-11-753185-5, £23.

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