ENVIRONMENT AGENCY

# LANDFILL DIRECTIVE
# REGULATORY GUIDANCE NOTE 3 (Version 4.0, December 2002)

# GROUNDWATER PROTECTION: LOCATIONAL ASPECTS OF LANDFILLS IN PLANNING CONSULTATION RESPONSES & PERMITTING DECISIONS

***This note has been produced as advice for Environment Agency staff. It is based on the Agency's current understanding of the legislative requirements which may be subject to change. You are welcome to share it with persons outside the Agency.***

## 1 INTRODUCTION

A modification to the Agency's Policy and Practice for the Protection of Groundwater (PPPG) was approved by the Agency's Board on 16 October 2002, following consultation which included DEFRA and Office of the Deputy Prime Minister. This modification provides the Agency's Position Statement on the Location of Landfills with respect to groundwater protection, and clarifies certain aspects of the PPPG.

The objectives of the Position Statement are as follows.

- To ensure that, in vulnerable areas, groundwater protection measures will be viable for the entire duration of the pollution risk from landfilling.
- To provide a framework for Agency staff within which risk based advice can be given to waste planning authorities (WPAs)/developers, steering development into less sensitive locations, and facilitating WPA compliance with their statutory role under the Landfill Directive.

## 2 LEGISLATIVE BACKGROUND

### *2.1 The Groundwater Directive (80/68/EEC)*

The Groundwater Directive requires Member States to prevent the introduction of substances in List I into groundwater and to limit the introduction of substances in List II into groundwater so as to avoid pollution.

Under the Waste Management Licensing regime these requirements were covered by Regulation 15 of the Waste Management Licensing Regulations 1994. Under the PPC regime, they are covered by the Groundwater Regulations (SI 1988/2746) which have similar requirements.

Accordingly, the Environment Agency must prohibit direct discharges of List I substances (unless, following a prior investigation, they are shown to comply with certain specific exclusions listed in the Directive).

However, the Agency may authorise the following, after prior investigation and providing all necessary technical precautions are observed:

a) the direct discharge of List II substances provided pollution of groundwater is prevented.
b) the disposal or tipping for the purpose of disposal of List I substances provided discharge to groundwater of such substances is prevented.
c) the disposal or tipping for the purpose of disposal of List II substances that might lead to an indirect discharge to groundwater provided pollution of groundwater is prevented.

Prior investigation should include an assessment of the hydrogeology, the "purifying properties of the soil and sub-soil" (i.e. the soil and unsaturated zone) and the risks to groundwater quality.

### *2.2 The Landfill (England and Wales) Regulations 2002*

In the Landfill Regulations groundwater protection is mainly dealt with in Schedule 2 paragraphs 1 to 3.

? *Paragraph 1(1)* relates to the location of a site with respect to various potential receptors including groundwater, waterways, water bodies and coastal waters. This includes consideration of the geological and hydrogeological conditions in an area, in addition to other requirements.

? *Regulation 5* requires that a planning permission may only be granted for a landfill if the locational issues in Schedule 2 paragraph 1(1) have been taken into consideration.

? *Schedule 2 paragraph 1(2)* requires that a landfill (PPC) permit may be issued only if the locational requirements or the corrective measures indicate that the landfill does not pose a serious environmental risk.

? *Schedule 2 paragraph 2* relates to measures to control leachate. Paragraph 2(1)(c) requires that appropriate arrangements are made to collect contaminated water and leachate. This requirement may not apply if a site specific risk assessment, based on the location of the site and the wastes to be taken, demonstrates that the landfill poses no potential hazard to the environment (paragraph 2(2)). Schedule 2 paragraph 2 does not apply to inert landfills.

? *Schedule 2 paragraph 3* consists of eight sub-paragraphs relating to the engineering of the site (for detailed interpretation of engineering aspects of Schedule 2 refer to Regulatory Guidance Note 6). Paragraph 3(8) allows the reduction of the requirements in sub-paragraphs (3) to (7) if a site specific risk assessment demonstrates that the landfill poses no potential hazard to soil, groundwater or surface water (with particular regard to the Groundwater Directive).

## 3 AGENCY POSITION STATEMENT ON LANDFILL LOCATION

The modification to the Policy and Practice for the Protection of Groundwater adopted by the Agency is as follows.

- The Agency will object to any proposed landfill site in groundwater Source Protection Zone I.
- For all other proposed landfill site locations, a risk assessment must be conducted based on the nature and quantity of the wastes, and the natural setting and properties of the location. Where this risk assessment demonstrates that active long-term site management is essential to prevent long-term groundwater pollution, the Agency will object to sites:
  - below the water table in any strata where the groundwater provides an important contribution to river flow or other sensitive surface waters;
  - on or in a Major Aquifer;
  - within Source Protection Zones II or III.

This statement replaces existing policies C3 and C4 of the Policy and Practice for the Protection of Groundwater.

## 4 INTERPRETING THE POSITION STATEMENT

This section describes the landfill locations to which the Position Statement refers. It sets out the situations where the Agency would object to planning applications for landfills by reason of the risks posed to the environment by their location. Section 5 of this note deals with the application of the Agency's Position Statement to an application for a PPC permit where the site has already received planning permission.

Where active long-term site management is essential to prevent long-term groundwater pollution there are three criteria listed in the Position Statement where the Agency would object to sites. These are:

1. Major Aquifers;
2. Source Protection Zones II and III; and
3. Sites below the water table (in any strata where the groundwater provides an important contribution to river flow or other sensitive surface waters).

**The Agency would object where any one of the three criteria is met.**

A flowchart which illustrates the decision framework for the landfill location Position Statement is shown in Figure 1.

### *4.1 Definition of some terms used in the Position Statement*

**Risk assessment**

This should be conducted in accordance with the Agency's guidance on Hydrogeological Risk Assessments for Landfills and the Derivation of Groundwater Control and Trigger Levels (Environment Agency 2002), which considers the risk presented by the landfill over its entire life. The risk assessment should be undertaken on the basis of the proposed risk management measures at the landfill i.e. the corrective measures (Schedule 2 paragraph 1(2) of the Landfill Regulations) which, for groundwater, will also be the technical precautions required by the Groundwater Directive. The risk assessment must consider the long-term degradation of these corrective

measures, in particular the leachate collection system, including the artificial sealing liner and any active groundwater management systems.

The hydrogeological risk assessment guidance adopts a tiered approach where the level of effort put into the risk assessment is proportionate to the complexity of the situation and the decisions that risk assessment will support. The level of detail required in the risk assessment will therefore differ at the different stages of a landfill proposal. The subsequent sections of this Note give guidance on the level (tier) of risk assessment which might be expected to support particular decisions. The criterion against which a risk assessment should be determined is that there should be *no likelihood of an unacceptable discharge from the site.*

The risk assessment needs to be of high quality and auditable, as the water protection part of it is included in the required reporting on implementation of the Landfill Directive to the European Commission. It should be noted that it is necessary to consider the engineering required to mitigate the risks posed by landfill gas as well as leachate before permitting a site. Hydrogeological risk cannot be considered in isolation and the interactions with landfill gas risk must be recognised.

**Active site management**
This should be taken to mean the infrastructure, operation and maintenance (i.e. the corrective measures) necessary to mitigate the environmental risk. With respect to water this refers to the control of water entry (e.g. groundwater pumping) and the collection (e.g. pumped leachate extraction), treatment and disposal of water and leachate. Although the term "passive measure" is not used in the Position Statement it is useful to consider what this means. Passive measures relate to the attenuation provided by the geological barrier and any other pollution mitigation processes that require no intervention or maintenance.

**Long-term**
This should be taken to mean throughout the aftercare period and up until completion and the surrender of the permit. This will be an undefined (and site specific) period which may extend for many decades until monitoring indicates completion has been reached. The Position Statement refers to "active long-term site management" i.e. it is the site management over the long-term which is important. This means that the collection and extraction of leachate to minimise leachate accumulation in the operational phase up to closure and capping is not the main concern. It is the active measures necessary to prevent groundwater pollution in the long aftercare period that are significant. The following are examples of active, long-term site management where they are essential to prevent groundwater pollution:

- the reliance on pumped extraction of leachate more than thirty years following closure;
- the pumping of groundwater to suppress the water table until the landfilled waste "stabilises".

Many active site management measures will degrade over time, resulting in a reliance on the geological barrier to provide long-term protection of the groundwater. The importance of the geological barrier in the prevention of long-term groundwater pollution is emphasised by the requirement in Schedule 2 paragraph 3 (2) of the Landfill Regulations; that groundwater is to be protected by the geological barrier combined with a top liner (i.e. a cap) during the aftercare period.

### *4.2 Source Protection Zone I*

Where the development of the conceptual model or risk screening identifies that the proposed landfill is situated inside a Source Protection Zone I then the Position Statement will be implemented. This applies to landfills for inert wastes as well as landfills for non-hazardous and hazardous wastes.

Source Protection Zones are defined in the Policy and Practice for the Protection of Groundwater (Environment Agency 1998), and shown on maps available at Environment Agency offices or via the Agency's website (www.environment-agency.gov.uk).

### *4.3 Nature of the Waste*

The Position Statement requires that for all proposed landfill site locations other than inside Source Protection Zone I, a risk assessment must be conducted based on the nature and quantity of the wastes, and the natural setting and properties of the location. This section considers the nature of the wastes.

Inert wastes are defined in the Landfill Regulations. Regulation 7(4)(c) provides that the total leachability and pollutant content of the wastes, and the ecotoxicity of the leachate produced, must be insignificant and in particular not endanger the quality of surface water or groundwater. Landfills for inert wastes can be considered as potentially suitable for any locations other than inside Source Protection Zone I. Inert landfills may be considered in sensitive locations provided the PPC permit ensures that strict waste acceptance procedures are put in place.

When considering the nature of waste, reference should be made to the Agency's guidance on Hydrogeological Risk Assessments for Landfills and the Derivation of Control and Trigger Levels. Landfills for hazardous and non-hazardous waste should be regarded as having the potential to produce leachate containing listed substances to which the Groundwater Directive would apply. The consideration of the presence of listed substances would normally take place at the risk screening stage.

### *4.4 Major Aquifers and Source Protection Zones II and III*

As well as the nature and quantity of wastes, the risk assessment must be based on the natural setting and the properties of the location. Major Aquifers and designated Source Protection Zones represent the areas of our groundwater resources that are critical to existing or future public water supplies. In these areas the Agency would normally wish to preserve the high quality of the groundwater immediately under a proposed landfill site. Risk screening should identify the Aquifer and Source Protection Zone designation.

#### *4.4.1 Circumstances Where A Major Aquifer Or Source Protection Zone III May Be A Suitable Landfill Location*

There may be cases where substantial, natural low permeability geological barriers overlie Major Aquifers or a Source Protection Zone III and where these would be sufficient to prevent long-term pollution and satisfy the requirements of the Groundwater Directive, after taking account of uncertainties in the longevity of artificial liners, leachate collection systems and other active long-term site management. This might for example occur where Major Aquifer designation is shown on the Groundwater Vulnerability Maps but the aquifer is actually known to be overlain by a

significant thickness of low permeability clay. For such circumstances to be taken into consideration, the following must apply:

- the site must be located outside any designated Source Protection Zone II; and
- the presence of the natural low permeability geological barriers should be demonstrated by site specific investigation; and
- the site must be above the water table where groundwater provides an important contribution to river flow or other sensitive surface waters (refer to section 4.6).

Where such natural geological barriers are shown to exist it must be demonstrated by quantitative risk assessment (Simple or Complex risk assessment) that they reduce the groundwater vulnerability by compensating for the *long-term* degradation of artificial sealing layers, leachate collection systems and other active management control systems. In some cases it may be appropriate to consider the natural geological barrier in conjunction with the artificially established mineral barrier component of a liner for this purpose.

*Note: The aquifer materials themselves will not normally be considered as forming part of a low permeability geological barrier when considering a proposed landfill on Major Aquifers or within Source Protection Zone III. A landfill in these locations is only potentially suitable where there is a separate natural low permeability geological barrier which is acting to protect the aquifer.*

In the Position Statement a simple distinction has been made between Major Aquifer or Source Protection Zones II & III and all other groundwater. There could however be areas designated on the Groundwater Vulnerability Maps as Major Aquifer where, according to the professional judgement of Agency hydrogeologists, circumstances of poor natural groundwater quality or geological structure mean that local significance to water resources is very limited. As an example, this might include areas of natural saline intrusion or where the strata involved only occupy a small isolated faulted block. These local circumstances in a Major Aquifer should be taken into consideration at the *Strategic Waste Planning* phase (Section 5.1) or a later phase, providing there is adequate evidence to justify this position and a decision should be supported by a quantitative risk assessment (Simple or Complex risk assessment)

*Note: The location of a landfill on a Major Aquifer due to poor groundwater quality must only be considered on the basis of the natural hydro-geochemistry and not poor quality due to existing landuse such as landfill.*

### *4.5 Minor Aquifers and Non-aquifers outside Source Protection Zones*

For both Minor Aquifers and Non-Aquifers outside Source Protection Zones[1] the impact of long term pollution should be considered on a site by site, risk assessment basis. This is to account for variability in the local significance of these formations for water supply in a wide range of strata with differing natural groundwater quality, hydraulic properties and ability to attenuate contaminants. In these locations it may be possible to place greater reliance on natural geological barriers and/or artificial mineral barriers for long term protection of groundwater, depending on the particular geological and hydrogeological circumstances. However, requirements to mitigate against the *long-term* degradation of artificial sealing layers and management control systems and to protect groundwater in accordance with the Groundwater Directive will need to be satisfied.

[1] Although infrequent, there are some circumstances where designated Source Protection Zones occur on Non-Aquifer.

There may be Minor Aquifer situations where groundwater resources have a particular local significance and a more precautionary stance is justified on the part of the Environment Agency. This means that where the consideration of the site specific risk justifies the action the Agency should object to landfill developments even though the location is not on a Major Aquifer or within Source Protection Zones II and III.

### *4.6 Sites Below The Water Table In Any Strata Where Groundwater Provides An Important Contribution To River Flow Or Other Sensitive Surface Waters*

Groundwater forms an integral part of the water cycle and to varying degrees it supports the baseflow of rivers; in some cases having a dominant influence on flows and quality, particularly in dry periods. Groundwater may also support sensitive ecological sites such as wetlands where small changes in quality or level could be detrimental.

It is clear that the Landfill Regulations indicate that sub-water table landfill development needs careful consideration. Particular attention needs to be paid to the risk of direct discharge and the implications with respect to the requirements of the Groundwater Directive.

Where not otherwise captured by the Major Aquifer or Source Protection Zone II or III criteria of the Position Statement, the Agency will object to sites below the water table in any strata where groundwater provides an important contribution to river flow or other sensitive surface waters.

For simplicity the general term *"water table"* has been used in the Position Statement. This should be taken to apply equally to a piezometric head within a confining layer over an aquifer where there is sufficient connectivity to the underlying aquifer to allow free flowing water to enter the landfill void. The aquifers concerned could include minor aquifers within low permeability strata such as glacial drift. The first consideration should be whether or not the underlying aquifer provides an important contribution to river flow or other sensitive surface waters. If so, the acceptance of the landfill development below the piezometric head level in an overlying confining layer will depend on site specific investigation and quantitative risk assessment (Simple or Complex risk assessment) demonstrating that the degree of connectivity to the aquifer is sufficiently low to prevent long term pollution.

Risk screening would normally identify whether the proposed landfill is below the water table and whether groundwater provides an important contribution to river flow or other sensitive surface waters.

Where geological barriers or other factors mitigate against the contribution of the groundwater to surface water the Agency is likely to require detailed risk assessment (Simple or Complex risk assessments) based on site-specific information.

The Position Statement uses the terms "important contribution" and "sensitive surface waters". The identification of such sites is necessarily a matter of site-specific professional judgement but in general the Agency should only identify sites as falling within these categories where the reasons for doing so are clear and transparent. The relevant factors to be considered in "important contribution" and "sensitive" include the following:

- proximity of the surface water;
- directness of the hydraulic connection;

- quality and quantity of both the groundwater and the receiving surface water;
- the consequences of the potential impact on the surface water quality;
- the consequences of the potential impact on the ecology of the surface water due to changes in quality or level.

For example some cases may arise from the close proximity to ecologically sensitive sites such as wetlands or rivers where there is direct continuity and sensitivity to quality or water level changes. In other cases, the close proximity of a river may raise concern about the potential for rapid or high volume flow connection or impacts on the headwaters to important, high quality catchments. The Agency would not wish to raise objections to sub-water table landfill developments on the basis of small scale, distant or trivial hydraulic connections or where natural geological barriers mitigate against the risk.

## 5 APPLYING THE POSITION STATEMENT

This section provides advice to Agency officers as to how they should apply the Position Statement in response to consultations on strategic waste planning or planning applications for landfill sites. It should be read in conjunction with the Protocol on Town & Country Planning agreed between the Agency and the Local Government Association. The Position Statement will be of interest to regional planning bodies, waste planning authorities and developers, as well as Agency staff. It should be noted that the Agency recognises the continuing role of landfill in helping to deliver the National Waste Strategy, albeit at a lower level than hitherto.

### *5.1 Strategic Waste Planning (Phase 1)*

Table 1 provides a link between the different phases of the regulatory process and the level of risk assessment at each stage.

The Agency seeks to influence the appraisal of options for new landfills, primarily through the development planning system. The Agency will contribute to the Development Plans for waste. This is an opportunity for the Agency to ensure that the policies and land use proposals of Waste Planning Authorities (WPA) take account of the Position Statement. This is particularly important as Section 54A of the Town and Country Planning Act 1990 requires that an application for planning permission or an appeal shall be determined in accordance with the Development Plan unless material considerations indicate otherwise.

Development Plans for waste should include/be based on an evaluation of:

- all waste management and disposal options in the plan area, to develop more sustainable waste strategies;
- the best locations for the necessary facilities, after the most appropriate options have been selected, and in the case of landfill sites, locations which satisfy the terms of the Position Statement.

The Agency will also provide strategic advice to regional planning bodies, waste and minerals planning authorities to ensure that due consideration is given to the Position Statement when considering landfill as a restoration option for minerals sites.

Development Plans for waste may use a combination of approaches to identify suitable landfill locations. These may include locational criteria, areas of search and site-specific proposals maps. The Agency should ensure that the Position Statement forms part of any environmental locational criteria so that landfills with a potential for the pollution of groundwater and surface waters are not sited in the sensitive locations identified in the Position Statement.

Where areas of search are used the Agency should, where feasible, provide constraint map details such that a risk screening (Phase 1 - Table 1) can be used to indicate areas where landfills should not be located. Development plans developed in this way should be sufficiently flexible to support landfill locations justified by quantitative risk assessment, even if they are outside areas of search (i.e. in the locations described in section 4.4.1).

Where site specific proposals are included in Development Plans they can only be supported by the Agency if a simple quantitative risk assessment (Phase 2A - Table 1) has been satisfactorily carried out, demonstrating that the Position Statement is unlikely to apply. It should be acknowledged that, over time, further information about the site may affect the Agency's view of the applicability of the Position Statement which may affect the Agency's consideration of an application for planning permission or a permit.

## *5.2 Planning Applications (Phase 2)*

### *5.2.1 Scoping Opinions*

The Agency must be consulted by planning authorities on all **Scoping Opinions** under the Environmental Impact Assessment (EIA) Regulations for new or significantly extended landfills (Phase 2A – Table 1).

In responding to such consultations the Agency will, as far as is feasible from the submitted details of the proposal, indicate the extent of the EIA needed to evaluate environmental risks relevant to the Agency at the planning application stage (Phase 2B – Table 1).

For sites within any of the areas listed in the Agency's Position Statement given in Section 3 above, the Agency will request that the WPA should make it clear in any scoping guidance provided to the applicant that a risk assessment compliant with Guidelines for Environmental Risk Assessment & Management (2000)[2] should be completed and submitted at the planning application stage, in accordance with relevant current Agency guidance.

### *5.2.2 Environmental Impact Assessments (EIA)*

When the Agency is consulted on applications for planning permission for new or significantly extended landfill sites (see Sections 5.4 and 5.5 for existing sites). The attention of the WPA should be drawn to the Position Statement. The risk assessment, in the form of an Environmental Statement, produced in support of the planning application must be sufficiently detailed to allow the Agency to clearly advise the WPA on the application of the Position Statement. The Agency should seek more information if the EIA is not sufficiently detailed. The Agency should object to the application if, having assessed risks, it is clear that the Position Statement applies, or if despite requests not enough information is available to show that the Position Statement does not apply.

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[2] Guidelines for Environmental Risk Assessment & Management (2000) ISBN 0-11-753551-6 The Stationery Office, London.

The Agency considers that EIAs should address all significant environmental risks, whether short, medium or long-term. In order to address these risks the EIA must consider the proposed operations of the landfill including the outline design of the proposed landfill engineering, leachate collection and other active site management. The Environmental Statement is likely to provide a quantitative risk assessment (normally a Simple risk assessment, see Table 1) which should be sufficient to identify whether the Position Statement applies to the proposed landfill.

**The Agency is likely to object to a planning application where the risk assessment shows that any of the criteria listed in the Position Statement apply.**

### *5.2.3 Planning Applications*

As outlined in Section 2 above, Regulation 5 of the 2002 Regulations states that a planning permission under the Town and Country Planning Act 1990 may be granted for a landfill **only** if the requirements of paragraph 1(1) of Schedule 2 to the Regulations have been taken into consideration. This includes the consideration of the distances to waterways and water bodies, the existence of groundwater and the geological or hydrogeological conditions. This requirement applies to applications that have not been determined before 15 June 2002, the date on which the Landfill Regulations came into force i.e. it applies to all outstanding applications.

**The granting of planning permission does not compel the Agency to grant a permit for a landfill site.**

There will be a number of applications for planning permission which have been made but have not been determined. The presumption is that the Position Statement should be applied to these current applications. Since the publication of the first version of Regulatory Guidance Note 3 in January 2002, the Position Statement on landfill location should have been applied to applications for planning permissions. Where RGN3 has not already been applied, and

- the planning application has not been determined by the Waste Planning Authority, then the Agency should write to the Waste Planning Authority informing them of the adopted Position Statement and how it applies to the application;
- the planning application has been refused and an appeal has been lodged, then Agency officers should seek legal advice.

### *5.2.4 Co-ordinated Permitting*

Where possible, the Agency encourages co-ordinated applications for planning permission and Pollution Prevention & Control (PPC) permits for a proposed facility. The making of both applications in parallel enables the development of the technical details of the proposal during the processing of the planning permission application and assists in ensuring that the impact assessments undertaken for the planning and PPC permits are undertaken within a consistent framework. However, there must be clarity between the WPA, the applicant and the Agency as to the scope and objectives of the respective assessments. The Agency will assist in the identification of overlaps in these assessments and liaise accordingly with the WPA and the applicant.

Where applications for a PPC permit and planning permission are being considered in parallel the hydrogeological risk assessment (usually a Complex risk assessment) submitted in support of the permit application can be used to determine whether the Position Statement applies to the planning application.

### *5.3 PPC Permits (Phase 3)*

The Position Statement on landfill location should be applied to PPC permit applications for new landfill facilities. The situation for existing sites is covered in Section 5.4 below.

Where an application for a PPC permit has been made but not yet determined then the Position Statement will be applied.

When it receives an application for a PPC Permit, the Agency is required to consider site-specific risks of pollution. The pollution risks from landfill sites to the environment in general and to groundwater in particular are, where the location and overall design is acceptable, controlled through conditions in a PPC permit. Schedule 2 paragraph 1(2) of the Landfill Regulations requires that a landfill permit may be issued if the characteristics of the site with respect to the requirements of paragraph 1(1) (the locational requirements) or the corrective measures to be taken indicate that the landfill does not pose a serious environmental risk. The Agency requires applications for PPC permits to include a robust hydrogeological risk assessment. This should include an assessment of the risk with its managed reduction through engineering and management controls (i.e. the corrective measures). **Such assessment must address the long-term viability of pollution control measures over the whole life of the proposed site, including any aftercare period and the consequences of site-specific failure scenarios.**

Consequently, in evaluating the applicant's risk assessment the Agency will consider *inter alia*:

- the identification of, and justification for, any reliance on the capacity of the geological environment for natural containment and/or natural attenuation of leachate sufficient to avoid groundwater pollution (in order to comply with the Groundwater Directive); and
- the demonstration of adequate facilities and full contingency planning for leachate treatment and disposal over the whole period of generation of potentially polluting leachates at the site.

The Agency envisages that an Environmental Statement written to the standards required for the Environmental Impact Assessment Regulations will constitute at least the starting point of the required risk assessment and, where appropriate, will form part of the permit application. This is more likely to be the case where the Agency has been consulted on the Scoping Opinion under these regulations and the Agency's advice has been taken. However, applicants should be aware that the risk assessment prepared for the planning application stage will probably need to be **extended and revised** to reflect the detailed engineering design and operation of the facility and to accommodate any changes brought about by conditions within the planning consent. The Agency guidance on conducting hydrogeological risk assessments for landfills addresses the specific requirements of the Groundwater and Landfill Directives and will help determine the appropriate level of risk assessment for the landfill.

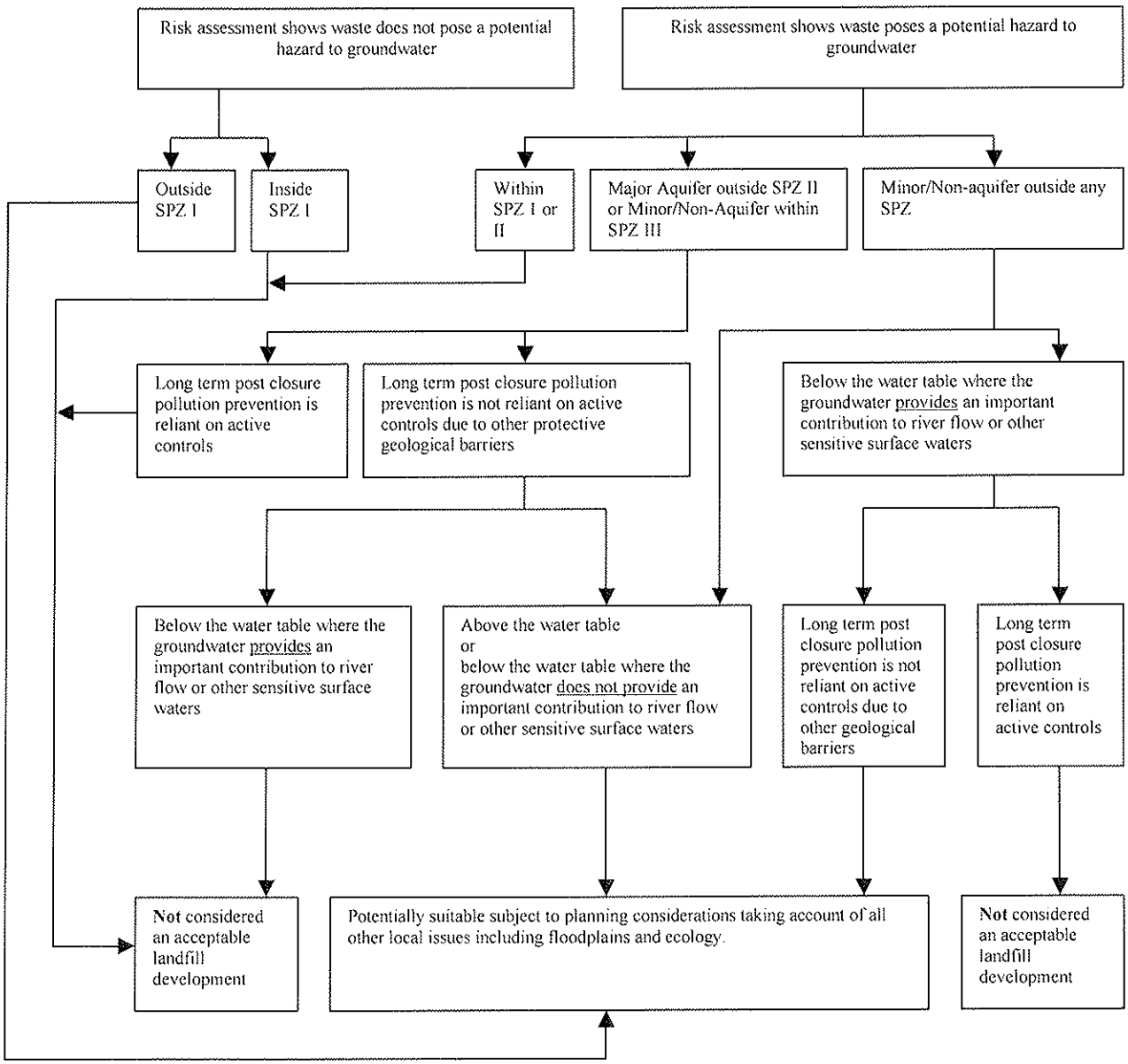
### *5.4 Existing Sites*

The Position Statement does not apply to those landfills which are existing landfills for the purposes of Schedule 4, paragraph 1 of the Landfill Regulations, i.e. those which were already in operation on 15 June 2002 or had not been brought into operation by that date, but the relevant authorisation (Licence or permit) was granted before that date. Regulatory Guidance Note 4 sets out guidance on determining the area of the existing landfill. The Agency is not required to apply Schedule 2 paragraphs 1(1) and (2) of the Landfill Regulations when granting a PPC permit for an existing landfill.

### 5.5 *Extensions to Existing Sites*

Any new areas (i.e. not already licensed or permitted on 15 June 2002) will not benefit from the transitional arrangements and therefore the Position Statement will be applied to applications for a PPC permit for those areas.

**FIGURE 1: FLOWCHART SHOWING THE DECISION FRAMEWORK OF THE LOCATION AND IMPACT ASSESSMENT OF LANDFILL SITES POSITION STATEMENT[3]**




[3] The flowchart must be read in conjunction with the text of this Note.

**Table 1: Relationships between the policy and site development, design & environmental risk assessment.**

| DEVELOPMENT PHASE | KEY ISSUES | RISK ASSESSMENT PHASE | ASSESSMENT TOOLS |
|---|---|---|---|
| **Strategic** e.g.:<br>- RPG<br>- Structure Plans<br>- Unitary Development Plans (Wales & some areas of England)<br>- Local Plans | Site location<br>Basic function (e.g. broad types of waste, overall capacity) | Risk Screening<br>*(identify major hazards and receptors)*<br>**PHASE 1**<br>Site-specific proposals should be dealt with as at Phase 2A below. | Maps of location of Major and Minor Aquifers (vulnerability maps) – eventually locations of "groundwater bodies" under the Water Framework Directive;<br>Catchment protection zones (e.g. Groundwater Source Protection Zone 3, Dee catchment); |
| **Pre-planning assessments** – screening and scoping assessments for Environmental Impact Assessment Regulations and specific locations in waste plans. | Fundamental elements of design and operation including leachate management. | Simple risk assessment on fundamental elements of design, construction and operation.<br>*(assess all pathways and impacts)*<br>**PHASE 2A** | As above, but all groundwater protection zones, mapped conservation areas etc.<br>Scoping guidance.<br>Risk assessment guidance and tools<br>Quantitative calculations using conservative input parameters and assumptions |
| ***Planning applications** | Operational principles, site layout, major construction elements e.g. type of landfill lining and leachate management. Initial design without benefit of planning conditions. | *Tiered risk assessment on major elements of design, construction and operation.<br>*(assess all pathways and impacts)*<br>**PHASE 2B** | Site specific assessment – site investigations, local mapping etc.<br>Risk assessment guidance and tools<br>Quantitative calculations using conservative input parameters and assumptions |
| ***Environmental authorisations** e.g. PPC permits. | Detailed design, finalised taking into account planning conditions, formal feedback from Agency etc. | *Tiered risk assessment on detailed design, construction and operation elements.<br>*(assess all pathways and impacts)*<br>**PHASE 3** | Site specific assessment etc. as above.<br>Typically stochastic solutions of analytical or numerical models (e.g. LandSim 2)<br>Guidelines for Environmental Risk Assessment & Management.<br>Guidance on Hydrogeological Risk Assessments for Landfills and the Derivation of Groundwater Trigger Levels |

* Planning applications and environmental authorisations may be progressed in parallel.