Interim SEPA Technical Guidance Note
Closure Procedures for Landfill Sites currently operating under Waste Management Licences

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1. Introduction

1.1 This guidance document has been prepared with reference to the Landfill (Scotland) Regulations 2003 (the regulations) and applies to landfill sites described under Part A (a) of Section 5.2 of Part 1 of Schedule 1 of the Pollution Prevention and Control (Scotland) Regulations 2000 (the 2000 regulations) and currently operating under waste management licences. Separate guidance will be provided for landfill sites not previously regulated under waste management licences.

1.2 The document provides guidance on the principal steps to be taken and the timescales to be met for closure at landfill sites under the regulations. This is for the use of SEPA officers and may be provided to operators, consultants and designers as guidance to SEPA's requirements. SEPA Interim Technical Guidance Note on 'Capping For Landfill Sites' provides further guidance to the steps required to establish the standard of capping for closed sectors.

1.3 The guidance provides a general framework for closure at landfill sites. The requirements for closure at each landfill must be considered on a site specific basis. If required, further advice on these issues can be sought from the Landfill Directive Implementation Team.

1.4 The term 'authorisation' is used in this document to mean either a Waste Management Licence or a PPC permit. The term ' sector' is used in this document to refer to different parts (including cells and phases) of a landfill site which are subject to different controls and may be delineated both horizontally and vertically within the site.

2. Summary

2.1 Landfill sites which have been operational since 16 July 2001 are subject to the provisions of the regulations.

Operators of such landfill sites are required to submit site conditioning plans to SEPA detailing their intentions in relation to such sites.

Where SEPA decides, on reviewing a site conditioning plan, that there is a reasonable prospect of a landfill site meeting the relevant requirements of the regulations , SEPA shall serve notice on the operator specifying the period within which an application for a permit must be made under the 2000 regulations (a PPC permit).

2.2 Where SEPA decides, on reviewing a site conditioning plan, that there is no reasonable prospect of a landfill site meeting the relevant requirements of the regulations, SEPA shall ensure closure of the landfill takes place as soon as possible.

2.3 In practical terms, SEPA shall serve notice requiring operators of such sites to submit closure proposals within a specified period. These notices will also specify the date after which waste must not be accepted at the site, which will be no later than 30 October 2007, as existing installations must operate in accordance with the technical requirements of the Integrated Pollution Prevention and Control Directive (and correspondingly the Landfill Directive) by this date. SEPA intends to give operators who failed to make any case for compliance in a site conditioning plan an opportunity to recover the situation after the service of a closure notice, subject to operators confirming in writing that they will "**take appropriate measures to comply with the requirements of the Directive**". Where appropriate, SEPA will consider withdrawing closure notices and issuing permit application notices for the sites in question.

2.4 After the specified date for waste acceptance to cease, only wastes which are not subject to the regulations may be accepted at the site - for example, suitable inert waste for the purposes detailed in Regulation 4 of the regulations such as restoration, or waste accepted subject to one of the exemptions specified in Schedule 3 of the Waste Management Licensing Regulation 1994.

2.5 Where an operator proposes to accept wastes at a landfill after 30 October 2007 (other than the wastes specified above), such deposits will be subject to the regulations and will require to be carried out under a PPC permit for the landfill activity.

2.6 Landfill sites which are closing may complete capping after 30 October 2007 subject to site specific, time limited conditions of a waste management licence but may not continue to accept waste subject to the regulations after this date. Non compliant sectors of landfill sites remaining open under PPC permits may

complete capping after 31 March 2007 subject to site specific, time limited conditions of a PPC permit.

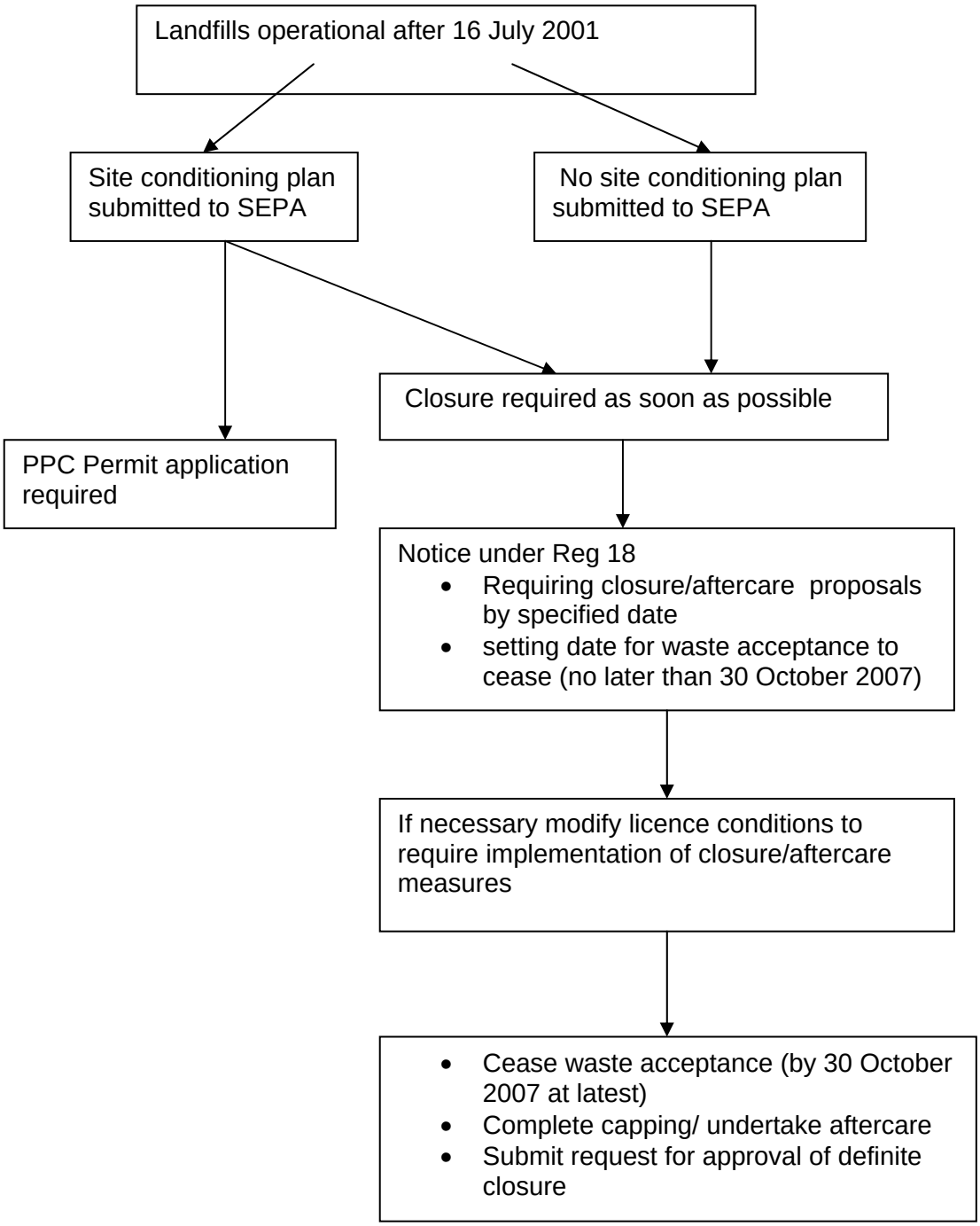
3 Background

3.1 The closure of landfill sites will take place in a phased process leading up to a point where the operator informs SEPA that the site is ready for definite closure and submits closure reports to SEPA. The site will only be considered to be definitely closed once SEPA has assessed the reports, inspected the site, and notified the operator in writing that closure is approved.

3.2 Where an operator failed to submit a site conditioning plan by 11 April 2003, the existing waste management licence shall cease to authorise the disposal of waste and SEPA will require to proceed with the process of closing the site until a site conditioning plan is submitted and SEPA agree to consider it.

3.3 Existing landfill sites which have been operational since 16 July 2001 will require to achieve full compliance with the requirements of the regulations by 31 March 2007 where a PPC permit is required, or by 30 October 2007 where the site operator has not been required to submit a PPC permit application by SEPA. In practice operators will require to cease importing waste subject to the regulations by 30 October 2007 at the latest, unless a PPC permit has been granted authorising the continued import of such waste.

Summary Flow Diagram



4 Closure requirements

4.1 The ultimate effect of the legislative provisions is to require that all landfills and sectors of landfills that do not comply with the regulations close as soon as possible. Non compliant sectors of landfill sites required to apply for PPC permits must cease to import waste for disposal in such sectors by 31 March 2007 and will be required to cap such sectors as soon as possible and site specific, time limited conditions of the PPC permit will ensure that appropriate capping and pollution control measures are put in place as soon as possible.

4.2 Landfill site operators not required to apply for PPC permits will be required to cease importing waste subject to the regulations by 30 October 2007 at the latest, and to cap such sectors as soon as possible and site specific, time limited conditions of the waste management licence will ensure that appropriate capping and pollution control measures are put in place as soon as possible.

4.3 Landfill site operators not required to apply for PPC permits who opt to complete capping of a landfill site by importing waste not subject to the regulations, may continue to import such wastes after 30 October 2007 and site specific, time limited conditions of the waste management licence will ensure that appropriate capping and pollution control measures are put in place as soon as possible.

4.4 Four examples are provided in Appendix A of the commonly expected scenarios at landfill sites. These are:

1. Landfill sites continuing to operate after 31 March 2007 under a PPC permit
2. Landfill Sites Closing before 30 October 2007
3. Landfill Sites Closing before 30 October 2007 with capping completed by inert waste imported after this date;
4. Landfill sites intending to remain operational after 30 October 2007 to complete capping with non inert waste imported after this date (PPC permit required by 31 March 2007).

4.5 Once the landfill has been closed to landfill operations and the capping and pollution control measures are in place the operator will require to submit a ‘closure’ report to SEPA. The requirements for a closure report are set out in Appendix B of this guidance note. It is only once SEPA has assessed the closure report and carried out a final on-site inspection, finding all matters to be satisfactory, that definite closure can be approved by SEPA (NB definite closure is not the surrender of the licence).

4.6 It should be noted that the requirement to obtain SEPA’s agreement to ‘definite

closure' applies to all sectors of existing landfill sites which continued to operate after 16 July 2001. In most cases it is likely that the standards of closure/ capping and aftercare of previously completed sectors will be appropriate, however the onus is on the operator to demonstrate this.

4.7 Where standards of closure, capping and aftercare are insufficient, works may be required in order to ensure compliance with the regulations. It is possible that the monitoring requirements for previously completed sectors may require to be reconsidered in light of the requirements of Schedule 4 of the regulaions. This includes, where possible, setting trigger limits and control values in the groundwater to guard against pollution. Guidance on this aspect is given in SEPA document 'Hydrogeological risk assessment and the derivation of control and trigger levels.'

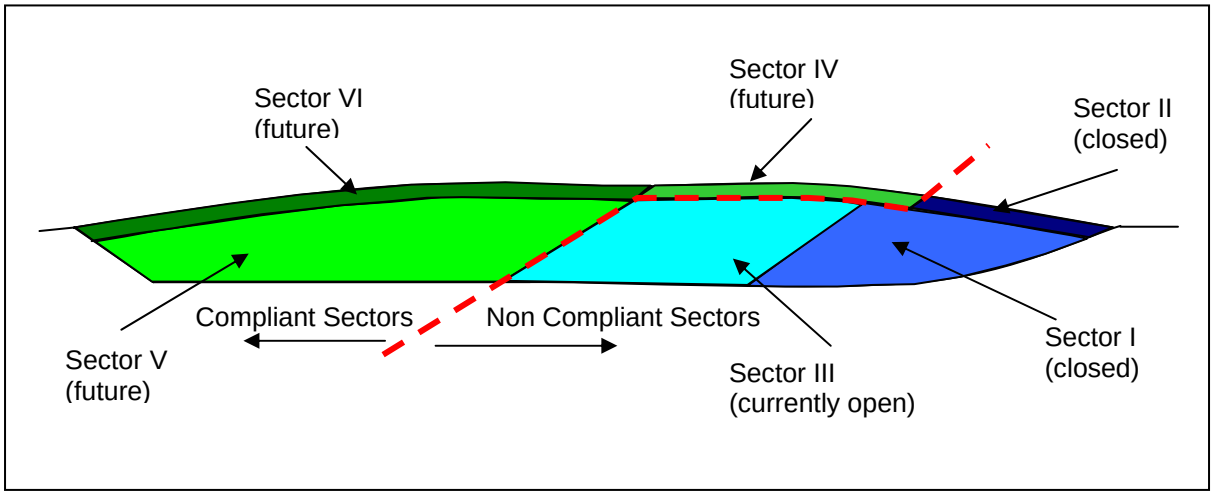
4.8 In some cases, operators may wish to close, or be required to close their sites before the waste has reached the final levels specified in the existing planning permission. In such circumstances the operator should be advised to discuss the matter with the relevant Planning Authority. Should the Planning Authority decide that the site must be completed in accordance with the permission, it will be for the operator to determine how this is to be achieved in the first instance. Operators proposing to close sites under these circumstances are advised to discuss their intentions with SEPA and the Planning Authority at the earliest opportunity.

4.9 Regardless of whether or not a Planning Authority approves an amendment to an agreed restoration profile, the terms of the regulations will require to be complied with. It will not be possible for a site to breach the requirements of the regulations on the basis of having to achieve a planning profile. Operators will be required to modify their operations in order that the requirements of the regulations are adhered to.

4.10 Where a PPC permit is required, planning consent for the proposed activity is a prerequisite to the issue of a PPC permit, and operators should be advised to ensure that the planning status of the site is clarified in relation to the ongoing deposit of waste at the site.

Appendix A: Examples of sectors of closure

Example 1: Landfill site continuing to operate after 31 March 2007 under a PPC permit (PPC Permit)

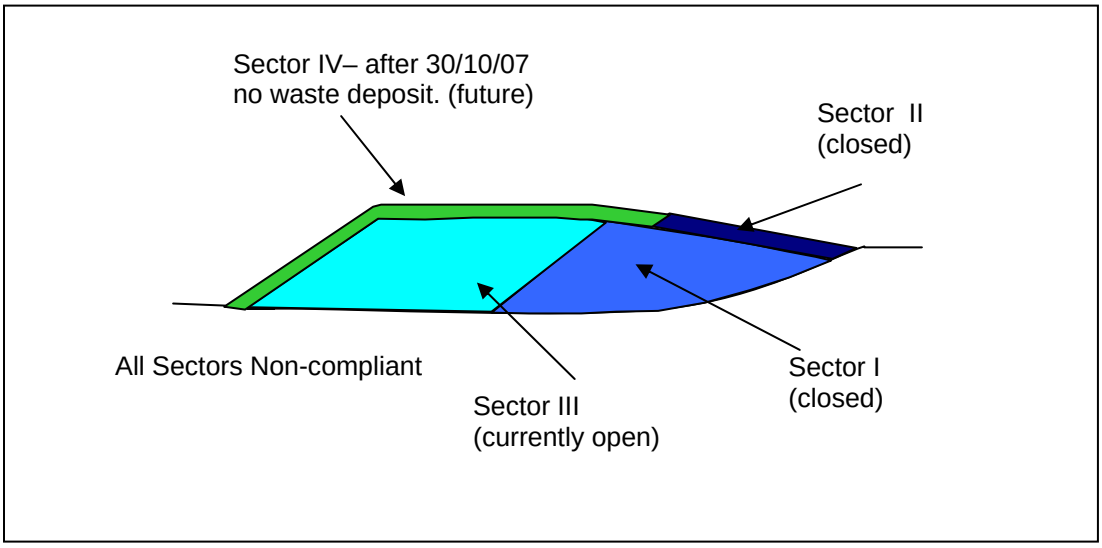


(Cross-section of landfill site - as at 11 April 2003)

Sector	Description of Status
I	Deposit of waste in this sector has ceased and capping measures and pollution control systems are in place. Permit conditions will require no further waste deposit and will implement closure and aftercare requirements. Operator will be required to demonstrate standards of closure takes account of the guidelines in the regulations.
II	Forming of the capping layer in this sector has ceased, pollution control systems are in place and the sector is grassed. Permit conditions will require no further waste deposit and will implement closure and aftercare requirements. Operator will be required to demonstrate standards of closure takes account of the guidelines in the regulations.
III	Deposit of waste in this sector is ongoing. This sector will require to be closed as soon as possible in accordance with the regulations (no later than 31 march 2007). This will require capping and pollution control systems to be put in place.

IV	Forming of the capping layer by deposit of suitable waste in this sector has yet to be undertaken. In order that waste may be accepted to this sector the standards must comply with the requirements of the regulations. This will require a risk based design demonstrating that deposit may continue and that such activities comply with the regulations. Consideration will require to be given to the constraints of operating this sector (i.e. stability, integrity of capping system, continued management control of underlying closed sector). This sector would require to comprise of waste that posed no potential hazard and would, itself, not require further capping.
V	Future sector which must comply fully with the requirements of the regulations. This may involve the construction of a suitable lining system over the existing waste deposits 'piggybacking' where there is an overlap between existing and future sectors. For sectors piggybacked over closed deposits the operations should be such that the integrity of new lining system is ensured particularly with respect to settlement. In addition the integrity of the pollution control and management systems of the closed sector must be retained. The piggybacking should be designed in-order to retain the ability to continue the management of the closed sector. It is anticipated that for this reason that piggybacking will be limited in extent and primarily used when a new sector overlaps with a side slope flank of a closed sector.
VI	Future sector which must comply fully with the requirements of the regulations. Forming of the capping layer by deposit of suitable waste (e.g. inert wastes, topsoil) in this sector has yet to be undertaken. In order that waste may be accepted to this sector the standards must comply with the requirements of the regulations. This will require a risk based design demonstrating that deposit may continue and that such activities comply with the regulations. Consideration will require to be given to the constraints of operating this sector (i.e. stability, integrity of capping system, continued management control of underlying closed sector). This sector would require to comprise of waste that posed no potential hazard and would, itself, not require further capping.

Example 2: Landfill Sites Closing before 30 October 2007 (Waste Management Licence)

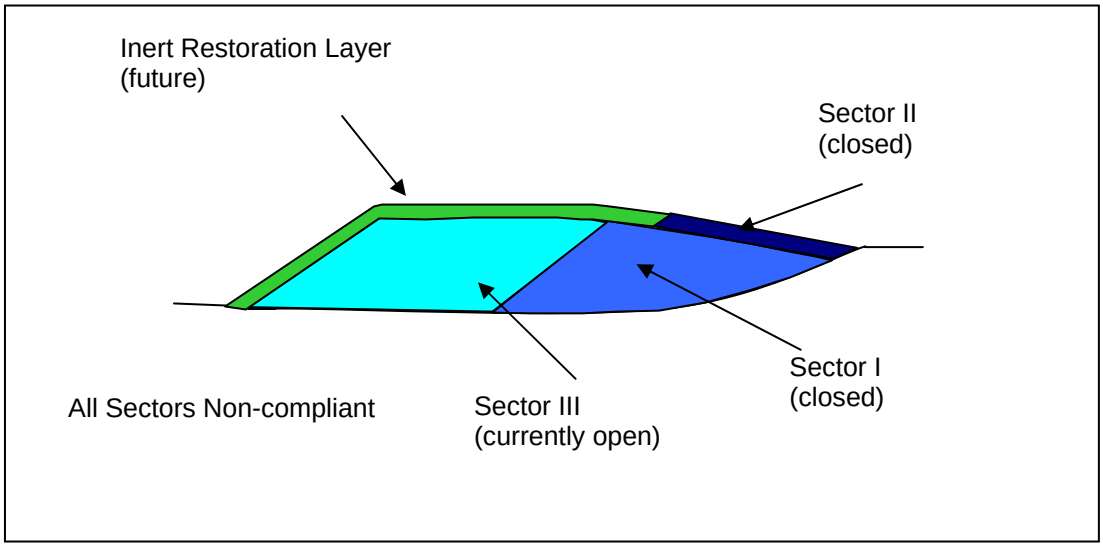


(Cross-section of landfill site as at 11 April 2003)

Sector	Description of Status
I	Deposit of waste in this sector has ceased and capping measures and pollution control systems are in place. No further waste deposit will be permitted in this phase. Licence may require to be varied to ensure this and to implement closure and aftercare requirements. Licence holder will be required to demonstrate standards of closure takes account of the guidelines in the regulations.
II	Forming of the capping layer by deposit of suitable waste in this sector has ceased, pollution control systems are in place and the sector is grassed. No further waste deposit will be permitted in this phase. Licence may require to be varied to ensure this and to implement closure and aftercare requirements. Licence holder will be required to demonstrate standards of closure takes account of the guidelines in the regulations.
III	Deposit of waste in this sector is ongoing. This sector will require to be closed as soon as possible in accordance with the regulations (no later than 30 October 2007). This will require capping and pollution control systems to be put in place. Licence may require to be varied to implement closure and aftercare requirements.
IV	Forming of the capping layer by deposit of suitable waste in this sector has yet to be undertaken. No waste may be accepted after specified date (no later than 30 October 2007). This sector will require to be closed as soon as possible in accordance with the regulations. Licence may require to be varied

	to implement closure and aftercare requirements. Licence holder will be required to demonstrate standards of closure takes account of the guidelines in the regulations. Definite closure of site should follow as soon as possible.

Example 3: Landfill Sites closing before 30 October 2007 with restoration by suitable inert waste after this date.
(Waste Management Licence)

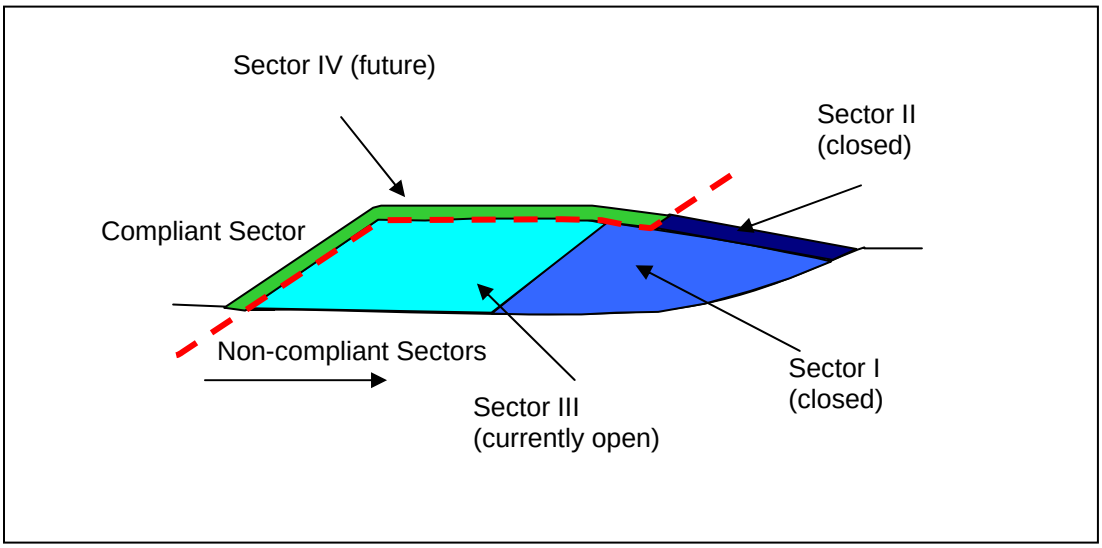


(Cross-section of landfill site as at 11 April 2003)

Sector	Description of Status
I	Deposit of waste in this sector has ceased and capping measures and pollution control systems are in place. No further waste deposit will be permitted in this sector. Licence may require to be varied to ensure this and to implement closure and aftercare requirements. Licence holder will be required to demonstrate standards of closure takes account of the guidelines in the regulations.
II	Forming of the capping layer by deposit of suitable waste in this sector has ceased, pollution control systems are in place and the sector is grassed and restored. No further waste deposit will be permitted in this sector. Licence may require to be varied to ensure this and to implement closure and aftercare requirements. Licence holder will be required to demonstrate standards of closure takes account of the guidelines in the regulations.
III	Deposit of waste in this sector is ongoing. This sector will require to be closed as soon as possible in accordance with the regulations. This will require capping and pollution control systems to be put in place. Licence may require to be varied to implement closure and aftercare requirements.
Inert Restoration layer	Forming of the restoration layer by deposit of suitable inert waste in this sector has yet to be undertaken. The regulations do not apply to the use of suitable inert waste for restoration (Regulation 4 (b)). The import of such inert waste to a landfill will still however require to be carried out under the provisions of a waste management licence. Consideration will require to be given to the constraints of placing this restoration layer (i.e.

	stability, integrity of capping system, continued management control of underlying closed sector). This sector would require to comprise of waste that posed no potential hazard and would, itself, not require further capping. The principal constraint of this approach is that inert waste excludes topsoil and it may be difficult to establish appropriate vegetative cover on inert waste. Either existing on-site topsoil would be required to provide a growing layer or this would require to be imported from a non-waste source or under an appropriate exemption under the Waste Management Licensing Regulations 1994.

Example 4: Landfill Sites intending to remain operational after 30 October 2007 to complete capping with non inert waste imported after this date (PPC permit required by 31 March 2007)



(Cross section of landfill site as at 11 April 2003)

Sector	Description of Status
I	Deposit of waste in this sector has ceased and capping measures and pollution control systems are in place. No further waste deposit will be permitted in this sector. Permit conditions will require to ensure this and to implement closure and aftercare requirements. Operator will be required to demonstrate standards of closure takes account of the guidelines in the regulations.
II	Forming of the capping layer by deposit of suitable waste in this sector has ceased, pollution control systems are in place and the sector is grassed and restored. No further waste deposit will be permitted in this sector. Permit conditions will require to ensure this and to implement closure and aftercare requirements. Operator will be required to demonstrate standards of closure takes account of the guidelines in the regulations.
III	Deposit of waste in this sector is ongoing. This sector will require to be closed as soon as possible in accordance with the regulations (i.e. no later than 31 March 2007). This will require capping and pollution control systems to be put in place. Permit will require to implement closure and aftercare requirements.
IV	Forming of the capping layer by deposit of suitable waste in this sector has yet to be undertaken. It is only the use of inert waste under Reg 4(b) of the regulations that is exempt from the requirements of the regulations. Therefore in order that non-inert waste may be accepted to this sector the standards must comply with the requirements of the regulations. This will require a risk based design demonstrating that deposit may continue and that such activities comply

	with the regulations. Consideration will require to be given to the constraints of operating this sector (i.e. stability, integrity of capping system, continued management control of underlying closed sector). This sector would require to comprise of waste that posed no potential hazard and would, itself, not require further capping.

Appendix B

Closure Report for submission to SEPA

B. 1 As part of the closure procedure, in order for a site to be regarded as definitely closed the operator will require to submit "such reports as may be required by SEPA" for assessment.

B. 2 The information to be provided in the 'closure report' must describe and be sufficient to confirm:

- the capping and pollution control measures that are in place
- that the conditions of the authorisation (Waste Management Licence or PPC permit) are complied with
- that the infrastructure and procedures are in place for monitoring (ie landfill gas, leachate, groundwater, surface water and stability/ settlement),
- that procedures are in place for reporting any significant environmental effects during the aftercare period.

B. 3 Plans and drawings of the site will need to be submitted. The location of any monitoring infrastructure (boreholes, wells, survey locations, etc.) should be identified.

B. 4 The operator will need to provide a final level survey as a baseline. Further surveys during the aftercare period will need to be undertaken to confirm settlement rates.

B. 5 For sites where monitoring for landfill gas, leachate, groundwater and surface water is already required by the conditions of the authorisation, these conditions will persist. The operator will need to comply with them until such time as these conditions are modified or SEPA accepts surrender of the authorisation.

B. 6 For sites where monitoring conditions do not exist, authorisation conditions will need to be varied to include environmental monitoring in accordance with Schedule 4 of the regulations. Guidance for monitoring is provided in the SEPA guidance on the monitoring of landfill, leachate, groundwater and surface water.

B. 7 The amount and design of monitoring required at sites should be based on an assessment of the risk the site poses to the local environment. One of the objectives of monitoring should be to collect the information likely to be required to support an application to surrender the authorisation.

B. 8 In the closure report the operator should detail the monitoring protocol for the site in accordance with Schedule 4 of the regulations. It may be that a monitoring protocol has already been agreed but this may need to be amended in accordance with the requirements of Schedule 4.

B. 9 The closure report should include a procedure for inspection and maintenance and the operator's method for recording and reporting such inspections during the aftercare period. The operator will need to maintain the infrastructure and inspect and report on the site to ensure that monitoring and abstraction points are not damaged or falling into disrepair. The efficiency of the landfill gas abstraction systems will need to be regularly checked (Schedule 4, Table 1, suggests monthly during the operational phase and six-monthly during the aftercare period). Suggested rates of checking during the aftercare period may need to be increased for sites which continue to produce significant quantities of gas. Inspections should include the cap where present, possibly by measuring fugitive gas emissions.

B. 10 Existing authorisation conditions may not require the operator to notify SEPA of significant environmental effects. Conditions may need to be varied, where necessary to ensure that such provision is included in the authorisation. For groundwater quality the trigger levels to be reported in accordance with Schedule 4, paragraph 5 of the regulations will be used as the basis for reporting significant environmental effects. The appropriate control/ trigger level will be included in the varied authorisation.

B. 11 Table 1 gives examples of the information which the Operator should provide in support of their proposal to close. However the information required will vary between sites. Operators should discuss with SEPA the exact scope of necessary submissions on a site specific basis.

Table 1

		Details
1.	Site Plan	Identifying capped sectors and monitoring infrastructure.
		Capping and pollution control measures
		Compliance with WML/PPC conditions
2.	Level Survey	Plan of site to identify final landform. Consideration to the effects from settlement and stability will be required.
3.	Monitoring	Current locations identified on a site plan, including monitoring infrastructure and survey points.
		Definition of the monitoring protocols in place
		Aftercare inspection of site by operator include capping, monitoring infrastructure, site security, gas and leachate management, unauthorised deposits etc
4.	Reporting	Inspection, environmental and stability data including protocols for reporting monitoring data, site survey data, etc
		Reporting Significant Effects. Proposal for control/trigger levels (if not already in place) and the mechanism for reporting exceedance of trigger levels

Legal References

Landfill (Scotland) Regulations 2003
Pollution Prevention and Control (Scotland) Regulations 2000
Pollution Prevention and Control Act 1999
Integrated Pollution Prevention and Control Directive (96/61/EC)
Landfill Directive (1999/31/EC)
Waste Management Licensing Regulations 1994