SEPA
Scottish Environment Protection Agency
Buidheann Dìon Àrainneachd na h-Alba

Land contamination and impacts on the water environment consultation

November 2020

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1 Overview

The Scottish Government is consulting on a framework for *Protecting Scotland's groundwater from pollution*. The consultation proposes revised environmental standards, greater clarity about the circumstances where remediation of land contamination is required and an improved approach to prioritising areas of for remedial action.

To align with the proposals SEPA has revised the guidance, *Land contamination and impacts on the water environment*, which is set out below.

It is recommended that you read the Scottish Government consultation prior to reading this guidance. This will allow you to understand the changes being proposed by the Scottish Government before reading the more detailed guidance.

2 Why is SEPA consulting?

The key concepts and associated questions regarding groundwater standards and land contamination are set out in the Scottish Government consultation document. To help industry and other interested stakeholders further understand the detail of the proposed approach SEPA has updated the guidance, *Land contamination and impacts on the water environment*. Your views are sought on several issues set out in the document and associated appendices. We will use your views to produce a revised version of this guidance.

How to respond

You can respond to this consultation online. As our offices are currently closed, please do not mail your response. You can email your responses on the proposal to groundwater@sepa.org.uk

Responses should be submitted to us by 12 February 2021.

Q1. What is your name? (optional)

Q2. What is your email address? (optional)

Q3. What is your interest in our consultation? (optional)

3. Introduction

3.1 Background

Land contamination is a legacy of historical land use across Scotland. It can pose a serious risk to the quality of our rivers, streams and groundwater and the people, businesses and ecosystems who depend on it.

Contaminants can be present in soil as a result of leaks, spillages, historical deposition of industrial by-products, reclamation of land using anthropogenic material, historic waste disposal activities and deposition from the atmosphere. Contaminants can then enter the water environment and affect a receptor by a variety of routes.

SEPA and other public bodies have a responsibility to work with third parties such as landowners and developers to ensure this pollution is remediated. By doing so we can protect and enhance Scotland's environment and help communities and businesses thrive within the resources of our planet.

Whilst all the aforementioned soil sources represent land contamination only some give rise to ‘Contaminated Land’ as defined by the legislation.

The primary legislation in relation to Contaminated Land is contained in Part IIA of the Environmental Protection Act[1] (EPA90). The regime is subject to further regulations and statutory guidance in the form of:

- The Contaminated Land (Scotland) Regulations 2000 (SSI 2000 No.178) and its amendments

[1] which was inserted by section 57 of the Environment Act 1995

- The Statutory Guidance: Edition 2, prepared by the Scottish Government, which provides the detailed framework for the operation of the regime.

In Part IIA 'Contaminated Land' has a specific definition in relation to the water environment. Contaminated Land is identified where significant pollution of the water environment is being caused or there is a significant possibility of such pollution being caused.

Whilst Part IIA provides a legislative mechanism for identifying Contaminated Land, much land contamination is addressed through the planning regime during the development process. This avoids the need for Part IIA to be triggered.

In conjunction with this advice, Planning Advice Note 33 (PAN33) provides guidance on the development of sites with historic land contamination.

Scottish local authorities are the lead regulator for both Part IIA and the planning regime. SEPA also has several duties and responsibilities. These roles, responsibilities and interactions are laid out in Section 4 of this guidance.

3.2 Purpose

This document:

- provides a brief overview of legislation, roles and interactions in relation to historic land contamination and the water environment.
- sets out SEPA's approach to the risk assessment of impacts on the water environment from land contamination:
  - a) in relation to Part IIA.
  - b) in relation to planning and development.
- summarises remediation requirements and considerations in relation to the Part IIA and planning and development regimes.

This document can be used by SEPA staff and third parties such as local authorities and environmental professionals. It provides an overview and acts as a pointer to other references.

3.3 Scope

This document is only applicable in Scotland. It considers impacts on the water environment from chemical contaminants as a result of historic land contamination.

It does not cover radioactive substances in the water environment under Part IIA. It also does not cover the risks to human health other than via a drinking water abstraction route.

It should be read in conjunction with the relevant SEPA supporting technical and policy guidance which is signposted throughout the document.

Readers may also need to refer to other publications for details on specific aspects relating to any individual site. Third parties should always seek their own advice on matters of legal as well as technical interpretation.

4. Roles and responsibilities

When it comes to looking after our water environment both SEPA and local authorities have key roles and responsibilities**. However, it is the role of site owners/operators to clean up their sites where and when required without prompting from the regulator.**

4.1 Water Environment and Water Services (Scotland) Act 2003 (WEWS)

The Water Environment and Water Services Act is about protecting and improving Scotland's water environment. These aims are delivered through the River Basin Management Planning (RBMP) process[2].

[2] This is facilitated through the Water Environment (River Basin Management Planning: Further Provision) (Scotland) Regulations.

SEPA lead and co-ordinate RBMP in Scotland. As part of this process responsible authorities (which include local authorities) must implement RBMP measures, so far as they may be applicable, when exercising their designated functions. Such functions include Planning and Part IIA of EPA90.

This means that there are several interactions between the requirements of Planning, Part IIA and WEWS. SEPA and local authorities have complementary roles and responsibilities in relation to these.

4.2 Planning and development

Issues of pollution of the water environment associated with land contamination in relation to re-development are considered by the planning authority. They will consult as required including within their local authority and, if the local authority sees fit, they will consult with SEPA in accordance with agreed consultation routes.

4.3 Part IIA

Scottish local authorities are the lead regulator dealing with land contamination under Part IIA. They are responsible for assessing and identifying land as contaminated and are responsible for securing the remediation of such land. Land is identified as Contaminated Land if substances in, on or under that land result in:

- significant harm being caused, or a significant possibility of such harm being caused; or

- significant pollution of the water environment being caused, or a significant possibility of such pollution being caused. [Part IIA section 78A(2)]

The decision as on whether significant pollution is occurring rests with local authorities. When making a determination regarding significant pollution of the water environment local authorities are obliged to consult with and adopt an approach consistent with that of SEPA.

SEPA is responsible for securing remediation of Contaminated Land that has been designated a special site. Special sites are particular categories of Contaminated Land, the descriptions of which are laid out in the Contaminated Land (Scotland)

Regulations 2000 (as amended). In relation to the water environment, special sites are those which are causing or are likely to cause a water body to be at less than good status or results in an increased level of treatment for an existing drinking water supply to ensure it is suitable for use, and to comply with the requirements of Council Directive 98/83/EC on the quality of water intended for human consumption.

Q4. Do you think we have clearly described the roles and responsibilities?

5. Legislative requirements and interactions

5.1 Planning and development

Frequently the most logical and timely opportunity to address pollution of the water environment is when a site is being redeveloped. The vast majority of land contamination is remediated through this route.

As a responsible authority under WEWS, the local authority is required to implement certain requirements of the Water Environment (River Basin Management Planning: Further Provision) (Scotland) Regulations 2013 when discharging its duties through planning. Where a water pollution assessment is being conducted for purposes other than assessment of Contaminated Land under Part IIA, such as through the planning regime or voluntary remediation, the assessment by the relevant party e.g. a developer, of the impact that contamination is having on the water environment should include the following:

- Whether hazardous substances are entering groundwater above the relevant standard (see Appendix 1);
- Whether surface water or groundwater pollution is being caused (see Appendix 1 and 2).

Q5. Appendix 1, Table 2 sets out the assessment criteria. Is it clear and helpful?

Q6. Appendix 2 sets out how to assess impacts on surface waters. Is it clear and helpful?

Further, Planning Advice Note 33 (PAN 33) indicates that where there are unacceptable risks to human health or the environment, land remediation will be required before the new use commences. It highlights that it is the responsibility of the developer to undertake an adequate risk assessment of a site, and to propose measures to ensure that these risks are appropriately addressed. This avoids the scenario where land is identified as Part IIA after completion of the development, which is in the interests of the developer. In relation to the water environment, the trigger for a site to be identified as Part IIA land relates to the term 'significant pollution of the water environment (see 5.2 below).

SEPA's approach to assessing the impacts on the water environment in the context of planning and development is set out in Section 6. Consideration of remediation requirements in set out in Section 7 of this guidance.

5.2 Part IIA

The concept of significant water pollution is important as it is one of the two reasons for land being formally identified as Contaminated Land by a local authority.

Contaminated Land is defined as:

"any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land that:

- significant harm is being caused or there is a significant possibility of such harm being caused; or
- significant pollution of the water environment is being caused or there is a significant possibility of such pollution being caused"

Pollution in relation to the water environment is defined by WEWS as the direct or indirect introduction, as a result of human activity, of substances or heat into the water environment, or any part of it, which may give rise to any harm[3]. The measures of

[3] and "harm" means a)harm to the health of human beings or other living organisms; b)harm to the quality of the water environment, including; i)harm to the quality of the water environment taken as a whole; ii)other impairment of, or interference with, the quality of aquatic ecosystems or terrestrial ecosystems directly

significant pollution are set out in A.46 of the Part IIA Statutory Guidance and are reproduced in Appendix 4 of this document.

SEPA considers pollution to be significant where contamination is entering or is likely to enter the water environment at a level sufficient to cause exceedance of an appropriate statutory or operational standard to trigger significant pollution as set out in Appendix 1[4]. In summary, SEPA's interpretation of the statutory guidance is that the following to represents significant pollution:

- Breach of the pollution standard for existing abstractions, for surface waters and for groundwater dependant terrestrial ecosystems.
- Breach of the status standard for future groundwater resources.

This interpretation reflects the purpose of Part IIA as a regime designed to capture the most pressing and serious problems first.

Section 6 of this guidance sets out SEPAs approach to assessing these measures and Section 7 outlines remediation standards and considerations.

Q7. We think that changing the description of "significant pollution" in relation to the future groundwater resource will only have a minor impact on the number of sites that will be designated as Part IIA Contaminated Land. Do you agree?

5.3 Other legislation

There may be other regulatory regimes that might apply during remedial works. Land remediation and waste management guidelines provide further details.

depending on aquatic ecosystems; c)offence to the senses of human beings; d)damage to property; or e) impairment of, or interference with, amenities or other legitimate uses of the water environment.

[4] If a standard is exceeded this is sufficient to make the formal determination of Contaminated Land and further individual assessment of other measures of significant pollution in the Statutory Guidance is not necessary. If a standard is not, or will not be, exceeded then pollution would not be assessed as significant based on any of the other measures of significant pollution listed in the Statutory Guidance.

6. Assessment of impact on the water environment

It is important to distinguish the difference between assessing the degree of impact on the water environment and the subsequent deriving of remedial targets. This section deals with the former. For information on remediation standards see Section 7.

6.1 Undertaking a risk assessment

To assess the degree of impact a risk assessment is first required. In line with industry good practice, SEPA recommends a staged approach to undertaking this assessment. This should identify whether any water environment receptor is being or could be impacted**.**

Firstly, the owner/developer should undertake an adequate site characterisation ensuring that all the types of raw data listed in the checklist in Appendix 5 are included in any submission. This data is required by the regulator to see if these assessments are satisfactory.

> Q8. In Appendix 5 we have produced a list of the raw data we would wish to see in support of a site assessment. Do you think this list is helpful? Is there anything missing?

Potential pollutant linkages should be identified and described in a Conceptual Site Model. The development of a Conceptual Site Model is discussed in detail in a number of other reference documents and British Standards (see References section of this document) and is not discussed further here.

It is important to note that for the purposes of Part IIA the source of any potential pollutant linkage must meet the two following criteria:

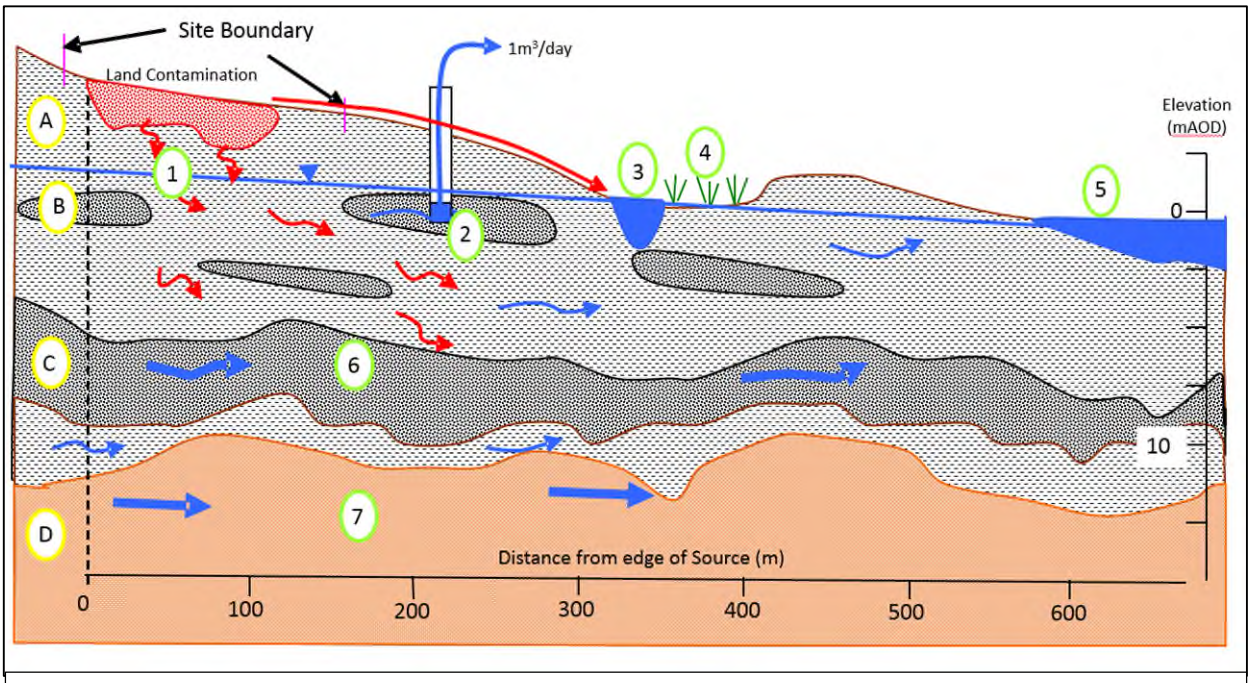
i. Substances must be present in, on, or under land; and

ii. Substances must be entering, have the potential to continue to enter or be likely to enter the water environment.

Figure 1 provides a diagrammatic summary of some key potential pollutant linkages.

The more confidence there is in the site conceptual model and the site data provided to back up the conceptual model, the greater confidence there will be in reaching any decision regarding the degree of impact on the water environment.

Figure 1: Summary of key potential pollutant linkages



Key

A:	Low productivity superficial deposits. Not future groundwater resource but pathway to other receptors.
B:	High productivity superficial deposits of limited spatial extent. Not future groundwater resource but pathway to other receptors.
C:	High productivity superficial aquifer capable of supplying 10 m^3/d. Future groundwater resource.
D:	Bedrock aquifer. Future groundwater
1:	Groundwater
2:	Existing abstraction
3, 5:	Surface water
4:	GWDTE
6, 7:	Future groundwater resource

6.2 Assessing the degree of impact

The risk assessment should assess the degree of impact on the water environment as set out in table 1 taking into account any risk management arrangements that are in place.

Table 1: Assessing the degree of impact on the water environment

<table>
<tr><th>Degree of Impact Being Assessment</th><th colspan="3">Regime/Part IIA designation</th><th>Receptor</th></tr>
<tr><td rowspan="2">Input of hazardous substances to groundwater</td><td rowspan="11">Planning</td><td rowspan="3"></td><td rowspan="11"></td><td>Groundwater*</td></tr>
<tr><td>Surface waters via a groundwater pathway</td></tr>
<tr><td rowspan="5">Groundwater pollution</td><td>Future groundwater resource</td></tr>
<tr><td rowspan="9">Part IIA significant pollution</td><td>Current abstractions</td></tr>
<tr><td>Groundwater dependent wetlands</td></tr>
<tr><td>Surface waters</td></tr>
<tr><td>Surface water pollution</td><td>All surface waters</td></tr>
<tr><td rowspan="4">Less than good status or results in an increased level of treatment for an existing drinking water supply</td><td rowspan="4">Part IIA “ Special Site”</td><td>Future groundwater resource</td></tr>
<tr><td>Current abstractions for human consumption in drinking water protected areas.</td></tr>
<tr><td>Surface water bodies subject to classification</td></tr>
<tr><td>Groundwater dependent wetlands designated as Natura 2000 or SSSI sites</td></tr>
</table>

Establishing if there is entry of a hazardous substance or pollution of surface or groundwater are relevant to planning (and voluntary remediation) in relation to the requirements of the WEWS Act and the Water Environment (River Basin Management Planning: Further Provision) (Scotland) Regulations 2013.

Establishing if any linkage is resulting in, or could result in, significant pollution of the water environment (SPWE) or the significant possibility of significant pollution of the water environment (SPSPWE) is relevant where a site is being considered under Part IIA. When a site is being considered under planning PAN33 states “It is in the developer's interests to ensure that development of the site will not result in designation as Contaminated Land under Part IIA” i.e. that any linkage is not resulting in, or could not result in, significant pollution of the water environment (SPWE) or the significant possibility of significant pollution of the water environment (SPSPWE).

As highlighted in Section 5.2, SEPA considers significant pollution to be where there is a:

- breach of the pollution standard for existing abstractions, for surface waters and for groundwater dependant terrestrial ecosystems.
- breach of the status standard for future groundwater resources.

Refer to Appendix 1 for criteria on how to assess this. In some cases, assessors may become aware of actual impacts upon the water environment prior to undertaking such an assessment. For example, impacts on the status of a water body may have been identified through the River Basin Planning process. If it can be demonstrated that the land in question is, or there is a significant possibility that it is, causing a water body to be at less than good status, then this would also represent evidence of significant pollution.

Establishing if the site is resulting in, or is likely to result in a water body being at less than good status or causing an increased level of treatment for an existing drinking water supply is required to:

- determine if a site could be a Part IIA Special Site.

- help determine the degree of impact a site is causing or is likely to cause. This can help in deciding the remediation required.

Q9. This section explains how to assess the impact of a site on the water environment. Do you think this section is clear? Is there anything missing?

7. Remediation

7.1 Planning and development or voluntary remediation

In relation to the water environment, the WEWS Act, in conjunction with the Water Environment (River Basin Management Planning: Further Provision) (Scotland) Regulations 2013, requires that measures be taken to prevent a deterioration in status and to restore the water body status to good. It also requires that all measures be taken to prevent entry of hazardous substances into groundwater and limit entry of non-hazardous substances.

Further, any remedial work should aim to ensure that significant pollution of the water environment is no longer occurring or is not likely to occur and therefore the site would not trigger identification as Contaminated Land under Part IIA.

SEPA recognise that it may not always be feasible to achieve these aims. As such, there are some circumstances where this requirement may be relaxed: for example, where entry of hazardous substances cannot be prevented either because the measures would increase risks to human health or the environment as a whole or would be disproportionately costly. In these cases, some more limited remediation will normally be required. Appendix 3, which is based on WAT-PS-10-02, but also considers impacts on surface waters, sets out the environmental objectives that should be aimed for and relevant considerations when setting remedial targets.

Q10. Appendix 3 states that SEPA expects the remediation of the sources of groundwater hazardous substances as far as practicable. Do you agree with our definition of sources?

Q11. Appendix 3 sets out our expectations for remediation to address impacts on the future groundwater resource. Do you agree with our proposals?

Q12. In Appendix 3 we state that where the impact is on groundwater resources we will normally expect remedial action to prevent expansion of the plume or an upward trend in concentration at the source and to secure a long term downward trend in contaminant concentration such that the groundwater resource will be restored to good status within an agreed reasonable timescale. Do you think we should provide detail on what a reasonable timescale is?

In scenarios where it is not considered feasible or proportionate to achieve certain environmental standards, the local authority must record the site details in such a way as these can be supplied to SEPA on request.

Q13. The Scottish Government have consulted on whether a record of any residual land contamination should be kept. Give us your views on the practical content and logistics of this register.

SEPA will respond to local authority consultation requests regarding remediation of water pollution in complex situations or if the site is causing or likely to cause significant pollution or the water environment.

Appendix 3 summarises the environmental objectives that should be aimed for and relevant considerations when setting remedial targets.

7.2 Part IIA

Local authorities have a duty to secure remediation of land identified under Part IIA as Contaminated Land, and SEPA has the same duty for Special Sites.

Chapter C of the published Statutory Guidance deals with the remediation of Contaminated Land. The Statutory Guidance sets out the aims of any remediation and provides that in evaluating the seriousness of any significant pollution of the water environment the enforcing authority should consider:

1. whether the significant pollution of the water environment is already being caused;
2. the likelihood of the significant pollution of the water environment being caused;
3. the nature of the significant pollution of the water environment involved with respect, in particular, to:
    i. the nature and importance of the water environment which might be affected,
    ii. the extent of the effects of the actual or likely significant pollution on that water environment, and
    iii. whether such effects would be irreversible; and
4. the context in which the effects might occur, in particular:
    i. whether the water environment has already been polluted by other means and, if so, whether further effects resulting from the pollution would materially affect its condition, and
    ii. the relative risk associated with the pollution in the context of wider environmental risks.

Any remedial work should ultimately aim to ensure that significant pollution is no longer occurring or that it is not likely to occur and should remedy the effects of any significant pollution that has already occurred. In addition, Section C.17 of the Part IIA Statutory Guidance highlights that it is open to the appropriate person to carry out remediation on a broader basis than this, if they consider it in their interests to do so. For example, a remediation strategy may incorporate further WEWS or human health requirements in order to ensure the land is ‘development ready’. For further information on WEWS requirements and environmental objectives see Appendix 1

The standard of remediation that can be required under Part IIA of the Environmental Protection Act 1990 depends on what can be regarded as reasonable, having regard to the cost likely to be involved, the benefit that would result, the seriousness of the pollution and the best practicable remediation techniques. Appendix 3 provides some broad guidelines to help this assessment.

Where it is not reasonable under Part IIA to require remediation for all or some significant pollutant linkages, or just part of a particular linkage, a remediation declaration will be issued by the enforcing authority. Enforcing authorities are required to place remediation declaration particulars on their public register.

Q14. Do you think the guidance is clear and easy to read?

Q15. Is there sufficient information in the guidance to enable you to undertake or review an assessment and inform a decision on the action?

8. References

Environment Act 1995. Available from Her Majesty's Stationery Office.

Environmental Protection Act 1990. Available from Her Majesty's Stationery Office.

The Contaminated Land (Scotland) Regulations 2000. SSI 2000 No.178. http://www.opsi.gov.uk/legislation/scotland/ssi2000/20000178.htm *As amended by:* The Contaminated Land (Scotland) Regulations 2005. SSI 2005 No.658. http://www.opsi.gov.uk/legislation/scotland/ssi2005/20050658.htm

The Scottish Executive. Environmental Protection Act 1990: Part IIA Contaminated Land Statutory Guidance: Edition 2. May 2006. Paper SE/2006/44. http://www.scotland.gov.uk/Publications/2006/06/05131212/0

The Scottish Executive Development Department, Planning Advice Note 33: Development of Contaminated Land. http://www.scotland.gov.uk/Publications/2000/10/pan33

Scottish Environment Protection Agency (SEPA) Position Statement [WAT-PS_10] "*Assigning groundwater assessment criteria for pollutant inputs*"

Scottish Environment Protection Agency (SEPA) Supporting Guidance (WAT-SG-53) Environmental Standards for Discharges to Surface Waters
http://www.sepa.org.uk/water/water_regulation/guidance/pollution_control.aspx

Scottish Environment Protection Agency (SEPA) WAT-SG-11: Modelling Discharges to Coastal and Transitional Waters.

https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/

The Scottish Government, The Scotland River Basin District (Standards) Directions 2014
https://www.gov.scot/binaries/content/documents/govscot/publications/regulation-directive-order/2014/08/scotland-river-basin-district-standards-directions-2014/documents/00457867-pdf/00457867-pdf/govscot%3Adocument/00457867.pdf

9. Further information sources

BRITISH STANDARDS INSTITUTION. BS10175:2011 Investigation of Potentially Contaminated Sites – Code of Practice.

BRITISH STANDARDS INSTITUTION. BS 5930:2015+A1:2020. Code of Practice for ground investigations.

CL:AIRE https://www.claire.co.uk/home this sites provides lots of useful information on land contamination.

Technical Guidance for England and Wales
https://www.gov.uk/government/collections/land-contamination-technical-guidance

Appendix 1: Assessment Criteria

Degree of Impact Being Assessment	Part IIA classification		Receptor	Spatial Assessment Rules	Assessment Concentration	Assessment Statistic
Input of hazardous substances to groundwater			Groundwater less than 400 m depth below ground level and which is located inland of the mean high water springs tidal limit and groundwater below 400m below ground level or below mean high water springs if there is a pathway for contaminants to reach surface ecosystems.	Assessed at the base of unsaturated zone[5] (more than 50 m from surface water body)[3]	Hazardous substance input value (>50m)[6]	Annual average
			Surface waters via a groundwater pathway	Assessed at the base of unsaturated zone (within 50 m of surface water body)[3]	Hazardous substance input value (<50m)[3]	Annual average
Groundwater pollution			Future groundwater resource	Standard exceeded over 1 hectare[7]	Threshold value[3]	Annual average
			Current abstractions	Assessed in abstraction prior to treatment	Use-based standard[8]	Maximum
			Groundwater dependent wetlands	Assessed in the wetland	Wetland standard or other SEPA agreed standard	Annual average
			Surface waters	Assessed in surface water following mixing	Environmental quality standard or other SEPA agreed standard[9]	Annual average
Surface water pollution			All surface waters	Assessed in surface water outwiith the mixing zone	Environmental quality standard or other SEPA agreed standard [8]	
Less than good status or results in an increased level of treatment for an existing drinking water supply	Part IIA significant pollution	Part IIA " Special Site"	Future groundwater resource	Hazardous substances exceed standard over 20 hectares[10] Non-hazardous substances exceed standard when averaged across groundwater body	Threshold value[3]	Annual average
			Current abstractions for human consumption in drinking water protected areas.	Assessed in abstraction prior to treatment	Drinking Water Standard plus upward trend in concentrations[11]	Maximum
			Surface water bodies subject to classification	Assessed in surface water following mixing taking into account spatial and temporal rules[12]	Environmental quality standard or other SEPA agreed standard[13]	Annual average
			Groundwater dependent wetlands designated as Natura 2000 or SSSI sites	Assessed in the wetland	Wetland standard or other SEPA agreed standard	Annual average

Table 2: Assessment Criteria

[5] Dilution in groundwater must not be taken into account. Sources below the water table should be assessed at the point of entry to groundwater.
[6] See WAT-PS-10-02 Assigning Groundwater Assessment Criteria for Pollutant Inputs
[7] In scenarios where surface recharge is not the dominant control on the groundwater flow regime (e.g. groundwater at >30m depth in hard rock terranes), an alternative site-specific assessment area capable of supporting a flow of $10m^3/d$ may be proposed for consideration by SEPA.
[8] If abstracted water is used for multiple uses, then the most stringent use-based standard will apply.
[9] See WAT-SG-53 Environmental Standards for Surface Waters
[10] In scenarios where surface recharge is not the dominant control on the groundwater flow regime (e.g. groundwater at >30m depth in hard rock terranes), an alternative site-specific assessment area capable of supporting a flow of $200m^3/d$ may be proposed for consideration by SEPA.
[11] As per UKTAG Paper 11b(i).
[12] As set out in Schedule 4 of The Scotland River Basin District (Standards) Directions 2014. See also Annex A3.3.4.
[13] See Standards Directions for spatial and temporal standards. Note that, although there are also intermittent standards for BOD, DO and ammonia, impacts from land contamination are unlikely to be intermittent or be predicted to be intermittent with any confidence

Appendix 2: Assessing impacts on surface waters

A2.1 Rivers

To assess current and predicted impacts on rivers the following approach should be followed:

Step 1: Are contaminants from the site entering or likely to enter a river?

Step 2: Are contaminants contributing to a river being polluted or a risk of it being polluted?

- Are the concentrations of relevant contaminants in the surface water downstream of the site above the environmental standard? If so, considering upstream concentrations, is this likely to be due to the contaminant inputs from the site? Note that the groundwater baseflow route or other flow paths needs to be considered when deciding what is “downstream”. For example, this might not occur immediately adjacent to the site; or
- Considering low flow conditions (Q95) and upstream concentrations is there a risk that contaminants from the site could result in the environmental standard being exceeded downstream of the site once fully mixed?

Step 3: Are the contaminants contributing to a river water body being at poor status or a risk that it will deteriorate in status?

- Is the river a classified water body[14] and is there any sampling evidence to suggest that the extent of an environmental standard exceedance extends beyond the spatial limits[15]? or

[14] Is the surface water shown on https://www.sepa.org.uk/data-visualisation/water-environment-hub/

[15] The Scotland River Basin District (Standards) Directions 2014 https://www.gov.scot/binaries/content/documents/govscot/publications/regulation-directive-order/2014/08/scotland-river-basin-district-standards-directions-2014/documents/00457867-pdf/00457867-pdf/govscot%3Adocument/00457867.pdf

- Is the river a water body? If so, considering the increase in flow (and additional dilution) as the surface water moves downstream and any attenuation that will occur, is it likely that the spatial extent of the impact will be greater than the spatial limits?

  Note, that impacts on SEPA monitoring points in rivers should not necessarily be used to determine status impacts e.g. an impacted monitoring point 100m downstream of an area of land contamination should not, on its own, be used to determine if a site is causing less than good status.

A2.2 Lochs

To assess current and predicted impacts on lochs the following approach should be followed:

Step 1: Are contaminants from the site entering or likely to enter a loch?

Step 2: Are contaminants contributing to a significant[16] area of the loch exceeding the standards?

Step 3: Are contaminants contributing to the spatial standard in a loch being exceeded:

- Is the loch a classified water body[17] and is there any sampling evidence to suggest that the extent of an environmental standard exceedance extends beyond the spatial limits[18]? or

- Is the loch a classified water body? If so, is it likely that the spatial extent of the impact will be greater than the spatial limits? For example a simple screen could be carried out to determine if the load of contaminants entering the loch

[16] This can be considered to be an area greater than or equal to $100x100x\pi$ m^2
[17] Is the surface water shown on https://www.sepa.org.uk/data-visualisation/water-environment-hub/
[18] The Scotland River Basin District (Standards) Directions 2014 https://www.gov.scot/binaries/content/documents/govscot/publications/regulation-directive-order/2014/08/scotland-river-basin-district-standards-directions-2014/documents/00457867-pdf/00457867-pdf/govscot%3Adocument/00457867.pdf

is sufficient to exceed the spatial standard when mixed in a volume of water equivalent to the areal spatial standard.

A2.3 Coastal and Transitional Waters

To assess current and predicted impacts on coastal and transitional waters the following approach should be followed:

Step 1: Are contaminants from the site entering or likely to enter a coastal or transitional water?

Step 2: Are contaminants contributing to a coastal or transitional water being polluted or a risk of it being polluted?

- Follow SEPA Guidance WAT-SG-11: Modelling discharges to coastal and transitional waters.

Step 3: Are the contaminants contributing to a coastal or transitional water body being at poor status or a risk that it will be at poor status?

- Is there any sampling evidence to suggest that the extent of an environmental standard exceedance extends beyond the spatial limits[19]? or
- Is it likely that the spatial extent of the impact will be greater than the spatial limits? For example a simple screen could be carried out to determine if the load of contaminants entering the coastal or transitional water is sufficient to exceed the spatial standard when mixed in a volume of water equivalent to the areal spatial standard.

[19] The Scotland River Basin District (Standards) Directions 2014 https://www.gov.scot/binaries/content/documents/govscot/publications/regulation-directive-order/2014/08/scotland-river-basin-district-standards-directions-2014/documents/00457867-pdf/00457867-pdf/govscot%3Adocument/00457867.pdf

Appendix 3: Remedial targets

SEPA expects that the following broad principles be adhered to when determining the remediation would be either reasonable, having regard to the cost likely to be involved, the benefit that would result, the seriousness of the pollution and the best practicable remediation techniques Compliance with the hazardous substances and pollution assessment criteria can only be relaxed if measures to achieve the criteria are disproportionately costly or would increase the risks to human health or the quality of the environment as a whole.

SEPA expects the following action:

- Remediation of the sources of groundwater hazardous substances as far as practicable. Sources are considered to include tanks and associated pipework or other underground infrastructure or services containing hazardous substances, free product non-aqueous phase liquids, and soil containing leachable concentrations that could result in groundwater pollution.

- Where inputs of groundwater hazardous and non-hazardous substances are causing groundwater or surface water pollution, source management to break the pollutant linkage will normally be required unless a detailed assessment demonstrates that measures to achieve the objectives are disproportionately costly or would increase the risks to human health or the quality of the environment as a whole.

- Action to prevent deterioration in status. This only applies where deterioration has not yet occurred or to prevent further deterioration of status. This can’t be relaxed based on grounds of disproportional cost, risks to human health or the quality of the environment as a whole. This could include action to control inputs from contaminated soil and/or remedial action within a water body e.g. pump and treat or permeable reactive barrier.

- Where land contamination has already caused a water body to be at less than good status action should be taken to restore it to good status provided this is not infeasible or disproportionately costly. In these cases as much improvement as possible should be sought. This could include soil remediation, groundwater remediation such as bioremediation, permeable reactive barriers or sediment management where this is required to remedy the impact on a surface water. Where the impact is on groundwater resource we will normally expect remedial action to prevent expansion of the plume or an upward trend in concentration at the source and to secure a long term downward trend in contaminant concentration such that the groundwater resource will be restored to good status within an agreed reasonable timescale. Any proposals for remediation that will not meet this objective must be supported by a detailed cost benefit assessment.

- Action should be taken to prevent or remedy impacts on nature sites or drinking water supplies as a priority. Deviation from this requirement will not normally be permitted.

Appendix 4: Statutory guidance description of significant pollution

Paragraph A.46 of the Statutory Guidance provides that when determining whether pollution of the water environment is "significant pollution of the water environment" for the purposes of section 78A(2)(b)", the local authority shall have regard to the flowing seven measures of significant pollution. Paragraph A.46 containing the seven measures is reproduced below.

- Whether there is a breach of, or failure to meet, any statutory quality standard for the water environment at an appropriate pollution assessment point. In the absence of any suitable UK or EU standard, other international standards can be used where demonstrated to be appropriate;

- Whether there is a breach of, or a failure to meet, any operational standard adopted by SEPA for the protection of the water environment;

- Whether the pollution results in an increased level of treatment for an existing drinking water supply to ensure it is suitable for use and to comply with the requirements of Council Directive 98/83 /EC on the quality of water intended for human consumption. The potential for an increased level of treatment must also be considered for future use in drinking water protected areas as defined in sections 6 and 7 of the Water Environment and Water Services (Scotland) Act 2003;

- Whether the pollution results in an increased level of pre-treatment of water abstracted for industrial purposes;

- Whether the pollution results in:

- deterioration in the status of a water body or failure to meet good status objectives, as defined in the Water Framework Directive 2000/60/EC; and/or

- the failure of a Protected Area to meet its objectives, as defined in the Water Framework Directive 2000/60/EC

- Whether there is a significant and sustained upward trend in the concentration of pollutants in groundwater being affected by the land in question;

- Whether there is a material and adverse impact on the economic, social and/or amenity use associated with a particular water environment.

It is SEPA's view that if the assessment criteria for significant pollution are met, as set out in Appendix 1, then the objectives set out here are met.

Appendix 5: List of the types of raw data to be included in submissions to SEPA

A5.1 This checklist lists the types of basic raw data which must be included in submissions to SEPA relating to the site characterisation of land contamination in support of the interpretation of risks to the Water Environment. This covers submissions made in respect of both the Planning and Development Control and Part IIA regimes.

A5.2 This checklist is for owners, developers or consultants to use to help ensure that adequate information is included in any submission. It is also for SEPA staff to use as an initial screening tool prior to passing on any submission to more specialist SEPA staff. The aim is to streamline the review process and reduce unnecessary delays resulting from requests for essential basic data missing from report submissions.

A5.3 The owner/developer should undertake site characterisation and risk assessment in line with this and other appropriate guidance e.g. Local Authority and SEPA guidance on 'Land contamination and development management', CLR11 and BS 10175: Investigation of potentially contaminated sites – code of practice and BS 5930: Code of practice for ground investigations.

A5.5 In addition, the owner/developer should ensure that all the types of raw data listed in the checklist below are included in any submission. This data is required by the owner/developer to undertake adequate site characterisation and risk assessments and is needed by SEPA to see if these assessments are satisfactory.

A5.6 Without the information included in the checklist below SEPA cannot initiate any review of the submission and will suggest re-submission in a form that will satisfy our checklist requirements. In light of this we would recommend that the checklist is completed, in full, prior to its submission and, where

appropriate, information deficiencies resulting only from ongoing 'phased' investigations are suitably highlighted for our attention.

A5.7 Once, the checklist information has been provided and a full review is undertaken by SEPA staff it may become apparent that additional information is required (for example, modelling of the impact that the contamination is having on the water environment or further boreholes in more appropriate locations). In this case this further information will be requested by SEPA.

General Details	
Site Name	
NGR of centre of site	
Plan showing location of site boundary	Yes/No
Developer/owner	
Local Authority	

Raw Data Required	**Included?** Add section/page ref
Previous Work	
1. References of previous reports.	Yes/No
Source of contamination	
2. Accurate site investigation plans showing the location and depth of any sources of any contamination including, the location of spills, leaks, discharges, working/storage areas and tanks and pipes. Details of the type of contamination should be marked against each area.	Yes/No
3. Accurate site investigation plans with locations of exploratory holes from current and historical investigations e.g. boreholes, trial pits, window samples. These should be clearly labelled on a map/plan.	Yes/No

Raw Data Required	Included? Add section/page ref
Receptors	
4. Location of potential receptors. This should include groundwater, surface waters, wetlands (including if they are groundwater fed) and abstractions (including the location of authorised abstractions (via SEPA) and private water supplies (via Local Authorities)).	Yes/No
Hydrogeology	
5. Methods used for forming exploratory holes, for example boreholes, trial pits, window samples.	Yes/No
6. Trial pit logs; elevation must be surveyed with reference to Ordnance Datum (mAOD).	Yes/No
7. Borehole logs, including construction details such as casing depth, screened/open intervals, method of sealing borehole annulus, position of water strikes or seepage, and details of the strata thickness and nature of geological units. Details of any cores/sample taken for testing. Borehole elevation should be surveyed with reference to Ordnance Datum (mAOD).	Yes/No
8. Groundwater levels for individual boreholes in metres below ground level (mbgl) AND metres above Ordnance Datum (mAOD) with reference location, response zone and date/time.	Yes/No
9. Water levels for surface water features included in the site conceptual model (in metres above Ordnance Datum (mAOD)).	Yes/No
10. Results of any in situ or laboratory testing such as hydraulic conductivity testing. This should include the method statements, raw data and interpreted results. The date, location and depth of any testing or sampling should be provided.	Yes/No
11. Identification of preferential flow pathways; natural geological conditions and man-made structures such as drainage, utility ducts and mine-workings.	Yes/No
Soil and Groundwater Quality Monitoring	
12. Environmental quality monitoring (soil, ground gas and vapour, leachability tests & water environment); sampling details including sample reference information, date, depth & strata and results. Sufficiently low limits of detection must be employed within the laboratory analyses to enable comparison of data against appropriate assessment criteria. All relevant original data should be included e.g. sample records and laboratory certificates.	Yes/No

Raw Data Required	Included? Add section/page ref
13. Field observations (thickness, visual and olfactory) of non-aqueous phase liquids (NAPL) (including location e.g. BH1 and date).	Yes/No

Table 3: Raw data to be included in submissions to SEPA

Notes:

Investigation design, logging and sampling techniques should be carried out in accordance with current codes of practice, such as

- BS 10175: Investigation of potentially contaminated sites – code of practice
- BS 5930: Code of practice for ground investigations