DRAFT Exemption risk assessment

Small-scale ex situ groundwater treatment as part of a groundwater remediation scheme

The Environment Agency produces risk assessments for all new and amended exemptions. These list the potential risks and specify the measures required to manage them.

The assessment of each risk comprises the following components:

- information about the source, pathway and receptors – and the potential harm to those receptors
- an assessment of the level of risk and justification of that assessment
- actions for managing the risk (through exemption limits and conditions) and a residual risk rating after managing it

Risk management involves breaking or limiting the source-pathway-receptor linkage to reduce the risk. If we set minimum distances we explain the basis of the distances, for example by modelling.

We control the residual risk (after risk management) through compliance assessment or the use of our enforcement powers.

If you need to check the meaning of any terms we have used in the context of this risk assessment, see the ‘Explanation of terms’ section.

This risk assessment is based on the scope of the exemption and associated limits and conditions:

Exemption limits and conditions

a. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology:
    - Biological treatment and or bioremediation
    - Ex situ chemical treatment such as oxidation, reduction, dehalogenation, sorption
    - treatment plant for sorting and separation, filtering, blending, mixing, bulking, screening, shredding, particle size reduction and or particle separation to facilitate remedial action
b. All remediation shall be completed within 6 months.
c. This exemption shall be used only once in a 3-year period for an individual site or remediation project.
d. Remediation activities shall be carried out by a competent person.

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e. The contaminated groundwater shall be treated and stored on the site of origin, with secondary containment, sealed drainage and ensure that no ex-situ contaminated groundwater (treated or untreated) shall enter into drains, watercourses or onto land

1. Risks to local population and property

1.1 Flood risk

We have assessed the likelihood of increased flood risk on local people and businesses and damage to property and infrastructure.

Judgement of risk

We have judged the:

- likelihood of the hazard affecting receptors as low
- overall severity of potential consequences as medium
- overall risk rating as medium

The reasons for giving the activity this rating are because:

- in the event of flooding, waste could be washed off site it may contaminate buildings / gardens downstream.
- the permitted waste types (contaminated groundwater) washed off site may add to the volume and hazard of the local post-flood clean-up workload.
- the remediation activity will be small scale, temporary, but there is the potential for contaminated run-off.

Managing the risk

The following limits and conditions will normally manage the risk, and we rate it as very low.

1. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology to facilitate remedial action on land affected by contamination:
    - Biological treatment and or bioremediation
    - Ex situ chemical treatment such as oxidation, reduction, dehalogenation, sorption
    - treatment plant for sorting and separation, filtering, blending, mixing, bulking, screening, shredding, particle size reduction and or particle separation

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2. All remediation shall be completed within 6 months.

3. Remediation shall be carried by a competent person.
4. The contaminated groundwater shall be treated and stored on the site of origin, with secondary containment, sealed drainage and ensure that no ex-situ contaminated groundwater (treated or untreated) shall enter into drains, watercourses or onto land

1.2 Odour

Odour travels through the air and can be inhaled.

We have assessed the potential harm to the local population as:

- nuisance
- loss of amenity

Judgement of risk

We have judged the:

- likelihood of the hazard affecting receptors as low
- overall severity of potential consequences as medium
- overall risk rating as low

The reasons for giving this rating are because:

- certain contaminants may be malodorous
- people can be sensitive to odour
- the remediation activity will be small scale, temporary, and managed to limit potential for exposure.

Managing the risk

The following limits and conditions will normally manage the risk, and we rate it as very low.

1. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology:

- Biological treatment and or bioremediation

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- Ex situ chemical treatment such as oxidation, reduction, dehalogenation, sorption

- treatment plant for sorting and separation, filtering, blending, mixing, bulking, screening, shredding, particle size reduction and or particle separation to facilitate remedial action

2. All remediation shall be completed within 6 months.

3. Remediation shall be carried by a ‘competent person’.

4. The contaminated groundwater shall be treated and stored on the site of origin, with secondary containment, sealed drainage and ensure that no ex-situ contaminated groundwater (treated or untreated) shall enter into drains, watercourses or onto land.

1.3 Noise and vibration

Noise travels through the air and vibration through the ground.

We have assessed the potential harm to the local population as:

- nuisance
- loss of amenity
- loss of or disturbed sleep

Judgement of risk

We have judged the:

- likelihood of the hazard affecting receptors as low
- overall severity of potential consequences as medium
- overall risk rating as low

The reasons for giving the activity this rating are because:

- certain remediation technologies and techniques require the use of mobile plant
- receptors may be sensitive to noise and vibration
- the remediation activity will be small scale, temporary, but managed to limit potential for exposure.

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- operators must comply with exemption conditions and must not cause a nuisance through noise

Managing the risk

The following limits and conditions will normally manage the risk, and we rate it as very low.

1. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology:

- Biological treatment and or bioremediation
- Ex situ chemical treatment such as oxidation, reduction, dehalogenation, sorption
- treatment plant for sorting and separation, filtering, blending, mixing, bulking, screening, shredding, particle size reduction and or particle separation to facilitate remedial action

2. All remediation shall be completed within 6 months.

3. Remediation shall be carried by a ‘competent person’.

4. The contaminated groundwater shall be treated and stored on the site of origin, with secondary containment, sealed drainage and ensure that no ex-situ contaminated groundwater (treated or untreated) shall enter into drains, watercourses or onto land.

1.4 Releases of particulate matter (dust)

Dust travels through the air and can be:

- inhaled or ingested

There is a risk of dust causing:

- respiratory irritation and illness

Judgement of risk

We have judged the:

- likelihood of the hazard affecting receptors as low
- overall severity of potential consequences as low
- overall risk rating as low

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The reasons for giving the activity this rating are because:

- the permitted waste type is contaminated groundwater
- certain remediation technologies and techniques require the use of mobile plant which may use fine particulate reagents.
- the remediation activity will be small scale, temporary and localised, and managed to limit potential for exposure.

Managing the risk

The following limits and conditions will normally manage the risk, and we rate it as very low.

1. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology:

- Biological treatment and or bioremediation
- Ex situ chemical treatment such as oxidation, reduction, dehalogenation, sorption
- treatment plant for sorting and separation, filtering, blending, mixing, bulking, screening, shredding, particle size reduction and or particle separation to facilitate remedial action

2. All remediation shall be completed within 6 months.

3. Remediation shall be carried by a ‘competent person’.

1.5 Fire risk

There is a risk of fire on-site from:

- Accident, arson and, or vandalism

Fire can cause:

- polluting materials (smoke or fumes) to travel through the air, water or over land
- spillages and contaminated firewater by direct run-off from the site and through surface water drains and ditches

We have assessed the potential harm as:

- respiratory irritation, illness, and nuisance to people living or working nearby

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- air, water, or land pollution

Judgement of risk

We have judged the:

- likelihood of the hazard affecting receptors as low
- overall severity of potential consequences as medium
- overall risk rating as low

The reasons for giving the activity this rating are because:

- certain remediation technology and techniques require the use of mobile plant that use flammable fuel
- the remediation activity will be small scale, temporary, but managed.
- the permitted waste type (contaminated groundwater) is not normally flammable.
- After treatment of contaminated groundwater, one of the separated fractions may be flammable

Managing the risk

The following limits and conditions will normally manage the risk, and we rate it as very low.

1. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology:

    - Biological treatment and or bioremediation
    - Ex situ chemical treatment such as oxidation, reduction, dehalogenation, sorption
    - treatment plant for sorting and separation, filtering, blending, mixing, bulking, screening, shredding, particle size reduction and or particle separation to facilitate remedial action

2. All remediation shall be completed within 6 months.

3. Remediation shall be carried by a ‘competent person’.

1.6 Pests

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Pests can travel through the air or over land. There is a risk of causing:

- nuisance
- loss of amenity
- harm to human health

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as low
- overall risk rating as low

The reasons for giving the activity this rating are because:

- the permitted waste type (contaminated groundwater) is unlikely to attract pests

Managing the risk

The following limits and conditions will normally manage the risk, and we rate it as very low.

1. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology:

- Biological treatment and or bioremediation
- Ex situ chemical treatment such as oxidation, reduction, dehalogenation, sorption
- treatment plant for sorting and separation, filtering, blending, mixing, bulking, screening, shredding, particle size reduction and or particle separation to facilitate remedial action

2. Risks to quality of nearby surface waters

2.1 Releases of pollutants

There is a risk of pollution from:

- spillage of liquid products used in the treatment process
- leachate/effluent from waste treatment

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- contaminated rainwater run-off from the waste treatment area

These can result in acute and chronic effects.

We have assessed the potential harm as:

- direct run-off from site across ground surface, through and via surface water drains, ditches can result in acute or chronic effects
- indirect run-off via the soil layer can also result in chronic effects
- leaching of pollutants into the ground and subsequent migration to surface water. This may affect surface water quality and may be directly toxic to plants and animals.
- acute effects such as fish kill
- chronic effects such as deterioration of surface water quality

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as medium
- overall risk rating as low

Managing the risk

The following limits and conditions will normally manage the risk, and we rate it as very low.

1. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology:
    - Biological treatment and or bioremediation
    - Ex situ chemical treatment such as oxidation, reduction, dehalogenation, sorption
    - treatment plant for sorting and separation, filtering, blending, mixing, bulking, screening, shredding, particle size reduction and or particle separation to facilitate remedial action
2. Remediation shall be carried by a ‘competent person’.
3. The contaminated groundwater shall be treated and stored on the site of origin, with secondary containment, sealed drainage and ensure that no ex-situ contaminated groundwater (treated or untreated) shall enter into drains, watercourses or onto land.

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3. Risks to groundwater

3.1 Risks to an abstraction borehole where groundwater is a source of drinking water

There is a risk of contaminants travelling through soil to groundwater, with the potential for: chemical spillages from containers or tanks, uncontrolled contaminated run-off from operational areas of the site, inappropriate site drainage infrastructure, or poor fire wash-water containment provisions. This could have a chronic effect resulting in the groundwater requiring treatment or causing the closure of a borehole.

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as medium
- overall risk rating as low

The reasons for giving the activity this rating are because:

- remediation activities will be carried out with secondary containment and sealed drainage
- the remediation activity will be small scale, temporary, and managed.

Managing the risk

The following limits and conditions will normally manage the risk, and we rate it as very low.

1. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology:
    - Biological treatment and or bioremediation
    - Ex situ chemical treatment such as oxidation, reduction, dehalogenation, sorption
    - treatment plant for sorting and separation, filtering, blending, mixing, bulking, screening, shredding, particle size reduction and or particle separation to facilitate remedial action
2. All remediation shall be completed within 6 months.
3. Remediation shall be carried by a ‘competent person’.
4. The contaminated groundwater shall be treated and stored on the site of origin, with secondary containment, sealed drainage and ensure that

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no ex-situ contaminated groundwater (treated or untreated) shall enter into drains, watercourses or onto land.

4. Risks to water abstracted from a watercourse

These risks relate to watercourses downstream of an exempt facility and to water for agricultural or potable use.

This receptor is at risk from:

- liquid spills
- leachate from waste
- contaminated rainwater run-off from waste

There is a risk of contaminants travelling through direct run-off from the site across the ground surface, through surface water drains and ditches, and finally through abstraction. This could have acute effects and cause the closure of abstraction intakes.

Judgement of risk

We have judged the:

- likelihood of the hazard affecting the receptor as low
- overall severity of potential consequences as medium
- overall risk rating as low

The reasons for giving the activity this rating are because:

- remediation activities will be carried out with secondary containment and sealed drainage
- the remediation activity will be small scale, temporary, but managed.

Managing the risk

The following limits and conditions will normally manage the risk, and we rate it as very low.

1. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology:

- Biological treatment and or bioremediation
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- treatment plant for sorting and separation, filtering, blending, mixing, bulking, screening, shredding, particle size reduction and or particle separation to facilitate remedial action

2. All remediation shall be completed within 6 months.

3. Remediation shall be carried by a ‘competent person’.

4. The contaminated groundwater shall be treated and stored on the site of origin, with secondary containment, sealed drainage and ensure that no ex-situ contaminated groundwater (treated or untreated) shall enter into drains, watercourses or onto land.

5. Risks to protected habitats and species

Protected habitats include:

- special areas of conservation
- special protection areas
- Ramsar wetland areas
- sites of special scientific interest
- Marine Conservation Zones

Protected habitats and species can be at risk from any source and by any pathway.

We have assessed the potential harm to protected habitats, species and the historic environment as:

- toxic contamination
- nutrient enrichment
- disturbance
- smothering

Judgement of risk

We have judged the:

- likelihood of the hazard affecting receptors to be low
- the overall severity of potential consequence to be low
- overall risk rating to be low

The reasons for giving the activity this rating are because:

- remediation activities will be carried out with secondary containment and sealed drainage
- the remediation activity will be small scale, temporary, and managed.

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Managing the risk

The following conditions will normally manage the risk, and we rate it as very low.

1. No more than 1,000 cubic metres of contaminated groundwater shall be treated in total using an established remediation technique or technology:

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2. All remediation shall be completed within 6 months.

3. Remediation shall be carried by a 'competent person'.

4. The contaminated groundwater shall be treated and stored on the site of origin, with secondary containment, sealed drainage and ensure that no ex-situ contaminated groundwater (treated or untreated) shall enter into drains, watercourses or onto land.

Explanation of terms

Competent person - as defined in Annex B of the National Planning Policy Framework

Receptors - these are people, animals, property and anything else that could be affected by the hazard

Secondary containment and **sealed drainage -** as defined in the Environmental Permitting Regulations 2016 Schedule 3 part 1, chapter 1 (interpretation) as follows:

Secondary containment means a bund or any other system for preventing waste that has leaked from its main container from escaping from the place where it is stored or treated.

Sealed drainage means a drainage system with an impermeable surface which ensures that that:

- no liquid will run off the surface, except via the system

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- all liquids entering the system are collected in a sealed sump, unless they can be lawfully discharged

Likelihood of exposure

This is the likelihood of the receptors being exposed to the hazard. The meanings of the definitions are:

- high – exposure is probable – direct exposure is likely with no or few barriers between the hazard source and the receptor
- medium – exposure may be probable – feasible exposure is possible as the barriers to exposure are less controllable
- low – exposure is unlikely – several barriers exist between the hazard source and receptor to reduce exposure
- very low – exposure is very unlikely – effective, multiple barriers are in place to reduce exposure

Overall magnitude of potential consequence

This is the severity of the consequence if the hazard is realised and may cause actual or potential harm.

This will have a high, medium, low or very low rating using attributes and scaling to consider 'harm'.

Risk rating

We determine the risk rating by combining the likelihood of exposure with the magnitude of the potential consequences.

We assess these ratings to be:

- high risk – very likely to occur, severe consequences, requires additional assessment and active management
- medium risk – may occur, moderate consequences, requires additional assessment and may need active management or monitoring (or both)
- low and very low risks – unlikely to occur, minor consequences but will require periodic review

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