

Construction sites - environmental regulation

Construction sites – environmental regulation

Content

Regulations and authorisation

Regulatory issues:

- Surface water run-off
 - Why silt is an issue
 - How to avoid silt issues
 - Case studies
 - How you can stay compliant
- Engineering
 - Preparing
 - Case studies
- Waste / PPC
 - What is waste / waste hierarchy
 - Duty of care
 - Case studies

Compliance / Enforcement

Guidance

Regulations & authorisation

Construction run-off permits

- Pre-application discussions – contact water permitting team (waterpermitting@sepa.org.uk);
- Site plans: base map (ideally OS 1:25K or 1:50K), **only** site boundary, **no** construction or planning details
- Chemical flocculants: we will refuse to authorise as a 'just in case' measure
- 4-month determination process
- Partial transfers: partial surrenders require SEPA to undertake assessment work and therefore attract a fee of 30% of the application fee. [Surrendering an authorisation | Scottish Environment Protection Agency \(SEPA\)](#)
- Construction run-off permit: process simplification views?

[Water run-off from construction sites | Scottish Environment Protection Agency \(SEPA\)](#)

Regulations & authorisation

Engineering

- CAR Practical Guide details activities and authorisation levels [car-a-practical-guide.pdf \(sepa.org.uk\)](#)
- Pre-application discussions – design and regulatory process and opinion support can be provided, and this is encouraged by SEPA. Pre-app can also confirm application fees, activities being carried out and enhance application quality which can reduce determination time. Contact waterpermitting@sepa.org.uk
- 1:50000 map scale rule – engineering activities other than permanent realignments, diversions and culverting for land gain DO NOT require authorisation on rivers not on the 1:50000 map scale
- 4-month statutory determination period (factor this into development programme)
- New permit reform approach does not require drawings or method statement approval in many cases

Regulations & authorisation

Waste / PPC

- Pre-application discussions – regulatory support and advice can be provided, and this is encouraged by SEPA. Contact wastepermitting@sepa.org.uk or ppcpermitting@sepa.org.uk
- Timescales
- Waste Management Licences – Waste treatment/transfer stations, bulking centres, Civic Amenity sites, metals (scrap) sites, mobile plant, recovery infill licences etc.
- [Waste Management Exemptions](#) – Paragraph 19, activity involving the construction maintenance or improvement of buildings, road, railway, airport, dock or other transport facility, recreational facilities, drainage or engineering works relating to or adjacent to the water environment.
- Greenfield Soils – Guidance Document '[Promoting the sustainable reuse of Greenfield Soils in Construction](#)'. Notify SEPA.
- [PPC](#) – Part B activities such as on-site treatment e.g. screening/crushing
- Waste Carriers Registration

Surface water run-off

Surface water run-off

Why is silt an issue?

- Some of our most threatened species, such as **Atlantic salmon** and **freshwater pearl mussels** rely on clean rivers.
- Silt can **smother river beds**, reducing habitat and killing invertebrates living there.
- Juvenile salmonids (salmon and trout) feed on invertebrates. Without this important part of their diet, mortality increases.
- 40% of returning adult salmon continue to feed on invertebrates in freshwater.
- Silt can also damage the gills of salmon and trout, leading to further mortalities.
- Only around 2-3% of juvenile salmon survive to return as adults – any increase in mortality could have a devastating impact on population numbers in our rivers.
- Angling is a major financial contributor in parts of Scotland, and pollution incidents can cause significant damage to the local economy.



www.pearlmusselproject.ie



How to avoid silt issues

PLAN AHEAD

- Take sufficient time prior construction, to plan and install appropriate treatment for the construction phase. Don't use permanent SUDs for construction phase drainage. Produce a PPP for each site.
- Identify potential sensitive receptors around the site and incorporate site specific mitigation measures.
- Check previous site use and the potential for uncharted drainage systems or groundwater sources/emergence.

AVOID UNNECESSARY WORKS

- Don't remove vegetation or clear site if it's not going to be worked immediately.

USE APPROPRIATE TREATMENT

- Settlement is the main way of treating silty water.
- Other elements such as silt fences, catch pits and silt bales should be considered as secondary measures and not all are suitable for all sites.
- Flocculant can only be used where justified.
- If an area of site is complete, **then** it can drain to permanent SUDS.



Surface water run-off

How to avoid silt issues

KEEP CLEAN WATER CLEAN

- Use interceptor ditches/conveyance trenches and stabilise or protect bare earth (e.g. using geotextile or re-seeding)*
*especially when the ground is sloped or close to a watercourse.

SIZE DRAINAGE APPROPRIATELY

- Calculate for slowest settling soil, clay-rich soils take longer to settle out.
- Calculate likely rainfall - use a reasonable storm return period i.e. at least 1 in 20 year flood (plus climate change), 1 in 200 for larger infrastructure projects.
- **Get it planned before work starts.** It can affect siting and build-out plans.
- Retrofitting construction drainage is really difficult to do and very expensive to get right.

ACT QUICKLY WHEN SOMETHING GOES WRONG



Surface water run-off

Settlement pond sizing



$$\text{Settlement Time } T_s = \frac{\text{Depth}}{\text{Velocity}}$$

Depth (m)	Fine clay 0.001mm/s	Fine silt 0.02 mm/s	Medium silt 0.05 mm/s	Coarse sand 30mm/s	Flocculated silt 10mm/s
0.5	6 days	7 hours	3 hours	16 s	50 s
1	11 days	14 hours	5.5 hours	33 s	2 min
2	23 days	1 day	11 hours	1 min	3 min

Residence time (T_R) is the length of time a given "water parcel" spends inside the pond.

i.e. if a pond has a volume (V) of 1m^3 (1000l) and the flow rate into the pond (Q) is 10l/s, then the residence time of that pond is:

$$T_R = V/Q = 1000/10 = 100\text{s}$$

i.e. water will only remain in the pond for 100s (1min 40s). If that pond is 1m deep, then anything smaller than coarse sand will fail to settle.

Shallow, large area ponds are more effective at settling than deep, low area ponds.

If the developer does not know the type of soil or how much rain will fall, they will not know what area the ponds should be. **Effective residence time CANNOT be increased by making ponds deeper.**

Surface water run-off

Silt pollution case study

Good...



Surface water run-off

Silt pollution case study

Bad...



Surface water run-off

Silt pollution case study

Slopes and exposed soils



Surface water run-off

Silt pollution case study

Keep clean water clean...



Surface water run-off

Silt pollution case study

Poor practice



Surface water run-off

Silt pollution case study

Poor practice



Surface water run-off

Silt pollution case study

The result...



Surface water run-off

Silt pollution case study

The result...



Surface water run-off

Site preparation

Bad practice



Surface water run-off

Site preparation

Good practice



Surface water run-off

Common GBR breaches – offences under Reg 44 (1)(b) of CAR

- Starting work (including stripping land) prior to installing drainage: GBR10D(f).
- Drainage is inadequately sized and/or lacking elements to properly treat surface water run-off: GBR10D(f).
- Drainage causes pollution of receiving water: GBR 10D(a) and (b).
- Drainage elements inadequately installed and/or maintained: GBR 10D(g)
- Drainage is used for disposal of concrete washout: GBR 11(a) and (c).
- Soil left exposed for periods in excess of the minimum required to do the work: GBR 11(d).
- Use of chemical assistance e.g. flocculants without authorisation, which is an offence under 44 (1) (a) of CAR.



Surface water run-off

In short...

- **Plan ahead** - Design appropriate construction drainage. Don't use permanent SUDS, they are designed primarily for attenuation, not silt removal.
- **Avoid unnecessary works** - don't remove vegetation or clear site too quickly.
- **Use appropriate treatment** - soil types and settlement rates will tell you how big your ponds need to be, high groundwater levels will need to be considered.
- **Keep clean water clean** - the less water you need to treat, the more likely you are to be able to treat it adequately.
- **Size drainage appropriately** - settlement ponds are your main tool in treating silty water, calculate using particle size and rainfall.

How to stay compliant

Daily site checks

Monitoring

- Visual checks of ALL receptors, not just drainage on site, but also receiving watercourse.
- Use a daily record sheet, develop an action plan if a silt breach is detected.
- Turbidity meters/sampling can be useful to alert of something is wrong, but it should not replace visual checks.
- Visual checks of refuelling areas, oil and chemical storage.
- Dust suppression - think about water source - recirculated, mains, abstractions from rivers (<10m³/day GBR).
- Concrete batching plants and wash-out areas (must be impermeable and solid and liquid fractions both disposed of appropriately).
- Welfare facilities e.g. septic tank discharges.
- Access and haulage roads.....material, topography etc (cross drains can help), impact on public highway.

Turbidity (NTU)

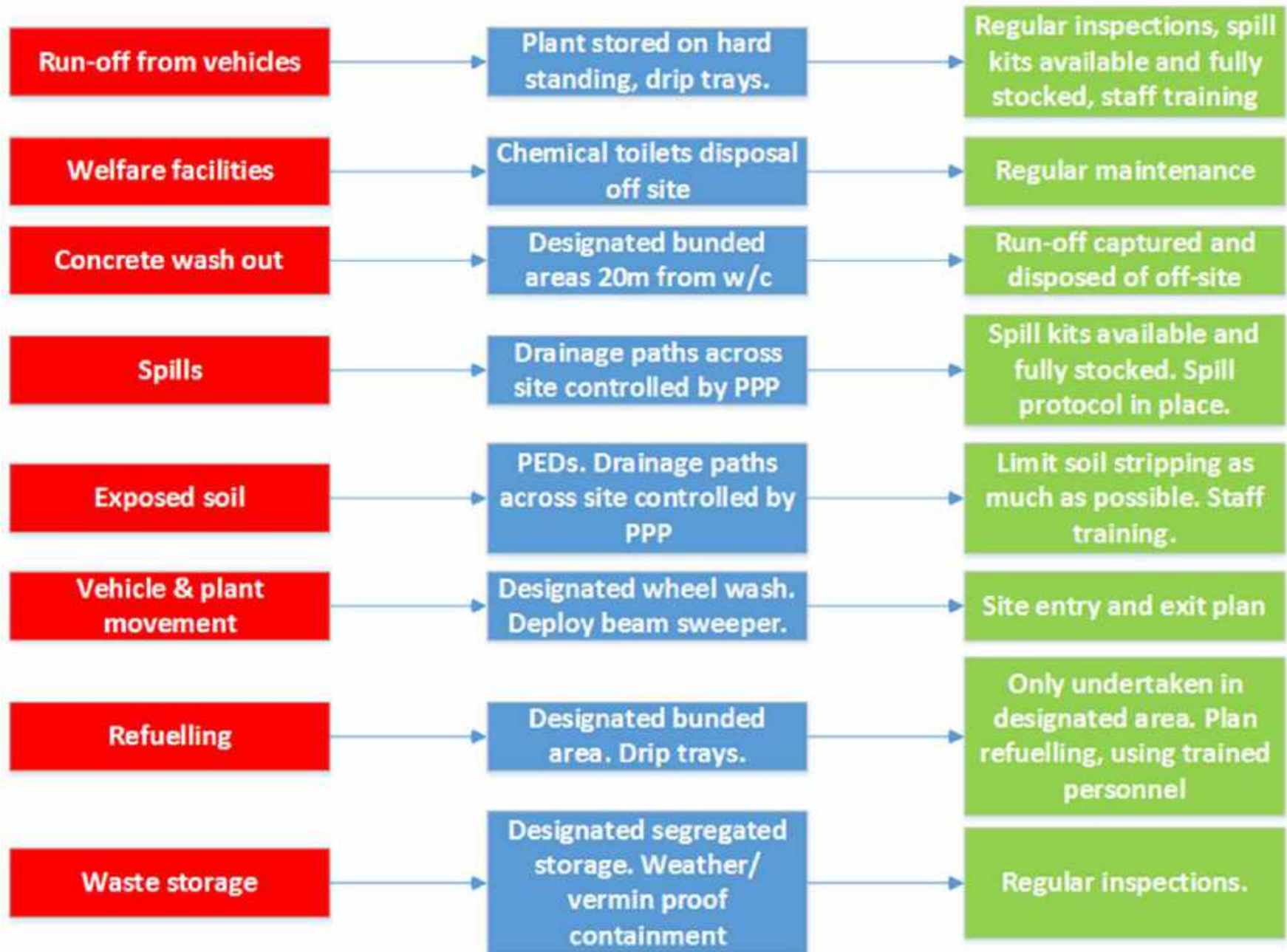


Pollution response

- What emergency procedures are in place (spill kits etc)
- Call us before we call you
- Incident reporting & tracking



How to stay compliant



Engineering in the water environment

Preparation

- Authorisation – if you need it, get it.
- Consider appropriate design and materials – and follow good practice guides
- Consider location of any works and potential impact on morphology of watercourse – to avoid long term issues, including erosion, undermining etc
- Maintaining channel width for stability and ensuring fish passage and sediment continuity through structures.
- Follow [know the rules](#) guidance
- Timing: avoid winter - wet weather, spawning restrictions
- Work from banks where possible, avoid equipment and material entering watercourses.
- Reinstatement/restoration of area following works
- On-going maintenance needs - e.g. blockages of culverts, screens etc
- Multiple benefits of good engineering and morphological design including amenity and aesthetic benefits, flooding, environmental and reduced maintenance interventions from erosion or sediment etc that can be caused and/or aggravated by poor design
- If in doubt as to whether an activity requires authorisation contact SEPA. Do not carry out unauthorised works.

Questions to ask yourself

Construction methodology

Think about-

- How will you construct engineering activity?
- How will you reduce risk of pollution during construction phase?
- Will any 'temporary' work be required?
- How will site be reinstated?
- Where will you store equipment/materials?
- How & where will you access site and watercourse?
- What are the contingency plans if something goes wrong? (pumps, weather etc)
- End date for engineering & spawning times



Unauthorised engineering



Unauthorised engineering



Good practice design



Waste / PPC

What is waste?

“any substance or object in the categories set out in Annex I which the holder discards or intends or is required to discard”

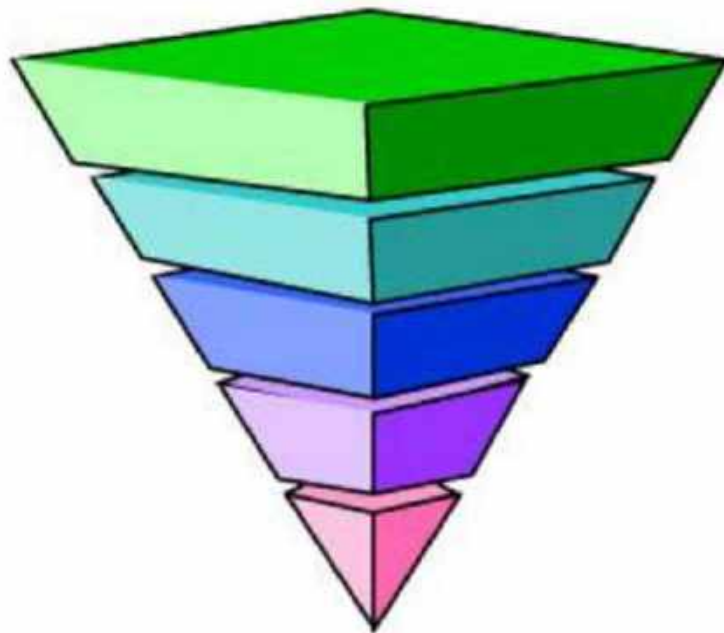
Waste Framework Directive (2008/98/EC)

Know what the guidance says

- [Is it waste?](#)
- [Supplementary guidance](#)

Just because the substance or object has a use and/or value, doesn't mean it is not waste.

Waste hierarchy



Prevention

If you can't prevent, then....

Prepare for reuse

If you can't prepare for reuse, then....

Recycle

If you can't recycle, then....

Recover other value (e.g. energy)

If you can't recover value, then....

Disposal

Landfill if no alternative available.

Duty of Care - the legal part...

Environmental Protection Act 1990

Section 34

- “Take all such measures available to that person as are reasonable in the circumstances to apply the waste hierarchy”
- “Take all reasonable steps to ensure the separate collection of dry recyclable waste”
- “Take all such measures available to that person as are reasonable in the circumstances to prevent any contravention by any other person of s33”

“on the transfer of the waste, to secure—

(i) that the transfer is only to an authorised person or to a person for authorised transport purposes; and

(ii) that there is transferred such a written description of the waste as will enable other persons to avoid a contravention of that section or any condition of a permit granted under regulation 7 of those Regulations and to comply with the duty under this subsection as respects the escape of waste.”

The legal part...

Environmental Protection (Duty of Care) (Scotland) Regulations 2014

Requirements for waste transfer notes:

(3) A transfer note must—

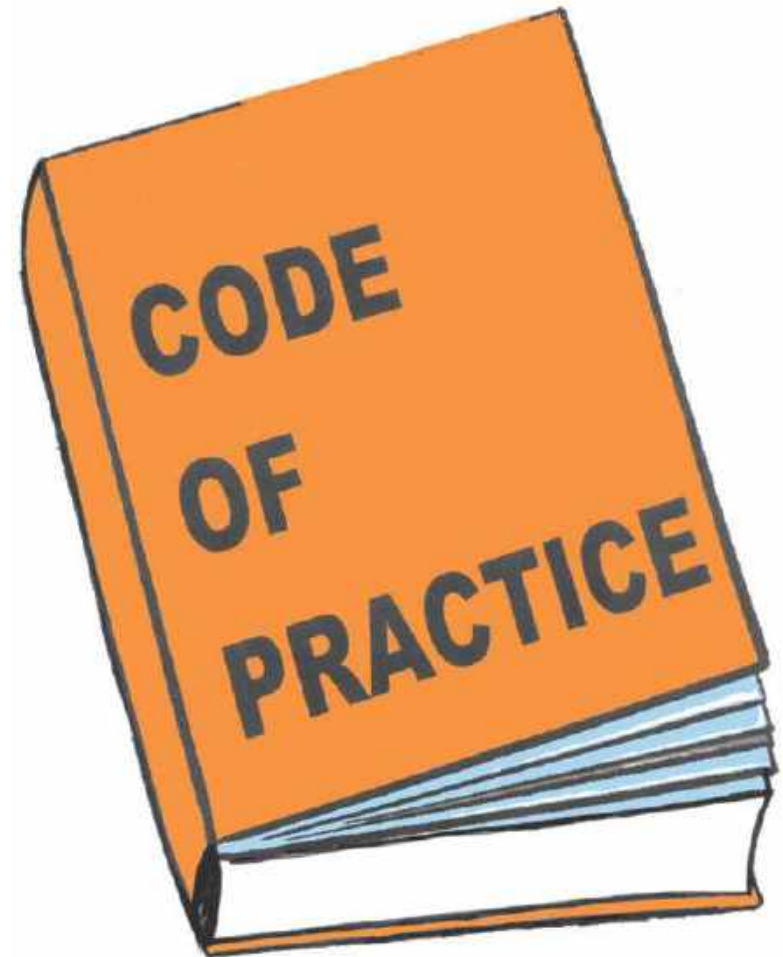
- (a) give the name and address (including the postcode) of the transferor and the transferee;
- (b) give the date and place (including the postcode) of the transfer;
- (c) state whether the transferor is the producer of the waste;
- (d) state whether the transferor is the importer of the waste;
- (e) describe the type, composition and quantity of the waste being transferred (including, where the waste is in a container, the type of container);
- (f) identify the waste being transferred by reference to the appropriate six-digit code in the European Waste Catalogue; and
- (g) identify the activity carried out by the transferor in respect of the waste being transferred by reference to the SIC code for that activity.

Keep a copy of the waste transfer note for 2 years.

Duty of Care: A Code of Practice

Statutory guidance issued by the Scottish Government

- Explains the duties that apply to anyone who produces or manages waste in Scotland.
- It is set out based on different roles – for example if you are a waste producer you can refer to the section for waste producers to understand your full responsibilities.
- The Code is statutory guidance – which means it is admissible as evidence in court when assessing whether a Duty of Care offence has been committed.
- [Duty of Care - A Code of Practice \(www.gov.scot\)](http://www.gov.scot)



Waste disposal - tax liability

- When is a disposal taxable?
- Definition of “landfill” for Scottish Landfill Tax purposes
- What does this mean for waste produced at housing sites?
- What are the penalties?



Waste treatment



End of waste

Treatment of waste to a standard that it can be used or has value does not mean that it is no longer waste – certainty of use is required.

[production-of-recycled-aggregates.pdf \(sepa.org.uk\)](https://www.sepa.org.uk/production-of-recycled-aggregates.pdf)

Must meet specification with relevant certificates:

- grading,
- compaction,
- frost heave (if required),
- physical contamination: glass, bituminous content, asphalt content plastic, wood, paper,
- **chemical specification,**
- **and there must be a guaranteed use**

But...this material continues to be waste until used.

Soil movements



Waste issues

Inadvertent creation of waste



When quality materials become waste



When quality materials become source of pollution



Case study



Waste issues

Case study

What went wrong?

- Accepting site not authorised to accept waste
- No waste duty of care or waste assessment was in place.
- The producer failed to describe their waste in a way that allowed the next holder to know how to manage it

Potential impact?

- Risk to human health from mishandled contaminated soils.
- Pollution to the environment e.g. surface and ground water from mobilisation of contaminants

How was it resolved?

- Enforcement action taken against the accepting site, house builder and groundworks contractor to secure compliance.



Key points to remember

- Always check that waste carriers and receiving sites are appropriately authorised.
- Ask questions about what will happen to the waste. Any red flags?
- If you are transferring contaminated soil, has it been sampled and analysed?
- Complete Duty of Care paperwork fully, including a proper description of the waste.
- Ensure that your supervisory staff for the development have received proper training / clear instructions on waste removal.
- If in doubt, call SEPA.

How we assess compliance and tackle non-compliance

Compliance assessment and tackling non-compliance

Replacement to compliance assessment scheme – [Performance Assessment Scheme](#)

Enforcement:

- [Enforcement policy](#)
- [Enforcement guidance](#)

Options

- Advice and guidance
- Warning letters
- Fixed Monetary Penalties
- Variable Monetary Penalties
- Enforcement Undertaking
- License suspension
- Report to procurator fiscal

Guidance

Know the rules – [working in or near rivers and lochs](#)

Good Practice Guides (GPGs)

- WAT-SG-25 ‘River Crossings’
- WAT-SG-29 ‘ Construction Methods’
- WAT-SG-31 ‘SEPA special Requirements for Civil Engineering Contracts for the Prevention of Pollution’
- Engineering Guidance and Regulatory Method webpage - [Engineering guidance | Scottish Environment Protection Agency \(SEPA\)](#)
- SNH ‘Good Practice during Wind Farm construction’
- SNH/FC ‘Floating roads on peat’
- Scottish Renewables/SEPA ‘Developments on Peatland’

Guidance

Pollution Prevention Guidance (Netregs)

[PPG 5 'Works and Maintenance in or near water'](#)

[PPG 6 'Working at Construction or demolition sites'](#) (updated version due end August 2023)

Factsheets in development:

- earthworks,
- groundworks,
- duty of care,
- working in / near water

CIRIA guides

- Control of water pollution from construction sites. Guidance for consultants and contractors (C532)
- Control of water pollution from linear construction projects. Technical Guidance (C648)

Thank you

