



Waste water management

Environmental protection goes hand in hand with sustainable golf course management. This document helps to explain **best practice** when dealing with washwaters and effluents from a golf facility.

Clubs are **responsible** for identifying and taking steps to address any potential **risks** which management practices may pose to the environment. They must ensure that washwaters and effluents are appropriately managed to minimise the risk of impact on ground and surface waters, ecology and ensure the working environment is safe and aesthetically acceptable.

These guidelines have been written by SGE in conjunction with the Scottish Environment Protection Agency (SEPA). It is important that you read and adhere to these guidelines to minimise any pollution risks

Sewage effluent

Sewage effluent from most toilets, kitchens, sinks and showers etc in urban golf clubs goes straight to the public sewerage system. From rural golf courses it may typically be treated in a septic tank or package treatment plant before discharge to a soakaway. Where additional treatment of the effluent is required reed bed technology may be most easily incorporated in a golf landscape.

For information on your waste water and trade effluent that goes to public sewer go to <http://www.business-stream.co.uk/waste-water-trade-effluent/waste-water>

For information on treatment of sewage effluent when no foul sewer is available see Pollution Prevention Guideline (PPG) 4 <http://www.sepa.org.uk/PDF/ppg4.pdf>

For information on legislation concerning septic tanks go to www.sepa.org.uk/water/water_publications.aspx

Pesticides handling / washdown

Storage

Pesticides should be stored in accordance with the Pesticide Code of Practice (Section 3.3) <http://www.scotland.gov.uk/Publications/2006/12/19110050/20>

Preparation

If possible, pesticides and other chemicals should be made up indoors (with no internal drains), so that the risks of any spills getting into the water environment are minimised. Where pesticides are mixed outside, this is best carried out on vegetated land at the area to be treated, keeping well away from watercourses and avoiding gateways and hard standings unless the drainage from such areas is adequately managed. Taking care to mix the correct volume of solution required to cover the target area will minimise the need to deal with any left over solution. The sprayer should be well maintained and regularly checked to ensure there are no drips or leaks. After mixing ensure the empty containers are adequately rinsed out into the sprayer and all packaging, including foil seals are safely disposed of.

Application

Pesticide use should be carefully targeted (rather than broad application), to minimise quantity applied and risks to the environment. It is important to take adequate account of the weather conditions, avoiding rainfall which can lead to run-off and windy conditions to avoid drift. Only approved products should be used and applied in line with the label conditions with care taken to keep a safe distance from watercourses. Buffer strips separating the intensively managed greens from watercourses and ponds are important. The product label should state the minimum buffer strip which must be maintained from watercourses and hedgerows etc, however with buffer strips bigger is better and they can also be managed to increase the biodiversity and wildlife value of the course. For more information on buffer strips and diffuse pollution management see 'Diffuse Pollution Management (SGEG 2010)' <http://www.sgeg.org.uk/water.html>

Washdown

If possible you should clean the pesticide application equipment you have used, inside and out, at the site of treatment keeping well away from watercourses and any wells or springs etc. Where this is not possible, other options for the management of dilute pesticide washings include:

- Applying the left over solution and tank rinsings to the treated area within the terms of the

product approval ensuring that the maximum dose is not exceeded.

- Store the contaminated water in a suitable container until a licensed waste-disposal contractor can collect it.
- Disposing of to land in line with an authorisation issued by SEPA under The Water Environment (Controlled Activities) (Scotland) Regulations 2011.
http://www.sepa.org.uk/water/water_regulation.aspx
- Disposing of to a lined biobed in line with an exemption issued by SEPA under the Waste Management Licensing Regulations. For more information about biobed design go to:
<http://www.biobeds.info/content/default.asp> and <http://publications.environment-agency.gov.uk/PDF/GEHO0407BMNS-E-E.pdf>
- Disposal of to sewer under a 'trade effluent consent' issued by Scottish Water.
<http://www.business-stream.co.uk/waste-water-trade-effluent>

Machinery wash down water

Remove pollutants before washing

Following grass cutting, use a return maintenance track which will allow the majority of grass clippings to fall off the machinery wheels before you reach the maintenance yard. Grass clippings contain high quantity of Nitrogen and Phosphorous which can cause pollution if released into the water environment.

Reduce Water

Minimise amount of water used to wash down machinery by appropriately planning frequency of washdown and use brushes and air hoses where applicable to reduce water use.

Intercept

Where washing occurs on a yard or other hardstanding, make sure the run-off does not pollute the water environment. Use a contained / bunded area to guide the wash water through some form of interceptor / grass trap. This could be a small chamber in the corner of the bunded area with a removable metal mesh to remove clippings. The waste removed from the interceptor should be appropriately disposed of.

Management of wash water

If **no pesticides, other chemicals or trade effluents** are handled in the wash area and there is no disposal of pesticide rinse waters there either your treatment options could include:

1. **Discharge direct to public foul sewer.** The wash water will be treated in the Scottish Water waste water treatment works. You will be charged for this under your waste water charges. For further information go to <http://www.business-stream.co.uk/waste-water-trade-effluent> **N.B it is illegal to discharge wash waters direct to a surface water sewer or storm drain.**
2. **Pipe to a sealed underground containment tank,** large enough to hold the full amount of washdown water. These will require regular emptying by a licensed contractor.
3. **Discharge to a grass filter strip or swale.** This will cope with light background contamination (allowing degradation in the topsoil) and potentially could be built into the landscape of the course. A well designed swale with check dams to slow down the water flow may give sufficient treatment. For swale design go to www.ciria.org and register to download the Sustainable Urban Drainage Systems (SUDS) Manual (CIRIA 2007).

For further treatment, any flow passing across the filter strip or swale can be piped to:

- a) **A soakaway.** This can be an area of open ground away from any water courses or a 'designed' soakaway. http://www.ciria.org.uk/suds/infiltration_devices.htm
If the discharge is in line with SEPA General Binding Rules (GBRs) 10 and 11, it will not need a registration or licence from SEPA.
http://www.sepa.org.uk/water/water_regulation/regimes/pollution_control/suds/gbrs.aspx
 - b) **A detention basin or pond** for final treatment.
http://www.ciria.org.uk/suds/basins_and_ponds.htm
- 4) **A Reed bed system** that treats the waste water prior to release or reuse in wash down water is becoming a more appealing method of intercepting and treating washdown water. It can also create a new ecological habitat and can blend in well with the landscape of the golf course. They require minimal maintenance and when combined with another SUDS system on the course can be an additional control for surface water on the course.

For reed bed and constructed wetland design advice go to: www.ciria.org or
<http://eprints.mdx.ac.uk/6077/1/P2-159-TR2-e-p.pdf>

5) Other designed filtering systems

There are suppliers working in the golf sector that provide technical filtering systems to remove particulates and oils from washdown water through a series of sumps and filtration sand and speciality granular activated carbon.

- 6) **Biological wastewater treatment and recycling systems (closed loop systems)**, are another technology on the market. The manufacturers claim to treat wash down water biologically while recycling the water for reuse. As they are self contained, they can also treat oils / chemicals/ pesticides etc). They are above ground tanks that need a monthly supply of microbes and although save considerable amounts of water will require increased energy use to pump the water through the system. These systems are not a legal requirement in Scotland.

In Scotland, discharges to the water environment are controlled by the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR). The level of authorisation required may range from General Binding Rule to Registration or licence depending on the activity and nature of discharge. Generally, surface water drainage systems and small scale SUDS which do not handle trade or organic effluents can be authorised via GBRs. See the CAR - A Practical Guide for advice and in particular GBR 10 and 11. http://www.sepa.org.uk/water/water_publications.aspx

Further Advice

Pesticide Code of Practice for Using Plant Protection Products in Scotland

<http://www.scotland.gov.uk/Publications/2006/12/19110050/20>

Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR)

http://www.sepa.org.uk/water/water_regulation.aspx

SEPA General Binding Rules 10 and 11

http://www.sepa.org.uk/water/water_regulation/regimes/pollution_control/suds/gbrs.aspx

SEPA water guidance can be found at http://www.sepa.org.uk/water/water_publications.aspx

Further design advice is available if you register at the CIRIA website <http://www.ciria.org/>

Scottish Water Business Stream advice can be found at <http://www.business-stream.co.uk/waste-water-trade-effluent>

Further SGEGL advice on water supply, water efficiency, surface water management and water quality go to <http://www.sgeg.org.uk/water.html>

For any further enquiries as to the legality and suitability of your waste water management practices please contact your local SEPA office.

<http://apps.sepa.org.uk/map/index.html>