The Farm Management Handbook

Farm Advisory Service

Environment and Pollution

The UK reference for farm business management

SAC CONSULTING

Part of Scotland's Rural College (SRUC)

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This document is an updated section of the Farm Management Handbook. It was updated on 28th of June 2024. You can find the complete handbook, as well as other updated sections, on the FMH section of the FAS website.

Introduction

Scotland has a strong environmental brand, promoting wild open spaces, clean air, and clear abundant waters. However, these environmental assets can be easily degraded through unintended actions or poor management of routine operations. A range of legislative requirements are in place across all sectors to help reduce pollution risk and protect and enhance our environment.

Environmental legislation covers most farming activities. A useful starting point for all businesses is NetRegs, an initiative to help small businesses reduce pollution risks and improve their environmental performance. NetRegs has a section specific to agriculture, providing free, clear guidance on environmental legislation.

The Prevention of Environmental Pollution From Agricultural Activity (PEPFAA) code of good practice provides a useful reference source for farmers and land managers and is available on the Farming and Water Scotland website.

This section summarises some of the main impacts on air, water and land quality in relation to agricultural activities and provides links for further information.

Protecting air quality

Scotland's air quality has notably improved over the last few decades, with monitoring data showing that our air now is cleaner than at any time since the start of the industrial revolution. That said, a renewed focus is being placed on air quality as more is being understood about its impact on human health, climate change and the wider environment. Ammonia, dust, odour and smoke can all cause issues leading to reduced air quality and negative environmental impacts. There is growing acknowledgement of the role that ammonia plays in climate change; for more information on gases contributing to climate change, see the Carbon section.

Ammonia

Agricultural practices account for around 90% of ammonia emissions in Scotland. Ammonia can lead to plant damage and changes to sensitive surrounding habitats. Ammonia may create an odour nuisance impacting on farming neighbours and can create human health concerns when mixed with other pollutants from industrial processes and vehicle pollution, resulting in tiny particles that can damage the lungs and enter the bloodstream.

Ammonia is a gaseous form of nitrogen, contributing to the formation of nitrous oxides driving climate change. Loss of ammonia, for example from livestock housing, slurry and manure management and application, and use of inorganic fertilisers, could lead to nitrogen oxide deposition many miles from the source. This can impact vegetation and nutrient sensitive habitats such as heathlands and bogs.

There are several mitigation measures farmers can consider to help reduce ammonia emissions, for example the use of protected urea, precision application techniques when applying slurry, which are now a requirement for most slurry applications, appropriate manure management in livestock buildings and inclusion of nitrogen fixers such as clover in grass swards.

Specifically designed shelter belts around animal housing and roaming areas have the potential to recapture ammonia emissions, disperse emissions and reduce nitrogen deposition, helping to minimise detrimental impacts.

Large intensive pig and poultry units above certain capacities are classed as industrial installations and are already regulated under the Industrial Emissions Directive and the Pollution Prevention and Control (Scotland) Regulations in terms of ammonia management.

Production of dust and odours

Odour and dust concentrations are not necessarily related, however activities that produce dust and odour could all constitute a 'nuisance' and have a negative impact on health and amenity, which could lead to legal action, a fine, or notice from your local council to restrict or stop business activities.

Good site management and maintaining high standards of cleanliness on farm will help to minimise odour and dust. For businesses already regulated under the Pollution Prevention and Control (PPC) regime, the permit will include relevant emissions controls covering dust and odour, including Best Available Techniques (BAT).

There is growing concern around the impact of very small dust particles on human health. Particles of this size are subject to Air Quality Standards (Scotland) Regulations 2010, based on the current understanding of health effects and exposure to air pollutants.

Burning

Since January 2019, burning on-farm waste is no longer an acceptable practice for most materials, with only a few exemptions remaining for woody/plant debris or untreated wood produced on site (an exemption will need to be registered on the SEPA website and the activity must not cause pollution or harm human health). Reuse, recover, recycle, or correct disposal are now the preferred options.

For those that have secured an exemption to burn materials on site, the process should not produce any dark smoke; the NetRegs website notes that "*you cannot use a defence of lack of visual evidence, if you burn materials at night for example. Evidence of burnt materials that could cause dark smoke, such as steel reinforcement from tyres, or plastic residues is sufficient".* For more detail on exemptions around burning waste, visit the NetRegs site.

Scotland's Farm Advisory Service have produced a Technical Note on minimising plastic waste on farms.

There is additional information for farmers and land managers on both the SEPA and Netregs sites.

Muirburn

Muirburn operations can also have a negative impact on air quality. The Muirburn Code outlines what measures are required under both good practice and legislation. Both the FAS site and Nature,Scot have more details regarding safe Muirburn practices. Cutting or swiping could be a practical alternative to burning for consideration on some sites.

For more information on issues and legislation around air pollution, see www.netregs.org.uk and www.scottishairquality.scot/

Protecting soil quality

Both climate change and changes in land use and land management will have an impact on soil quality. Poor soil management practices can increase the loss of organic matter, change soil biodiversity, and increase erosion risk. Increased urban development such as roads and housing, can reduce the land area available to deliver the important services that a well-managed topsoil can provide.

For farmers and land managers, the booklet '*Valuing Your Soils*' is an excellent resource providing case studies and information on practical measures other farmers have taken to improve and protect farm soils, plus field sheets on how to carry out a visual evaluation of soil structure (VESS). You can download a copy here.

In addition, the Scotland's Soils website provides useful information, including the National Soil Map of Scotland and a range of resources for land managers and developers at https://soils.environment.gov.scot/.

Several resources around soil protection and management are available through Scotland's Farm Advisory Service website, including information on soil biodiversity, soil structure, nutrient budgeting and soil pH.

Protecting water quality

Scotland's water quality is generally good, with huge improvements having been made over the last 50 years primarily due to the introduction of controls and regulation on point source discharges such as treatment plants and factories. However, there are still pressures affecting water quality in Scotland, including rural diffuse pollution, discharges of wastewater, abstractions, and historical adaptations.

Diffuse pollution is the release of potential pollutants from a range of activities that, individually, will have only a small effect on the water environment but, at the scale of a catchment, can have a significant cumulative effect. Examples of rural diffuse pollution risks include loss of inorganic and organic fertilisers through field run-off or poor application techniques, and livestock access to and significant poaching around watercourses, leading to erosion, soil loss, and contamination of water with faecal bacteria.

The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended), more commonly known as the Controlled Activities Regulations (CAR), apply regulatory controls over activities which may affect Scotland's rivers, lochs, transitional waters (estuaries), coastal waters groundwater, and groundwater dependant wetlands.

The measures under CAR cover land management activities which include forestry, agricultural and amenity uses. The regulations have been designed to be proportionate to risk; there are three tiers of authorisation:

- **General Binding Rules (GBRs)** - provide statutory controls over low-risk activities and were revised and updated in 2022. For land managers, the Diffuse Pollution GBRs (DP GBRs) include minimum working distances for activities bordering watercourses, such as, application of manures and slurry or in-field cultivation practices. Recent revisions have phased out the use of high trajectory splash plates for applying slurry, encouraging the use of low emission, precision application techniques such as dribble bar or trailing shoe alongside a requirement for 22 weeks slurry storage capacity for housed cattle (26 weeks for pigs). Compliance with the GBR rules act as authorisation to carry out the activity; you don't need to contact SEPA before conducting activities controlled by GBRs, but you must understand and follow the rules. The amendments to the rules have been summarised in the '*Know the Rules*' guides at Farming and Water Scotland.

- **Registration** - covers low risk activities which cumulatively pose a risk to the water environment. An example of an activity requiring a registration would be abstracting between 10 to 50m^3 water in any

24hrs from the water environment. A one-off fixed registration fee is payable.

- **Licence** – required for site-specific controls, particularly if constraints upon the activity are to be imposed. For example, the construction and operation of a borehole which will be or is intended to be greater than 200m in depth will require a licence from SEPA with a fee which may be payable on an annual basis, depending on the activity.

The CAR Practical Guide provides more detail.

SEPA's information on licencing abstractions from the water environment.

Further information

Further guidance on funding, environmental policies, statutory requirements, and good practice guides are available at the following websites:

- Diffuse Pollution Priority Catchments: https://www.sepa.org.uk/regulations/water/diffuse-pollution/diffuse-pollution-in-the-rural-environment/
- Farming and Water Scotland; practical information for farmers to protect and improve water quality on the farm, including the *Know the Rules* guides. Visit Farming and Water Scotland at or find on Facebook and X @FarmWaterScot
- FAS Technical Notes: wide range of information aimed at both farmers and consultants. Contains a suite of Technical Notes focused on nutrient management
- Nitrates Directive and Nitrate Vulnerable Zones (NVZ): Sets out. what is required from farmers to comply with the NVZ rules.
- Pollution Prevention and Control (PPC) Regulations. Large pig and poultry units are covered by the PPC Regulations:
- PLANET Scotland, free nutrient management computer software:
- SEPA Scottish Environment Protection Agency

Pollution accidents or incidents should be directed to SEPA's 24/7 pollution hotline: 0800 80 70 60.