Report of the Sludges, Biosolids and other Organic Fertilisers Working Group

Prepared for the National Technical Implementation Group (NTIG)

April 2025

Contents

Report of the Sludges, Biosolids and other Organic Fertilisers Working Group

Executive Summary

An Overview of Ireland's Fifth Nitrates Action Programme, published by the Department of Housing, Local Government and Heritage, required

"A review of the management and oversight of sludges being applied to land will be carried out by a working group established under the National Technical Implementation Group (NTIG), which is part of the River Basin Management Planning and Water Framework Directive governance structures. Recommendations arising will be brought back to the WFD governance structures for consideration."

A Sludges, Biosolids and other Organic Fertilisers Working Group was established in April 2024 with representatives from a number of organisations involved in the regulation and management of sludges being applied to land. The Working Group was tasked to identify the existing controls and legislation in relation to land spreading of sludges and biosolids and to identify any gaps in knowledge or breaks in chains of custody. It was also agreed to extend the scope to include other organic fertilisers being applied to land. The Working Group was asked to make recommendations back to the NTIG for consideration.

Sludges, biosolids and other organic fertilisers can be considered valuable fertilisers and soil improvers when spread on agricultural land, subject to crop requirements and appropriate environmental controls. The recycling of these materials to land can offer an economically favourable means of contributing to the circularity of the waste streams.

The application of biosolids and industrial sludges as organic fertilisers to agricultural land is controlled by local authorities through the maintenance of sludge registers and/or inspection and enforcement programmes under the Good Agricultural Practice for the Protection of Waters Regulations (GAP), as amended. While there are multiple pieces of legislation in place relating to biosolids and industrial sludges there is no integrated approach or centralised data system available that identifies and tracks the loads and spreadlands where they are applied.

The Working Group has made 12 recommendations with the three key recommendations being to:

1. Develop a national register and database for sludges, biosolids and other organic fertilisers that are being spread on agricultural land. This would enable the capture and sharing of data in a timely, verifiable and accessible manner to all relevant authorities. It should also include all steps in the chain including primary producers, contractors and importing farms. It would ensure coordination and transparency across all sources being applied to land. It was agreed that DAFM would be best placed to develop this national register/database based on an expansion of their Organic Nutrient Movement System.

2. Amend the Good Agricultural Practice for the Protection of Waters Regulations 2022 (GAP Regulations) and any other relevant legislation to include an obligation on producers, contractors and farmers to record the movements of sludges, biosolids and other organic fertilisers once the register is created.

3. Update the Codes of Practice for the Use of Biosolids in Agriculture (Guidelines for Farmers & Guidelines for Local Authorities and Wastewater Treatment Plant Operatives) which were developed in 2008. It was agreed that DECC would lead out on this recommendation and a sub-group has been recently established to progress this work.

1 Overview

1.1 Introduction

Ireland's Fifth Nitrates Action Programme (NAP) 2022 – 2025, jointly published by the Department of Housing, Local Government and Heritage and the Department of Agriculture, Food and the Marine stated that a "review of the management and oversight of sludges being applied to land will be carried out by a working group established under the National Technical Implementation Group (NTIG)". NTIG is responsible for overseeing the technical implementation of the River Basin Management Plan (RBMP) and is comprised of all public bodies relevant to water quality. The Environmental Protection Agency (EPA) Office of Evidence and Assessment acts as Secretariat for the group.

The fifth Nitrates Action Programme also assigned expanded responsibilities to the EPA regarding the oversight of local authority agricultural inspections and to establish a National Agricultural Inspection Programme (NAIP). The aim of the NAIP is to improve the level of compliance with the Good Agricultural Practice for the Protection of Waters Regulations 2022 (GAP Regulations), as amended, and to protect and improve water quality.

The application of biosolids and industrial sludges as organic fertilisers to agricultural land is controlled under the GAP Regulations. Of all the nitrogen that goes onto land, 57% of it comes from livestock manure, 38% is from chemical fertiliser, and a small proportion – estimated at approximately 5% – comes from sewage and other sludges.

The NTIG requested that a working group be established under the co-ordination and chair of the EPA NAIP Team to carry out a review of the management and oversight of sewage/industrial sludges being applied to land and to make recommendations for consideration to achieve better environmental outcomes with respect to the protection of waters.

1.2 Membership of the Working Group and Terms of Reference

A Sludges, Biosolids and other Organic Fertilisers Working Group was established in April 2024 and comprised of members from the Environmental Protection Agency (EPA), Department of Agriculture, Food and the Marine (DAFM), Department of Environment, Climate and Communications (DECC), Department of Housing, Local Government and Heritage (DHLGH), Uisce Éireann (UÉ), Local Authority Waters Programme (LAWPRO), Food Safety Authority of Ireland (FSAI), Kildare County Council (KCC), Louth County Council (LCC), Meath County Council (MCC), Monaghan County Council (MNCC), Roscommon County Council (RCC) and the Department of Agriculture, Environment and Rural Affairs (DAERA, NI). Each organisation shared their role and experience regarding the legal requirements and procedures that are currently in place.

A Terms of Reference for the Working Group was agreed based on the recommendation from the Fifth NAP review (Appendix 1). The Working Group was tasked to identify the existing controls and legislation in relation to land spreading of sludges and biosolids and to identify any gaps in knowledge or breaks in chains of custody. It was also agreed to extend the scope to include other organic fertilisers being applied to land. Recommendations from the Working Group would be submitted back to the NTIG for consideration.

The Working Group met four times during 2024 and was chaired and co-ordinated by the National Agricultural Inspection Programme (NAIP) of the EPA. The NAIP exchanged and collated comments from all Working Group members and prepared this report for NTIG.

1.3 Background

There is a wide variety of sludges, biosolids and other organic fertilisers being applied to land. Likewise, there is an extensive list of legislation and regulations governing their use. The current applicable legislation and a Glossary of Terms and Definitions is listed in Appendix 2.

Most of this legislation is quite old, however a recast Urban Wastewater Treatment Directive is now in place. As part of the New Circular Economy Action Plan the European Commission undertook an evaluation of *Council Directive 86/278/EEC of 12th June 1986 on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture*. The Evaluation of the Sewage Sludge Directive concluded that "*the [Sewage Sludge] Directive remains relevant but that the set of pollutants which it regulates needs review, notably considering organic compounds, pathogens, pharmaceuticals, and microplastics which are present in sewage sludge. It highlighted the cost-efficiency of sludge use in agriculture, which appears significantly less costly than incineration, the main alternative to its use on farmland. Sludge use in agriculture ties in many dimensions of sustainable development and in the context of zero pollution, climate change, and EU policies of strategic autonomy, there can be synergies and trade-offs between different drivers of choices for sludge management. The importance of flexibility is stressed, also considering that sludge management strongly depends on local conditions".*

The evaluation also pointed to a lack of data on sludge use in agriculture and on-going research on the subject.

Environmental risks posed from certain pathogens and hazardous substances were discussed by the Working Group, however, the remit was on the controls and various pieces of legislation regulating the management and oversight of the application of sludges, biosolids and other organic fertilisers on agricultural lands.

There are numerous forms of sludges, biosolids and other organic fertilisers which originate from multiple sources. The main forms include sewage sludge from urban wastewater treatment (UWWT) plants, sludge from domestic wastewater treatment systems (DWWTS), pig slurry and poultry litter from EPA licenced installations, anaerobic digestate, industrial wastewater sludges, dissolved air flotation (DAF) sludge, paunch, manure from bedding, lairage slurry, dairy sludges, sludge from fish processors, spent mushroom compost, food waste compost, wash water and to a lesser extent, contaminated milk.

1.4 Existing controls and regulations

1.4.1 Sludges

EU rules promote the use of sewage sludge in agriculture but regulate this use to prevent harmful effects on soil, vegetation, animals and people. Sludges that are land spread (including sludge from public and private sewage sludge facilities) are regulated nationally under S.I. No. 148 of 1998 - Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998 as amended by S.I. No. 267 of 2001 – Waste Management (Use of Sewage Sludge in Agriculture) (Amendment) Regulations, 2001.

The application of sewage sludge and biosolids to agricultural land is controlled by local authorities through the maintenance of sludge registers and inspection/enforcement programmes. The Sewage Sludge regulations stipulate that a local authority shall be responsible for the supervision of the supply and use of sludge in agriculture in their functional area and it is required that each local authority shall establish and maintain a register to be known as "the sludge register". Each local authority shall enter in the register;

(a) the quantities of sludge produced and the quantities supplied for use in agriculture in their functional area

(b) the composition and properties of the sludge having regard to the parameters referred to in Part II of the Schedule of the regulations

(c) the treatment which the sludge has undergone having regard to the types of treatment referred to in article 2 of the regulations

(d) the name and address of each recipient of the sludge and the location of each site where the sludge is to be used.

However (b), (c) and (d) shall not apply to sludge from septic tanks or from sewage treatment plants with a treatment capacity below 300 kg BOD 5 per day, corresponding to a population equivalent of 5,000 persons, and designed primarily for the treatment of domestic waste water.

There are numerous applicable legislative instruments relating to the regulation of sludges, (See Appendix 1). While the application of sludges, biosolids and other organic fertilisers to agricultural land is regulated through the GAP Regulations, DAFM and local authorities are not required under the Regulations to collect and share all the associated data.

1.4.2 Sewage Sludge from Uisce Éireann plants

The Sewage Sludge Directive (Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment, and in particular of the soil, when wastewater sludge is used in agriculture) governs the use of sewage sludge in agriculture while preventing negative health and environmental impacts. This Directive has been transposed into Irish legislation by S.I. No. 148 of 1998 — Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998, as amended by the SI No. 267 of 2001. The use of sewage sludge and biosolids generated at Uisce Éireann plants is managed by Uisce Éireann through its National Wastewater Sludge Management Plan 2022 – 2027. The National Wastewater Sludge Management Plan (NWSMP) states that it '*sets out a nationwide standardised approach to ensure that treated wastewater sludge is effectively managed, stored, transported, and re-used in a sustainable way, to safeguard public health and the environment*'. This NWSMP is currently undergoing revision by Uisce Éireann and a public consultation process is planned in 2025.

Uisce Éireann exports sewage sludge to approximately 130 farms and has systems and controls in place for recording sewage sludge and biosolids produced at its facilities. Uisce Éireann produces circa 60,000 tonnes dry solids (tds) of biosolids annually, 100% of which is reused on agricultural land. This is expected to increase to greater than 96,000 tds by the year 2040 as new and upgraded plants are completed. In addition, sewage sludge collected from some domestic waste water treatment systems (DWWTS) is treated at UÉ WWTPs via commercial agreements with authorised waste collectors and this is expected to increase in volume over the duration of the NWSMP.

The EPA's most recent Urban Wastewater Treatment Report states the destination routes for sewage sludge in 2023 to be; Agriculture 53,244 Tonnes (dry solids) and Compost 5,720 Tonnes (dry solids). "*All sludge sent for composting was subsequently used in soil / agriculture*". The report goes on to say "*that sludge must be treated to make it stable and free from odours, harmful bacteria and viruses before it is used on land. The treated sludge should only be used on suitable land and must be applied during appropriate conditions, in a way that makes sure the nutrients are effectively used for plant growth or assimilated into the soil*".

1.4.3 Sludge from EPA licensed facilities

The EPA regulates specified industries through Industrial Emissions (IE) licences, some of which generate industrial sludges including anaerobic digesters, intensive agriculture (pig and poultry installations), dairy processing and animal slaughtering. IE licences issued and enforced by the EPA are confined to the activity/activities and installation(s) for which the licence was issued, and do not include the spreadlands, as set out most recently in High Court judgement [2024] IEHC 55, 23 January 2024. Jurisdiction of the licence therefore ends at the installation boundary and the application of sludges to the spreadlands is regulated and controlled by local authorities under the GAP Regulations. This has resulted in a break in the chain of custody, making tracking and managing both the volume and nutrient content of the sludges and organic fertilisers originating from these sources difficult.

1.4.4 Farmyard / livestock manure and slurries (organic nutrients)

Movements of farmyard / livestock manures and slurries, such as pig slurry, between farm holdings, were required to be reported to DAFM by the 31st December each year through the Record 3 / Organic Nutrient Movement system, however DAFM has since 1st January 2025 moved to a new 4-day notification period for the movement of farmyard/livestock manures and slurries onto farm holdings. While the quantity of farmyard / livestock manures and slurries generated on these sites is recorded there is a weakness in the system regarding linking it to other requirements of the GAP Regulations and, also sharing of this information from DAFM to the local authorities. There needs to be improved sharing of data regarding the generator, contractor and the receiving farms.

1.4.5 Digestate from Anaerobic Digestion facilities

The National Biomethane Strategy (2024) estimates that there will be approximately 140 community scale Anaerobic Digester (AD) plants developed by 2030, which is an increase from the six currently licensed by the EPA. In addition, there are currently approximately 40 AD sites which are not licensed by the EPA but operate under a local authority waste permit or don't require authorisation. Digestate is a nutrient rich output of anaerobic digestion, with the nutrients typically readily available. Digestate application to spreadlands is regulated by local authorities as an organic fertiliser under the GAP Regulations. However, the nutrient composition, and possible presence of contaminants, is dependent on what is fed into the anaerobic digester.

While the EU Fertiliser Product Regulations 2019/1009 sets standards for compost and digestate to be used as fertiliser, and EPA licences specify a standard for digestate, there are currently no established national standards in terms of the quality of anaerobic digestate and there is an opportunity for this to be addressed under the National Biomethane Strategy.

1.5 Separation of solids and liquid fractions in slurry and digestate

The Department of Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland is funding a small number of mobile slurry and digestate separators which produce a liquid and solid fraction. Typically, the liquid fraction remains on the farm for land spreading and the solid fraction can either be used on the same farm, exported to another farm or exported to an anaerobic digestion (AD) plant. Likewise, AD digestate can be separated, with the solids being transported further afield compared to raw unseparated digestate. Depending on the separation method (typically screw press for slurry and screw press or centrifuge for digestate) the liquid fraction will have a reduced nutrient content. DAERA advise that there has also been a surge in the number of privately funded separators being used by agricultural contractors to separate slurry on farms in Northern Ireland over the last 12 months.

2 Issues and Challenges

2.1 Lack of a national centralised Register or Database

The control and management of sludges, biosolids and other organic fertilisers is complex. There are multiple sources of organic fertilisers which in turn gives rise to different definitions depending on the source. Currently there is no integrated approach or data system available that identifies the nutrient loadings and spreadlands where biosolids and other organic fertilisers are applied.

There are also several regulatory controls which vary depending on the source. In addition, there are different types and sources of sludges which may present varying environmental risks as the constituents of the sludge differ depending on the processes involved. Due to the variety of legislation, there are several organisations regulatory bodies with responsibilities which can lead to breaks in chains of custody and gaps in data sharing.

Uisce Éireann treat sewage sludge to convert it to biosolids, however Uisce Éireann is only one producer. Other sources of sludges, biosolids and organic fertilisers include pig slurry, anaerobic digestate, poultry litter and sludge from fish processors amongst others, and the loadings exported from these other sources are less easy to track.

In the absence of a single national register for all land spreading, there are gaps in chains of custody which is problematic in terms of tracking loads being applied to lands from multiple sources, creating a risk of accumulation of contaminants or a higher loss of nutrients locally. The absence of a single database or formal process for data sharing also creates potential for farms or individual fields to receive repeat or excessive loads from multiple sources, which could have a potential negative impact on water quality and creates difficulties when responding to or investigating complaints.

The tracking and verification of movements requires simple and timely data sharing amongst all relevant authorities. The need for a centralised organic fertiliser database was discussed by the Working Group. The new DAFM National Fertiliser Database for tracking the movement of chemical fertilisers has proven to be successful and could act as a template for a wider organic fertiliser database.

2.1.1 Sewage sludge from Uisce Éireann plants

Uisce Éireann have formal procedures in place to identify the farms in receipt of the biosolids they produce. They engage a framework of contractors who in turn work with farmers. The contractors must demonstrate that valid Nutrient Management Plans are in place and provide them to Uisce Éireann as required. Nutrient Management Plans are submitted by (or on behalf of) farmers to the relevant local authority for assessment and approval, before a farm can receive biosolids.

Uisce Éireann is currently solely reliant on land spreading of biosolids as a means to address the biosolids produced at their plants. With volumes being produced projected to increase and a small number of registered farms available, there is increasing pressure on the land bank, storage facilities and receiving catchments. Moreover, timing of the land spreading is critically important to minimise nutrient losses to water, with land spreading on tillage land in the autumn presenting a higher risk. If there are changes to the timing for landspreading of sludges, this may have an impact on the capacity in the various sludge storage facilities.

2.1.2 Sludges from EPA/IE licensed installations

Sludges exported from EPA/IE licensed installations, however, are not regulated by the EPA outside of the licence boundary; instead, land spreading of these sludges is regulated by the local authorities under the GAP Regulations.

The export of the sludge is recorded by the licensee, however the details of the land on which it is used as fertiliser is not shared with any regulator. While the local authorities regulate the landspreading under the GAP regulations they do not have prior knowledge of where the sludge is to be spread.

The sludges are largely treated as fertiliser as they are used on agricultural land, therefore the sludge isn't managed or recorded as a waste or subject to the Waste Management Act.
A mechanism is required to share details with regulators of the land where sludges from EPA/IE licensed sites is used as a fertiliser.

2.1.3 Industrial sludges from non-EPA licensed sites

There needs to be improved sharing of data between local authorities and DAFM on the movement of sludges from non-EPA licensed sites.

2.1.5 Farmyard / livestock manure and slurries (organic nutrients)

The GAP Regulations impose a limit of 170kg/ha of organic nitrogen. Farms in derogation are allowed exceed this limit subject to additional controls. Farms outside of derogation who exceed the limit are required to export excess slurries and/or farm yard manure (FYM) and/or livestock manure, which is recorded through the DAFM 'Organic Nutrient Movement System'. This reporting system is primarily an online system but still allows for paper forms (Record 3) to be submitted in certain circumstances. This 'Organic Nutrient Movement System' required the movement of slurry and/ FYM and/or livestock manure to be recorded and reported to DAFM by the 31st December each year, with both the exporter recording and importer verifying each movement on the system. The requirement to record these movements extends to the importation onto farms, of organic fertilisers produced in EPA IE licensed installations such as pig slurries and poultry litter. However, the requirement to report by the end of the year, did not facilitate timely assessments or inspections of the movements and so from 1st January 2025, DAFM has moved to a new 4-day timeframe for the notification of exports on the Organic Nutrient Movement System. Farmers are required to maintain a record of sludges, biosolids and other organic fertilisers imported onto their farms; this can be in the format of details recorded on the 'Organic Nutrient Movement System' where appropriate.

For cross border movements proof of registration on the EU TRACES system is required by DAFM, with respective valid addresses in the Republic of Ireland (ROI) and NI. DAERA, NI have similar protocols in place (exports from NI – imports to NI).

2.2 Guidance

The key guidance documents relevant to the use of biosolids in agriculture from UWWT plants are the 'Code of Good Practice for the Use of Biosolids in Agriculture – Guidelines for Farmers' and the 'Code of Good Practice for the Use of Biosolids in Agriculture – Guidelines for Local Authorities and Wastewater Treatment Plant Operatives'. Both Codes of Practice were developed and published by the Department of Environment and Local Government in 2008 with a focus on the use of biosolids in agriculture. These now need to be updated to reflect current knowledge, practices and developments with a greater focus on water quality and other organic nutrients that are being applied to land. These Codes of Practice must also be kept under review, and amended as required,

in accordance with changes to European and national legislation which may in the future consider organic compounds, pathogens, pharmaceuticals, persistent chemicals and microplastics.

2.3 Knowledge Sharing, Training and Resources

Sludges that are spread on agricultural land are regulated through the GAP Regulations, which are implemented by the local authorities and DAFM. However, in recent years the number of experienced people working in this area in local authorities has reduced partly due to the restructuring of water services between local authorities and Uisce Éireann. This has led to reduced resources in many cases and a loss of local connections between local authorities, Uisce Éireann and industrial sludge producers. The resource issue in the local authorities has now been addressed with the introduction of the National Agricultural Inspection Programme, and the recruitment of dedicated staff to undertake GAP inspections. New staff require training and upskilling, particularly, in relation to the assessment of Nutrient Management Plans, and formal enduring communication channels are required between Uisce Éireann and individual local authority environment sections.

Farmers are the end users of sludges, biosolids and other organic fertilisers that are being produced. The success or otherwise of the use of these materials, with the associated benefits to the circular economy and the environment, are dependent on their continued engagement and co-operation. Therefore, training/guidance is required to be provided to farmers and any solutions for the tracking and verification of land spreading must not be overly burdensome.

The regulation of sludges should also ensure that the farmers receiving the sludges are receiving a sludge that is beneficial to agriculture, has the nutrients stated, does not contain contaminants or pathogens which exceed acceptable limits and is applied at an appropriate time of year.

2.4 Further Research on Existing and Emerging Pathogens and Hazardous Substances

Research is currently underway, through a DAFM funded project 'Safe Waste' and the EPA funded 'TERRAChem', these will provide additional understandings on pathogens and hazardous chemicals that may be contained in sludges and biosolids.

The 2017 EPA Research Report 200 Health and Water Quality Impacts Arising from Land Spreading of Biosolids undertook a thorough literature review of the spreading of treated sewage sludge (biosolids) on land to include analysis of potential impacts on environmental and human health.

The working group note the food safety risks associated with the use of sewage sludge and in particular concerns raised by FSAI. Although this Working Group primarily reviewed the management and oversight of sludges, biosolids and other organic fertilisers in relation to the protection of waters, it is noteworthy that some Member States have more stringent national controls compared to the EU requirements and dispose of sewage sludge via alternative routes, such as incineration or landfill.

Research papers and reports refer to persistent chemicals and contaminants in leachate and waste water (examples in Appendix 3), being potential sources of these substances in waste water sludges.

In the context of pathogens, chemicals and other hazardous substances such as POPs, PFAS, and microplastics, a national assessment of the use of sewage sludge in agriculture is required.

It is worth noting that under the Bord Bia Sustainable Beef & Lamb Assurance Scheme "the storage and or use of raw or treated sewage, sewage sludges or sewage-derived products on Bord Bia

certified farms is prohibited", however local authorities have commented that currently there is no way for them to check if a farm is Bord Bia approved.

The Irish Grain Assurance Scheme, Code of Practice states that "The Food and Feed industry will not purchase grain from land treated with OMI (organic municipal and industrial material/sludges). It also recommends that their members should always consult their grain buyer and notify them before applying the product.

3. Key Considerations/Findings

- While the initial focus of the Working Group was on the movement and management of sludges on agricultural land it became apparent that there are a wide range of other organic fertilisers being applied to land and it was agreed to extend the scope to include these other organic fertilisers.
- Uisce Éireann has procedures in place for managing biosolids that are produced at its plants, but there is currently no integrated approach for timely data sharing with all relevant bodies, nor is there a centralised data system for tracking and verifying loads or spreadlands for all sludges.
- While local authorities have responsibility for enforcing the GAP Regulations including the landspreading of sludges and organic fertilisers, they have difficulty in doing so due to the lack of timely information sharing. Likewise, local authorities do not have prior knowledge of where the sludge from EPA/IE licensed facilities is to be spread. A mechanism is required to include the sharing of details with regulators of the land where sludges from EPA/IE licensed sites are used as a fertiliser.
- Considering the multiple sources of sludges and other organic fertilisers being applied to land and the multiple associated pieces of legislation, there is a requirement for simple and timely data sharing between relevant authorities to ensure the existing controls are working and are fit for purpose. Recording of these movements onto farms must also be simple and accessible for farmers. The Working Group concluded that currently there is a lack of an integrated approach to identifying the origin, loads and spreadlands of where these materials are being applied and that a centralised register or database should be developed to facilitate this process.
- The two *Codes of Practice for the Use of Biosolids in Agriculture* were developed in 2008 and urgently need to be updated to reflect current knowledge, practices and developments with a greater focus on water quality.
- Uisce Éireann is currently solely reliant on land spreading of biosolids as a means to address the biosolids produced at their plants. With volumes being produced projected to increase and the small number of registered farms available, there is increasing pressure on the land bank, storage facilities and receiving catchments.
- The timing of the land spreading is critically important to minimise nutrient losses to water, with land spreading on tillage land in the autumn presenting a higher risk. If there are changes to the timing for landspreading of sludges, the impact on the capacity in the various sludge storage facilities would have to be considered.
- Sludges can be considered valuable fertilisers and soil improvers when spread on agricultural land, subject to crop requirements and appropriate environmental controls. The recycling of these materials to land can offer an economically favourable means of contributing to the circularity of the waste streams. However, they may also contain contaminants such as metals, pathogens, chemicals including pesticides, microplastics and medicinal residues. Although the nutrient load being applied to land nationally from sludges is low (approximately 5% of the national nitrogen load), land spreading may be concentrated on a small number of farms and

therefore may pose a more significant risk to individual waterbodies. Consideration should be given to conducting a national assessment of the use of sewage sludge on agricultural land in the context of pathogens, chemicals and other hazardous substances such as POPs, PFAS, and microplastics.

4. Key Recommendations

1. Develop a national register and database for sludges, biosolids and other organic fertilisers that are being spread on agricultural land.
   As DAFM currently manages the national chemical fertiliser database and the 'Organic Nutrient Movement System'; as well as farmer data, they would be best placed to host this proposed new sludge, biosolids and other organic fertilisers register. Data uploaded to this register must be timely, verifiable, and accessible to all relevant authorities. The requirement to record movements on the register should include all steps in the chain including primary producers (UE, industry, etc.), contractors and importing farms. The register should identify importing farms and could incorporate the new 4-day export recording timeframe as required by DAFM's 'Organic Nutrient Movement System'. The register should also address scenarios where intermediate contractors are used. It is essential that in time the register could identify land spreading locations at field level. Farmers importing sludge are currently required to maintain a record of such movements onto their farms, therefore recording these movements on an organic fertilisers register could replace this requirement. This register would ensure coordination and transparency across all sources being land spread.
2. Amend the Good Agricultural Practice for the Protection of Waters Regulations and other relevant legislation, to include an obligation on the producers of all sludges, biosolids and other organic fertilisers and on the contractors and farmers spreading it on agricultural land, to record the movements on a national register, once created.
3. Update the 'Code of Good Practice for the Use of Biosolids in Agriculture – Guidelines for Farmers' and 'Code of Good Practice for the Use of Biosolids in Agriculture – Guidelines for Local Authorities and Wastewater Treatment Plant Operatives' produced by the Department of Environment and Local Government in 2008. It should be updated with a greater emphasis on water quality, and on other organic nutrients and substances that may contain chemicals which may be applied to land. Elements of the Codes of Practice once finalised, may be considered in future updates of the GAP Regulations. It is recommended that this work should commence as a priority, with a delivery timeframe for the end of 2025. In this regard DECC established a Working Group in January 2025 to examine and update the Codes of Practice.

5. Operational Recommendations

4. With increasing volumes of biosolids being produced and the small number of receiving farms there will be increasing pressure on land banks, storage facilities and receiving catchments. Uisce Éireann should explore options to diversify the handling of biosolids.
5. Complete an assessment of the risk associated with landspreading sludges in the autumn due to the perceived risk of nutrient losses.
6. Training for local authority inspections should include reviewing and approving of Nutrient Management Plans. It is imperative that local authorities are adequately resourced to undertake inspections and monitoring of land spreading locations. An inspection regime to verify land spreading locations should be incorporated into the local authority and DAFM GAP inspections.

7. Incorporate training on the benefits and risks associated with the use of sludge and other organic fertilisers in agriculture into the Teagasc 'Better Farming for Water Campaign', Knowledge Transfer Groups and the Agriculture Sustainability Support and Advisory Programme (ASSAP).
8. Establish formal enduring points of contact between local authority environment sections and Uisce Éireann in relation to the management of sludges and biosolids and establish similar links between the EPA and local authorities in relation to the volumes generated at licensed sites.
9. Establish formal enduring points of contact between local authority environment sections and Bord Bia to identify farms registered on the Bord Bia Sustainable Beef & Lamb Assurance Scheme.
10. Conduct a national assessment of the use of sewage sludge on agricultural land in the context of pathogens, medicinal residues, chemicals and other hazardous substances such as POPs, PFAS, and microplastics.
11. The Biomethane Implementation Group should establish national quality standards for digestate from anaerobic digestion plants and compost from compost plants.
12. The Sludges, Biosolids and other Organic Fertilisers Working Group should be retained, to meet at least biannually, to assign responsibility and oversee the implementation of the recommendations.

Appendix 1. Terms of Reference

National Technical Implementation Group for WFD WORKING GROUP	**TERMS OF REFERENCE**
Name of Group	**Sludges & Other Organic Fertilisers Working Group**
Purpose	To identify the existing requirements & controls, and records & declarations applicable to use and movement of sludges and other organic fertilisers and where necessary make recommendations to improve the control and recording of sludges and organic fertilisers to achieve better environmental outcomes.
Scope of Group	To identify: • the sludges and organic fertilisers that are applied to land, • the main sources (generators) of sludges and organic fertilisers, • the existing controls and records applicable to the use and movement of sludges and organic fertilisers, • the agencies/organisations with legislative responsibilities in this area, • the existing legislative responsibilities on organisations/individuals generating, storing, moving or using sludges or organic fertilisers, • legislative, implementation or policy gaps, • the barriers to making data available to facilitate assessment, enforcement and compliance. To recommend: • where required, improvements to the control and recording (including data sharing) of sludges and organic fertiliser movement practices.
Associated Working Groups/Networks	Agriculture Inspections Policy Group, Nitrates Expert Group, ASSAP oversight group, National Agricultural Inspections Programme (NAIP) Working Group, National Technical Implementation Group (NTIG)
Main tasks	1. Identify existing work and actions in this area, 2. Identify legislative restrictions, 3. Identify what is currently captured in the way of data or reports and could they be improved. 4. Identify challenges on data sharing and how processes and procedures could be improved so that agencies / organisations may share data and information. 5. focus on environmental outcomes
Outputs	1. Recommendations arising will be brought back to the WFD governance structures for consideration. 2. Recommendations will be submitted as part of an EPA progress report to the DHLGH on the implementation of the GAP Regulations due on 1st October 2024.
Added Value: What Outcomes will be achieved?	1. Consolidated inter-agency/organisation approach to the recording, tracking monitoring and assessment of movements of sludges and organic fertilisers on the island of Ireland.

	2. Effective monitoring and enforcement of the land spreading of organic fertilisers. 3. Informed and Targeted regulation 4. Better environmental outcomes
Frequency of meetings/workshops	First meeting in April 2024, possibly one more in-person meeting and/or online meeting, frequency may vary as need arises.
Main methods of Communication within the group	Email and in person meeting, followed by online meetings.
Start date	April 2024
Date for completion of work	Q3 2024
Group Coordinator name	Ken Bucke / Michael Martin
Group Coordinator organisation	Environmental Protection Agency
Coordinator email	k.bucke@epa.ie / m.martin2@epa.ie
Group membership composition	FSAI, DHLGH, DECC, DAFM, Uisce Eireann, 5 Local Authority representatives, EPA, LAWPRO, DAERA NI. Other groups may be invited on a needs basis.

Appendix 2.

Relevant Legislation

- Waste Management (Use of Sewage sludge in Agriculture) Regulations, 1998 to 2001 (S.I. 148/1998 and S.I. 267/2001).
- S.I. No. 419/2007 – Waste Management (Shipments of Waste) Regulations: Regulation (EC) No. 1013 of 2006 on the shipment of waste
- S.I. No. 820/2007 – Waste Management (Collection Permit) Regulations 2007 (as amended).
- S.I. No. 821/2007 – Waste Management (Facility Permit and Registration) Regulations 2007 as amended.
- S.I. No. 113/2008 – Waste Management (Registration of Brokers and Dealers) Regulations.
- S.I. No. 32/2010 Waste Management (Registration of Sewage Sludges Facility) Regulations 2010.
- S.I. No. 220/2012 - Domestic Waste Water Treatment Systems (Registration) Regulations 2012 as amended.
- S.I. No. 187/2014 – European Union (Animal By-Products) Regulations 2014.
- S.I. No. 214/2020 - European Union (Wastewater Discharge) Regulations 2020.
- S.I. No. 321/2020 – European Union (Landfill) Regulations 2020 gives effect to Directive (EU) 2018/8501 of the European Parliament and of the Council of 30 May 2018 amending Directive 1999/ 31/EC on the landfill of waste.
- S.I. No. 113/2022 – European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022 as amended.
- S.I. 32/2010 Waste Management (Registration of Sewage Sludge Facility) Regulations 2010.
- The Veterinary Medicinal Products, Medicated Feed and Fertilisers Regulation Act 2023 [National Fertiliser Database].
- Forthcoming Recast Sludge Directive and Urban Wastewater Treatment Directive.

Glossary of Terms and Definitions

Extracted from S.I. No. 113/2022 – European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022 as amended.

"**agriculture**" includes the breeding, keeping and sale of livestock (including cattle, horses, pigs, poultry, sheep and any creature kept for the production of food, wool, skins or fur), the making and storage of silage, the cultivation of land, and the growing of crops (including forestry and horticultural crops).

"**chemical fertiliser**" means any fertiliser that is manufactured by an industrial process.

"**farmyard manure**" means a mixture of bedding material and animal excreta in solid form arising from the housing of cattle, sheep and other livestock excluding poultry.

"**fertiliser**" means any substance containing nitrogen or phosphorus or a nitrogen compound or phosphorus compound utilised on land to enhance growth of vegetation and may include livestock manure, the residues from fish farms and sewage sludge.

"**livestock**" means all animals kept for use or profit (including cattle, horses, pigs, poultry, sheep and any creature kept for the production of food, wool, skins or fur).

"**livestock manure**" means waste products excreted by livestock or a mixture of litter and waste products excreted by livestock, even in processed form.

"**organic fertiliser**" means any fertiliser other than that manufactured by an industrial process and includes livestock manure, dungstead manure, farmyard manure, slurry, soiled water, silage effluent, spent mushroom compost, nonfarm organic substances such as sewage sludge, industrial by-products and sludges and residues from fish farms.

"**slurry**" includes— (a) excreta produced by livestock while in a building or yard, and (b) a mixture of such excreta with rainwater, washings or other extraneous material or any combination of these, of a consistency that allows it to be pumped or discharged by gravity at any stage in the handling process but does not include soiled water.

Extracted from S.I. 148/1998 - Waste Management (Use of Sewage sludge in Agriculture) Regulations, 1998 as amended.

"**sludge** means"

(i) residual sludge from sewage plants treating domestic or urban waste waters and from other sewage plants treating waste waters of a composition similar to domestic and urban waste waters;

(ii) residual sludge from septic tanks and other similar installations for the treatment of sewage;

(iii) residual sludge from sewage plants other than those referred to in paragraphs (i) and (ii).

Extracted from Uisce Éireann report 'Regional Biosolids Storage Facility for Greater Dublin'

"**biosolids**" is the treated sludge product arising from wastewater treatment processes. The sludge is fully treated so that it is both biologically stable and free of harmful pathogens (bacteria and viruses etc.).

Appendix 3. Reports and Research papers

- Sewage Sludge in Agricultural Lands: The Legislative Framework in EU-28 (2024)
- Ireland's State of the Environment Report 2024 - Chapter 14 - Environment, Health and Wellbeing | Environmental Protection Agency
- EPA Research 430: Sources, Pathways and Environmental Fate of Microplastics (2023)
- EPA Published Report - Determining Historic and Current PFAS Levels in AFFF in the Republic of Ireland (2021)
- EPA Research Report 345: Furthering Understanding of Emissions from Landfilled Waste Containing POPBFRs and PFASs (FUEL) (2021)
- EPA Published Report - Persistent Organic Pollutants, Landfill Leachate Sampling Study (2021)