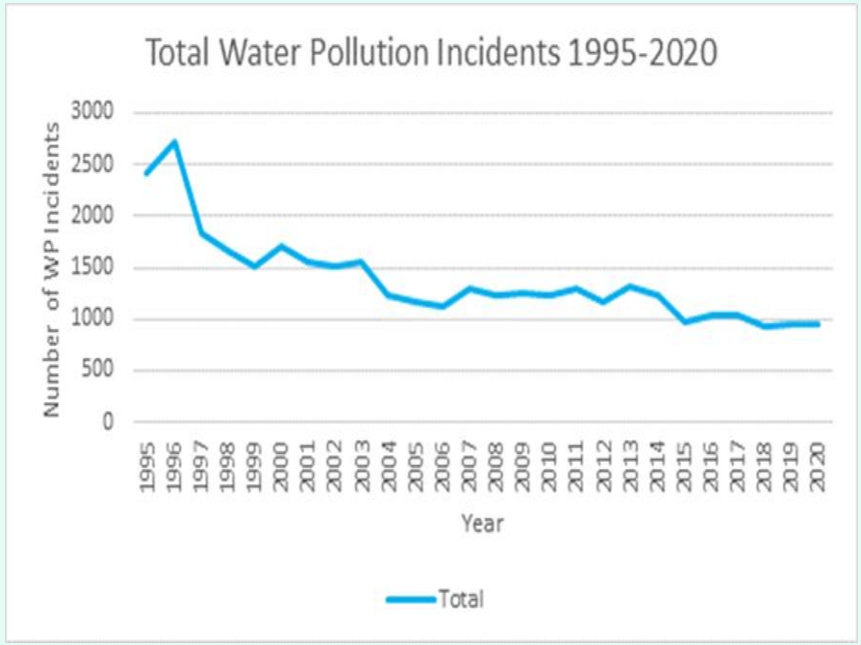
Queries based on Introduction and Presentation 1 'Catchment Team Update' by Mert Thompson	
Stakeholder Query	Response
Feedback on reported incidents is not great. This was to be put on a web page where possible to allow the public to be updated?	Each incident of reported water pollution is given a unique identifying reference number (WRxxx) which is provided to the complainant at the time. Feedback on an incident can be sought by contacting your local Catchment Officer quoting the incident reference number. It should be noted that in cases where enforcement action is taken, some details cannot be released until the proceedings have taken place, which can be many months after an event. A website detailing the progress on every single incident reported is not deemed practical or reasonable given the relatively low numbers of high profile incidents and the already existing method of feedback outlined above.

What is being done to reduce phosphorus in river water?	Many actions are being taken to reduce phosphorous levels in rivers. Within agriculture, nutrient inputs are controlled by the Nutrient Action Programme (NAP) 2019-2022, which is designed to protect water against pollution caused by nutrients from agriculture sources. In particular it is about promoting better management of animal manures, chemical fertilisers and other nutrient-containing materials spread onto the land. Compliance with the NAP is one of the Cross Compliance Statutory Management Requirements. NIEA manage consents to discharge from any commercial, industrial or domestic premises not connected to the public sewer. Discharge consents include conditions outlining the quality and quantity of waste discharges. These conditions have been drawn up to ensure that the effluent can be received by the receiving waterway without damaging the aquatic environment or breaching national or European Commission (EC) standards. The department maintains registers of discharge consents. These are open to public inspection. The Agency also provides a pollution response service. If a pollution incident is discovered and reported the Pollution Response team will find and stop the source of the pollution, identify the polluter and where necessary collect enough evidence to secure a prosecution. The team co-ordinates the response to all reported pollution incidents. Once an incident has been reported and its severity assessed, the Duty Emergency Pollution Officer then mobilises the staff and resources necessary to deal with each incident. Every incident is responded to with a view to: -tracing the source of pollution -stopping the pollution at source -identifying the polluter -collecting sufficient evidence, if appropriate, to secure a prosecution -notifying persons who may be affected by a serious incident -organising/giving advice for clean-up operations (if required) -preventing the continuation or the repetition of pollution -enforcing the legislation and making the polluter pay.
Will funding for projects be available 2021?	Water Management Unit are continuing to work hard to secure funding for another Water Quality Improvement Strand of the Environment Fund in 2021.

Pollution incidents up or down during 2020?	The total number of water pollution incidents investigated and substantiated as having an impact on water quality in the inclusive period 2016 to 2020 were 1027, 1028, 924, 941 and 948 respectively. The number of substantiated water pollution incidents increased by 0.74% in 2020 compared to 2019.
How much were the farming incidents in 2020 affected by the minister ordering staff to leave the farmers alone?	Although planned farm inspections were postponed to later in the year in 2020, pollution incidents that were farm related were still investigated. Final compliance figures for the 2020 year are yet to be confirmed but initial analysis of planned inspections conducted indicate an overall level of non-compliance at approximately 24% which is similar to levels found in 2019 and 2018 at 21% and 26% respectively.
In 2 of the 3 years pollution spiked during peak slurry spreading time. Any comment?	Phosphorous elevations occur in catchments at different times and will relate to land use. In the Devenagh Burn, which is the example that Mert discussed in his presentation, the elevations occurred within the open period for slurry spreading, suggesting that it is likely that the phosphorus is entering the waterway diffusely from fields. One of the outcomes from the Catchment Officer investigations on the Devenagh Burn was to mitigate for this diffuse pollution by highlighting farms for the Environmental Farming Scheme and the Knowledge Advisory Service in order to address diffuse pollution from farming activities.
Continuous pollution of River Faughan this year - why not stopped?	Waterway Inspections within the River Faughan catchment in 2020 were significantly increased which included inspections of both watercourses and higher risk sites. This work was effective in identifying both actual and potential issues and enforcement action in relation to some of these incidents is ongoing. Should anyone observe water pollution or have concerns about particular sites please report these to the pollution hotline on 0800 80 70 60.
Hi folks, just on the poll question where you've grouped the protection of High/Good, I was just wondering if there has been any extra consideration given to the protection/restoration of High status sites given their significance?	Our High/ Good status water bodies continue to be monitored in line with our monitoring programme of surface water bodies. If any issues are noticed at the time of sampling the monitoring location is immediately referred to our pollution response team for further investigation in order to protect the water body and prevent deterioration. When prioritising catchments for intervention we plan to consider the status and its objective of the water body, but also whether the water body is associated with any protected sites (e.g. bathing waters, drinking water protected areas, SAC/ SPA, shellfish water) that require targeted measures.

Why are we not seeing an overall drop in pollution incidents year on year with all the action? What does "Other" refer to?	In recent years the number of confirmed pollution incidents has plateaued however the long term trend has shown a decline in pollution incidents since the mid-1990s (graph below refers). This has been as a result of improvements in waste water management, the regulation of industry and agriculture and an increasing awareness amongst the public of the correct disposal of potentially harmful products. NIEA will continue to work with all stakeholders to continue the overall trend in reducing pollution incidents. 
Can angling clubs see the specific reports on a Priority Water Body? Currently not being shared.	Summary documents of the priority water body investigations have been prepared and will be available on the website.

Why is soil testing not compulsory?	DAERA have part funded several soil sampling and analysis pilot schemes aimed at informing farmers about the importance of healthy soils; and the benefits they provide for farm efficiency and sustainability through Nutrient Management Planning. As well as the mandatory measures regarding fertilisation plans and soil testing under NAP, DAERA continues to promote nutrient management planning to farmers. Through the NAP, Nitrogen application limits are in place NI wide. Soil testing is mandatory before the application of chemical phosphorus fertiliser and all farms using AD and high phosphorus manures; as phosphorus is the main issue in our waters.
Why are pig farms exempt from preparing a fertiliser plan when pig manure has more water soluble Phosphorus than cattle?	-In the Nutrients Action Programme (NAP) 2019-2022, a fertilisation plan must be prepared and kept up to date by all grassland farms using chemical phosphorus fertiliser, and all farms using phosphorus rich manure (0.25kg or more of total phosphorus per 1kg of total nitrogen e.g. some poultry manures, pig FYM manures) and anaerobic digestate; and all derogated farms. - An exemption has not been introduced for pig farms. Pig manure with 25% dry matter content is defined as a phosphorus rich manure and requires a fertilisation plan. Pig slurry with 6% dry matter content is below the ratio of 0.25kg of total phosphorus per 1kg of total nitrogen and not defined as a phosphorus rich manure. This is due to the update of figures from RB209. The Pig slurry ratio is likely to have been influenced by improved pig diet. The NAP figures are based on the latest scientific analysis available at the time, and are reviewed for each 4 year programme. - As part of the fertilisation plan for phosphorus, a soil analysis is required which indicates the Soil P index (from analysis) and is taken into account in determining the crop requirement. The use of soil indexing for phosphorus and SNS for nitrogen allocates different limits to the amount of nutrient allowed to be applied, dependent on current soil fertility levels. The aim is to only apply what is required for the crop and reduce excess levels which can be lost to the environment. We continue to provide training and advice and online nutrient management planning tools for farmers. It is important to recognise that some farmers find nutrient management plans challenging. - The NAP also contains land application restrictions such as not applying slurry, manures and chemical fertilisers in poor weather or ground conditions to reduce the risk of water pollution. - The NAP specifies nutrient availability values for manures from different animal species. The leachate solubility of manures from different animal species are not currently factored in as part of the NAP nutrient values and research is ongoing in this area as there is limited evidence available for local data.

When are farm contractors going to be certified and licensed, so they can be held responsible for pollution?	A licensing/training scheme for contractors spreading slurry is being considered. The Plant Protection Products (Sustainable Use) Regulations 2012 bring into operation a number of provisions aimed at achieving the sustainable use of pesticides, by reducing risks and impacts on human health and the environment. By law, everyone who uses pesticides (plant protection products (PPPs) professionally must be in possession of an accredited certificate of competence, also known as a spraying certificate or a pesticide licence. The Sustainable Use Regulations also include a requirement for the regular inspection and testing of pesticide application equipment i.e. sprayers and spray equipment. DAERA has raised awareness of these requirements through a series of articles in the press and the DAERA 'Helping You Comply' bulletin and also promotes best practice in the use of pesticides through its role in the Water Catchment Partnership Initiative. More information for farmers on the Sustainable Use Regulations and the current Code of Practice for Using Plant Protection Products is available on the DAERA website. CAFRE provide training for farmers combined with assessment and certification for a range of Pesticide qualifications through City & Guilds.
There is no one policing the farmers so the pollution continues.	NIEA have regional Water Quality Inspectors across NI who investigate pollution incidents and these include farm incidents. In addition NIEA inspect a minimum of 1% of farms claiming single farm payment for compliance with the Nutrient Action Programme Regulations 2019.
Govt. is promoting large increase in livestock numbers - what plans to address this?	Many actions are being taken to reduce pollution within all sectors including agriculture through enforcement and increased awareness. The Nutrient Action Programme (NAP) 2019-2022 is designed to protect water against pollution caused by nutrients from agricultural sources and promote better management of animal manures, chemical fertilisers and other nutrient-containing materials. Compliance with the NAP is one of the Cross Compliance Statutory Management Requirements. The long term trend has shown a decline in pollution incidents since the mid-1990s. This has been as a result of the regulation of industry and agriculture and an increasing awareness amongst the public of the correct disposal of potentially harmful products. NIEA will continue to work with all stakeholders to continue the overall trend in reducing pollution incidents. The Green Growth strategy has been set up with the aim of ensuring the sustainability of Northern Ireland's natural environment into the heart of future Executive policies while fostering the necessary conditions for innovation, investment and competition that can give rise to new sources of economic growth, while building resilient ecosystems.

How does LESSE reduce Total Nitrogen and Total Phosphates leaching?	Research carried out by AFBI and others has shown that using LESSE improves utilisation of nutrients, by placing the nutrients close to the soil surface and in close contact with the base of the plant. LESSE has also been shown to reduce N and P losses due to run-off, particularly P loss. Furthermore application of slurry using LESSE results in less contamination of the plant and improved growth rates/yields.
Water quality trend in Lough Neagh?	NIEA monitor the water quality in Lough Neagh against the Water Framework Directive standards which assess water quality on a 5 point scale ranging from High to Bad. Since 2009 Lough Neagh has consistently been assessed at being at Bad Overall status with the exception of 2018 when the Lough was assessed to improve to Poor Overall status. In the most recently published statistics report, Lake Quality Update 2020, Lough Neagh was once again assessed as Bad status. The drivers for this status are the excessive amount of nutrients in the lake and the biological elements that respond to this pressure. Over decades nutrients accumulate in the sediment and some lakes are subject to a phenomenon known as internal loading, whereby nutrients are released from the sediment into the water column under certain conditions. A number of actions to address catchment inputs to the lake have been identified but because internal loading occurs in Lough Neagh and nutrients are also being released from the lake bed, Lough Neagh will take several decades to recover. AFBI carry out long term monitoring in Lough Neagh and the results from this are being used to determine an ecological recovery time for the lake.
Are there any plans to increase EFS for riverine farmland e.g. moving up the tiers?	EFS (H) land is split into three tiers, depending on which designated site or priority site it falls into. EFS (H) Tier 1: includes those fields that are within sites designated as Special Area of Conservation (SAC), Special Protection Area (SPA) and RAMSAR sites.
There seems to be a focus mostly on nutrient monitoring. Is there likely to be a focus on different parameters that lower the water quality status?	Many of the catchments prioritised in 2019 were those that had deteriorated for Soluble Reactive Phosphorus - hence the focus on nutrients. There is a focus on the other parameters that have lowered water quality. Parameters that have brought about deteriorations other than nutrient related parameters include Zinc, Iron and morphology. The Zinc and Iron failures have been investigated as part of the 2019 priority investigations.

How are you using Outcome Based Accountability to turn the curve on water quality failure?	Outcome Based Accountability (for example as used in the Programme for Government) relates to desired outcomes, targets and objectives. Our target is to have 70 % of all water bodies at good status and our regular updates on classification and Programme for Government provide the accountability. Measures relate to the actions required to achieve the desired targets. However, the successful implementation and delivery of the measure does not only depend on regulation of activities by the department, but also on a variety of delivery partners (e.g. Northern Ireland Water, NGOs, Interreg projects, Challenge fund partners) as well as behavioural changes of every person living in Northern Ireland.
Can I ask if the changes to slurry spreading that Deirdre outlined apply to land within the priority waterbody catchments or to all land in NI?	The changes cover all NI and not specific to priority water bodies.
Planning response team must not accept data given by developers. Local experience has shown that local residents' information given to planning response is ignored.	The relevant planning authority is responsible for seeking advice from NIEA as a statutory consultee. NIEA will provide advice to the planning authority in line with the consultation request and will respond to all information consulted upon, including information from the applicant and representations from third parties.

Queries based on Presentation 2

'Marine and Fisheries Division Team Update'
by Claire Vincent

Stakeholder Query	Response
Is it a coincidence that Waterfoot and Carnlough are not good when the only salmon farms are situated there?	Both Waterfoot and Carnlough have areas which are identified as bathing waters under The Quality of Bathing Water Regulations (Northern Ireland) 2008, and Protected Areas under The Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2017. The water quality of these areas are monitored for faecal indicator organisms (E. coli and Intestinal Enterococci) throughout each bathing season, and an annual classification is produced. The Department has no evidence to indicate that there is any connection between water quality at these identified bathing waters and any fish farms that are in the area.

What is being done to reduce pollution from rivers into the marine from plastics and rubbish?	We are currently in the process of developing a plan to eliminate plastic pollution in Northern Ireland, as committed to in the New Decade, New Approach document. This plan will incorporate a range of ongoing initiatives and some new actions to tackle plastic pollution, including that which ends up in marine environments. The Northern Ireland Marine Litter Strategy will be revised during 2021 and it is anticipated that it will be expanded to include plastic and litter pollution from rivers. In tackling pollution, we will first aim to prevent rubbish and plastic from being created and encourage people to follow the 5 R's "Refuse, Reduce, Reuse, Recycle and Responsible Disposal". There are also a number of legislative and policy interventions on the horizon aimed at keeping harmful items, in particular plastics, out of our environment - for example restrictions on the sale of some of the most commonly littered items (cotton buds, plastic cutlery, plastic straws etc.). The Department will also consult soon on a Deposit Return Scheme and is developing an Extended Producer Responsibility Scheme, both of which will help to reduce the amount of rubbish entering our waterways. Capital funding has been secured to tackle marine litter and options are being proposed for how best to utilise this to ensure the maximum impact is achieved. Work to raise awareness and educate the public around pollution and littering is continuing. We have supported several schemes which have all been aimed at eliminating pollution, for example, Adopt a Spot, Tackling Plastics NI and more recently a project to increase Terracycling and reduce the amount of cigarette butts in our environment. This is just a brief overview of the many projects that are ongoing to help keep our waterways clean and safe. The next edition of the DAERA e-zine, Marine Litter Watch, which reports on how litter pollution is being addressed, will be published soon on our website https://www.daera-ni.gov.uk/articles/marine-litter and on the intranet. If you would like further information on any of these or any other upcoming initiatives, please email wastepolicyteam@daera-ni.gov.uk.
Are there any plans to look at the catchments on the beaches where the results are below good?	Yes - bathing water failures are one of the triggers for a catchment investigation.

Are you thinking of adding in any Freshwater sites to the Bathing Waters Monitoring Programme? Muckross Bay on the Erne and Beach at Garrisson Lough Melvin spring to mind.	Should interested parties wish to nominate a site for consideration as a formally identified bathing water, they may do so at any time, subject to the nomination meeting certain criteria. These criteria include: provision of initial usage evidence at the site (the selection criteria for candidate sites is over 45 bathers on at least one occasion or over 100 beach users on at least two occasions across a review period); evidence that bathing is not prohibited or inadvisable for reasons of safety; provision of information about site facilities for example, signage, litter collection, site access, car parks, life guards, changing facilities; and confirmation from an appropriate body that it is willing to take on responsibility as the bathing water operator. Once the Department is satisfied that the criteria have been met, it shall seek to verify the initial usage data by conducting its own survey at the candidate site during the course of the next bathing season. Should this be verified, and the other criteria continue to be met, the Department would then undertake a public consultation with a recommendation that the candidate site be formally identified as a bathing water. Guidance for Bathing Water Operators can be found at https://www.daera-ni.gov.uk/publications/guidance-bathing-water-operators-northern-ireland.

Can we get some inland bathing waters? Oxford Island, Lough Neagh, Lough Erne, Castle Archdale and Shaws Bridge Belfast?	Should interested parties wish to nominate a site for consideration as a formally identified bathing water, they may do so at any time, subject to the nomination meeting certain criteria. These criteria include: provision of initial usage evidence at the site (the selection criteria for candidate sites is over 45 bathers on at least one occasion or over 100 beach users on at least two occasions across a review period); evidence that bathing is not prohibited or inadvisable for reasons of safety; provision of information about site facilities for example, signage, litter collection, site access, car parks, life guards, changing facilities; and confirmation from an appropriate body that it is willing to take on responsibility as the bathing water operator. Once the Department is satisfied that the criteria have been met, it shall seek to verify the initial usage data by conducting its own survey at the candidate site during the course of the next bathing season. Should this be verified, and the other criteria continue to be met, the Department would then undertake a public consultation with a recommendation that the candidate site be formally identified as a bathing water. Guidance for Bathing Water Operators can be found at https://www.daera-ni.gov.uk/publications/guidance-bathing-water-operators-northern-ireland.
There are large numbers now swimming in Lough Neagh right through the whole year. Are there any plans to sample the Lough for bathing water quality?	Should interested parties wish to nominate a site for consideration as a formally identified bathing water, they may do so at any time, subject to the nomination meeting certain criteria. These criteria include: provision of initial usage evidence at the site (the selection criteria for candidate sites is over 45 bathers on at least one occasion or over 100 beach users on at least two occasions across a review period); evidence that bathing is not prohibited or inadvisable for reasons of safety; provision of information about site facilities for example, signage, litter collection, site access, car parks, life guards, changing facilities; and confirmation from an appropriate body that it is willing to take on responsibility as the bathing water operator. Once the Department is satisfied that the criteria have been met, it shall seek to verify the initial usage data by conducting its own survey at the candidate site during the course of the next bathing season. Should this be verified, and the other criteria continue to be met, the Department would then undertake a public consultation with a recommendation that the candidate site be formally identified as a bathing water. Guidance for Bathing Water Operators can be found at https://www.daera-ni.gov.uk/publications/guidance-bathing-water-operators-northern-ireland.

What results are being shown from the study of micro plastics and radioactivity in marine animals?	The Department has started a programme to assess the levels of micro plastics in marine sediments and water, however, analysis of these samples has been delayed due to current COVID19 restrictions. Research on the impact of micro plastics is a topic of global interest and the Department is supporting ongoing research in partnership with AFBI and QUB. Details of monitoring of radioactivity in animals and the environment can be found online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/932885/Radioactivity_in_food_and_the_environment_2019_RIFE_25.pdf
Is managed realignment being considered?	Unlike the rest of the UK, there is no specific legislation in NI assigning responsibility for coastal change. A Coastal Forum has been formed whose membership includes DAERA, DfI, Chief Executives of NI coastal councils, and the NI Director of the National Trust. The Forum was set up to provide government with strategic advice on coastal management and has ready access to expert knowledge as required. The Forum has commissioned comprehensive research to assist in recommending strategies for addressing coastal change and managed realignment may be considered in appropriate circumstances.
What is the WFD microbiological higher standard and how many SWPAs do not meet this standard?	A shellfish flesh monitoring programme is operated by FSA in NI. The analyses in shellfish flesh are carried out by Northern Ireland Public Health Laboratories and results are reported back to both DAERA and FSA in NI. In addition to being used for the Official Control monitoring for the microbiological shellfish classification carried out by the FSA in NI, this information is also used by DAERA to determine the status of Shellfish Water Protected Areas against a guideline microbiological standard for shellfish flesh which is set in the Water Framework Directive (Priority Substances and Classification) (Amendment) Regulations (Northern Ireland) 2015. This guideline standard requires that 75% of samples contain ≤ 230 E. coli per 100ml of shellfish flesh and intervalvular liquid. Both Skate Rock and Paddy's Point SWPAs met the guideline microbiological standard in 2019.
What was the outcome of Dundrum Bay? Little point in using this as an example and not giving the detail.	The investigation of Dundrum Bay helped identify pressure within the catchment and focused mediation. Pressures identified during the investigation resulted in Northern Ireland Water upgrading the Waste Water Treatment Works at Annesborough off the back of the investigations. Farms were identified that would benefit from the Environmental Farming Scheme. While the ecology of Dundrum Bay will be slow to recover already there is less dominance of Opportunistic Green Algae.

I would be interested if you could expand a little on the 3D coastal survey work next year.	The Northern Ireland 3-Dimensional Coastal Survey will acquire high resolution data, providing a precise representation of the morphology of the coastal environment. Seamless coverage will be obtained from the coast, extending inland approximately 200m, out to a seaward depth of approximately 10m. The survey will cover the full extent of Northern Ireland's major dune systems and also coastal sites which have been designated as Areas of Special Scientific Interest. The survey will consist of 3 elements: 1. The topographical LiDAR (Light Detection And Ranging) survey will include the intertidal area, extending approximately 200m landward of the high water mark. Where applicable the landward extent will include the full extent of the 6 major dune systems (Magilligan, Portstewart, Portrush, Whitepark Bay, Tyrella and Dundrum) and also coastal Areas of Special Scientific Interest (ASSIs). Islands around the coast will also be included in the survey (e.g. Rathlin Island, The Maidens, the Copelands and islands within Strangford Lough). RGB ortho imagery will be simultaneously captured. Bluesky International will carry out this survey. 2. Satellite-derived bathymetry for the marine environment will be acquired at a high resolution, out to a mapping depth of approximately 10m for all of Northern Ireland. This will be acquired at a 2m resolution. Fugro will carry out this work. 3. Bathymetric LiDAR survey of a pilot marine area. This will be acquired at a high resolution and out to a depth of approximately 10m. Dundrum Bay has been selected as the pilot area and if time permits this will extend to the Outer Ards. Fugro will be carrying this out also. While this overall survey will provide a comprehensive baseline, subsequent surveys, hopefully every 3 to 5 years, will build on this baseline survey, providing an accurate picture of exactly how, when and where the coastline is changing. While it was anticipated work would be complete by end of March 2021, due to the current restrictions imposed by the pandemic and also getting a suitable weather window, it is likely the surveys will not be complete until spring 2021.

Queries based on Presentation 3 'Preparing for 3rd Cycle Draft River Basin Management Plan' by Silke Hartmann	
Stakeholder Query	Response
What is the future impact of CSOs factoring in climate change?	Any increase in rainfall resulting from Climate change has the potential to increase the number and volume of spills from intermittent discharges. The current NI Water policy is that a 10% uplift shall be included to allow for future climate change. This shall be applied to all design rainfall events to both summer and winter profiles.
What is SWELL?	SWELL stands for 'Shared Waters Enhancement and Loughs Legacy' which is a €35 million INTERREG funded project. More information can be found at the projects website - https://swellproject.com/.
What are you doing to reduce phosphates from NIW plants on Lagan and other Rivers?	Inner Belfast Lough and the Tidal Lagan were identified as sensitive under the Urban Waste Water Treatment Directive. This requires the provision of nutrient removal at all WWTW serving a population of >10,000. Those WWTW discharging to the Tidal Lagan require both Nitrogen and Phosphorus removal. The qualifying works are Dunmurry, Lisburn and Newtownbreda. Nutrient removal was in place by end of 2008. More information is available in the attached link. https://www.daera-ni.gov.uk/articles/urban-waste-water#toc-2
Fisheries Act non-compliant with EU law, no effort to make it compliant.	EU law supersedes domestic legislation and therefore compliance with EU law is the priority.
What about Antibiotic and AMR pollution?	The Water Chemistry Group completed a survey of key inputs of Antibiotics into the aquatic environment in 2019 as part of the DAERA One Health programme. This survey represented the baseline for a five year study into the presence of antibiotics in the aquatic ecosystem. The data generated will be used to help assess the potential for exposure to drug resistant bacteria via this route.

When are you going to publish River LMA Data in an accessible format for the public?	Historic and contemporary classification data will be published through OpenDataNI by 22nd December 2021, future classification data will be made available with the publication of the associated status.
How can you have an integrated plan if you don't undertake continuous Monitoring? How can you detect Nitrates when slurry spreading is an infrequent event?	WFD classification and standards are based on monitoring at specified frequencies, quarterly or monthly. This provides a regional picture of water quality. Nitrate is not included as a parameter for rivers under WFD, but is monitored in accordance with the requirements of the Nitrates Directive. Results are assessed against standards based spot sampling. The use of continuous monitoring is not a requirement of classification or the development of River Basin Management Plans. However, that is not to say it does not play a role in research and catchment based studies at a local level. The use of continuous monitoring is still at an experimental stage, and trials remain ongoing to establish how such equipment, and the data generated, can be used reliably. A number of different auto samplers and probes are available for nitrogen, usually measured as Total Organic Nitrogen. The trials will investigate the practicalities of deploying such equipment in the field. This work is led by AFBI in conjunction with University of Ulster. Until this work is complete, published in scientific literature, and peer reviewed, I am not able to expand further. As technology advances, there will be scope to adopt a broader range of sampling technologies, in order to assess status, carry out investigations, engage with stakeholders and understand more fully the impact of activities and interventions at a catchment scale. No one sampling technology will meet all these requirements, and so future monitoring strategies will employ a range of techniques and spatial scales (Northern Ireland, catchments and sub catchments) to meet these needs.
Why are true environmental friendly SUDS not being adopted as opposed to hard engineered system? Of holding tanks hydro brakes and concrete ducts?	An increasing number of 'soft' engineered SuDs systems are being approved in NI. A cross Agency sub team of the Stormwater Management Group are taking these assessments and decisions forward. Lessons learnt will inform policy. Developers should look at all SuDs options at a pre-planning stage, to understand the advantages and disadvantages of both 'hard' and 'soft' SuDs. A stormwater drainage Group has been established by NIEA and the Department for Infrastructure to progress issues such as the use of the full suite of SuDs solutions. Indeed many local authorities are currently developing SuDs policies as part of the local development plan process.

In the 1960s the algal bloom in Lough Neagh was well documented. 50 years later we have widespread pollution across many water bodies in NI. Is this an accurate reflection of the effectiveness of NIEA as a pollution permitting body?	Diatom blooms would have been documented for many years and nutrient loading has been demonstrated from the mid-1950s. Over decades nutrients accumulate in the sediment and some lakes are subject to a phenomenon known as internal loading whereby nutrients are released from the sediment into the water column under certain conditions. While the nutrients entering the Lough have been reduced, the internal loading ensures there is a supply of nutrients to feed algal growth.

How can you have recovery when DAERA continues to approve Derogations from NAP and has no Objection to new pig and poultry units?	Farms operating under the Nutrients Action Programme (NAP) derogation must adopt specific nutrient management, land spreading restrictions and record-keeping measures in addition to complying with the NAP measures. Derogation requirements include preparation of annual fertilisation plans and accounts, regular soil analysis and a farm phosphorus balance limit. The purpose is to ensure that operating at the higher grazing livestock manure limit of the derogation does not adversely impact on water quality. The conditions of the derogation are set by the European Commission and specified in the legal decision. The Northern Ireland derogation has been granted by the European Commission since 2008 and must be renewed every 4 years. The application process for renewal is lengthy and involves detailed scrutiny by the European Commission and the EU Nitrates Committee. In order for the derogation to be approved it must be demonstrated that it will not adversely impact on water quality. Given that the Northern Ireland derogation has been approved on four occasions, the European Commission and the EU Nitrates Committee consider that it should not cause a deterioration in water quality. Data since 2012 indicates that deterioration in water quality in Northern Ireland is mainly due to increases in concentrations of soluble reactive phosphorus in rivers. This is likely to be related to an increase of phosphorus inputs to NI agriculture in terms of livestock feeds and chemical phosphorus fertiliser use. Overall livestock numbers have also increased from 2012 to 2018. However on derogated farms phosphorus inputs are constrained as they must operate within a farm phosphorus balance limit. In addition, water quality monitoring of a derogated sub-catchment compared with a non-derogated sub-catchment of the Upper Bann has indicated little difference in the measured median concentrations of soluble reactive phosphorus in out-flowing drainage water between these two sub-catchments. This implies that the derogation is not exacerbating water quality problems. • The Pollution Prevention and Control (Industrial Emissions) Regulations (NI) 2013 require intensive pig and poultry farms over a specified threshold to obtain a permit from DAERA to operate. • Applicants for Pollution Prevention and Control (PPC) permits must provide an adequate demonstration that the proposal will have an acceptable environmental impact including any potential impacts of emissions (e.g. ammonia, odour) on sensitive local receptors such as habitats and the sustainable utilisation of slurry produced from the proposed installation. • The Department has a duty to ensure that decisions or permissions relating to planning, funding or the issue of environmental permits/licences/authorisations are made on the basis of thorough environmental assessment and avoidance of environmental damage.

Why is there an absence of effective action to stop agricultural pollution?	Within agriculture regulations, such as the Nutrients Action Programme 2019-2022, there are actions designed to protect water against pollution caused by nutrients from agriculture sources. In particular it is about promoting better management of animal manures, chemical fertilisers and other nutrient-containing materials spread onto the land. Compliance with the NAP is one of the Cross Compliance Statutory Management Requirements and 100+ farms are breached for non-compliance of nitrates each year. Where agriculture sources are found to be polluting a waterway this can also be pursued via the Water Order. Once an incident is reported or discovered, the Pollution Response team will find and stop the source of the pollution, identify the polluter and where necessary collect enough evidence to secure a prosecution. In the period January to November 2020 253 farm pollution incidents were addressed by this means.

Has Source to Tap encouraged an increase in herbicide usage instead of reducing it?	The Source to Tap pilot Land Incentive Scheme (LIS) has grant-aided rush control by weed-wiping on 977.5 hectares (2415.32 acres) of land (as of 31st December 2020). This land has previously been treated with MCPA products applied by boom spraying before Source to Tap funding was available. Boom sprayer application of MCPA involves spraying the herbicide product, in dilution, over all of large areas of ground with product being applied to both target and non-target plants. Due to the nature of spraying it can be easily caught by wind and carried some distance over land that is not intended to be treated (known as drift). MCPA does not bind to soil particles so it is prone to leaching directly into watercourses or via sub-surface and land drains. As MCPA is highly soluble in water there is a potential for it to be washed off the land and to get into our rivers and lakes. Agritox (which contains MCPA) is the most common product used in rush control and recommends an application rate of 2.7 litres of product per hectare for grassland rush (soft, hard and compact). Since the weed-wiping is a replacement treatment for rush control in the project area (River Derg catchment, upstream of Tievenny) and that boom spraying of MCPA was therefore not undertaken on 977.5 ha of land, it can be construed that the project prevented the application of at least 2,639.25 litres of MCPA in 2020 (based on one application per year). Weed-wiping involves directly applying herbicide to the target plant only. A rotating 'carpet' roller mounted on wheels and pulled by a quad bike is wetted with herbicide, in dilution, and wiped directly onto the target plant. For rush control, the carpet roller is mounted at the required height so as to brush the top of the rush plants without coming into contact with other shorter plant species i.e. grasses. This results in only part of the plant being wiped with herbicide, but this is enough to kill the entire plant. CAFRE's Rush Control Technology Project trialled various methods of rush control and confirmed that areas cut and later weed-wiped showed the most effective rush management with negligible water quality impact. Preliminary results from Source to Tap support that the project has not resulted in any increase in the use of herbicide in the project area. The water quality sampling programme is ongoing and further analysis of the data will be undertaken in the coming months.

There appears to be a great interest in using ground water resources in current thinking. What is being done to conserve and protect them?	Groundwater quantity and quality needs to be protected to ensure it remains a sustainable resource. Groundwater quantity is regulated by NIEA through the abstraction licensing regime, where a risk assessment is required for large volume abstractions. Groundwater quality is regulated by NIEA through various activities - typically higher risk activities have monitoring and mitigations in place to protect groundwater quality. NIEA also monitor baseline groundwater quality and quantity (groundwater levels) through a monitoring network across Northern Ireland which provides data on background conditions and long term trends.
How can water quality be improved when DAERA continue to approve Discharge Consents from Wind Farms, Gold Mining and Intensive Agriculture into catchments which are already failing water quality?	NIEA's consenting process involves a detailed assessment and determination to evaluate the likely impact of any discharge on the receiving water quality and the dependant habitat and species. Any consent which is subsequently issued has standards set to ensure there is no detrimental impact on water quality. Furthermore, where a discharge consent is approved, the Agency undertakes regular compliance monitoring and sampling to verify that the consent conditions are being met. Where consent conditions are not complied with, NIEA would consider appropriate enforcement action. The assessment and monitoring process seeks to take into account the existing water quality and contribute to the improvement of the status of water bodies in line with WFD objectives.

Why are we going backwards with lake water body status and will that be replicated in river status?	The Northern Ireland Water Framework Statistics Report: Lake Quality Update published on the 27th August 2020 highlighted that in 2020, only one of the 21 lake water bodies in Northern Ireland was classified as 'good' status and 20 lake water bodies were classified as less than 'good' status. This compares to five lakes at 'good' status and 16 at less than 'good' status in 2015 and 2018. In addition, four lakes that were already classified as moderate or worse have also deteriorated in class to increase numbers in the 'poor' and 'bad' categories. The deterioration in the status of all but one lake was due to nutrients (or the biological element responding to this pressure). This increase in nutrient pressures on the lakes actually reflects the situation in the rivers with nutrients being the main cause of deterioration between river water body classifications published in 2015 and 2018. Increasing levels of phosphorus led to 22% of rivers dropping at least one class in the 2018 classification. Also in December 2018 the insecticide cypermethrin, which was previously a Specific Pollutant, was identified as a Priority Substance under the Water Framework Directive (Classification, Priority Substances and Shellfish Waters) Regulations (Northern Ireland) 2015 with a more stringent Environmental Quality Standard. This has also led to downgrades in lake status. Lakes take longer to respond to environmental changes due to the large bodies of water providing greater capacity to dilute pollutants. However, over several years nutrients will accumulate in water and sediments and lead to deterioration in status.
Why only 93 monitoring sites for SRP?	NIEA currently monitor Soluble Reactive Phosphorus (SRP) on a monthly basis at 471 sites across Northern Ireland. Over the years our programmes and site locations have changed but we have 93 sites which form our river surveillance network and where we have long term datasets. For the draft Programme for Government we therefore selected monthly SRP data at these sites as our indicator for water quality.
How can you control spreading when farmers are currently flouting the existing rules e.g. spreading when it is raining and spreading on frozen ground	NIEA is restricted to the legislative remit and enforceability of incidents. The legislation indicates heavy rain so not all rainfall events can be considered as not outside the law. Our inspectors collect all available evidence if we are informed of the spreading in time to visit while spreading takes place. Visits that occur days after spreading are less likely to have sufficient evidence with regard to frozen ground or heavy rainfall. However most incidents of frozen ground coincide with closed period spreading which would allow a breach to be processed.

Do Riparian Buffers give a "license" to increase nutrient loading of farm land creating legacy leaching?	There is no change to the nutrient management of a farm with riparian buffers in legislation or guidance.
Why did you omit a reduction in livestock numbers as an option to reduce Source?	The reduction of the source deals with the reduction of nutrients in the food system and ultimately the reduction of excess nutrients that are released to the water environment. The key is improved nutrient planning and management in the agriculture & food sector: e.g. elimination/ reduction of chemical fertilizers, reduction of P content in concentrate feed and increase in grass fed diet of livestock. Some businesses may choose to reduce their livestock numbers to achieve nutrient balance.
NIEA have never got to grips with septic tanks when will this issue be tackled in a proper manner?	NIEA have successfully implemented a number of systems to improve the records we hold on the location of septic tanks, including an online application process which captures this data and an online public register of digital records. We continue to work with colleagues to analyse and interpret this data to better understand the environmental impact of septic tanks at the local and catchment scale. We recognise that there are practical and operational issues in relation to septic tank performance, which we could do more to address, and we plan to initiate a working group with septic tank providers and installers to promote good practice in this area.
Surely monitoring of discharges from WWTW is already in place?	All WWTW serving a population equivalent of >250 are subject to monitoring of final effluent discharges. The frequency of sampling is determined according to the size of the works. This varies from quarterly to weekly sampling.
Why have you not considered Nutrient Neutrality for all new developments?	The majority of new housing developments connect to the Northern Ireland water sewerage network whereby sewage is transported to a waste water treatment works. The sewage is then treated before being discharged to a river or the sea. The sewage is treated to a standard set by a discharge consent which dictates the quality required from the effluent prior to discharge and is site specific to the needs of the waterway. Where it is deemed more stringent conditions are required, they can be applied through a review of the discharge consent and this may necessitate an upgrade of the WWTW. Smaller developments relying on on-site package treatment plants or septic tanks are assessed on a site specific basis. NIEA will challenge any development that is not deemed to be sustainable and likely to impact upon the objective for the particular waterway.

Given the accumulative effects of discharges from new developments, large and small, how do you consider further development can be sustainable if there is not a more strict approach adopted?	The majority of new housing developments connect to the Northern Ireland water sewerage network whereby sewage is transported to a waste water treatment works. The sewage is then treated before being discharged to a river or the sea. The sewage is treated to a standard set by a discharge consent which dictates the quality required from the effluent prior to discharge and is site specific to the needs of the waterway. Where it is deemed more stringent conditions are required, they can be applied through a review of the discharge consent and this may necessitate an upgrade of the WWTW. Smaller developments relying on on-site package treatment plants or septic tanks are assessed on a site specific basis. NIEA will challenge any development that is not deemed to be sustainable and likely to impact upon the objective for the particular waterway.
Are Riparian buffers contributing to plastic pollution?	Applicants to the Environmental Farming Scheme have a choice of 2 metre or 10 metre wide riparian buffer strips which can be planted with native trees. When planted with trees the buffer strips provide the additional benefits of reduced peak flood flow and increased bank stability. The trees are specified to be fitted with spiral tree guards and a cane. The fact that the guard is fitted to the tree and a cane should ensure it does not become dislodged. Tree guards should be removed once the tree is established after 3-5 years.
Can you provide a link to the answers from this webinar?	Questions and answers are available on our website: Delivery and public participation | Department of Agriculture, Environment and Rural Affairs (daera-ni.gov.uk)

How does continuous monitoring results compare with quarterly and monthly sampling when slurry spreading is infrequent?	WFD classification and standards are based on monitoring at specified frequencies, quarterly or monthly. This provides a regional picture of water quality. Nitrate is not included as a parameter for rivers under WFD, but is monitored in accordance with the requirements of the Nitrates Directive. Results are assessed against standards based spot sampling. The use of continuous monitoring is not a requirement of classification or the development of River Basin Management Plans. However, that is not to say it does not play a role in research and catchment based studies at a local level. The use of continuous monitoring is still at an experimental stage and trials remain ongoing to establish how such equipment, and the data generated, can be used reliably. A number of different auto samplers and probes are available for nitrogen, usually measured as Total Organic Nitrogen. The trials will investigate the practicalities of deploying such equipment in the field. This work is led by AFBI in conjunction with University of Ulster. Until this work is complete, published in scientific literature and peer reviewed, I am not able to expand further. As technology advances there will be scope to adopt a broader range of sampling technologies in order to assess status, carry out investigations, engage with stakeholders and understand more fully the impact of activities and interventions at a catchment scale. No one sampling technology will meet all these requirements and so future monitoring strategies will employ a range of techniques and spatial scales (Northern Ireland, catchments and sub catchments) to meet these needs.
Is there an equivalent body within DAERA monitoring air quality?	We have an Air Quality Unit - www.daera-ni.gov.uk/articles/air-quality-monitoring-policy-and-legislation
AFBI are not just the preferred provider for testing and monitoring, but the only allowed contractor. WHY?	It is not correct that AFBI are the only provider allowed or used by DAERA for testing and monitoring. At the time of AFBI's establishment in the early 2000s it was mainly comprised of the former science arm and staff within the then DARD. The legislation that established AFBI required DARD (now DAERA) to give AFBI priority when allocating science research and other science work. However it also allowed, that where for any reason AFBI is unable to provide particular science services that these may be obtained elsewhere. Various types of specialist testing and monitoring are therefore provided by non-AFBI laboratories, both within DAERA and externally. An example is that the testing and monitoring for many of NI's water and environmental monitoring programmes are provided by NIEA's Water Chemistry Unit.

The AfBI report recommends export of 30% as the solution when production of P is 20% higher than demand from crops. How can you achieve a balance of supply meeting demand when the current surplus production is so high, never mind the legacy P?	The AFBI RePhoKUs project states that 'Manure P inputs generated by livestock agriculture in NI are 20 % higher than the total P demand for NI.' Scenario 5 of the same report is modelled on the assumption that 30 % of manure P is exported to outside of Northern Ireland. As already explained in the answer to Question 1, the reduction of excess nutrients is linked to improved nutrient planning and management, as outlined in the scenarios in the report. Scenario 5 of the report explains how a balance can be achieved within the context.
Have technologies to remove P from wastewater sludge been looked at for WWTW sites?	NI Water has completed a long term sludge strategy and within its next business cycle (2021-2027) will develop the detailed future requirements of sludge end management. The strategy undertook a high level inquiry into P-recovery from wastewater sludge and sewage sludge ash (SSA). Significantly, because NI Water employs chemical precipitation techniques within the primary treatment of wastewater, P-recovery from the residual sludge or SSA is limited to chemical and thermal treatments. These technologies are not commonplace within the UK industry. NI Water understands the global sustainability challenge Phosphorus presents and recognises that P-recovery via Enhanced Biological Phosphorus Removal from wastewater is a growing environmental opportunity. It is significantly inhibited presently by the established process design and configuration of NI Water's Wastewater Treatment Works. NI Water continues to consider and test innovative and emerging processes including Biological Nutrient Removal within its major investments in wastewater treatment.
When are the Measures going to be based on Outcome Based Accountability?	Outcome Based Accountability (for example as used in the Programme for Government) relates to desired outcomes, targets and objectives. Our target is to have 70 % of all water bodies at good status and our regular updates on classification and Programme for Government provide the accountability. Measures relate to the actions required to achieve the desired targets. However, the successful implementation and delivery of the measure does not only depend on regulation of activities by the department, but also on a variety of delivery partners (e.g. Northern Ireland Water, NGOs, Interreg projects, Challenge Fund partners) as well as behavioural changes of every person living in Northern Ireland.

Why the difference in the presentation re farms visited 37 and farms for nutrient advice 704. Surely there are not that many farms in this area?	The figures given in the presentation are a summary of all 2019-20 NI water body investigations.
What IT systems and tools (if any) do you use to identify pressures and help with inspections/ incident management?	Given all the pressures within a catchment can have an impact within a defined spatial area, the main IT tool used to identify and assess pressures is via Geographical Information Systems (GIS). Pressures such as known discharges from industry, wastewater, septic tanks and farming statistics can all help identify the key issues within any given catchment. Discharge consents are also calculated using a mass balance modelling (Monte Carlo software) to determine discharge standards, ensuring no detrimental impact to receiving watercourse.

In Fermanagh water quality continues to drop despite much less fertilizer being used by farmers than in the past. Are you monitoring for the mass sewage being pumped into Lough Erne?	NIEA have in place an extensive water quality monitoring programme in the Lough Erne Catchment. NIEA carry out routine monitoring of Upper and Lower Lough Erne under the requirements of the Water Framework Regulations for NI. Lower Lough Erne is divided into two water bodies, Lower Lough Erne Kesh and Lower Lough Erne Devenish. In the recently published 2020 statistics, (https://www.daera-ni.gov.uk/publications/northern-ireland-water-framework-directive-statistics-lake-quality-update-2020) Upper Lough Erne and Lower Lough Erne Kesh are at Poor overall status and Lower Lough Erne Devenish is at Moderate overall status. The reason for all three water bodies being assessed as less than Good status is due to excessive levels of nutrients including Phosphates from sewage and agricultural sources, and the biological elements that respond to these. In addition, Lower Lough Erne Kesh is assessed as being at Moderate Chemical status due to levels of the insecticide cypermethrin exceeding the WFD standard. NIEA routinely (monthly) monitors water quality at the Lakeland Forum Complex. Comparison of the 2019 results at this location, with the nearest upstream sample point at Killyhevlin, shows no appreciable difference in water quality. All results both upstream and downstream of the NIW assets at Derrychara and Rossory show high water quality, with no evidence of any deterioration at the downstream location. Unfortunately the sampling programme for 2020 has been disrupted by Covid-19 and a similar comparison for this year is not available. There are 22 NI Water Waste Water treatment assets that serve large populations and a significant number of smaller assets in the vicinity of Lough Erne. NIEA monitors compliance with consent conditions and only sewage treated to the appropriate standard is permitted to be discharged into the Lough. NIEA applies the rigors of its enforcement policy where NIW has been found to be outside of these terms and conditions of their Water Order Consent.
Has the 2015 incorporation of Estuaries such as Roe with Lough Foyle resulted in these Estuaries not being monitored? Where is the Data on these Estuaries? Has the incorporation with Loughs hidden the evidence?	The 2015 incorporation of the Roe transitional water body (TW) into the Lough Foyle TW has resulted in designated monitoring sites being retained in the larger overall water body. However the monitoring of fish population and basic physiochemical parameters continue to be monitored in the Roe every 3 years. This was impacted in 2020 by COVID19 restrictions. Fish data from the 2017 fish survey was published as "Fish Surveys of Northern Ireland Transitional Waters - 2017" and is available.

When are you going to publish the data on antibiotic pollution and AMR?	The data generated from the antibiotics study forms part of a wider programme and will ultimately be published as part of this work.