Water and Sewerage Services

PC15 Mid-term Review

The Utility Regulator's Report on the PC15 MTR

February 2018



About the Utility Regulator

The Utility Regulator is the independent non-ministerial government department responsible for regulating Northern Ireland's electricity, gas, water and sewerage industries, to promote the short and long-term interests of consumers.

We are not a policy-making department of government, but we make sure that the energy and water utility industries in Northern Ireland are regulated and developed within ministerial policy as set out in our statutory duties.

We are governed by a Board of Directors and are accountable to the Northern Ireland Assembly through financial and annual reporting obligations.

We are based at Queens House in the centre of Belfast. The Chief Executive leads a management team of directors representing each of the key functional areas in the organisation: Corporate Affairs; Electricity; Gas; Retail and Social; and Water. The staff team includes economists, engineers, accountants, utility specialists, legal advisors and administration professionals.

Our Mission	Value and sustainability in energy and water.
Our Vision	We will make a difference for consumers by listening, innovating and leading.

Our Values

Be a best practice regulator: transparent, consistent, proportional, accountable, and targeted.

Be a united team.

Be collaborative and co-operative.

Be professional.

Listen and explain.

Make a difference.

Act with integrity.

Abstract

We regulate the revenue NI Water receives through periodic price controls. Our proposals set an overall revenue requirement and identify the levels of capital and operational expenditure. NI Water is currently in its third regulatory price control period, PC15, which covers the period from April 2015 to March 2021. In our PC15 approach document and our final determination we outlined our intention to undertake a PC15 mid-term review during the PC15 period. This document explains our PC15 mid-term review findings.

Audience

Consumers, public representatives, representative bodies and the water industry
Principal Stakeholders: DfI, NI Water, NIEA, CCNI, DWI

Consumer impact

This document explains our PC15 mid-term review findings. It includes our assessment of the improvements that could be delivered for consumers during the PC15 period for a range of budget scenarios. It concludes that the output targets for PC15 should remain unchanged for the remainder of the PC15 period.

Mid-Term Review Report

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Foreword

The Utility Regulator's primary role within the water industry of Northern Ireland is to protect the interests of consumers, both today and in the future. One of the key regulatory processes used to achieve this is to set price controls which aim to ensure consumers receive best value for money. The price control determination sets out the revenue that the company requires to deliver for a specified level of service to consumers.

Northern Ireland Water (NI Water) is in its third regulatory price control period, PC15. This covers a six year period from April 2015 to March 2021, and is longer in duration than any of NI Water's previous price controls.

When we published our final determination of the company's plans for PC15 in December 2014, we noted the potential uncertainty associated with the development of a longer term investment plan and the provision of funding on an annual basis through a public expenditure regime.

In recognition of this, we proposed that PC15 should include a mid-term review so that the company's plans could be reviewed and if necessary amended as a consequence of any changes that might have occurred in the first half of the price control period. It was also intended to provide an opportunity to review NI Water's progress in delivering the key preparatory work required to support its investment planning for the next price control period (PC21).

We have now concluded our mid-term review and this report explains the approach taken and our conclusions.

In the first two years of PC15, NI Water's public expenditure budgets for both resource and capital have been reduced below the nominal levels we considered necessary to deliver the PC15 price control. However, NI Water has benefitted from lower levels of inflation than was expected. As a result its real operational expenditure remains in line with the post-efficiency levels determined for PC15 which should be sufficient to maintain service. There has been a real reduction in the level of capital investment in the first two years of PC15 and the delivery of some capital outputs have been delayed as a result. However, based on reasonable forward planning scenarios for capital investment, the company should have sufficient capital budget to deliver all of its defined PC15 outputs within the 6 year PC15 period. But it is unlikely to allow investment in additional necessary quality improvements, which may need to be deferred to the PC21 period. The reduction in expenditure in line with inflation is being passed on to consumers through RPI+K price cap regulation and the PC15 outputs are being delivered.

Our overall conclusion is therefore that the PC15 final determination targets remain valid and should be used for planning and performance reporting for the rest of the PC15 period. The Mid-term Review has confirmed that the PC15 final determination was both challenging but achievable. We expect NI Water to continue to focus on the delivery of these priority requirements, notwithstanding the variations to annual budgets which may occur. This includes all the critical development work funded in the PC15 final determination, which the company is required to complete in time to inform its PC21 business plan submission.

Subsequent changes to budget and priorities can be addressed through established mechanisms for change control.

NI Water has made the case that current governance arrangements, annual public expenditure allocations and budget reductions are impacting on PC15 delivery. While we welcome the fact that NI Water is broadly delivering the PC15 final determination within an uncertain framework, we agree that surety of funding within a more stable and predictable framework would be beneficial. It would help promote effective long term investment planning, efficient delivery, consumer benefit and the delivery of long-term outcomes. We also continue to believe that a fully funded final determination is the optimum outcome for ensuring continued improvements in the level of efficiency and consumer service.

Key Findings

Outputs

Overall NI Water has performed well against a backdrop of reduced public expenditure funding and is broadly delivering against the majority of the final determination targets.

Our overall assessment is that NI Water should have sufficient funding to deliver all the outputs defined in the final determination if budget reductions in the rest of PC15 are no more severe than they have been to date. This includes those required to inform the preparation of plans for PC21. This should remain a priority for NI Water and performance in PC15 will be judged on this basis.

Operating expenditure/Revenue

NI Water has been subject to public expenditure resource budget reductions in nominal terms but has also benefited from lower than forecast inflation. In real (inflation adjusted) terms it has managed to deliver and marginally outperform efficiency targets included in the PC15 final determination. At the same time, NI Water is delivering against its service level outputs demonstrating that these savings are being delivered by efficiency as opposed to a reduction in service.

We have concluded that a review of K factors is not necessary at the mid-term review. We note that NI Water has recovered more revenue than expected in the first two years of PC15 due to higher than expected consumption by non-domestic customers. However, consumption varies year on year and it is not yet certain that the company will continue to generate higher levels of revenue than expected for the remainder of the PC15 period. We will review the need for any adjustments to reflect higher than expected levels of revenue in the PC15 period as part of our determination of revenues for the PC21 period.

Capital Investment

NI Water has been subject to public expenditure resource budget reductions in the first two years of PC15. Although the impact of these budget adjustment has been reduced by lower than expected inflation there has been a budget reduction in real terms and some delay to capital output delivery as a result. For this mid-term review we have considered a number of planning scenarios for capital budgets for the remainder of the PC15 period. In all of these scenarios, the company has sufficient funds to deliver all of the nominated outputs which were defined at the time of the PC15 final determination. This is a consequence of inflationary benefits against the final determination assumptions.

However, the scope for delivering further outputs and benefits anticipated in the PC15 final determination reduces under both budget reduction scenarios considered. The worst case scenario provides no scope for further outputs. Any additional priority investment identified to deal with emerging issues, would require existing defined projects to be substituted out of the PC15 programme and deferred to PC21.

The company continues to maintain serviceability and so we conclude that capital expenditure on base maintenance can be maintained at final determination levels in real terms for the remainder of the PC15 period. The company did not make a case for any change in base maintenance funding in its Mid-term Review submission.

We acknowledge that funding uncertainty and annual budget allocation has the potential to inhibit the company's ability to plan effectively and deliver the maximum efficiencies and benefits for consumers.

Specific Project Assessments

The PC15 final determination made provision for the development of some major projects to allow an efficient capital allowance to be determined at the Mid-term Review. The company's update on these major projects shows that some remain in development. As a result, we have not been able to determine a clear capital programme for the remainder of the PC15 period resulting in some uncertainty.

A detailed review of two wastewater treatment investment proposals submitted by NI Water identified opportunities for cost reductions in PC15 of approximately 30%. NI Water's internal project development and approval processes should identify such opportunities to maximise the benefits that can be delivered for consumers within the funding available. We expect NI Water to continue to review its capital programme challenge to ensure that such efficiencies are realised.

Preparation for PC21

We are concerned that all work required and funded in PC15 to support the preparation of a more robust business plan for PC21 may not be completed on time. The company needs to ensure an appropriate focus in this area to avoid any lost opportunities for maximising the benefits to customers.

1.0 Introduction

1.1.1 The Utility Regulator's primary role within the Northern Ireland water industry is to promote and protect the interests of consumers. NI Water (the company) is responsible for providing water and sewerage services to consumers.

1.1.2 Since NI Water is the sole provider of these services, the Utility Regulator carries out periodic reviews to set delivery targets and an efficient level of revenue to deliver the targets. These price controls are developed in conjunction with the other Principal Stakeholders in the water industry (DfI, CCNI, NIEA and DWI) and following consumer consultation. NI Water is almost midway through its third control period, known as PC15, which began on 1 April 2015 and runs until 31 March 2021.

1.1.3 The company's domestic consumer charge and domestic allowance for commercial consumers are met by Government subsidy through public expenditure (PE) mechanisms. The remainder of the revenue requirement is recovered through direct billing of non-domestic consumers which include industry, agriculture and commercial sectors. Notwithstanding these sources of regulated revenue, the company's expenditure budgets are set through the public expenditure process which is set annually and has to be fully utilised in-year or returned at year end.

1.1.4 Our price controls are set in the context of the PE environment and specific regulatory processes have been established to allow spending constraints to be accommodated as they arise. However, in recognition of the potential for material change over the medium term, our final determination provided for a mid-term review (MTR) to:

- Allow for managed changes in funding;
- Provide an opportunity to implement innovative and sustainable solutions that might develop from studies and pilot projects undertaken early in PC15;
- Deal with material changes which may accumulate over a 6 year period and result in a stepped change in prices at the start of the next price control; and
- Avoid the regulatory burden associated with continuous change creating a single opportunity for re-opening the financial determination for PC15.

1.1.5 Our intention was that the review would be limited to those areas where it would provide benefit and that it would not result in a full price control process if possible. We have now completed this review and this report summarises the outcome.

1.1.6 The review has drawn on existing regulatory processes and sources of information, such as the annual information return, as far as possible. We believe this has resulted in a reasonable and proportionate approach which has minimised the input required from others involved in the process.

1.1.7 We have also engaged with water industry Principal Stakeholders (DfI, NI Water, CCNI, DWI and NIEA) throughout to ensure that the mid-term review remained an

open, transparent, collaborative and informed process. We acknowledge and appreciate the positive input provided by each of these stakeholders.

1.1.8 The mid-term review for PC15 has considered the following issues:

Section 2	Reviews progress in achieving the outputs required in the PC15 final determination including the delivery of the development outputs and other work required to inform the company's PC21 business plan submission.
Section 3	Reviews the development and implementation of new consumer measures.
Section 4	Reviews operational expenditure and revenue requirements taking account of the impact of reductions in public expenditure budgets and the impact of inflation.
Section 5	Reviews capital investment delivery taking account of the impact of reductions in public expenditure budgets and the impact of inflation.
Section 6	Notes how the company's delivery of PC15 is contributing to the Department for Infrastructure's strategic social and environmental priorities.
Section 7	Reviews the development of a number of defined major schemes necessary for the completion of the PC15 capital programme which we had planned to determine at the mid-term review.
Section 8	Reviews preparation for PC21 in light of progress on delivery of the development objectives which were an integral part of the PC15 outputs.

2.0 PC15 Outputs

2.1. Background

2.1.1 For PC15 we assessed NI Water's proposed outputs in line with the anticipated level of investment and the priorities set out in the department's social and environmental guidance. The outputs included in the final determination formed part of an overall package which the company was expected to deliver.

2.1.2 The following sections explain the types of output included in the PC15 final determination and the outcome of our mid-term review assessment. This considers performance to date and the need for adjustment of the final determination targets. Our review is structured to reflect five different categories of output:

- Service level outputs;
- General activities;
- Asset serviceability;
- Nominated outputs; and
- Development objectives;

2.1.3 In the tables below, actual performance has been shaded green if the company is meeting, or is on track to meet, the final determination targets. Where the company is only marginally behind the final determination target and recovery is anticipated, performance has been shaded amber. Performance has been shaded red where the company is more significantly behind its target, but it should be noted that in these instances the company is still indicating that performance can be recovered by the end of the period subject to suitable funding.

2.1.4 For the mid-term review we have assessed performance against the original targets set in the PC15 final determination. We have taken this approach to allow us to consider the impact of any funding changes on the deliverability of the original requirements of the price control and therefore support the purposes of this report. We however recognise that stakeholders had agreed to change some of the annual targets in years 1 and 2 of the price control to reflect funding changes. We will therefore also report performance against the agreed adjusted targets in our annual cost and performance report for 2016-17.

2.1.5 Our overall conclusion is that the company is delivering its PC15 final determination output targets. This should be commended. There is some shortfall in delivery against the nominated capital investment schemes, but reasonable expectation that this can be recovered over the remainder of the PC15 period. We are concerned by progress to date on the delivery of the PC15 development objectives and note the need for a continued focus on delivery to inform the next price control (PC21) in a timely way.

2.1.6 Overall, we have concluded that the PC15 output targets remain valid and that any subsequent changes in priorities and budgets can be managed through the established 'relevant items' and 'change control' processes.

2.2. Service level outputs

2.2.1 Service level outputs measure the impact of investment on the level of service experienced by consumers. They incorporate customer contact measures, risk of low pressure, interruptions to supply, risk of out of sewer flooding, water quality compliance, environmental compliance, security of supply and leakage.

2.2.2 Performance against targets set in the final determination is summarised below.

Measure	FD 2016-17	Actual 2016-17
Overall Customer Service		
Number of low pressure properties removed by company action	200	211
Total number of properties receiving low pressure at end of year	932	862
% of properties affected by supply interruptions >12hrs	0.17	0.06
Overall supply interruption performance score	1.05	0.66
% of billing contacts dealt with within 5 working days	99.90	99.98
% of written complaints dealt with within 10 working days	99.50	100.00
% of metered customers received a bill based on a meter reading	99.00	99.52
% of customer calls not abandoned	99.00	99.54
% of calls not receiving the engaged tone	99.90	99.97
Overall Performance Assessment (OPA) score (11 Measures)	221	228
% of NI Water's power usage derived from renewable sources	25.0	35.5
Number of educational school visits made	352	534
Number of educational events attended	114	129
Water Customer Service		
Total leakage (Ml/d)	161	163
Security of Supply Index score	100	100
Drinking Water Quality		
% overall compliance with drinking water regulations[1]	99.79	99.86
% compliance with drinking water quality standards at consumers tap[1]	99.69	99.77
% compliance with iron quality standards at consumers tap[1]	97.10	98.66
% service reservoirs with coliforms in >5% samples	0.00	0.00

Sewerage Customer Service		
Nr of props at risk of internal flooding >1 in 20yrs removed by NIW action	16	14
Total number of properties at risk of internal flooding at the end of the year	146	156
Environmental Compliance		
% of WwTWs discharges compliant with numeric consents[1]	92.4	93.6
% of total p.e. served by WwTWs compliant with numeric consents[1]	98.26	98.90
% Small WwTW compliance (works greater than or equal to 20p.e. but less than 250p.e.)	86.97	83.99
Number of high and medium pollution incidents attributable to NI Water	27	22

Note 1: Performance against these targets are subject to natural variation due to external factors such as weather and sampling regimes. The targets are set at the lower end of the expected range of natural variability and we expect NI Water to exceed these target values. We have also considered performance against the expected range and consider it to be reasonable.

2.2.3 This area of performance is most likely to be impacted by resource budget reductions. However NI Water is only marginally behind the final determination targets in 4 of the 24 measures and is planning to address any shortfalls by the end of the period, budget permitting.

2.2.4 In previous exercises to assess the impact of budget reductions we concluded that the resource cash shortfalls were within the realm of 'achievable outperformance' when inflation was taken into account and that service levels should not be adjusted as a result. Our MTR assessment of performance and funding supports this conclusion and we believe that, if future reductions are no more severe than they have been in the past and inflation remains as projected, this should remain the case.

2.3. General Activities

2.3.1 We include general activities, such as the rate of replacement of water mains or the replacement of sewerage, as outputs where it is not possible to establish a clear link between activity and service level outputs in the short term. This ensures that NI Water puts forward robust plans for each price control period against which delivery can be monitored.

2.3.2 Performance against targets set in the final determination is summarised below.

Measure	**FD 2016-17**	**Actual 2016-17**
Length of new, renewed or relined mains delivered under the watermain rehabilitation programme (km)	274	289
Total length of sewers replaced or renovated (km)	23	26

2.3.3 This investment primarily feeds off the base maintenance budget which stakeholders have agreed should be maintained at final determination levels in real terms in any circumstance. Based on this and the fact that NI Water is currently ahead of the delivery profile, we conclude that there is no need to adjust the final determination targets.

2.3.4 We also note that outperformance to date may provide some opportunity to adjust activity in this area to help accommodate short term budget pressures elsewhere.

2.4. Nominated Outputs

2.4.1 Nominated outputs are specific named schemes or requirements. They may be specified by quality regulators to address compliance issues (e.g. WTW or WwTW improvements) or proposed by NI Water to improve the service it delivers to its consumers (e.g. trunk main schemes or the provision of additional water storage capacity).

2.4.2 The PC15 final determination included a list of named priority outputs which NI Water was expected to deliver through its capital investment programme. These requirements were also translated into numerical targets based on the proposed delivery profile. Performance against the nominated output targets set in the PC15 final determination are summarised in the Table below.

Measure	FD 2016-17	Actual 2016-17
Water		
Number of trunk main schemes completed	1	3
Number of water treatment works (WTW) schemes completed	1	1
Number of service reservoir and clear water tank schemes completed	0	0
Wastewater		
Number of Unsatisfactory Intermittent Discharges (UIDs) addressed	43	37
Number of wastewater treatment works (WwTWs) completed	7	5
Number of small WwTWs delivered by the rural wastewater programme	15	12
Number of WwTWs upgraded to comply with PPC Regulations	0	0

2.4.3 Delivery against the wastewater nominated outputs is currently behind the final determination profile. NI Water quote the impact that budget reductions at the start of PC15 had on programme momentum, but anticipate being able recover delivery by the end of the period, subject to appropriate PE funding.

2.4.4 In section 5.0 we conclude that in the worst case scenario NI Water would have sufficient capital funding to deliver all of the named outputs specified for the PC15 period. We therefore agree that the defined nominated outputs should be deliverable and that the final determination targets remain valid.

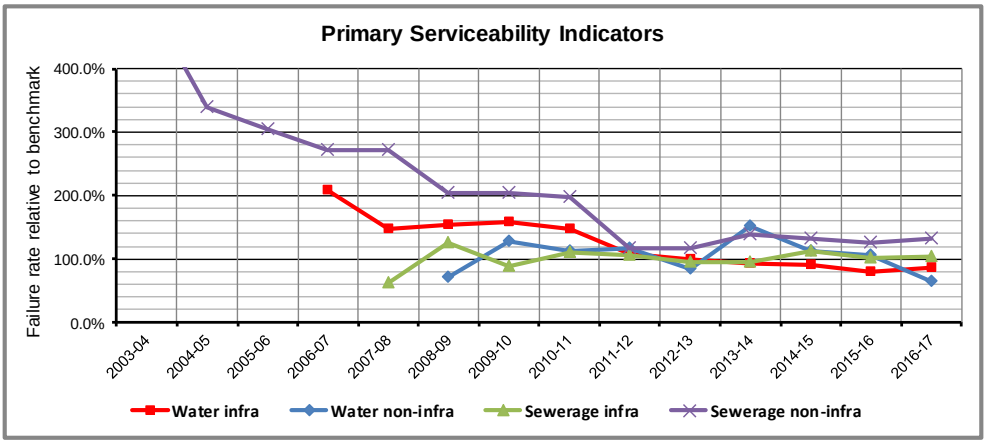
2.4.5 The extent to which additional nominated outputs can be delivered, or will need to be accommodated by the removal of existing PC15 outputs, depends on the level of public expenditure funding for the remaining years of the price control period. Changes in priorities and budget can be considered through the PC15 change control process.

2.5. Serviceability outputs

2.5.1 Our primary mechanism for assessing whether the company's base maintenance allocation is sufficient is serviceability. This is the capability of an asset to provide a service. It is a broad measure based on a mix of service indicators, asset performance indicators and sub-threshold indicators which balance consumer experience and the underlying performance of the assets. This helps ensure that investment targets consumer outcomes in the short term and the right level of capital maintenance investment is maintained in the medium and long term.

2.5.2 For PC15 we completed a detailed serviceability assessment for NI Water, which concluded that on balance the current trend was stable and that capital maintenance investment in the recent past had been adequate. The target for PC15 was to maintain serviceability.

2.5.3 We repeated our assessment of serviceability for the mid-term review incorporating performance data from 2015-16 and 2016-17. The updated trend for the primary indicators which form part of this assessment are presented below.



2.5.4 Our updated assessment indicates that serviceability remains stable and NI Water remains on track to deliver stable serviceability over PC15.

2.6. Development outputs

2.6.1 The final determination for PC15 included 18 key development objectives. These objectives were intended to help ensure NI Water developed its planning capability and techniques in order to improve the service delivered to consumers over the longer term. They covered areas where we considered development to be necessary to support NI Water's PC21 business plan submission and requirements that could not necessarily be monitored using numerical targets.

2.6.2 The objectives were fully funded in the PC15 final determination and their delivery is considered equally important to other measures. They are necessary to help ensure that the company is able to identify and balance investment priorities and maximise the benefits delivered to consumers.

2.6.3 Progress in delivering development objectives is reported in the annual information return and the latest company response can be found in Annex A.

2.6.4 Some of the numerical targets included in the final determination are also directly linked to the development objectives or the company's ability to better inform its PC21 submission. Performance against these targets is summarised below.

Measure	FD 2016-17	Actual 2016-17
Water		
Number of Catchment Management Plans	13	10
Number of lead communication pipes replaced (proactive)	3688	3789
% SRs where sample taps upgraded to the appropriate standard.	100	0
Wastewater		
Number of event/duration monitors installed at overflow discharges	115	0
Impermeable surface water collection area (m^2) removed from the combined sewerage network	60,000	83,424
Number of sustainable medium/large WwTW solutions delivered	1	2
Number of sustainable small WwTW solutions delivered	0	1

2.6.5 We welcome the progress made on certain development objectives, such as the ICAT strategy and the investigation of sewer blockage hotspots, which will help delivery efficiencies and allow investment to be targeted more effectively. Our review however also raises concerns over whether delivery in some areas will be sufficiently progressed to inform the company's business plan for PC21.

2.6.6 Examples include development of the company's asset maintenance planning capability, strategic drainage area study/modelling work, installation of event/duration monitors at overflows and upgrades of sample taps at service reservoirs.

2.6.7 Our concerns and the need for continued focus on delivery by the company are described in more detail in 8.0 – Preparation for PC21.

2.7. Overall conclusion

2.7.1 The company is broadly delivering its PC15 final determination output targets in spite of the budget reductions that it has experienced in nominal terms to date. This should be commended. There is some shortfall in delivery against the nominated capital investment schemes, but reasonable expectation that this can be recovered over the remainder of the PC15 period. We are concerned by

progress to date on the delivery of the PC15 development objectives and note the need for a continued focus on delivery to inform the next price control (PC21) in a timely way.

2.7.2 We have reviewed changes in operational and capital budgets in subsequent sections of this review. We note that the beneficial effect of lower than expected inflation is countering the reductions in nominal public expenditure budgets. We have considered a range of realistic future capital budget scenarios and concluded that it is reasonable to plan on the assumption that NI Water can deliver all the defined capital outputs identified in the PC15 final determination, including any investigations/studies required to inform the business plan submission for PC21.

2.7.3 In view of this, we have concluded that the PC15 output targets remain valid. Any subsequent changes in priorities and budgets will be managed through the established 'relevant items' and 'change control' processes.

2.7.4 We acknowledge that the current arrangement of allocating NI Water's public expenditure budget annually is not conducive to effective planning and efficient delivery and has the potential to limit the benefits that can be delivered. We also continue to believe that a fully funded determination is the optimum outcome for ensuring continued improvements in the level of efficiency and consumer service.

2.7.5 We recognise that some re-profiling of outputs may be required within an overall programme of this scale and will therefore consider delivery over the period as a whole when assessing performance in PC15. Within this process we would ask NI Water to ensure that preparatory work for PC21 is given sufficient emphasis to ensure the information required to inform the business plan submission for PC21 is available in time.

3.0 New consumer measures

3.1.1 In section 3.10 of our PC15 final determination we explained the work being undertaken by the Consumer Measures and Satisfaction Working Group to develop improved quantitative and qualitative customer measures during PC15.

3.1.2 Through ongoing collaboration the working group, which includes CCNI, NI Water, DfI and is chaired by the Utility Regulator, has identified the following new measures considered more relevant to the company and their customers:

Customer measure	Rationale
Unwanted contacts	To allow the company to deliver reductions in unwanted contacts, promote beneficial contacts and identify performance issues.
First Point of Contact Resolution (FPOCR)	To try to improve satisfaction with NI Water and reduce the costs to the company of dealing with 'repeat contacts' from the same customer.
Customer advocacy measure	To assess customer satisfaction and promote improvements. This is achieved through an unannounced survey of a representative sample of customers who have contacted the company for any reason. It is assessed through a Net Promoter Score style of question.
Omnibus survey questions	An unannounced survey of a representative sample of all consumers (including the 'silent majority' of customers who do not contact NI Water from year to year) in order to gauge customer satisfaction in a broader sense and promote improvements. This incorporates both a customer satisfaction score as well as a Net Promoter Score style of question, focusing on customer advocacy.

3.1.3 The new customer satisfaction surveys, including the Net Promoter Score style questions, will allow comparison of NI Water customer service to international peers and other service providers. Further flexibility has been introduced to allow certain survey questions to change and focus upon emerging issues for consumers.

3.1.4 Taken together, the new surveys will provide NI Water with the incentive, alongside further in-house actionable data, to continue their journey of improving customer satisfaction across the PC15 period and beyond.

3.1.5 Reporting against these new measures has been incorporated into the company's annual information return for the remainder of the PC15 period. However the working group has concluded that as the measures are new, there is insufficient data available to allow realistic performance targets to be set for NI Water at this mid-term review.

3.1.6 It has therefore been agreed by the working group that performance against the new measures should be monitored over the remainder of the PC15 period in preparation for targets being set in PC21 for those that are adopted as KPIs. In the interim the original PC15 customer service measures and targets will continue to be used for assessing ongoing performance.

4.0 Operating Expenditure and Tariffs

4.1. Operating expenditure

4.1.1 We did not intend to ask NI Water to undertake any additional detailed assessments of the specific impacts of any opex planning assumptions as part of the mid-term review process. However, we noted that we would comment on NI Water's outturn performance in the first two years of the PC15 period against its adjusted opex allowances and the potential for adjustments in capital investment to impact on opex requirements.

4.1.2 NI Water outperformed against the Utility Regulator's PC15 operating cost allowance (including PPP) by £2.5m in 2015-16 and £0.5m in 2016-17 in real terms. At present, the company is delivering the efficiency challenge set in PC15 and delivering further out-performance. In Section 2.0 above we concluded that NI Water has broadly delivered its output targets to date, which indicates that the out-performance against budget is not at the expense of service delivery. Based on operational expenditure and performance to date, we have concluded that there is no reason to amend the operational efficiency targets of the PC15 final determination.

4.1.3 We will complete a more detailed analysis and consider this in the cost and performance report which we plan to publish in February 2018.

4.2. Resource DEL impact

4.2.1 NI Water has been subject to reductions in its public expenditure resource DEL in nominal terms compared to the estimates included in the PC15 final determination. However, it has been able to maintain its operational budgets in real terms because it benefitted from:

- Lower levels of inflation than forecast at the time of the final determination;
- Higher levels of non-domestic income than forecast due to increased consumption and back-billing;
- Income from land disposal; and
- Some out-performance of the PC15 final determination described above.

Because of this, it did not to fully utilise its resource DEL budget in 2016-17 and released some of it to DfI at the end of the year. In doing so, the company has responded to and delivered the operational efficiency challenge inherent in the PC15 final determination.

4.3. Tariff adjustment

4.3.1 NI Water has benefitted from a lower level of inflation than was anticipated in the PC15 final determination. The cost savings arising from lower than anticipated levels of inflation are passed through to consumers automatically by price cap regulation which limits NI Water's price changes to RPI+K with the K factors being those determined for PC15.

4.3.2 We said in the PC15 Final Determination and our approach document that the mid-term review should provide a single opportunity to re-open the financial determination to take account of:

- Any relevant items bids already determined as part of the regular monitoring of the company to the extent that they impact on regulatory funding;
- Any material change to capital funding determined through the change control protocol including any material increase or decrease in capital maintenance investment;
- Any material change in customer numbers and demand; and
- Any material change in costs which cannot be defined with any certainty in the business plan – for example the cash tax position of the company.

4.3.3 We also reminded NI Water in the mid-term approach that if it wished to propose a review of K factors it would need to inform the Utility Regulator at the start of June and complete its submission by the 15 September 2017 so that the Utility Regulator could complete its determination of K factors by 15 December 2017 and include the changes in the 2018-19 scheme of charges.

4.3.4 NI Water confirmed in its submission in September 2017 that it considers that a review of price limits is not necessary at this time. Mechanisms are in place through normal regulatory processes to make adjustments in the future if required.

4.3.5 Our assessment at the time of the mid-term approach was that a review of K factors would not be necessary, but we would keep this under review as the process progressed and further information (for example the scale of PE constraints and additional income from higher than forecast levels of revenue driven by higher consumptions) became available.

4.3.6 Our assessment of the items raised in 4.3.2 above is as follows:

- Relevant Item bids – There have been no determined relevant item bids as part of regular monitoring that impact on the regulatory funding of NI Water;
- Capital Funding – There is no need to reopen the determination for the reasons explained in Chapter 5.0 of the report. Any anticipated changes can be managed through the established change control process;
- Customer numbers and demand – NI Water did not propose a review of K as part of the Mid-term Review. However, we noted that annual reporting from NI Water has shown that c£9m more revenue was recovered in 2016-17 than anticipated, due to additional customer numbers and volumes. Although this is

higher than the threshold of £3m per annum for a review of tariffs specified in the final determination, we have decided not to review tariffs at the mid-term review. This is because we cannot be certain that the higher levels of revenue recovery will continue throughout the remainder of the PC15 period. We believe that PC21 is the most appropriate time to consider the need for any adjustments. This will allow us to take a balanced view of financial performance over the period and avoid making adjustments which prove to be inappropriate in the longer term. We therefore plan to adjust the RCV at the end of PC15 to reflect the over-recovery of revenue and return money to consumers. We also intend to actively consider a move to a revenue cap for PC21 in line with Northern Ireland Electricity Networks and the Gas Distribution Networks; and

- Uncertain costs in the business plan e.g. tax – We are not aware of additional information to change our assumptions at this time.

4.3.7 In conclusion, we remain minded that a review of K factors is not necessary at the mid-term review. The Utility Regulator has started to plan for the next price control (PC21) and it is our view that this is the best time to look again at the financial determination of NI Water when the actual revenue generated over the PC15 period is known. Other mechanisms such as the Relevant Items process and the capital Change Control Protocol exist to manage changes in the short term.

4.3.8 We are aware that the Department of Finance (DoF) published a briefing paper at the end of December on the potential budgetary outlook for Northern Ireland for the period 2018-2020 and that NI Water's opinion is that this goes beyond the realms of 'achievable performance'. This has not been assessed in the mid-term review and if necessary we will work with stakeholders to ensure that the company continues to deliver the best possible package of outputs within the funding available to it over the remainder of the PC15 period.

5.0 Capital Investment

5.1. Background

5.1.1 NI Water's investment plan for PC15 was based on the indicative allocation of £990m Capital DEL (expressed in nominal terms) for water and sewerage services included in the Executive's Investment Strategy for Northern Ireland (ISNI).

5.1.2 In our final determination we concluded that, when adjustments for PPP finances, IFRS infrastructure accounting and estimates of future income were taken into account, the gross capital expenditure that NI Water had available to invest was £1,002.8m. This included the funding required to deliver improvements in the performance or capacity of the company's asset base (enhancement) as well as that required to maintain existing levels of performance (base maintenance).

5.1.3 As public expenditure budgets are set in nominal terms, an assumption on the movement in RPI inflation over the PC15 period was used to estimate the real purchasing power of this nominal budget and the outputs that could be delivered. The targets quoted in the final determination were based on the defined outputs submitted by the company in its business plan submission.

5.1.4 We challenged the capital programme submitted by the company in its PC15 Business Plan and our final determination identified that £55.7m of additional priority outputs could be delivered in addition to those included in the company's plan. NI Water was expected to work with stakeholder to identify these additional schemes and include them as targeted outputs to be delivered within the PC15 period.

5.1.5 In the first two years of PC15 (2015-16 and 2016-17) NI Water received a public expenditure capital allocation which was approximately 10% less than that identified in our final determination. This was a result of government budgetary pressures and represented a total reduction of just over £26m in nominal terms.

5.1.6 The current indicative budget allocation for 2017-18 is also lower than that identified in our final determination. It equates to around 90% of the latest ISNI figures, which include for a reallocation of the 2015-17 public expenditure shortfall of £26m, spread over the final 4 years of the price control period.

5.1.7 For the mid-term review we have considered the impact that ongoing funding reductions against the final determination nominal allocations might have on the outputs that the company is able to deliver. We also take account of the fact that the reductions are partially offset by inflation being lower than anticipated at the time of the final determination. This increases the purchasing power of any budget in real terms and the outputs that can be delivered.

5.2. Mid-term review planning scenarios

5.2.1 The level of public expenditure that will be provided to NI Water for the remainder of the PC15 period is currently unknown. For the mid-term review we have therefore considered three potential scenarios. One based on the original determination and two based on the public expenditure reductions applied to date.

i Fully Funded FD. This assumes the gross nominal budget allocation of £1,002.8m identified in the final determination is available. It allows us to assess the benefits that could be delivered and provides a 'baseline' against which other scenarios can be assessed.

ii Actual/anticipated funding for years 1 to 3 and 90% of PE for years 4 to 6 This uses the actual and indicative allocations for the first 3 years and assumes that nominal budget allocations for the final 3 years will be based on 90% of the originally anticipated public expenditure allocation (i.e. equivalent to reductions applied in years 1 and 2).

iii Actual/anticipated funding for years 1 to 3 and 90% of ISNI for years 4 to 6. This uses the actual and indicative allocations for the first 3 years and assumes that the budget for the final 3 years will be allocated on the same basis as 2017-18 (i.e. 90% of the latest ISNI budget figures).

5.2.2 For all the assessments we calculated the real term impact that inflationary changes had on the funding necessary to maintain performance levels and to deliver all of the defined outputs in the final determination. We also accounted for developer services contributions being higher than anticipated in the first half of the price control period. This allowed us to re-assess the amount of money available for delivering further outputs for comparison with our final determination figure of £55.7m. The outcome of our assessment and the conclusions for each scenario are summarised below.

Funding Available for Further Undefined Outputs

	Funding Scenarios	Funding for Further Outputs (£m)	Potential Number of projects
	Final determination unadjusted	55.7	72
i	Final determination funded to full nominal budget adjusted for lower than anticipated inflation	88.9	95
ii	Actual/Anticipated funding for first 3 years and 90% of PE budget for final 3 years	1.0	None
iii	Actual/Anticipated funding for first 3 years and 90% of ISNI budget for final 3 years	18.8	Current known pressures

Scenario (i) – Fully funded FD (nominal) adjusted for inflation

5.2.3 In the fully funded scenario, the benefits associated with lower than anticipated inflation would increase the money available for further undefined outputs from £55.7m in the final determination to around £89m.

5.2.4 Capital works programme information submitted by NI Water indicates that this would provide sufficient funding for a further 95 outputs in addition to all of the defined outputs already included in the PC15 final determination. It indicates that this could comprise of investment on:

Investment area	Number
Water treatment works	2
Service reservoirs and clear water tanks	5
Trunk mains	2
Sewerage projects	42
Wastewater treatment works	42
Properties at risk of low pressure	10% increase in investment
Properties at risk of internal flooding	

Scenario (ii) - Actual/Anticipated for first 3 years, 90% of PE for last 3 years

5.2.5 This represents the worst case planning scenario based on budget reductions to date. The scope of £55.7m for delivering further outputs and associated benefits identified in our final determination is entirely lost along with the additional benefit resulting from lower than anticipated inflation.

5.2.6 However NI Water still has sufficient funding to deliver all of the outputs defined at the time of the final determination. This allows us to conclude that under the most severe assumption the defined outputs of the final determination remain valid and that NI Water should continue to focus on their delivery.

5.2.7 As the scope for further projects has reduced to almost zero, there would be no funding available for further schemes without outperformance. To accommodate projects that have already been accepted by stakeholders, or any required in the future to cater for emerging pressures, elements of the original defined programme would need to be deferred. This would need to be managed through the established Change Control process.

Scenario (iii) - Actual/Anticipated for first 3 years, 90% of ISNI for last 3 years

5.2.8 In this scenario the scope of £55.7m for delivering further outputs and associated benefits identified in our final determination reduces to around £19m and the additional benefit resulting from lower than anticipated inflation is lost.

5.2.9 In addition to providing sufficient funding to deliver all the outputs listed in the final determination, we believe that the remaining £19m would broadly cover any changes approved to date or required to deal with known pressures. Any other

projects required to cater for unknown issues in the future would however require elements of the original defined programme to be deferred, unless there was outperformance by the company. This would need to be managed through the established Change Control process.

5.3. Base maintenance investment

5.3.1 In our final determination we adopted the following approach to estimate an appropriate capital maintenance budget for the price control period.

i We reviewed recent trends in serviceability;

ii We reviewed recent trends in capital maintenance investment;

iii We completed an econometric assessment of capital maintenance investment, expanding the range of techniques employed to allow us to triangulate to a reasonable determination; and

iv We applied an ongoing efficiency adjustment over the PC15 period.

5.3.2 Through the application of this approach we determined that the company required a total budget of £551.1m in nominal terms over the period, based on assumptions of projected inflation at the time. We estimate that this equates to a requirement of £531.5m when actual/projected inflation is taken into account.

5.3.3 In Section 2.0 above we noted that serviceability had been maintained to date. There is currently no evidence to suggest that the level of base maintenance funding should be changed for the latter half of PC15. We therefore expect NI Water to continue to plan on the basis of the final determination figure, adjusted for actual and projected inflation. We will reassess the requirement for PC21 using the additional performance data gathered during the remainder of the PC15 period.

5.3.4 The current policy, agreed by stakeholders, is to maintain base maintenance expenditure at the levels identified in the PC15 final determination in real terms irrespective of any budget reductions resulting from public expenditure constraints. This is to ensure that asset performance and the service provided does not deteriorate, as a minimum. This policy is not expected to change in the short to medium term, so we have applied it when considering the overall funding requirements for the period in the PC15 mid-term review.

5.3.5 We recognise that uncertainties in the level of funding and scope for delivery of further outputs is not ideal from an internal planning and budgeting perspective and that the management of ‘incidental base maintenance’ associated with these outputs could potentially result in some degree of suboptimal delivery.

5.3.6 However, we believe that the scale of this disruption should be relatively minor within the context of the overall programme and therefore shouldn’t have a major adverse impact on overall performance. This view is supported by the continued ability to deliver stable serviceability, in line with the requirements of the final determination, in spite of the funding constraints to date.

5.3.7 We note that the company is currently developing capital investment planning tools which will enable a detailed, evidence-based assessment of its ongoing maintenance requirements. This was a development objective funded in PC15 and we expect this work to be completed in time to inform the business plan submission for PC21 in order to justify investment in maintenance on the basis of the benefits that it will achieve for the customer.

6.0 Delivery of Social and Environmental Priorities

6.1.1 The Social and Environmental Guidance for Water and Sewerage Services 2015-21 (S&EG), published by DRD in October 2014, set out the strategic environmental and social policies that the Utility Regulator should have regard to when regulating NI Water in the PC15 price control period.

6.1.2 This was developed in conjunction with other key stakeholders and included 88 priorities across a range of policy areas. The specific targets and other more general work funded through the final determination is intended to contribute towards the delivery of these policy aims.

6.1.3 During the engagement on our approach to the PC15 mid-term review, DfI asked if an overview of how PC15 was contributing to the delivery of the S&EG priorities could be provided. As a consequence we introduced reporting through the company's annual information return (AIR) in 2016-17.

6.1.4 NI Water's first submission is attached in Annex B for information. This references specific contributing activities captured in the AIR and includes a more general commentary on other work being undertaken that is not covered by specific activity/output reporting.

6.1.5 The information reported by NI Water indicates a positive contribution to the majority of the priorities which is welcomed. This submission only covers work completed in the first two years of PC15 and conclusions on overall delivery will need to consider work undertaken over the entire six year price control period. We will therefore:

- Continue to monitor and report on progress through our annual information return and cost and performance processes.
- Provide a more comprehensive assessment of the contribution to the S&EG priorities when we complete our review of NI Water's PC15 outturn performance as part of the PC21 determination process.

6.1.6 We note that in some instances the company refers to delays or constraints due to reductions or uncertainties in PE funding. As the mid-term review indicates there is sufficient funding in overall terms to deliver these defined outputs under all scenarios, we would encourage NI Water to report contributions to the S&EG priorities in this context in the future.

7.0 Major scheme development & programme changes

7.1. Major scheme development

7.1.1 In Section 6.23 of Annex K of our PC15 final determination we listed five major schemes where the benefits were not yet confirmed or the scheme had not been developed sufficiently to allow us to make an informed determination on the requirements:

- Head Office rationalisation;
- Caugh Hill WTW water quality improvements;
- Carmoney to Strabane trunk main;
- Moygashel WWTW upgrade; and
- North Ards WWTW upgrade.

7.1.2 Funding at the level identified in NI Water's business plan was provisionally included, but the company was expected to provide us with an update on each scheme for final determination at the mid-term review.

7.1.3 The potential for the Carmoney to Strabane trunk main to meet the supply demand requirements has been confirmed through the developing Water Resources and Supply Resilience Plan (WR&SRP). However our main concern over the ability to abstract sufficient water to supply the main in all circumstances has not been addressed. We are concerned that this remains the case and expect NI Water to work with NIEA to resolve this issue as soon as possible so that the overall viability of the main can be confirmed before construction commences.

7.1.4 We have received an updated business case for North Ards WwTW. Our review of the company's proposals identified that that it had not fully explored opportunities to minimise the cost of this scheme. As a consequence we have determined a cost which is approximately 30% lower than that submitted. This releases approximately £5m of the provisional final determination allocation for delivery of new outputs, which we expect NI Water to identify and agree through engagement with stakeholders.

7.1.5 We are concerned that the company has not been able to provide updated plans for the remaining schemes at the mid-term review and in particular that the investigations and pilot schemes for testing solutions for Caugh Hill WTW and Moygashel WwTW have yet to be completed and reach any conclusions.

7.1.6 The delivery of solutions at these sites are high priorities for the quality regulators and the provisional allocation included in the final determination for both schemes is significant. The current rate of progress raises concerns that the opportunity for early delivery of service improvements may be delayed or lost.

7.1.7 As NI Water has not developed the remaining schemes sufficiently to allow determination at the mid-term review, we will need to do this at a later date when the company is able to provide the necessary information.

7.2. PC15 Programme changes

7.2.1 NI Water has submitted 4 formal change control proposals which have been approved by stakeholders in PC15 to date.

- Maghaberry WwTW;
- Monaclogh Service Reservoir;
- Unsatisfactory Intermittent Discharges (UIDs); and
- The Loup WwTW.

7.2.2 The proposals for UIDs and the Loup were accepted as they did not change the overall number of outputs and were cost neutral. The equivalence of the amended UID programme to that included in the final determination will be assessed more fully towards the end of the PC15 period and accounted for as part of our 'logging up' and 'logging down' process for PC21. The submitted cost for Monaclogh SR was assessed as being reasonable and accepted on that basis.

7.2.3 Our review of the Maghaberry submission however came to a similar conclusion as our assessment for Ards North (i.e. that the company had not fully explored opportunities to minimise the cost of this scheme). Adopting a similar approach we have determined a cost which is approximately 30% lower than that submitted.

7.2.4 We are aware of 3 further potential changes which may be required as a consequence of quality enforcement or stakeholder approval

- Derg WTW MCPA upgrade;
- Ballinrees WTW MCPA upgrade; and
- Living with Water Programme enhanced (ecosystem) modelling.

7.2.5 We expect any proposals relating to these needs, or any others subsequently identified, to be submitted through the established Change Control Protocol process so that they can be considered by stakeholders and managed within the overall delivery programme. Any submissions will need to be supported by business cases explaining the need and the extent of the investment so that this can be fully assessed.

7.2.6 Our mid-term review assessment indicates that all of the additional requirements identified above, could be accommodated within a planning scenario based on 90% of the Investment Strategy for Northern Ireland budget allocation projections. They might however require existing projects to be removed from the programme if actual budget reductions were more severe. In this circumstance stakeholders would need to agree which projects are to be 'substituted' out of the programme.

8.0 Preparation for PC21

8.1.1 The promotion of long term planning was a key component of our approach to PC15. This was reflected in our final determination which included funding for a range of outputs/objectives aimed at improving the company's asset knowledge and planning capability.

8.1.2 Delivery of these outputs, investigations and studies is necessary to ensure that the business plan submission for PC21 is as robust as possible in order to maximise the benefits and value delivered to consumers.

8.1.3 We are currently almost half way through PC15 and are concerned over whether all development work will be sufficiently progressed to deliver the anticipated improvements in the company's PC21 business plan submission in around 2 years' time. Our concerns are based on the following:

- Two thirds of the treatability studies due to be undertaken in the first half of PC15 to identify investment requirements have not started and are awaiting the establishment of a new consultancy framework.
- The capital maintenance planning tool and consultancy support necessary to help assess and prioritise NI Water's future needs has just been procured and a period of development will be required before it can be embedded and start producing meaningful validated outputs. This is a critical output needed to justify maintenance investment in PC21 on the basis of the benefits delivered.
- Strategic drainage area study work only commenced in 2016-17 and is due to continue into 2020-21. Around 85% of the 60 needs/options studies need to be completed by December 2019 to inform the PC21 investment programme.
- The MoU with the Agri-Food and Biosciences Institute for the modelling work to support the Living with Water Programme (LWWP) has yet to be finalised and models will subsequently need to be developed and their outputs validated before they can be used for informing investment proposals.
- The installation of event/duration monitors at overflows is occurring around two years later than anticipated and is programmed to continue into 2020-21. The greater the extent of the information available the better informed investment decisions, including those associated with the LWWP, will be.
- The installation of sample taps at service reservoirs is commencing around two years later than anticipated. These improvements are required to ensure results are not distorted by unrepresentative samples and provide as accurate a view of quality compliance as possible for investment planning purposes.
- Further work is required to overcome barriers encountered in attempts to identify and reduce surface water discharges to the sewer network and allow effective forward planning.

- Work necessary to confirm requirements for 3 of the 5 major schemes under development has not been completed in time for determination at the Mid Term Review as required. The fact that this is the case for priority PC15 outputs raises concerns over the delivery of investigation and study work for PC21.

- The findings from the investigations and trials for innovative and sustainable solutions are not yet available to benefit the later years of PC15 or planning for PC21. The company needs to demonstrate how lessons learnt can be captured and factored into delivering more sustainable outcomes in the future.

8.1.4 Our funding assessment indicates that the company has sufficient budget to deliver all of the outputs defined in the final determination under all the planning scenarios considered. This includes the investigations/studies which were funded in order to inform the business plan submission for PC21.

8.1.5 The company indicates that it intends to complete all this work in time to inform the PC21 business plan, however we remain concerned that it may not have sufficient time to do so. A concerted effort will therefore be required from the company in terms of delivery and we will hold it to its commitment when assessing PC15 performance. This is crucial as delivery of these objectives is key to ensuring that the necessary tools/processes are embedded in the business and providing accurate data in time to support the preparation of the PC21 plan.

PC15 MTR Annex A- PC15 S&EG Priority Delivery Update

NORTHERN IRELAND WATER LIMITED - ANNUAL INFORMATION RETURN

ANNUAL INFORMATION RETURN - TABLE 48 Social and Environmental Guidance for Water and Sewerage Services (2015-21)

Drinking Water Quality

Priority	Drinking Water Directive	Update on Delivery (June 2017)	AIR Ref
WQ1	Maintain existing water assets and infrastructure and complete any upgrades needed to sustain overall compliance levels.	NI Water maintain assets as a Business as Usual (BAU) action within our base maintenance programme. The total base maintenance funding being invested has been maintained in line with the PC15 FD to ensure customer service is maintained. This investment includes replacements and repairs to sustain water compliance levels. Upgrades to achieve new compliance standards are prioritised from the 'Enhancement' investment programmes and nominated within the PC15 final determination. This funding envelope has been reduced from the PC15 FD due to PE cuts and is delaying investment at sites including Derg WTW where Pesticides are now requiring an additional treatment process which was not identified at the time of the PC15 plan.	AIR Table 11 and Table 40a
WQ2	Complete any water infrastructure and treatment upgrades necessary to address enforcement notices and other statutory obligations from the Water Supply (Water Quality) Regulations (NI) 2007 (as amended).	Water infrastructure investment (watermains rehab) is prioritised using our WIIM progress which includes for a range of issues including water quality. Any enforcement notices relating to watermains infra should they arise will be accommodated as must do investments within the watermains rehab programme which is a blend of Base Maintenance and Enhancement investments. PC15 has to date completed the GAC installations at Dorisland and Killyhelvin WTW's which achieved beneficial use in PC13. The PC15 programme also includes for investment at Derg WTW to fit out existing filters and ensure the chemical arrangements are available to treat the water from the River Strule intake. In addition a PEO ref MCPA has added a further project not funded within the PC15 FD nominated outputs. It is planned to progress this project in PC15 as an agreed 'undefined' output providing funding is guaranteed.	AIR Table 11 and Table 40a
WQ3	Identify and program any infrastructure and treatment upgrades necessary to meet new or emerging drinking water quality issues or legislative changes (e.g. Radon).	NI Water will continue to respond to emerging risk identified in the Drinking Water Safety plans and to respond to issued raised by the Drinking Water Inspectorate in its consideration of provisional enforcement orders or other enforcement action. Any resultant outputs will be agreed with stakeholders via change protocol to prioritise investment not currently funded in PC15 FD.	
Priority	**Water Fittings Regulations**	**Update on Delivery**	**AIR Ref**
WQ4	Effectively monitor and regulate compliance with the Water Supply (Water Fittings) Regulations (Northern Ireland) 2009 and manage the risk of contamination or waste of public water supplies through defective water fittings.	NI Water monitor and regulate compliance with Water supply Regs as a BAU item. Information on the companies obligations and powers, guidance to householders and notification forms are available on the companies website. The company supports the national schemes for licensed or approved plumbers.	
Priority	**Drinking Water Safety Plans and Drinking Water Protected Areas**	**Update on Delivery**	**AIR Ref**
WQ5	Continue raw water monitoring programme at abstraction sites to manage drinking water quality risks and work with NIEA to designate Drinking Water Protected Areas to help prevent future deterioration of drinking water sources in line with WFD principles.	Raw water monitoring is in place and ongoing. Sampling frequencies are reviewed in line with regulatory requirements and on risk assessment. The is managed as BAU. DWPAs have been assigned by NIEA for our drinking water catchments in line with WFD principles. NI Water worked with NIEA during this process.	AIR Table 9 Section B 6
WQ6	Through the ongoing review of Drinking Water Safety Plans (DWSPs), develop and implement a prioritised programme of mitigation measures to build resilience against contamination risk for all aspects of the water supply chain (from catchment through to tap) to protect public health.	As BAU we implement a prioritised investment programme to manage drinking water quality risks informed by DWSPs. This is a Core Business activity.	
Priority	**Managing Raw Water Quality Risks**	**Update on Delivery**	**AIR Ref**
WQ7	Continue rolling out a prioritised SCAMP NI programme across all drinking water catchments to reduce raw water contaminants through interactive stakeholder working to improve or prevent deterioration of abstracted drinking water quality (e.g. natural organic matter, pesticides) and provide for more cost-effective treatment solutions in the future.	Catchment Management Plans being developed by NI Water for all drinking water catchments. Catchment Management Plans will be completed for all live catchments in the PC15 period. Year 1 & 2 targets delivered. Continued roll out of the WCP and work with organisations such as Rivers Trust. SCAMP NI and the work with NGOs and the WCP is progressing well. In addition NI Water have secured Interreg VA funding for the Source to Tap project, aimed at improving border catchments.	AIR Table 9 and 47
WQ8	Implement the recommendation of the Inter-departmental Group on Wildfires to introduce Bye-laws on NI Water's land and work with the proposed Strategic Wildfire Forum and other stakeholders to manage the risk of wildfires within its catchments (and the risks to raw water quality).	Participation with the Inter-departmental Group on Wildfires is ongoing and implementation of recommendations to manage the risk of wildfires within catchments are being carried out on an annual basis as agreed at the group.	AIR table 47
Priority	**Managing Quality Risks from the Distribution System**	**Update on Delivery**	**AIR Ref**
WQ9	Continue a maintenance programme to ensure all service reservoirs are cleaned and checked for integrity on a regular basis. The company should also ensure that for the protection of human health microbiological quality is not compromised; residual disinfection is maintained throughout the distribution system, and disinfection by-products are kept to a minimum.	NI Water have a rolling programme of Potable water storage structures cleaning and inspection as a BAU item. The inspection programme informs the Base Maintenance investment at Potable Water storage structures which is progressing as per PC15 FD plans. All Water Quality parameters are monitored and managed within the water network as a BAU item	AIR Table 11 line 19
WQ10	Work with DRD, DWI and stakeholders through the PC15 planning process to develop and agree a PC15 investment programme and targets to address iron exceedances & drinking water quality complaints, in particular colour, taste & odour.	This action is complete. Stakeholder engagement took place during the development of the PC15 plan	
Priority	**Managing the Quality Risks from Lead Pipes**	**Update on Delivery**	**AIR Ref**
WQ11	Continue implementing its strategic lead policy and lead pipe replacement programme focused on improving compliance with EU Lead standard (10µg/l).	NI Water continues to invest in lead 'communication pipe' (NI Water owned pipe, excluding private customer pipe) replacement on a prioritised basis within the funding constraints of PC15. The prioritisation is completed on a risk based approach to target the investment.	AIR Table 11 Section B 8a-9
WQ12	Work with DRD, DWI and stakeholders to develop and implement a strategic risk based approach for addressing lead compliance issues associated with private supply pipes and domestic distribution systems	NI Water have completed a pilot replacing both private and public elements of lead service pipes. A report is being completed for sharing with stakeholders to take this action forward.	

Drinking Water Supply			
Priority	**Water Framework Directive**	**Update on Delivery**	**AIR Ref**
WS1	Develop, agree and implement water abstraction monitoring and management plans with NIEA.	Ongoing work with NIEA AIL team to review abstraction licences. Managed as BAU.	
WS2	Implement any drinking water resource-related measures set out in the Executive's River Basin Management Plans.	Ongoing work with NIEA. Member of the WFD Strategic Planning and Resources Group (SPAR)	
Priority	**Water Resource Management (& Drought) Plan**	**Update on Delivery**	**AIR Ref**
WS3	Prepare a revised Water Resource Management Plan (WRMP) to identify the long-term water resource management and security of supply investment needs. The WRMP should incorporate drought planning requirements, identify adaption measures in response to climate change predictions and take account of the review of water abstraction and impoundment licences. DRD will provide Guidance on this to NI Water.	NI Water have completed a draft Water Resource and Supply Resilience Project which includes for a Water Resource Management Plan, Strategic Drought Plan and a Critical Period Plan, in accordance with the guidance provided by DRD. The plan will proceed to consultation, when a minister is appointed, with the final plan informing investment in the final years of PC15 and PC21.	AIR Table 10 Section C & AIR Table 47
WS4	Develop and implement a water supply investment programme to ensure long-term security of supply (informed by revised WRMP).	This is included with WS3 above.	AIR Table 44 Section C
Priority	**Water Leakage Detection & Reduction**	**Update on Delivery**	**AIR Ref**
WS5	Continue to focus on leakage detection and reduction with the aim of achieving and maintaining the Sustainable Economic Level of Leakage18 (SELL), and driving below this if recommended in the 2017 WRMP.	The recorded leakage level of 163.43Ml/day at March 2017 was slightly above the target level of 161.00 Ml/day for 2016/17. An action plan has already been implemented to address this variance pending availability of Capital funding in 2017/18. The 2017 WRMP does not recommend going below the current SELL	AIR Table 10 and Table 44 lines 31 33
WS6	Work with DRD and stakeholders to develop and implement policy on reducing private supply pipe leakage (e.g. in conjunction with lead supply replacement).	NI Water have limited powers to repair private supply pipe leakage. If a leak is identified a waste notice is issued which provides the customer a period of c4weeks to complete a repair. The vast majority of repairs are carried out within this period and reducing the time period would have limited benefit. A draft report following the pilot lead replacement project has been completed and is currently being reviewed by NI Water Governance mechanisms. As suggested in last year's report the initial outputs suggest there is limited benefit in replacing private communications pipe unless all internal lead within a property is removed. As soon as the report is approved it will be forwarded to DfI for further consideration.	
Priority	**Managing Water Consumption**	**Update on Delivery**	**AIR Ref**
WS7	Continue with a programme to install meters for non-domestic water and sewerage customers	NI Water was until December 2017 obligated to fit water meters at all newly connected premises under Article 81 of the Water and Sewerage Services Order (2006). In December 2016 the Minister made regulations removing the part of this obligation relating to Domestic premises. As such NI Water will limit the installation of water meters to non-domestic premises going forward.	AIR Table 8 Section B
WS8	Prepare and implement a Water Demand Management Strategy (WDMS) focussed on moving towards the proposed water strategy's long-term target of 130 l/h/day.	This is a long term water strategy action being led by DfI. NI Water will support the development of this strategy.	
WS9	Work with DRD and other stakeholders to develop policies in respect of water efficiency measures in homes and businesses. This includes investigating opportunities to work with other government departments, utility providers or NGOs to find mutually beneficial projects in which water efficiency can be highlighted or implemented (e.g. water efficiency and lower energy bills)	An initial meeting held with DfI and other associated stakeholders on the 23rd May 2017 to discuss this measure in relation to the LTWS. Following this discussion it was agreed that NI Water would highlight the current Education campaigns to assess if there were further opportunities. In addition the work on Demand Management options carried out as part of the 2017 WR&SRP to be forwarded to DfI for further discussion.	

Environmental Protection & Improvement

Priority	Urban Waste Water Treatment Directive (UWWTD)	Update on Delivery	AIR Ref
WW1	Continue improving overall levels of compliance with Water Order Consents(including flow compliance from 2015), the PPC Regulations and the CSO spill requirements of the UWWTD, WFD (including Priority Substances &SWD), MSFD & BWD.	The PC15 plan and FD set targets to continue improving overall levels of compliance. Despite public expenditure cuts within 15/16 and 16/17, which have impacted on NI Water ability to upgrade WWTW's as per the PC15 plan, with some projects being delayed, compliance has been maintained. Actual compliance by WwTW at calendar year end for 2015 and 2016 was 92.80% and 93.62%.	AIR Table 16 Section D, E and F
Priority	**Urgent Waste Water Priorities**	**Update on Delivery**	**AIR Ref**
WW2	Develop and deliver a prioritised investment programme on wastewater treatment facilities, pumping stations and sewerage systems to meet:	The PC15 plan was developed with stakeholder engagement and all WWTW enhancement projects have been prioritised in conjunction with NIEA. The PC15 plan was constrained within the funding limits set for the plan and this has resulted in a significant number of WWTW's not receiving investment during PC15. The additional PE cuts in 15/16 and 16/17 are further reducing NI Water's ability to deliver investment at WWTW's and as a result a number of new housing developments are not receiving planning approval as the receiving WWTW has no headroom capacity. The extent of this impact is detailed in the mid term review baseline document compared to the latest plan, illustrating the number of WWTW's where potential investment could have taken place in PC15.	AIR Table 16 Section F and Table 40a
WW2a	- immediate development pressures (& address overloaded works) and compliance with Water Order Consents (WOCs),		AIR Table 16 Section F and Table 40a
WW2b	- flow monitoring requirements (in support of the introduction of flow compliance from 2015); and		AIR Table 16 Section F and Table 40a
WW2c	- any outstanding spill monitoring requirements needed for compliance with the UWWTD, SWD & BWD.		AIR Table 16 Section F and Table 40a
WW2d	And deliver the highest priority schemes during PC15 within the funding constraints.		AIR Table 16 Section F and Table 40a
Priority	**Planning & Modelling**	**Update on Delivery**	**AIR Ref**
WW3	Work with DRD, NIEA and other statutory partners in response to the Committee for Regional Development's Inquiry into Unadopted Roads and commence a prioritised investment programme to address unsatisfactory private sewerage infrastructure and treatment facilities	This action has not progressed as no funding was included with the PC15 business plan or FD to take this forward. NI Water continue to collaborate with TNI in respect of Article 11 Enforcement sites (pre 2007) where TNI hold a single bond. NI Water has also identified potential Enforcement sites (post 2007) where separate NI Water/TNI bonds apply.	
WW4	Collect accurate and reliable information on wastewater treatment facilities and sewerage infrastructure to inform development of robust holistic drainage area plans (DAPs).	NI Water has agreed with NIEA a prioritised list of 61 Drainage Area Studies for delivery during PC15. The studies will involve a comprehensive model build and verification of catchment operation for various horizons and will be used to inform both DAP capital works and WwTW upgrades. Flow and Composition studies are selectively undertaken as part of WwTW appraisals.	AIR Table 16 Section E
WW5	Ensure storm separation and sewer infiltration reduction are considered through the DAPs and that these options are adequately explored and costed before being ruled out	As part of catchment model verification anomalies in hydraulic loading will initiate infiltration investigations. DAS catchment investigations, both reactively and proactively, target opportunities for storm water removal (separation & infiltration). Cost benefit analysis of potential capital works are examined through the Needs & Options report, developed for each study area.	
WW6	Work with DRD, NIEA and other statutory partners to develop and implement catchment-based solutions (from Simulated Catchment Management Modelling - SIMCAT) for wastewater collection and treatment	NIEA has no funding to update SIMCAT, which is populated with 2009 data. The SWELL Interreg project has an output to deliver legacy deliverables, and catchment models will be provided as an output for this. .	
WW7	Work with DRD, NIEA and other statutory partners to develop a programme and target for installing appropriate spill monitoring systems across the sewerage network.	PC15 includes for the installation of CSO monitoring at priority sites including those required by revised Bathing Water & Shellfish Directives.	AIR Table 40a
WW8	Undertake work to develop a sustainable economic level of infiltration (SEIL) to inform sewerage investment decisions and deliver infiltration reduction works where this is assessed to be cost effective in addressing issues	NI Water currently exploring SELI methodology with other UK sewerage providers.	
WW9	Develop and maintain a long-term investment programme for the implementation of the PPC requirements for Odour Management. In the first part of PC15 NI Water should:	The PPC Compliance Group, a collaborative working group between NIEA and NI Water has been established and Odour Modelling prioritisation for 23 WWTWs has been established in addition to a schedule of inspections.	
WW9a	- assess the cost of complying with the PPC Regulations for all sites that are determined to be 'qualifying sites' under proposed NIEA guidance.	Project Identifier KI583 - PC15 Implementation of Odour & PPC Strategy has identified a spend of £4.4 to rectify deficiencies as identified by the joint inspections	
WW9b	- develop and agree with NIEA a prioritised programme with the aim of achieving full compliance by the end of the PC15 period (subject to priority & funding constraints).	A prioritised programme has been agreed and this is reviewed quarterly by the PPC Compliance group	
WW9c	In the second part of PC15 NI Water shall commence the delivery of this programme, with the pace determined by the relative priority of this programme, as guided by the WICG.	The initial delivery of the programme has commenced as per the prioritised programme agreed with the PPC compliance group.	

Priority	Longer Term Investment Priorities	Update on Delivery	AIR Ref
WW10	Continue a prioritised long-term maintenance and enhancement programme on wastewater treatment facilities & pumping stations to maintain serviceability and meet:	The PC15 plan was developed with stakeholder engagement and all WWTW enhancement projects have been prioritised in conjunction with NIEA. The PC15 plan was constrained within the funding limits set for the plan and while this has effectively limited the immediate number of sites for capital intervention it has provided for an extended list of wastewater sites for longer term prioritisation with the option of promoting additional outputs as circumstances prevail. Please see WW2 for additional information.	AIR Table 16 and 40a.
WW10a	- development pressures (& address overloaded works) and compliance with Water Order Consents (WOCs);		
WW10b	- reduce pollution incidents;		
WW10c	- comply with existing/revised Water Order Consents; and		
WW10d	- meet the PPC requirements.		
WW11	Continue to implement a long-term investment programme focused on providing appropriate treatment at small (>250) waste water treatment works	This programme is progressing and is planned to achieve the upgrades during PC15 as per the plan targets.	
WW12	Continue to implement a prioritised investment programme on sewage sludge treatment facilities focused on providing appropriate pollution containment and odour abatement.	Capital Maintenance Planning is ongoing at sludge treatment facilities identifying appropriate Base Maintenance on PPC and odour control. For additional information see WW9	
WW13	Develop and implement a programme to bring existing wastewater pumping stations and treatment works in to compliance with the Water Supply (Water Fitting) Regulations (Northern Ireland) 2009.	NI Water implemented a programme of work for PC15 - 'KI487 Backsyphonage Risks at NI Water Sites'. The initial desktop study for the project estimated the cost of meeting the compliance at approximately £16.2 million and this figure was included in the unconstrained PC15 budget but following the identification of a constrained budget, funding for this element of work was reduced to £1.8m, and subsequently included at this funding level within the Final Determination (FD). As a consequence a limited number of sites will be addressed in PC15.	
WW14	Continue a prioritised long-term programme of Drainage Area Plan work to:	NI Water has established a long list of Drainage Area Studies. Priority catchments agreed with NIEA will be undertaken during PC15 with and ongoing prioritisation from the long list will apply to future Price Control periods. The studies will involve a comprehensive model build and verification of catchment operation for various horizons and will be used to inform both DAP capital works and WwTW upgrades to target essential drivers e.g. flooding, pollution, headroom and serviceability.	AIR Table 16 Section E
WW1	- maintain the serviceability of the sewerage system;	See WW14	AIR Table 16
WW1	- meet development pressures (& address capacity issues);	See WW14	
WW1	- reduce sewer related flooding; and	See WW14	AIR Table 3
WW14d	- reduce UIDs and pollution incidents in line with UWWTD, MSFD, BWD & SWD.	See WW14	AIR Table 16 and Table 40a.
WW15	Work with DRD and NIEA to develop and implement a policy for addressing crossed connections to storm sewers focussed on the WFD's 'the polluter pays' principle.	NI Water and NIEA to produce a prioritised list of misconnections and establish a protocol for keeping this up to date. NI Water and NIEA to produce a misconnections leaflet and publicise the issue of misconnections to wherever appropriate.	AIR Table 47 line 13
WW16	Implement any sewerage or potable water related measures set out in the Executive's River Basin Management Plans (RBMPs).	Please see details WS2 for further information	
WW17	Continue to reduce the number of pollution incidents through effective investment and operation of the water and sewerage assets.	NI Water has developed some additional management tools now being used in PC15, which will reduce the potential number of pollution incidents. An example is the hotspotting tool which identifies areas where repeat blockages occur enabling full route cause analysis to be completed, allow for corrective action and remove the potential for future events. Work in progress also includes the development of a DWF capacity mapping tool which will provide an alert of capacity exceedance from new development proposals.	AIR Table 47 line 12

Flood Risk Management & Drainage			
Priority	**The European Floods Directive**	**Update on Delivery**	**AIR Ref**
FRM1	Develop & implement individual sewerage and drainage measures applicable to NI Water as set out in the Executive's FRMPs (2015-21).	Within the new Risk Based approach to 'Needs and Options' and 'MBVs' specification, part of this new specification is meeting with Rivers Agency regarding flooding, and developing solutions to address this flooding with a joint approach where possible.	
FRM2	Implement the inspection and maintenance requirements of the Executive's proposed Reservoirs Bill for controlled reservoirs.	NI Water have historically completed panel engineers inspections and subsequent required investment at our impounding reservoirs, without legislation being in place. The next round of inspections to inform PC21 are planned in 17/18. NI Water will continue to implement the other elements of the Reservoirs Act as the commencement orders are enacted, in particular in relation to potable water storage structures larger than 10ML.	AIR table 47 Line 7
Priority	**Drainage Planning & Modelling**	**Update on Delivery**	**AIR Ref**
FRM3	Contribute to the development of integrated drainage models and plans to manage flood risk in urban areas including completing any necessary Pilot Projects (e.g. Ballyclare).	NI Water continue to participate within Living With Water Programme and particularly Work Package 9 which seeks to integrate Rivers Agency and NI Water hydraulic models contributing to the management of flood risk through the identification and provision of protection measures.	
FRM4	Work with DRD, NIEA and Rivers Agency through the Stormwater Management Group (and through implementation of PPS 15 – Planning and Flood Risk) to progress and implement the utilisation of SuDS NI, design for exceedance and other policies for sustainable storm water management.	NI Water attend and contribute to the Storm Water Management group to develop approach's to extend the utilisation of SuDS NI. NI Water are finalising a new 'Sewers for Adoption' manual for developers which will include for Suds design. This document will be released in the Autumn of 2017.	Table 47 line 17
Priority	**Urban Drainage Provision**	**Update on Delivery**	**AIR Ref**
FRM5	Consider the costs and benefits of widening the scope of Drainage Area Studies Plans to include 'design for exceedance' in high flood risk areas and include an emphasis on improving sewerage records held on the Corporate Asset Register (CAR).	NI Water's Risk Based Drainage Area Plan specification provides for an assessment of overland flow based upon predicted flood volumes and utilising LIDAR, 2D Modelling or other techniques to assess potential flood impacts. Emphasis is given to understanding external stakeholder flood risk within the catchment with potential for integrated drainage solutions to be promoted.	
FRM6	Contribute to the development and implementation of a prioritised Government programme of integrated drainage schemes to manage surface water flooding in urban areas (incorporating storm drains, sewers and watercourses). This includes assisting in the development of integrated flood modelling in specific locations on a case by case basis, where Stakeholders agree that this is necessary, and the apportionment of appraisal, modelling, and survey costs can be agreed in advance.	NI Water attends the Flood Investigation Coordination Group (FIPG) meetings at which responsibility for developing tactical solutions for flood issues are agreed. As a result NI Water has participated in and lead a number of studies that have developed integrated solutions. NI Water has fully participated in the Dfl's 'Improved Surface Water Management' workstream, providing input material and reviewing documents. NI Water is also participating in Dfl's Living With Water Programme (LWWP) and awaits guidance from Dfl on how the recommendations resulting from the 'Improved Surface Water Management' workstream will influence the investment appraisal and planning work being progressed to inform the Belfast Strategic Drainage Infrastructure Plan and the NI Integrated Drainage Investment Planning Guide.	
Priority	**Sewer Flooding (DG5)**	**Update on Delivery**	**AIR Ref**
FRM7	Continue to address out-of-sewer flooding problems attributed to NI Water's sewerage and drainage networks	NI Water are continuing to invest, as per the PC15 plan in providing engineering solutions to remove internal flooding of properties attributed to NI Water's sewerage network. These are commonly referred to as DG5 removal projects.	AIR Table 3 Section A
Priority	**Combined Sewer Separation and Infiltration Reduction**	**Update on Delivery**	**AIR Ref**
FRM8	Work with DRD, NIEA, Rivers Agency and other stakeholders to develop and commence a long-term storm water separation and infiltration reduction programme focussed on addressing UIDs, pollution incidents, sewer flooding, surface water flooding and providing capacity for development.	NI Water is developing a programme of storm separation projects using bespoke software to identify opportunities. The objective is to complete a range of projects e.g. urban housing, large commercial, educational campus etc. An examination of cost/benefit relationship will be used to inform a more focussed business case for PC21 projects.	Table 47 line 14
Priority	**Emergency Flood Response**	**Update on Delivery**	**AIR Ref**
FRM9	Contribute to the delivery of an efficient and effective coordinated response from Government during flooding incidents (in line with PEDU).	NI Water has a well-developed Major Incident Plan that provides a fully planned reactive response to all types of emergency incident. The annual audit of NI Water's emergency planning arrangements has been completed by an independent Certifier for 2017, and the final Audit Report submitted to the Department for Infrastructure's Water & Drainage Policy Division. NI Water is represented on the Dfl 'Emergency Planning Steering Group'. This group now includes the three main drainage agencies: Dfl Rivers, Dfl Roads and NI Water. Dfl Rivers has completed a 2016/17 review of its Flooding 'Toolkit' which details flood emergency response procedures where Dfl has a Lead Government Department role. NI Water has contributed to the review and participated in a Dfl multi-agency flood-response training exercise in June 2017. NI Water continues to be a member of the multi-agency 'Flood Strategy Steering Group' (led by Dfl Rivers) and contributes to the 26 related multi-agency 'Regional Community Resilience Group' forums across Northern Ireland. NI Water continues to engage with multi-agency partners through the five Northern Ireland 'Local Emergency Preparedness Groups' (EPGs) (Belfast, Southern, Eastern, Western and Northern) and related working groups (e.g. flooding and communications working groups). All EPGs tested their Coastal Flood Plans during 2016/17 and NI Water fully participated in these multi-agency exercises. The Company is also represented on the principal strategic emergency preparedness body for the public sector in Northern Ireland, the 'Civil Contingencies Group (NI), and continues to keep pace with wider developments through involvement with UK water industry emergency planning groups.	

Service Delivery, Improvement and Affordability

Priority	Customer Priorities for Customer Service, Information & Communication	Update on Delivery	AIR Ref
CS1	Continue to review and improve performance in customer service quality and effectiveness through the development of better data and information systems and customer focussed processes and policies	With regard to customer data, there is a programme of projects being progressed in respect of data accuracy and data validation. In addition, there are data accuracy obligations imposed on the service provider under the CBC contract.	
CS2	Improve the accuracy, reliability, security, and consistency of billing information including enabling customers to self serve	With regard to customer data, there is a programme of projects being progressed in respect of data accuracy and data validation. In addition, there are data accuracy obligations imposed on the service provider under the CBC contract. A self service website has been launched and this will continue to be developed as part of the future services improvement requirement under the CBC contract	
CS3	Adopt any proven technology or systems that provide tangible benefits in terms of improving service performance or reducing operational costs, whilst ensuring the resilience and security of essential control and monitoring networks. (e.g. ICAT programme)	The delivery of the ICAT programme has commenced with a large number of Potable storage tanks having ICAT technology installed during PC15. This technology is to be used to control inlet flows to maximise storage, improve resilience and enable remote control during operational events. The technology will also enable system control functionality where a number of sites are grouped into an overall system to improve performance. The Omagh and Cookstown areas are due for completion in Summer 2017.	Table 47 line 4
CS4	Continue improvements in handling customer queries, complaints and billing (DG6-9).	FPCOR (First Point of Contact Resolution) functional targets have been set, these are monitored at monthly meetings to ensure improvements in handling customer queries, complaints and billing	AIR Table 4 Section A
CS5	Work with stakeholders through the Customer Measures and Satisfaction Group (CM/SAT) to develop more consumer focussed performance measures, including:	We have agreed the following quantitative and qualitative measures with the CM/CAT group : Unwanted Contacts, FPOCR and Customer Advocacy score. The remainder of PC15 will be used to understand trends with a view to having hard performance measures in place for the beginning of PC21	
CS5a	i) New consumer satisfaction (CSAT) Key Performance Indicator which gives a measure of customers' overall satisfaction with the service provided by NI Water; and		
CS5b	ii) Adoption of industry best practice measures for performance on handling customer contacts for example:		
CS5bi	- customer contact levels (through all communication channels);		
CS5bii	- first point of contact solutions; and		
CS5biii	- repeat contacts		
Priority	**Customer Priorities for Water Service Levels**	**Update on Delivery**	**AIR Ref**
CS6	Develop quality drivers and measures for the water mains rehabilitation programme informed by drinking water quality monitoring and customer complaints (iro colour, taste & odour).	The WIIM methodology for prioritising replacement pipelines in the distribution network , includes WQ failures as drivers for pipeline replacement. This a Core Business Activity. For the 2016 reporting year NI Water achieved its drinking water quality targets and is on profile to achieve its targets in 2017.	AIR Table 47 line 2 and 8
CS7	Continue to reduce the number of properties that experience unplanned and unwarned interruptions to drinking water supply in excess of 3/6/12/24 hrs (DG3).	WIIM process already in place as developed for PC15 but will continue to refined. Latest WIIM review of the methodology (WIIM3) now includes better informed DG3 analysis. This is one element of the overall Capital Maintenance Planning process. The Water Resource & Supply Resilience Plan will include a number of resilience project proposals.	AIR Table 2 Section B 5-8 and AIR Table 47
CS8	Target areas of low pressure to increase the number of customers who benefit from at least the minimum levels of supply.	NI Water continues to invest in watermains rehab and within this sub prog properties on the DG2 register are targeted to ensure that post investment they receive the minimum levels of supply. The PC15 investment is currently on track as per the agreed investment levels	AIR Table 2 Section A
CS9	Continue to maintain a Register (DG2) of properties at risk of receiving low pressure and reduce the number of properties on the register over the PC15 period	NI Water has by assessing pressure across its water network prepared a the DG2 register of properties at risk of receiving low pressure. Following capital investment verification is completed to determine if properties can be removed from the register.	AIR Table 2 Section A
Priority	**Customer Priorities for Sewerage Service Levels**	**Update on Delivery**	**AIR Ref**
CS10	Establish and maintain a Register (DG5) of properties at risk from internal & external sewer flooding and reduce the number of properties on the register over the PC15 period.	NI Water developed a register of properties at risk of internal sewer flooding during PC10. This confidence in the data originally was low but this has improved significantly over recent years. The DG5 external register has been developing. PC15 investment is focused on removing properties from the internal flooding register.	AIR Table 3 Section B
CS11	Work with Roads Service, Rivers Agency and other relevant drainage providers to develop a register of properties at risk of surface water flooding to be actioned 'jointly' during PC15 and beyond. NI Water should provide the information on out-of-sewer flooding from sewerage and relevant drainage assets.	FIPG maintain a register of flooding locations which require collaboration between the main drainage agencies. FIPG meet bi-monthly and review progress on resolution of issues. NI Water participate fully in FIPG providing information and leading on a number of joint projects.	AIR Table 3 Section B
Priority	**Customer Priorities for Affordability & Efficiency**	**Update on Delivery**	**AIR Ref**
CS12	Explore opportunities to reduce the cost of its existing Public Private Partnership contracts to reduce their long-term running costs.	Cost efficiencies to date include aligning the Alpha Contract water quality standards to that of the Regulatory water quality standards. Energy efficiency measures and annual energy audits to reduce power costs are also ongoing. Other cost efficiencies measures are currently being explored.	
CS13	Reduce costs by setting targets and developing and implementing action plans to deliver operational efficiencies.	BAU/Core Business. Significant input was completed during PC13 and this will be continually reviewed as part of BAU to ensure the most efficient operational regime is maintained as the supply network changes during periods of normal operation, drought and winter critical periods. PC15 is implementing the first phase of ICAT on the SR asset base with over 30 sites already fitted with the technology. Dedicated energy efficiency team has been established and is pursuing as BAU Short and medium term energy efficiency targets for NI Water have been developed for the PC15 period. These are under review as challenges such as grid connections, and closure of incentive schemes, are considered. RDI Strategy has and continues to support the identification and implementation of improved performance and efficiencies through collaborative RDI. Continued membership and participation in UKWIR projects and other water industry focused collaborative projects. NI Water have deployed a modern meter data management system to collect record meter reads on site and return to the corporate billing system in real-time. We are starting deployment of automatic meter reading equipment and utilising mobile telephone technology to remotely read key meters.	AIR Chapter 30

Sustainability, Climate Change and Resilience			
Priority	**Project Appraisals**	**Update on Delivery**	**AIR Ref**
SSR1	Revise the project appraisal process to ensure that investment decisions take account of 'whole-life' costs (including the cost of the CRC Energy Efficiency Scheme) and benefits of proposed solutions. Whole life carbon costs should be factored into appraisals for projects costing over £500k (and any other projects where carbon is likely to be a material consideration). Where there is a marginal NPC difference between a solution with the lowest NPC and a solution that offers significantly lower whole life emissions, the lower emission solution should be selected.	These actions are already included as part of the Capital Appraisal process. NI Water are currently completing a full review of the appraisal process, and will refine the process to improve it further.	
SSR2	Long-term social, economic & environmental sustainability should be considered in all project appraisals.	NI Water are reviewing the Appraisal Report and Business Case Templates ensuring they align with the NIGEAE 10 Step approach including Step 7 – 'Weigh up non-monetary costs and benefits'	
SSR3	Explore opportunities with Forest Service and other partners to offset existing and future energy demands (e.g. carbon offsetting through forestry, green energy production through wind turbines or wood chipping).	NI Water have explored a number of renewable investment types. Due to recent changes in ROC's a number of initiatives have not been deemed economic. 1.2 MWP of Solar installations have been completed to date across the NI Water estate and other opportunities will be explored as they become known.	
SSR4	For every WWTW site on which NI Water needs to carry out an appraisal to inform capital investment, due to base maintenance or enhancement drivers (quality, growth or service levels), the project appraisal shall assess if a more sustainable solution option is feasible, and determine any land acquisition requirements.	PC15 FD includes for sustainable solution targets. Each WWTW appraisal now examines potential sustainable solutions with examples including ICW's, Reed beds and similar technology. During PC15 an ICW has been constructed at Castlearchdale. Further pilot projects are planned with a variety of sustainable solutions to gain confidence in long performance and value for money.	AIR Table 16 section H
Priority	**Project Planning and Risk**	**Update on Delivery**	**AIR Ref**
SSR5	NI Water should carefully plan the early stages of project development and consider risks to project delivery, which may include progressing trial projects and working with other stakeholders to identify solutions and secure support that these risks be accepted and managed.	Project planning and risk is managed as a BAU item on all projects. Stakeholder engagement is important on key projects and examples demonstrating this in action include the WR&SR plan (see WS3) where a steering group has met circa every 6 weeks during the project development. For WWTW NI uses a process selection matrix, including processes that are endorsed by stakeholders. For new processes e.g. ICW's NI Water engage with stakeholders to ensure acceptance in principle of the process.	
Priority	**Research Development and Innovation**	**Update on Delivery**	**AIR Ref**
SSR6	Maintain and implement a Research Development and Innovation (RDI) strategy.	NI Water have an (RDI) strategy in place. The main emphasis within the strategy is that NI Water operates on a fast follower principle.	
Priority	**Renewable Energy**	**Update on Delivery**	**AIR Ref**
SSR7	Explore opportunities to invest in renewable energy generation to reduce running costs at existing high-energy facilities.	NI Water has invested in solar panels at 55 sites around the province, availing of incentive schemes at multiples of 4, 3 and 2 ROCS. Solar PPAs are being considered. Dedicated energy efficiency team has been established and is pursuing as BAU.	AIR Chapter 30
SSR8	Explore opportunities to generate renewable electricity through innovative management of existing water and sewerage assets such as: generating hydro-power from excess water mains pressure and installing solar panels at facilities.	NI Water have completed a Business Case on using Hydro power within the distribution/trunk network. To date no solution has been found that has been economically viable. Solar has been successfully installed on a number of sites. Hydro is still be examined from a Water Resource perspective to determine if an economic solution can be repeated, similar to technology already installed at Foffany WTW where energy generated from raw water can be used to power the treatment process units on the site.	AIR Chapter 30
SSR9	NI Water shall seek to maintain the level of energy purchased from external renewable sources to that achieved in the PC13 period, whilst increasing the percentage of renewable energy generated by use of its own assets and lands and contribute to achieving the Executive's greenhouse gas emissions reduction target.	NI Water continues to purchase a significant amount of green energy from the grid and is meeting the PC15 targets. NI Water have been successfully investing in renewable energy, particularly Solar recently in PC13 and PC15, but examination is being completed on a number of technologies to provide other economic solutions.	AIR Table 45
Priority	**Sustainable Treatment & Regulation**	**Update on Delivery**	**AIR Ref**
SSR10	Where NI Water believes that a license, consent, or permit proposed or set by NIEA is unnecessarily stringent or does not adequately consider a catchment based approach, NI Water should seek to challenge and resolve this with NIEA initially, and then if not resolved, by escalating this to the WICG for wider consideration and direction by stakeholders. The objective should be to develop more sustainable treatment solutions	This action is actively challenged for all design standards offered by NIEA under BAU. NIEA are supportive of sustainable solutions, where appropriate, and have supported a deviation from the full RBC approach for small works, below 20pe. Moneyreagh WwTW identification of infiltration and removal from the system is another example where we are working with NIEA to reassess the standards of the discharge from this site, in conjunction with hydrology team in NIEA reassessing the river flows, following rerouting of infiltration directly to the adjacent watercourse, giving a better flow in the watercourse, hence better dilution.	
SSR11	Complete a number of sustainable wastewater treatment 'pilots' early in PC15 to compare the costs and performance of various options. Develop & commence a long-term investment programme of sustainable wastewater treatment schemes (including the land requirements) with the core aim that this reduces NI Water's long-term operating costs and emissions.	Castle Archdale Integrated Constructed Wetland has come into operation and along with Stoneyford ICW is currently undergoing performance monitoring. Further sustainable treatment pilots are proposed at Clabby WwTW, Co Fermanagh using a Phragmifilter Reed Bed System for installation as part of the PC15 WWTW's nominated outputs programme.	AIR Table 16 Section H
SSR12	Identify and secure sufficient land early in the project phase to give the option of the selection of larger footprint process solutions that typically result in lower operating costs. Consider the advanced purchase of land to accommodate future expansion of works using more sustainable solutions.	The project business case will proactively identify land purchase requirements as developed for each Price Control.	
SSR13	Aim to gradually deliver year on year increases in the percentage of new WWTW investment (assessed by Population Equivalent served) delivered by 'more sustainable solutions' so that: By 2020/21 33% of all WWTW upgrades to works serving a PE of <2,000 are delivered by more sustainable solutions. Where viable, more sustainable WWTW solutions should also be used for works serving a PE > 2,000	Castle Archdale Integrated Constructed Wetland has come into operation and along with Stoneyford ICW is currently undergoing performance monitoring. A further much larger ICW is planned for Ballykelly later in PC15. Further sustainable treatment pilots are proposed at Clabby WwTW, Co Fermanagh using a Phragmifilter Reed Bed System. Other more sustainable solutions are being considered including nitrifying biological filters, deep lagoons and granular sludge technologies at appropriate sites.	AIR Table 16 Section H

Priority	Education & Public Awareness	Update on Delivery	AIR Ref
SSR14	NI Water should continue to invest in education and campaigns to promote prioritised key messages such as the importance of insulating (freeze-thaw), using water wisely (water efficiency), bag it and bin it (preventing pollution) and measures to prevent flooding due to other causes through continued work of the water bus and school visits, and other educational means. NI Water should learn from the impact of previous campaigns and demonstrate how future campaigns will reach consumers more effectively.	Through the work of the Waterbus and school visits, all schools (both Primary and Secondary) are offered education talks on our key water efficiency messages as well as being taught about the value of water. Communicating our key Bag it & Bin it messages and Freeze/Thaw protection via Radio/Print/Social Media. Also attending community events and delivering community and school talks. The overall objective of the strategy is to educate and increase public awareness by providing important information via all the communication channels at our disposal. Another action of the strategy was the appointment of Environmental Champions enabling the key messages to be delivered to a wider audience. NI Water delivers our key FOG (Fat, Oil and Grease) messages to schools, community groups and businesses. We have a community outreach programme which focus on delivering education programmes and public awareness campaigns on the importance of correct disposal of FOG and highlight how this can reduce the risk of pollution.	AIR Chapter 1
SSR15	NI Water should seek to develop effective partnerships with other organisations where there are shared benefits of the campaign (such as with DSD on Lead).	NI Water work with a range of stakeholders to promote our key messages around Water Quality and the benefits of drinking tap water. These Stakeholders include, Community Groups, Schools, Education Board, Media, CCNI, Regulator, DWI, DfI to name but a few. Water for Health is one of our key campaigns and we deliver it all year round through our Education programme. Water for Health/Water Quality is part of the organisation's CSR, Communications and Education strategy and is a priority for the company.	AIR Chapter 1
Priority	**Preservation of Services**	**Update on Delivery**	**AIR Ref**
SSR16	Comply with the requirements of the Preservation of Services and Civil Emergency Measures (Relevant Undertaker) (Northern Ireland) Direction 2010 and any supplementary Guidance issued by DRD. • Provide DRD with an annual audit laying out the requirements in the Direction.	Presently we are on target to deliver the security hardening measured outlined and subsequently approved in our PC15 submission. The PC15 programme of work comprises: - Security harden 52 Enhanced Service Reservoirs at a budget cost of £2,500k- target date for completion June 2017 - Security harden 13 Water Treatment Works at a budget cost of £1,700k- target date for completion late 2018. - Security harden 2 Waste Water Treatment Works at a budget cost of £400k- target date for completion before end of PC15 It should be noted that Dalriada Water also has a security hardening programme for security hardening at the sites which they operate on our behalf, albeit the cost of this work is borne by DW and not NI Water and was not included in our PC15 submission. This programme of work is independently reviewed by the Certifier as part of the annual PSCEMD audit and for CNI sites only there is separate independent audit of CNI sites. Both audit reports for 2016/17 have been submitted to DfI confirming that the work carried out to Date is compliant with regulations and progress is satisfactory.	AIR Table 47 line 3
SSR17	Ensure:	Please see SSR16 above for information	
SSR17a	• All CNI sites continue to meet latest security advice; and	Please see SSR16 above for information	
SSR17b	• Implementation of a prioritised plan for securing other identified sites to required standards.	Please see SSR16 above for information	
SSR18	Provide training and testing of appropriate protocols and Guidance issued under the Direction. Review and update major incident plans to reflect lessons learned	There is a year on year requirement to review the effectiveness of emergency plans and submit an independent audit report covering all aspects of emergency planning required under PSCEMD to the Department for Infrastructure (DfI) by 31st March each year. Typically the independent Certifier, approved by Defra, is provided with details on: • Staff training delivered • Exercises carried out including outputs and outcomes • Updates to Major Incident Plans and response protocols, implemented since the previous review. In consideration of the above the independent Certifier prepares the audit report and Statement of Compliance issued to DfI, by the due date each year.	
Priority	**Resilience**	**Update on Delivery**	**AIR Ref**
SSR19	Provide training and testing of appropriate protocols and Guidance issued under the Direction. Review and update major incident plans to reflect lessons learned	There is a year on year requirement to review the effectiveness of emergency plans and submit an independent audit report covering all aspects of emergency planning required under PSCEMD to the Department for Infrastructure (DfI) by 31st March each year. Typically the independent Certifier, approved by Defra, is provided with details on: • Staff training delivered • Exercises carried out including outputs and outcomes • Updates to Major Incident Plans and response protocols, implemented since the previous review. In consideration of the above the independent Certifier prepares the audit report and Statement of Compliance issued to DfI, by the due date each year.	
SSR19a	1) Water supply	Please see SSR19 above for information	
SSR19b	2) Prevention of internal flooding (e.g. due to a sewer pumping station being flooded)	Please see SSR19 above for information	
SSR19c	3) Prevention of pollution (e.g. due to WWTWs or SPS being flooded)	Please see SSR19 above for information	

Tourism, Recreation & Biodiversity			
Priority	**Estate Management**	**Update on Delivery**	**AIR Ref**
TRB1	Contribute to the development and implementation of the NI Biodiversity Plan.	Development and implementation of the NI Biodiversity Plan is underway as required	
TRB2	Develop & implement an estate management strategy to take account of: the primary water and sewerage functions; protected areas; the need to enhance biodiversity; the need to permit public access to support tourism and healthy lifestyles; and the need to increase opportunities for providing recreational amenities for interest groups.	A project has been created to improve site security; public safety; and enjoyment of permitted recreational activities at several locations. Work includes construction of steps and handrails; accessible fishing stands; construction of paths and walkways; construction of boardwalks; extension and repair of car parks; construction of slipway; erection of fencing and gates; installation of benches, picnic tables and bins; provision of signage; and provision of life saving equipment. Phases 1 & 2 complete. Phase 3 planned to commence summer 2017.	
TRB3	Continue to develop partnerships (e.g. SCAMP NI) with other public, community & voluntary sector organisations to deliver sustainable catchment initiatives.	Engagement and development of partnerships with key stakeholders is being carried out on an ongoing basis as required to deliver sustainable catchment initiatives.	AIR Table 47 Line 9
TRB4	Explore opportunities for leasing NI Water land and assets for leisure, tourism and income generation where appropriate.	No locations have been identified as suitable to date.	
TRB5	Adopt and implement the 'Protocol for the Care of the Government Historic Estate'. Develop a long term plan to bring assets covered by this, where necessary, up to a suitable standard and maintain them going forward.	Specialist architect appointed to undertake Condition Assessment Reports for assets listed on NI Water's historic estate register, in line with the requirements of the Protocol. The recommendations from the survey reports will be used to collate a programme of work to ensure assets are up to a suitable standard, subject to availability of funding. A capital programme has commenced on Mourne Wall to implement repairs to areas of damage.	
TRB6	Explore opportunities to celebrate the local water industries influence on the social, cultural, industrial & natural heritage of Northern Ireland.	NI Water work with a range of stakeholders to promote and celebrate the local water industry's influence on both the natural and built heritage, we do this through a joined-up approach with like minded organisations, such as the MHT, Newry, Mourne and Down Council as well as local 'user groups' . NI Water participate in special designated events to promote the important relationship between Water, Heritage, Social and Culture. These events include-EHOD, WED, WWD, Open Days, Specialised Lecturers etc.	AIR Chapter 1
Priority	**Bathing Waters & Clean Beaches**	**Update on Delivery**	**AIR Ref**
TRB7	Contribute to the implementation of the NI Marine Litter Strategy and the protection of Bathing Waters and Shellfish Waters from pollution.	NI Water continues to deliver wastewater education campaigns to highlight education and awareness for appropriate use of sewerage systems. Community engagement projects have been delivered to extend education and awareness for fats, oils and grease and sewage related debris. Compliance with water order standards at coastal works has assisted with protection of protected waters. Ballycastle WwTW being progressed, with provision of secondary treatment. LWWP will contribute to delivery of water quality improvements in Belfast Lough, whilst a capital works upgrade in Dundrum and Carrigs River investigations will contribute to identifying actions and hence assist with driving water quality improvements in Dundrum Bay.	
TRB8	Put a programme in place to reduce the risk of pollution from the sewerage system during PC15, informed by the Marine Conservation Society Pollution Policy and Position Statement on CSOs	There is a programme to install CSO monitors at prioritised sites throughout PC15. The technology is at trial stage in the field, to assess suitability. Following the trial and approval to proceed to the next stage, installation will be rolled out to all CSOs within 2km for designated bathing and shellfish waters. In addition, funding has been allocated for installation of monitors at 65 No. inland CSO's and the same technology will be used for these monitors.	
Priority	**Reservoirs**	**Update on Delivery**	**AIR Ref**
TRB9	Progress the assessment of 'unused' reservoirs to determine the approach to disposal.	NI Water have commissioned Abandonment/Discontinuance Scoping Report to be carried out at a number of reservoirs. The Outputs of this will be available in PC15.	

Table 47 – Development Outputs

DEVELOPMENT OUPUT			
1. Development of new consumer measures			
Final Determination: *The company shall report progress on the development of new consumer measures and satisfaction survey outlined in Section 3.7 of the PC15 final determination.*			
GOVERNANCE			
Directorate	**SRO**	**Project Lead**	**Approving Authority**
CSDD	Des Nevin	Rod Neill	EC
Additional Details:			
N/A			
PROJECT SUMMARY			
• New consumer measures have been developed in conjunction with stakeholders as part of the joint CEOG/CSat working group. • 4 new metrics were initially agreed by CEOG – 3 Quantitative and 1 Qualitative: ▪ total contacts ▪ first point of contact resolution (FPOCR) ▪ repeat contacts ▪ Net promoter score (NPS) style measure • This was then amended by the CSat group to 3 measures – 2 Quantitative and 1 Qualitative: ▪ total contacts (which may move to unwanted contacts) ▪ first point of contact resolution (FPOCR) ▪ customer advocacy measure (CAM) • The trial for the new metrics was completed and reported in AIR16. • They continue to be measured and reviewed by NIW, the UR and CSat group members. • Although there is currently 2yrs worth of data, it is insufficient to set targets (based on trendline analysis) at the PC15 mid-term review for performance reporting during the second half of PC15. • The PC15 mid-term review may also result in further adjustments. • It is anticipated that performance targets for the new measures will now be proposed for inclusion in the PC21 business plan and draft/final determinations.			
KEY MILESTONES		Target	Status
1. Development of new consumer measures and approval by CEOG			Complete
2. Complete a trial of new consumer measures		30 Sep 15	Complete
3. Complete a trial of a new consumer satisfaction survey		31 Dec 15	Complete
4. Go live with a new consumer satisfaction survey		01 Apr 16	Complete
5. Report new measures in AIR16		15 Jul 16	Complete
6. Provide update for PC15 Mid-Term Review (via AIR17)		15 Jul 17	On target
7. Propose targets in PC21 Business Plan		Q3 2019/20	On target

Development of new consumer measures

The company shall report progress on the development of new consumer measures and satisfaction survey outlined in Section 3.7 of the PC15 final determination. The company shall:

- *Complete a trial of new consumer measures by 30 September 2015;*
- *Go-live with new consumer measures on 1 April 2016;*
- *Complete a trial of a new consumer satisfaction survey by 31 December 2015; and*
- *Go live with a new consumer satisfaction survey 1 April 2016.*

Activity Completed to date and its outcome

Listening to our customers' views and building these into our plans is essential for us to ensure that our customers' needs are at the heart of our service delivery.

Customer Services has been working extensively on providing an improved customer experience. Under the auspices of the Customer Engagement Oversight Group (CEOG), Customer Services has been actively engaging with NIAUR, CCNI and DRD to develop a range of new quantitative and qualitative customer measures which are most relevant to us and our customers, including the merits (or otherwise) of the current (OPA/DG) regulatory measures.

These new measures include the development of targets and methodologies for:

- Customer Contacts,
- Resolving customer queries at first point of contact (FPOCR),
- Reducing repeat contacts, by analysing and understanding the reasons for these contacts, and
- Developing a solution to obtain more meaningful and timely customer satisfaction feedback to highlight, as close to real time as possible, those areas and activities, which cause dissatisfaction for customers.

Planned next steps for delivery

The measures above were trialled and reported on for the first time in AIR16.

Following discussions with the other Stakeholders in CEOG – NIAUR, CCNI and DfI – it was agreed that the measures could be amended from 4 to 3;

- total contacts (which may move to unwanted contacts)
- first point of contact resolution (FPOCR)
- customer advocacy measure (CAM)

Although we have been measuring the original quantitative and qualitative customer measures for two years, CEOG thought there was insufficient data available to set appropriate targets for performance management at the PC15 mid-term review for the second period of PC15. Ideally, three to four years of data would provide sufficient data to set realistic targets. Having demonstrated our customer commitment, CEOG agreed that NI Water could further develop the customer measures and recognised that these adjustments may also need to be considered at the mid-term review.

As such, it was agreed that these new (or revised) measures would continue to be monitored during the remainder of PC15 in the anticipation that performance targets for the new measures will now be proposed for inclusion in the PC21 business plan and draft/final determinations.

DEVELOPMENT OUPUT
2. Plan for Asset Maintenance
Final Determination: *The company shall provide a clear plan of how it will develop its approach to asset maintenance by 30 June 2015 with an interim update by 30 April 2015.* *The plan shall meet the basic requirements set out in Section 4 of the final determination. The company shall report progress against the plan throughout PC15. We shall determine the frequency of reporting once the plan has been developed.*
PROJECT SUMMARY
A detailed PID and programme plan have been developed and progress is monitored by the Project Board.

KEY MILESTONES	Target	Status
1. Interim update to UR	30 Apr 15	Complete
2. Approach document to UR	30 Jun 15	Complete
3. Complete visits with sample E/W/S water Co.s	31 Jan 2017	Complete
4. Update EC and gain approval on way forward	8 Mar 17	Complete
5. Verbal update to UR on progress to date and way forward	16 Mar 17	Complete
6. Business Case for Development of CMP Tools AO CIP Approval	May 17	On target
7. Provide update for PC15 Mid Term Review (via AIR17)	15 Jul 17	On target
8. Award Contract for Development of CMP Tools	Sep 17	On Target
9. PC21 Business Plan – Capital Maintenance Plan	Sep-Dec 2019	On target

Summary of Progress since AIR16

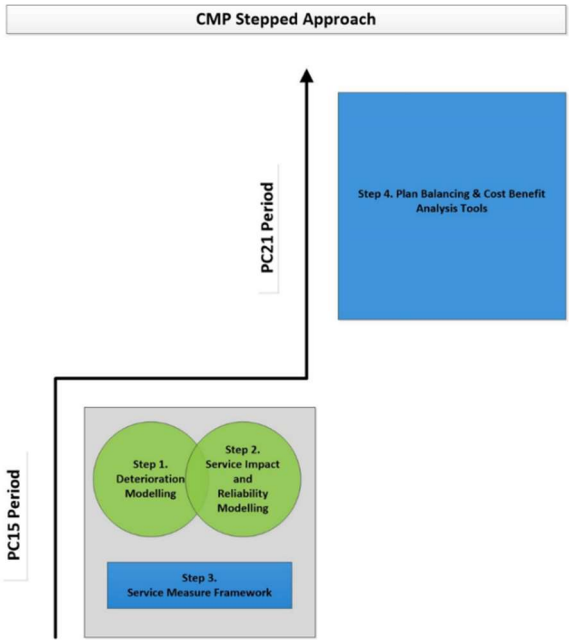
In previous correspondence, NI Water set out its approach to asset maintenance in accordance with the Final Determination Main Report 2014. There have been a number of formal updates since this time including the Development Output update for AIR16 and at a meeting with the Utility Regulator on the 16th March 2017.

Since the AIR16 submission as part of a review of Capital Maintenance Processes, a delegation from NI Water visited three Water & Sewerage Companies (WASCs) and these included:

- Northumbrian Water
- Welsh Water
- Anglian Water

In addition, Scottish Water visited NI Water for further discussion on Capital Maintenance Processes and telephone conversations took place with South West Water and United Utilities. This enabled a broad understanding of the Tools/Processes used by other WASCs and the reasoning for these.

Subsequently NI Water has developed a stepped approach for the development of Strategic Planning Tools. These tools are required to give a forward-looking view of the need for capital maintenance in order to maintain service at the least cost over time. The diagram below highlights the stepped approach.

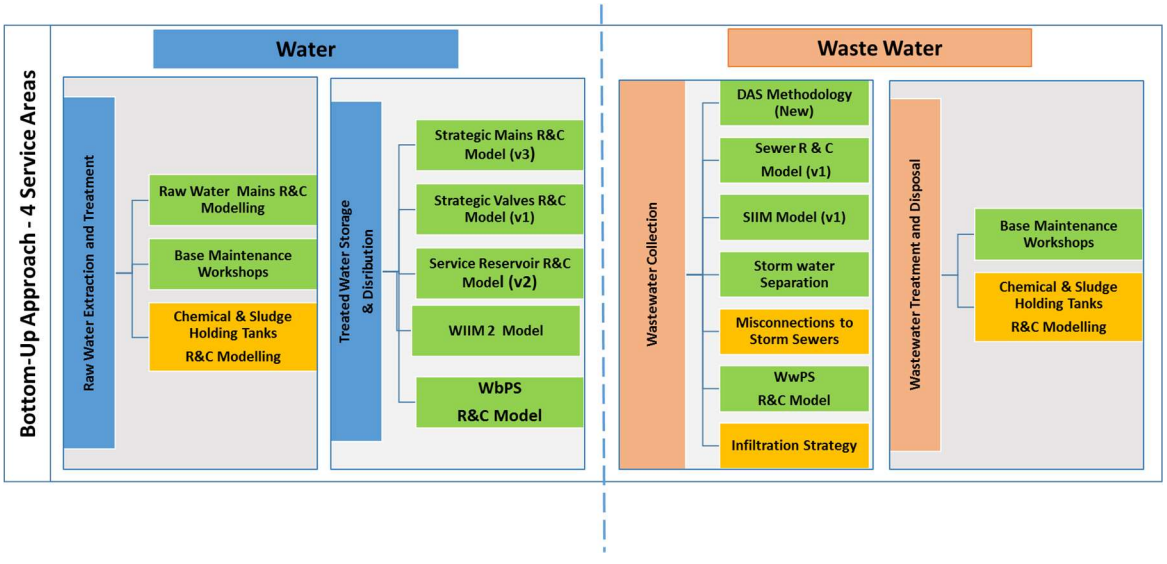


This approach has been formally approved by NI Waters Executive Committee and involves implementing Step 1 – Deterioration Modelling, Step 2 - Service Impact and Reliability Modelling and Step 3 - Service Measure Framework to inform the PC21 submission. The degree of sophistication would be at a relatively low level of granularity initially but with processes in place to improve this over time.

The development of the above steps allows scenario analysis to take place within the individual service areas, which can link future serviceability to future expenditure and KPIs.

The development of the Service Measure Framework has already began and is due to complete in June 2017 and this will allow the implementation of Plan Balancing/Cost Benefit Analysis tools in the future when there is further maturity to CMP data and processes.

There has also been further development of NI Waters Tactical Investment Planning Tools and the table below highlights the Tactical Investment Tools that are currently in use or under development to assist Capital Maintenance Planning.



These tools have all been developed or enhanced since the PC15 submission and will be further refined during the current planning period.
As indicated in AIR16, since the formal submission of the CMP High Level Roadmap to NIAUR, the Roadmap information has been translated into a tracking spreadsheet, which is being used for detailed project reporting to a Capital Maintenance Planning Group, which has been meeting on a regular basis. The purpose of the group is to ensure that delivery against the eleven key initiatives is on target. The table below highlights the status to date against each of the key initiatives.

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
1. Strategy and Policy Objectives		
1.1 Confirm and implement the CMP High Level Roadmap including confirmation of roles, responsibilities, budgets and governance procedures	Q4 2015-16	Roadmap approved
1.2 Develop an initial framework of key service targets, measures and planning objectives to define the development of the capital maintenance model	Q4 2015-16	Initial framework completed
1.3 Develop a Capital Maintenance Planning Strategy to guide the outputs from the systems and processes that are put in place	Q4 2016-17	Not yet commenced - This output will be shaped by whichever Strategic tools/models are procured which should be in place Sept 17
1.4 Determine how the developed CMP capability will be deployed to develop the PC21 business plan	Q2 2018-19	Not yet commenced
2. Improve Asset Knowledge		
2.1 Wastewater Infrastructure:	Q4 2017-18	
Critical Sewers – Develop a tool to prioritise CCTV surveys, which will then be used to implement a 12-month survey programme.		Using model to predict sewers requiring rehabilitation and then carrying out CCTV surveys to confirm.
CSOs and Ancillaries – Interrogate GIS system to review data (including sensitivities of locations) associated with CSOs.		CSO Monitoring to take place at all CSOs within 2km at Shellfish & Bathing Waters (Approx. 450/400) Batch 1 - Q4 2016/17 Batch 2 - PC15 Potentially line to be added within GIS to define sensitivities of locations Parameters of what is a 'critical/sensitive' CSO to be established

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
2.2 Wastewater Non-Infra:	Q1 2019-20	
WWTWs > 250PE (inc Sludge Treatment Centres - STCs) & WWPS - Formalise and enhance the recording of all asset specific information (on CAR) resulting from Maintenance Schedule Tasks, reactive and proactive work orders and capital maintenance interventions. The latter will be complimented by reliability and redundancy information that will be captured through liaison with Operational staff.		A high level Risk Methodology for 2017/18 Capital Maintenance Workshops was developed. This captured Criticality and Time to Repair/Replace from Expert panels.
Small WwTWs < 250PE – Formalise and enhance the recording of all asset specific information (on CAR) resulting from Maintenance Schedule Tasks, reactive and proactive work orders and capital maintenance interventions. Reliability and redundancy information will be captured on WWTWs on the basis of cohorts of works treatment types, PE banding etc.		A high level Risk Methodology for 2017/18 Capital Maintenance Workshops was developed. This captured Criticality and Time to Repair/Replace from Expert panels.
Develop Asset Performance Business Analytics to assist in the collation of all relevant asset knowledge held on corporate systems		APT presently working with ICT to develop Asset Performance Business Analytics
2.3 Water Infrastructure:	Q4 2016-17	
Strategic Mains – Instigate a process for data capture (including condition data from routine maintenance)and root-cause analysis associated with future failures and/or adverse service impacts		A project has been initiated to assess cut-outs for condition grading of mains >300mm
Undertake geographical analysis linking bursts to specific assets.		BAU links bursts to assets
Obtain additional datasets (e.g. updated roads, rivers and flood plain datasets) and review and update the existing Trunk Main (Strategic Supply) Model.		This is carried out as BAU through the Trunk Main Risk & Consequence Model and latest data is used were applicable.

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
Identify and commission further condition assessment surveys on high-risk systems (including possible non-intrusive monitoring).		Although condition assessments are being carried out as BAU a paper is being developed on a pilot scheme of a matrix of condition assessments techniques
Distribution Mains – Improve the bottom up modelling approach within WIIM		This is now BAU through the development of WIIM2. WIIM2 incorporates DG3 analysis, for example, and is regularly being updated and improved
Create distribution mains asset cohorts, within CAR, based on material, diameter, length and age ranges and link bursts to pipe asset cohorts.		This work is 90% complete with further refinement required to establish gaps between Strategic & Distribution mains. There has been recent discussions across the business to develop a list of rules to distinguish between a Strategic Trunk Main, Strategic Distribution Main and a Distribution Main and these will be embedded as BAU to allow completion of this initiative
Instigate a process for data capture and root-cause analysis associated with future failures and/or adverse service impacts.		Root Cause Analysis of Distribution Mains is felt not to be a relevant action. This is only relevant for Strategic Mains. Best practise on data capture is carried out as BAU for WIIM2
Assess data availability (as regards serviceability indicators) and implement BAU processes to capture and incorporate additional datasets (e.g. updated roads, rivers and flood plain datasets).		The data required has been assessed and BAU processes are in place for WIIM2.

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
Service Reservoirs (SRs) & Clear Water Tanks (CWTs) – Continue to integrate SR inspections with cleaning and maintenance programmes, where possible, and capture knowledge of improvement in asset performance from asset renewals / maintenance and the cleaning programme.		This is ongoing as BAU and the process has been reviewed and updated twice since the PC15 submission
2.4 Water Non-infra	Q3 2017-18	
WTW and WPS – Enhance the recording of all asset specific information (on CAR) resulting from Maintenance Schedule Tasks, reactive and proactive work orders and capital maintenance interventions. The latter will be complemented by reliability and redundancy information that will be captured through liaison with Operational staff.		Commenced a 'Data Specification' document to identify most beneficial data to be collating.
Develop Asset Performance Business Analytics to assist in the collation of all relevant asset knowledge held on corporate systems.		APT presently working with ICT to develop Asset Performance Business Analytics
3. Define Failure Modes and Identify Deterioration		
3.1 Wastewater Infrastructure	Q4 2017-18	
Critical Sewers – Develop the Sewerage Infrastructure Investment Model (SIIM) to link condition grade and collapse probability using published data / past failure data, to indicate sewer deterioration.		CCTV surveys are carried out to assess the condition grade of the sewers. This information to be made available on the corporate systems The next stage will be shaped by whichever Strategic tools /models are procured which should be in place Sept 17

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
Other Sewers – Develop SIIM to ascertain the probability of blockage and collapse based on relevant characteristics of sewer cohorts normalised for any specific weather effects or extreme weather events		A Hot Spotting Tool has been developed which records the blockage and collapse information The next stage will be shaped by whichever Strategic tools /models are procured which should be in place Sept 17
Rising Mains - Develop SIIM to ascertain burst probability based on characteristics of rising main cohorts**.**		A risk based assessment tool for rising mains is currently being developed
The need for a specific Deterioration Model for sewers will also be assessed		Following the assessment of other Water & Sewerage Companies and internal review, NI Water do intend to procure a sewer deterioration model
3.2 Wastewater Non-Infra	Q4 2018-19	
Review and develop the approach to standard asset lives for all WWTWs (and STCs) and WWPS informed by relevant criticality and reliability factors		There have been ongoing discussions with ICT to understand information available from Asset Performance Business Analytics. The next stage will be shaped by whichever Strategic tools /models are procured which should be in place Sept 17
Allocate deterioration curves to asset lives and benchmark against other companies where possible		This initiative will be shaped by whichever Strategic tools/models are procured, and these should be in place Sept 17
Capture specific failure data against asset types; review recording processes to determine the reliability/relevance of the recording of failure types (including M&E) and activity types included within the MWM job management system		There has been some initial analysis on the quality of failure data with a view to identifying gaps

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
3.3 Water Infrastructure	Q4 2016-17	
Strategic/Distribution Mains – Undertake statistical analysis of burst and deterioration data for the broader asset base and assess the viability of a deterioration model		Strategic Mains are considered as Low Failure High Consequence Assets and as such, the data is not available for a robust deterioration model. This will be assessed through the Trunk Main Risk & Consequence Model
3.4 Water Non-Infra	Q3 2017-18	
Review and develop the approach to standard asset lives		There have been ongoing discussions with ICT to understand information available from Asset Performance Business Analytics. The next stage will be shaped by whichever Strategic tools /models are procured which should be in place Sept 17
Allocate deterioration curves to asset lives and benchmark against other companies where possible		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
Capture specific failure data against asset types; review recording processes to determine the reliability/relevance of the recording of failure types (including M&E) and activity types included within the MWM job management system		There has been some initial analysis on the quality of failure data with a view to identifying gaps
4. Impacts of Asset Failure		
4.1 Wastewater Infrastructure	Q2 2018-19	
Critical Sewers – Review the number and cost to NI Water and stakeholders of blockages and collapses on critical sewers.		As part of AIR Reporting, the costs of blockages and collapses are captured. However further analysis required on this with regards to CMP.
Other Sewers – Enhance the consequence information within the existing SIIM to include the extent of impact		There current SIIM model is currently being reviewed for an enhancement to the process which will include the extent of impact

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
Rising Mains – Develop the SIIM to include rising mains basing the approach on that used for gravity sewers		An initial meeting took place in February for the development of a Risk Based assessment tool for rising mains. This will be implemented in 17/18
CSO and Ancillaries – Ascertain and analyse failure data.		Not yet commenced
4.2 Wastewater Non-Infra	Q2 2019-20	
WWTWs > 250PE (inc STCs) – Develop a service impact model; allocate the extent of service impact for each process stage/critical asset at each works including mitigation costs. Utilise the expertise of Operational staff to carry out FMECA type analysis (which may require a specific model) for each WWTWs.		A high level Risk Methodology for 2017/18 Capital Maintenance Workshops was developed. This captured Criticality and Time to Repair/Replace from Expert panels. The next stage will be shaped by whichever Strategic tools /models are procured which should be in place Sept 17
Small WwTW < 250PE - Develop generic assumptions on the extent of impact and mitigation costs, on the basis of cohorts of works treatment types, PE banding etc.		A high level Risk Methodology for 2017/18 Capital Maintenance Workshops was developed. This captured Criticality and Time to Repair/Replace from Expert panels. The next stage will be shaped by whichever Strategic tools /models are procured which should be in place Sept 17
WWPS – Develop the Risk and Consequence Methodology for WWPSs to incorporate the extent of service impact for each site including mitigation costs.		This initiative will be shaped by whichever Strategic tools/models are procured, and these should be in place Sept 17
4.3 Water Infrastructure	Q2 2017-18	
Strategic Mains – Link burst and DG3 datasets to assets and analyse to understand the consequence of bursts		This is carried out as BAU through the Trunk Main Risk & Consequence Model and latest data is used were applicable.

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
Create high-risk system schematics, to link and inform the DWSP risk assessments		Initial discussions have indicated that there should be little impact on the DWSP and therefore could be closed out.
Validate the existing Trunk Main Risk and Consequence Model through review of scores and weightings and incorporation of ongoing case-based learning		This is carried out as BAU through the Trunk Main Risk & Consequence Model and latest data is used were applicable.
Carry out hydraulic 'critical link analysis' for high-risk systems including modelling of flood impact and review/validate at a high level against actual incident data		This work is not deeded to be required at this stage and will be assessed in the future
Subsequently update the existing Trunk Main Risk and Consequence model with newly available and improved data, consequence understanding and validation		This is carried out as BAU through the Trunk Main Risk & Consequence Model and latest data is used were applicable.
Distribution Mains – Develop the risk and consequence aspect of WIIM and determine population at risk of interruption from failure of each main using critical link analysis and review/validate at a high level against actual incident data. WIIM will subsequently be developed with improved data, consequence understanding and validation.		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
SR & CWT – Develop good practice Service Reservoir risk assessments and formalise Expert and Challenge Panel meetings to validate the subjective weightings annually as part of business as usual		This is carried out as BAU on an annual basis with a review group established
Develop the Risk and Consequence Model from the existing SR/CWTs Condition Investment Prioritisation Methodology using good industry practise (UKWIR) and use outputs (vulnerability assessments) to inform the condition assessment programme		The Risk and Consequence Model for the SR/CWTs has been reviewed to include any relevant outputs from the 2017 UKWIR Project – 'Management of Treated Water Storage Assets.'
Develop DWSP contingency and mitigation plans (capex / opex), by prioritised SR / CWT risk assessment score		As it currently stands DWSP do not link to Capital Investment needs - Further work required to establish how to advance.

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
Update the Trunk Main (Strategic Supply) Model with the most strategic SR & CWTs and undertake resilience (which may include instrumentation control), criticality, water quality risk and outage assessments and planning. The output will inform DWSPs and allow NI Water to allocate extent of service impact for each structure.		This is carried out as BAU through the Trunk Main Risk & Consequence Model and latest data is used were applicable
4.4 Water Non-Infra	Q3 2017-18	
WTW – Allocate the extent of service impact for each process stage/critical asset at each works including mitigation costs. Utilise the expertise of Operational staff to carry out FMECA type analysis (which may require a specific model) for each works		Some initial work regarding criticality is ongoing with regards to progressing this initiative
WPS – Develop a Risk and Consequence Methodology for WPS, similar to that which NI Water has developed for the WWPS. It will be developed to incorporate the extent of service impact for each site including mitigation costs.		A risk and consequence model for WPS is currently being developed.
5. Intervention Options and Impacts		
5.1 Wastewater Infrastructure	Q3 2017-18	
Critical Sewers – Review published repair cost factors against cost of historical repairs		Not yet commenced
Other Sewers – Develop a cost model for proactive sewer cleansing programmes and a whole life valuation model to plan a programme of proactive sewer cleansing		This is currently being developed through an enhanced CCTV programme
5.2 Wastewater Non-Infra	Commence Q4 2015-16	

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
For all **WWTWs (and STCs) and WWPS** capture and analyse information from Operators and corporate systems regarding the impact of maintenance interventions (including refurbishments, change to operating regime or MSTs, or mid-life interventions) on asset performance, efficiency and effect on asset lives		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
Evaluate the cost risk of planned versus 'emergency' refurbishment/ replacement activities.		Not yet commenced
5.3 Water Infrastructure	Q2 2017-18	
Strategic Mains – Develop an intervention strategy for prioritised pilot schemes with cost benefit analysis using best available data		A Strategic Mains Review Group has been established to assess schemes on a quarterly basis
Identify contingency plans and potential capex & opex solutions for high-risk systems based on priorities following model updating, linking to the Water Resource Supply Resilience Plan and the DWSPs		The current WRSRP looks at Resilience and outages of WTWs. Outage data is of poor quality and discussions have taken place with water Supply Business Unit to ensure that outage information is improved upon going forward
Distribution Mains – Develop an Intervention Strategy with a focus on cost benefit and whole life value analysis, using outturn costs, rather than framework rates		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
Prioritise critical sluice valves for intervention (based on risk and consequence approach) and identify capital need		A study has been completed on the risk of critical SVs. A pilot has begun to assess this and action as required on operability.
SR & CWT – Develop cost benefit analysis of intervention types, based on UCD outturn costs		This action is not required as NIW repair faults on joints/membranes & covers as discovered. This would deemed to be essential work if issues are identified
Collate outputs from the condition assessment programme / interventions to better understand the effectiveness of interventions		This is the next stage of the SR Condition Assessment programme to be progressed

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
Develop a costed asset condition assessment programme and assess economic level of service risk		This is the next stage of the SR Condition Assessment programme to be progressed
5.4 Water Non-Infra	Commence Q4 2015-16	
For all **WTW and WPS -** Capture and analyse information from Operators and corporate systems regarding the impact of maintenance interventions (including refurbishments, change to operating regime or MSTs, or mid-life interventions) on asset performance, efficiency and effect on asset lives		This initiative will be shaped by whichever Strategic tools/models are procured, and these should be in place Sept 17
Evaluate the cost risk of planned versus 'emergency' refurbishment/replacement activities.		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
6. Valuation of Service Levels		
6.1 Evaluate the appropriateness of the approach and the need to quantify service level values prior to further development	Q2 2016-17	This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
6.2 Develop appropriate service measures and cost components (including Opex, reputation) to drive capital maintenance investment planning	Q3 2016-17	This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
6.3 Review historical service level valuation data and evaluate model options	Q4 2016-17	This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
6.4 Develop a service valuation model and populate it with available data – updating this subsequently to reflect the impact of updated S&EG (for PC21)	Q1 2017-18	This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
6.5 Undertake customer engagement to understand priorities for customers and stakeholders and use this to inform / update the service valuation model	Q3 2018-19	This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
7. Intervention Cost Model(s)		
7.1 Develop a UCD structure and process for capex (FOM _ Investment Planning project)	Q4 2015-16	The work on this aspect is well developed for EP Capital (Captrax) but less so for Ops capital (Coptrax) The Ops Capital Aspect will be developed further in the coming months
7.2 Review and assess the use of current opex/capex systems such as MWM and Cost to Serve	Q1 2016-17	The work on the UCD is well developed for EP Capital (Captrax) but less so for Ops capital (Coptrax) The Ops Capital Aspect will be developed further in the coming months
7.3 Create an Improvement Plan for opex/capex systems (including improved opex/capex data collection)	Q3 2016-17	The Asset Data Quality Sustainability Group has been established but additional work is required on this element to progress
7.4 Assess costs from wider business to inform service valuation model (customer complaint costs/call centre/ legal etc.)	Q4 2016-17	This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
7.5 Populate the UCD with capital maintenance cost data	Q4 2017-18	The work on this element is ongoing
7.6 Develop cost curves and tabulations within the UCD	Commence Q1 2016-17	The work on this element is ongoing
7.7 Implement improved opex/capex data collection	Q2 2018-19	The issues with CAPEX data collection have been resolved but further work is required on OPEX data. This may sit outside the remit of the project
7.8 Develop a model for analysing opex / capex data	Q2 2017-18	This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
8. Best Value Planning Tools		
8.1 Wastewater Infrastructure	Q4 2017-18	
Critical / Other Sewers – Develop the SIIM to incorporate a whole life valuation model to prioritise sewer rehabilitation.		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
Rising Mains – Develop the SIIM to predict likely failures and will incorporate a whole life valuation model to identify priority rising mains for rehabilitation.		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
CSO and Ancillaries – Develop a spreadsheet based prioritisation tool		Not yet commenced
8.2 Wastewater Non-Infra	Q2 2017-18	
WWTWs > 250PE (inc STCs) – Assess, select and implement a best value planning model		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
WWTWs < 250 PE - Develop a simplified planning spreadsheet.		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
WWPS – Select and implement a strategic best value planning tool to model deterioration and mitigation impacts, populated with intervention and service costs		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
8.3 Water Infrastructure	Q4 2017-18	
Strategic Mains – Review and develop the Trunk Main investment strategy model for high-risk schemes and systems to model deterioration and mitigation impacts as performance measures, populated with intervention and service costs		Strategic Mains are considered as Low Failure High Consequence Assets and as such, the data is not available for a robust deterioration model. This will be assessed through the Trunk Main Risk & Consequence Model
Distribution Mains – Develop the WIIM to model mitigation impacts as performance measures, linking performance and deterioration to impacts, to enable full cost benefit analysis of schemes		Not yet commenced

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
SR & CWT – Develop SR/CWT investment strategy model for high-risk SR/CWT's, populated with intervention and service costs		Not yet commenced
8.4 Water Non-Infra	Q3 2017-18	
WTW – Assess, select and implement a best value planning model		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
WPS – Select and implement a strategic best value planning tool to model deterioration and mitigation impacts, populated with intervention and service costs		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
9. Integrated CMP Tool		
9.1 Define strategic objectives for the Capital Maintenance Planning tool that incorporate regulatory, shareholder and stakeholder views in relation to priorities, risk and balancing investment	Q2 2016-17	This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
9.2 Develop a formal methodology to balance capital maintenance needs, projects and budgets	Q3 2016-17	This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
9.3 Review and assess existing (SCIM) and potential capital investment prioritisation tools	Q2 2016-17	Following the assessment of other Water & Sewerage Companies and internal review, NI Water do not intend at this stage to implement a capital investment prioritisation tool
9.4 Develop and implement the appropriate capital investment prioritisation methodology or tool by March 2017	Q4 2016-17	Following the assessment of other Water & Sewerage Companies and internal review, NI Water do not intend at this stage to implement a capital investment prioritisation tool

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
9.5 Implement trial run of the prioritisation tool with available data	Q4 2017-18	Following the assessment of other Water & Sewerage Companies and internal review, NI Water do not intend at this stage to implement a capital investment prioritisation tool
10. 'Top Down' Methodology		
10.1 Implement an annual review of serviceability performance and capital maintenance delivered by service to inform the Top Down methodology	Commence Q1 2016-17	This is ongoing as BAU but may require an enhancement to process in the future
10.2 Build on the PC15 top down approach (using serviceability and capital maintenance costs) to include consideration of excess opex costs incurred in maintaining service	Q3 2017-18	Not yet commenced
10.3 Review the relevance of an MEAV analysis for PC21, to provide an alternative top down assessment of future replacement costs of non-infrastructure assets	Q4 2017-18	It has been agreed that MEAV should not be advanced at this stage
10.4 Review alternative top-down benchmarks in context of the S&EG and other (ministerial) constraints to validate bottom up capital maintenance outputs	Q1 2018-19	This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
11. Develop Capital Maintenance Planning Resources	Ongoing	
Undertake strategic assessment of the asset management capabilities needed to deliver Key Initiatives		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
Review current asset management capabilities versus expected requirement for skills and resources		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
Deliver the required in house capabilities through appropriate skills development		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17

Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
Identify requirements for outsourcing/ insourcing additional resources and capabilities		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
Additional Initiatives Following AIR16 Reporter Review		
2.2.4 **Sea Outfalls** Improve Asset Knowledge Wastewater Infrastructure		Initial discussions have taken place to develop an approach for CMP for this Asset Type, in terms of a desktop study and surveys required.
2.3.5 **Raw Water Trunk Mains** **I**mprove Asset Knowledge Water Infrastructure: Strategic Mains		This is being carried out as BAU as a Raw Water Risk & Consequence Model has been developed and regularly updated
2.4.2 **Raw Water Intakes and Pumping Stations** Improve Asset Knowledge Water Non-infra		The relevant approach for Raw Water Intakes and Pumping Stations is currently being assessed
4.2.4 **Sea Outfalls** **Impacts of Asset Failure** **Wastewater Non-Infra**		Initial discussions have taken place to develop an approach for CMP for this Asset Type, in terms of a desktop study and surveys required.
4.3.6 **Raw Water Trunk Mains** Impacts of Asset Failure Water Infrastructure - Strategic Mains		This is being carried out as BAU as a Raw Water Risk & Consequence Model has been developed and regularly updated
4.4.2 **Raw Water Intakes & Pumping Stations** Impacts of Asset Failure Water Non-Infra		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
5.3.3 **Raw Water Trunk Mains** Intervention Options and Impacts Water Infrastructure - SR and CWT		This is being carried out as BAU as a Raw Water Risk & Consequence Model has been developed and regularly updated
8.2.4 Sea **Outfalls** - Develop a simplified planning spreadsheet. Best Value Planning Tools Wastewater Non-Infra		This initiative will be shaped This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17

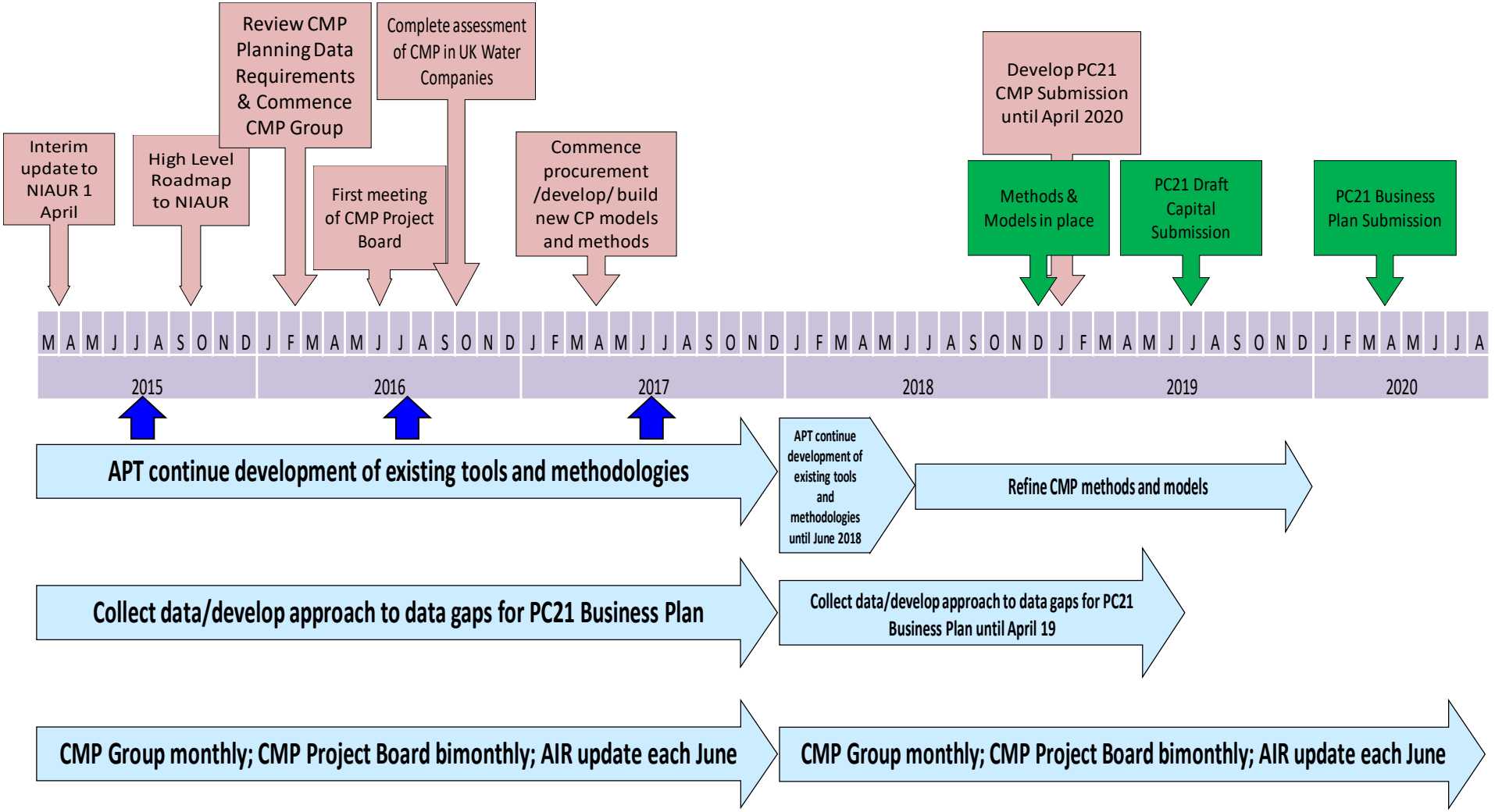
Key Initiative	Delivery Milestone	Progress Sept 2015 to April 2017
8.3.2 **Raw Water Trunk Mains** Best Value Planning Tools Water Infrastructure		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17
8.4.2 **Raw Water Intakes and Pumping Stations** Best Value Planning Tools Water Non-Infra		This initiative will be shaped by whichever Strategic tools /models are procured, and these should be in place Sept 17

The Next Steps

The next steps in the development of NI Water's 'Plan for Asset Maintenance' include:

1. Further development of the CMP methodologies and tools which currently exist within NI Water;
2. Procurement of a Service Provider to implement Deterioration and Risk & Reliability Modelling for the PC21 CMP Submission
3. Continuation of Project Board Meetings to review progress, understand risks and endorse the key strategic decisions.

Capital Maintenance Planning - Key Inputs & Milestones



DEVELOPMENT OUPUT		
3. Preservation of Services and Civil Emergency Measures Direction (PSCEMD)		
Final Determination: *The company will report progress on delivery of PSCEMD enhancements agreed with the Department for Regional Development.* *The Utility Regulator will seek updates from DRD to confirm that the agreed work has been completed.*		
Additional Details:		
The NI Water Security & Resilience Manager works closely with DfI and CPNI to ensure compliance with PSCEMD.		
PROJECT SUMMARY		
PSCEMD is a Regulatory Instrument directing NI Water to undertake such works as are necessary to preserve services and mitigate the effects of a Civil Emergency. On an annual basis, NI Water appoints an approved external Certifier to prepare a Statement of Compliance and provide a supplementary report for DfI, detailing progress on delivery of key measures previously notified. In-year progress reporting, on an exception basis, is directly to DfI via regular QSM Reports.		
KEY MILESTONES	Target	Status
1. External Certifier has pre-audit meeting with WDPD staff	Dec 17	On Target
2. External Certifier completes PSCEMD Audit	Feb 18	On Target
3. Submission of Compliance Statement & PSCEMD Report to DfI	1st April 18	On Target
4. In-Year reporting to DfI by exception	As Required	On Target

Executive summary

With respect to activity completed to date and its outcome, details were provided to DRD Water Policy Shareholder Division as part of the Quarterly Shareholder Meeting Report for Quarter 2 (16/17) for the period to 30 September 2016. A subsequent joint review to refine reporting arrangements concluded that going forward, reports for PSCEMD Critical Sites will, as requested by Water Drainage Policy Division, be by exception only.

Regarding Planned Next Steps for Delivery, this was the subject of extensive bilateral discussion with WPSD staff commencing in July 2014 and continuing through various iterations and changes requested by the Department, until a programme was agreed, as confirmed in writing by the Director of Water Policy and Shareholder Division dated 12th April 2016.

The independent PSCEMD Audit Report and CNI Sites Audit Reports submitted to The Department for Infrastructure, Water Drainage Policy Division on 31st March 2017 included assessment of work done to date and endorsement of future work programme.

Detailed update

On 31st March 2016, NI Water wrote to the Department enclosing a programme of security hardening work to be completed during the remainder of the PC15 period, comprising:

- 13 Non-CNI Water Treatment Works (5 Enhanced & 8 Basic Plus)
- 54 Service Reservoirs all Enhanced
- 2 Wastewater Treatment Works (2 Basic Plus)

It was agreed that the programme would be subject to ongoing review throughout the PC15 period to capture and reflect changes in the distribution network and in some instances reappraisal of needs.

For example, the number of Service Reservoirs to be security hardened has changed due to decommissioning and overlap with other capital projects on the Base Maintenance Programme, the nett effect being a reduction from 54 to 53 sites requiring security hardening under this programme.

The most recent programme review indicated that:

- 13 Non-CNI Water Treatment Works will complete by November 2018
- 53 Enhanced Service Reservoirs will complete by January 2018
- 2 Wastewater Treatment Works, programme still to be confirmed but will complete during PC15 period

Changes to the original estimated delivery timetable reflect actual time spend on issues such as planning approval, programme scheduling and revising design elements in light of experience gained from previous security hardening projects.

DEVELOPMENT OUPUT		
4. ICAT Strategy		
Final Determination: *The company shall report progress on the development and implementation of the ICAT strategy including implementation of the trial projects proposed for PC15 and its benefits and the economic case for extending the strategy.*		
PROJECT SUMMARY		
The Instrumentation, Control, Automation and Telemetry (ICAT) Strategy is focussed on enabling NIW to become more customer focussed, to improve compliance and become more resilient, whilst simultaneously reducing costs. This project addresses this through development of reliable automation and controls, to minimise manual input and on site presence, for process and plant controls and to facilitate remote monitoring and control of plant and processes that is not currently available for our assets, (focusing on Service Reservoirs). The project is divided into 6 phases based around WTW supply zones. The full programme overview for the 6 phases for PC15 was provided in AIR 16. A shorter milestone programme is outlined below.		
KEY MILESTONES	Target	Status
1. PC15 ICAT Business Case Approval	30/11/15	Complete
2. First PC15 ICAT Delivery Programme Board Meeting	06/05/16	Complete
3. PID Approval (Phase 1 Omagh / Cookstown)	06/05/16	Complete
4. ICAT delivery team fully established	18/07/16	Complete
5. First task order issued to contractors (Phase 1)	08/08/16	Complete
6. First Site started - Brigh SR (ACE Key milestone)	22/08/16	Complete
7. Update to BIPB - Midway through Omagh / Cookstown (ACE Key milestone)	30/11/16	Complete
8. 2nd ICAT Delivery Programme Board Meeting	30/11/16	Complete
9. 3rd ICAT Delivery Programme Board Meeting	21/03/17	Complete
10. Approval of Business case for phase 2 (Belfast)	31/05/17	Expected 29/6/17
11. Completion of listed Service Reservoir in Omagh / Cookstown	30/06/17	On target
12. PPE1 - Omagh / Cookstown Work Package	31/07/17	On target
13. Update to BIPB - Completion of Omagh / Cookstown	31/08/17	On target
14. PPE2 - Omagh / Cookstown Work Package	31/07/18	On target

Activity completed to date and its outcome

PC15 ICAT delivery programme business case was approved by the NI Water Business Improvement Project Board (BIPB) on the 30th November 2015 with £4.784M of funding to install ICAT technology at approximately 200 sites. The delivery programme is divided into 6 phases based around water supply zones.

The overall project will deliver improved resilience through increased overall network storage volume, reservoirs spending less time in low-low level alarm, potentially quicker reaction time in operational incidents through remote intervention, remote access to controls in poor weather conditions and better overall management of the water network through the ability to manage storage and balance flows across the network.

The project will also contribute to reducing corporate risks and acting as an enabler for Customer Relations Centre (CRC) and Production lines benefit realisation.

The total nett financial savings of the total project is estimated at £1,371K over 10 years made up of reductions in overflows, site visits, overtime and truck rolls.

A dedicated ICAT delivery team was established in July 2016 and the first site installation of Phase 1 (Omagh / Cookstown) took place on the 22nd August 2016. This phase is due for completion by the end of June 2017, with installations having taken place at 50 sites.

To date feedback from Customer Services Delivery Directorate (CSDD) on these sites has been very positive. In addition, other issues (e.g. hydraulic issues) within the network system have been identified and addressed.

Detailed baseline figures for estimating benefits in Phase 1 have been established and will be used to complete PPE stage 2 in July 19.

NI Water provided the Utility Regulator with a presentation on 13 October 2016 giving an overview of the PC15 ICAT programme.

The Business case for Phase 2 (Belfast area) has been completed and will be presented to BIPB in late June 17for approval.

A detailed user manual for the system has been developed and NI Water are in the process of applying for IP for the system.

Planned next steps for delivery

Subject to Phase 2 (Belfast Area) business case approval, the project will enter the on-site delivery in July 2017 and will see the delivery of the iCAT solution an additional 26 sites over the 17/18 period at a total cost of £1,035K.

During October 17 to December 17 Phase 3 (Newry) business case will be developed.

DEVELOPMENT OUPUT
5. Water resource management plan and drought plan
Final Determination: *The company shall complete a Water Resource Resilience Plan that combines a Water Resource Management Plan and Drought Plan.* *- A draft plan should be available for consultation by June 2016;* *- A plan should be complete for publication by April 2017.* *When developing its plan, the company should set out and incorporate its water demand management strategy and its policy on water efficiency measures in homes and businesses.*
PROJECT SUMMARY
The WR&SR Plan sets out how NI Water intends to maintain the balance between the supply and demand for water over the long-term, and the operational and management options and activities available to respond to the short-term critical events such as droughts and freeze-thaw issues. Final Determination target dates have been amended with the agreement of the WR&SR steering group: reflected in the milestones below.

KEY MILESTONES	Target	Status
1. Demand Forecast Results	Nov-15	Complete
2. Deployable Output Results	Mar 16	Complete
3. Outage & Headroom Results	May 16	Complete
4. Options Workshops	June 16	Complete
5. Resilience Workshops	Oct 16	Complete
6. Multi-Criteria Assessments of Options & Strategies	Jan 17	Complete
7. Draft Plan for Internal Review	Feb 18	Complete
8. Plan available for consultation	June 17	On Target
9. Plan published	Oct 18	On Target

Activity completed to date and its outcome

The Water Resource Management Plans & Drought Plan is currently on going. There has been some slippage in the programme and the draft plan should be available for formal consultation in June 2017 with the complete plan published in November 17.

The Steering Group, including various external stakeholders, have been involved in all key decisions throughout the process including a detailed review of the Draft Plan prior to issue for formal consultation.

Planned next steps for delivery

It is anticipated the Draft Plan will be signed off internally for formal consultation in June 17. The start of the formal consultation process is also dependent upon ministerial approval and therefore a resolution through either the reestablishment of the assembly or the appointment of a direct rule minister will be required.

The steering group will continue to be involved in all decisions throughout the process.

DEVELOPMENT OUPUT
6. Sustainable Economic level of Leakage
Final Determination: *The next economic level of leakage assessment shall be prepared in 2016-17 to inform the Water Resource Resilience Plan and revised leakage targets for PC15 from the mid-term review onwards. This should be updated in 2019-20 to inform the company's business plan submission and the establishment of leakage targets for the PC21 period.*
Additional Details:
NIW developed its PC15 business plan based on the SELL 2014 assessment, proposing a leakage reduction profile to reduce leakage below the SELL to reach 153 Ml/d by 2021.
PROJECT SUMMARY
The SELL determination will incorporate all relevant findings with respect to data and methodology improvements and accounting for leakage review comments and relevant changes to the industry best practice since the 2014 SELL determination. The outline scope of work for delivery includes: 1. Data Collection and Quality Assessment 2. Cohort Definition 3. AZNP / HDF 4. Background / Policy Minimum Leakage & Infrastructure Correction Factor determination 5. NRR 2015-16 (already completed) 6. ALC Cost Functions per HDZ 7. Asset Renewal Functions 8. Pressure Management Functions 9. MCoW Calculation 10. Social & Carbon Leakage Management Externalities 11. Environmental & Carbon LR Externalities (short-cut estimation) 12. SR ELL & SELL Calculation 13. SELL Sensitivity & Uncertainty Analysis (climate, MCoW etc.) 14. ELL/SELL Monte Carlo Analysis 15. Draft and Final Executive Reporting 16. Household night use allowances update 17. Customer supply pipe leakage update 18. Review of non-household night use calculations and data/logging requirements to update. The SELL review takes into account the potential for further leakage reductions into the next PC period as part of a least cost plan to meet the future demand for water, whilst minimising environmental impacts.

KEY MILESTONES	Target	Status
1. Project initiation	Apr-16	Complete
2. Phase 1 scoping study documentation	Jul-16	Complete
3. Phase 2 SELL refresh initiation	Jul-16	Complete
4. Draft & Final Executive Reporting	Apr-17	Pending
5. Household night use & customer supply pipe updates	Apr-17	Pending

Activity completed to date and its outcome

NI Water has procured an SELL study, which commenced in April 2016, has completed its scoping stage and currently in process of collating Company data for analysis.

NI Water has met with the WRMP project team, will align with the proposed 7 resource zone boundaries and understand the WRMP project leakage requirements.

SELL analysis completed in June 2017 with outcome agreed. Final Executive Reporting and supplementary technical annexes to be completed July 2017.
Household night use and customer supply pipe update analysis complete. Final project reports and technical annexes to follow in July 2017.

Planned next steps for delivery

Outcomes for the SELL study and the supplementary review of customer supply pipe leakage, household night use and hour-to-day values are complete with final reports and technical annexes expected in July 2017. NI Water plans to undertake a review of SELL in 2018/19 – 2019/20.

DEVELOPMENT OUPUT

7. Controlled Reservoir Safety

Final Determination:
The company shall report progress on the inspection and maintenance of controlled reservoirs under the proposed Reservoir Bill addressing:
- Remedial work on Camlough Reservoir (see Annex K [of the Final Determination]);
- Implementation of the inspection requirements of the proposed Reservoir Bill for controlled reservoirs by the end of 2017/18;
- Completion of maintenance requirements arising from these inspections by 2020/21.Report on any material issues identified in the surveys which require immediate attention which cannot be delivered within the estimate PC15 funding.

PROJECT SUMMARY

- **Remedial Work on Camlough Reservoir.**
  - The contract to rehabilitate the dam core and outlet pipework has just been completed
  - Controlled dam refilling to previous TWL has taken place
- **Implementation of Inspection Requirements of the Proposed Reservoir Bill for controlled reservoirs by the end of 2017-18.**
  - The new consultancy framework has been awarded, with NI Water internal authorisation presently being completed.
  - The appointment of a consultant Panel Engineer is scheduled for July 2017.
  - NI Water will endeavour to complete all inspections by the end of 17/18.
- **Completion of Maintenance Requirements Arising from Inspections by 2020/21.**
  - The intention is to complete all maintenance requirements identified by the Panel Engineer's reports within the PC15 period.
  - However, without knowing the Panel Engineer recommendations it is not yet possible to provide full assurance. Any remedial work requiring extension beyond PC15 will be identified, when known.
  - Previously, extensive consultation with NIEA, Rivers Agency etc. resulted in a long lead-time for the construction work. Planning may also be an issue.
- **Designation of Service Reservoirs and Clear Water Basins Capacity > 10,000m^3 yet to be confirmed by Rivers Agency.**
  - The category designation of individual SRs and CWBs still to be confirmed and agreed with Rivers Agency.
  - Panel Engineer inspections for these assets not currently programmed as a PC15 output.

KEY MILESTONES	Target	Status
1. Remedial Work on Camlough reservoir	June 2017	Complete
2. The award of new consultancy framework	June 2017	Complete
3. Implementation of inspection requirements of the Proposed Reservoir Bill for controlled reservoirs	March 2018	On Target
4. Complete all maintenance requirements identified by the Panel Engineer's reports within the PC15 period subject to funding availability	March 2021	On Target

1. Remedial work on Camlough Reservoir

In 2013, NI Water appointed RPS to carry out a condition assessment of Camlough dam. As part of this assessment, RPS appointed URS to inspect the dam, utilising an All Reservoirs Panel Engineer. The review of the dam concluded that it was built according to the accepted standards of the time, but due to the lack of maintenance and changing design standards a significant upgrade would be required to ensure the safety of the dam.

A high water event in November 2014 necessitated emergency bank stabilisation and pumping to lower the water level to ensure the reservoir embankment did not fail. A contract (JV853 - Intermediate Level Drawdown Pipework) was also completed before the 15/16 winter to reduce the likelihood of pumping over the winter period. This pipe is a permanent part of the

refurbished reservoir, and ensures the water level is easier to manage during the main contract.

A contract (JV853 - Camlough Impounding Reservoir Refurbishment) was awarded to rehabilitate the dam core and outlet pipework, which commenced in May 2016 and has just been completed, in June 2017.

2. Implementation of the inspection requirements of the proposed Reservoir Bill for controlled reservoirs by the end of 2017-18

The Reservoirs Act (Northern Ireland) 2015 received Royal Ascent on the 24th July 2015. Although not all parts of the Act have commenced, Rivers Agency intend to bring forward further regulations in relation to the act within the next couple of years. Previously NIW worked under the spirit of the Reservoirs Act 1975.

NI Water presently has 47 Impounding Reservoirs (as Knockbracken IR was sold during the AIR17 period), in service and out of service, which are recognised by the act as being 'controlled reservoirs'. The definition of this term now broadly includes structures and areas that are capable of holding 10,000m3 or more of water above the natural level of any part of the surrounding land. This covers SRs & CWBs, which is an important change from the 1975 act that only covered Impounding Reservoirs. Although Rivers Agency has a list of SRs and CWBs, belonging to NI Water, both the list and the process of designation between Rivers Agency and NI Water has yet to be agreed. Hence, NI Water has not reported any SRs or CWBs as 'controlled reservoirs' for AIR17.

A project has been raised for the inspections of the in service and out of service Impounding Reservoirs and a contract will be let, following the establishment of the new Consultancy Framework, in July 2017.

3. Completion of maintenance requirements arising from these inspections by 2020-21. Report on any material issues identified in the surveys that require immediate attention that cannot be delivered within the estimate PC15 funding.

Not yet applicable

4. Plans for Delivery of the inspection requirements of the proposed Reservoir Bill for controlled reservoirs

The plans as set out in the PC15 Business Plan submission for the inspection requirements, for the Impounding Reservoirs, and the delivery of any maintenance requirements arising from these inspections are still on target for 2020-21. However, it is to be noted that the extent of the maintenance requirements will not be known until the inspections are carried out. NI Water will advise NIAUR on any material issues identified in the surveys that require immediate attention that cannot be delivered within the estimated PC15 funding.

DEVELOPMENT OUPUT
8. Water mains prioritisation
Final Determination: *The company shall engage with stakeholders on the development of its water mains prioritisation process to incorporate the outcome of PC15 consumer engagement including interruption to supply and dirty water complaints by 31 March 2015.* *The company shall provide updates on the implementation of the prioritisation annually throughout PC15.*
PROJECT SUMMARY
• For PC15, NI Water developed a Watermains Infrastructure Investment Model (WIIM) to identify and prioritise water network rehabilitation investment. WIIM is now operating as a BAU tool for Capital Maintenance Planning. • The model is refreshed annually using updated corporate datasets (e.g. bursts customer contacts, water quality sampling exceedances, etc.) to inform the next year's investment programme. • WIIM1 incorporated dirty water complaints but not DG3 within the methodology. With the exception of DG3, there was a strong alignment between the original WIIM 1 methodology and CEOG analysis (Note: WIIM1 refers to the initial methodology used to identify the investment programmes for 2015/16 and 2016/17). WIIM2 model was modified to incorporate DG3 in April 2016 and used to identify the 2017/18 investment programme. • NI Water acknowledged the omission of DG3 data in the original WIIM1 analysis. NIAUR was informed of the company's intention to revise the methodology approach in a detailed response in September 2014. • A formal presentation delivered to CCNI in September 2014 to provide an update of the WIIM process, including plans to incorporate DG3 in the WIIM2 methodology. Further formal presentations to external stakeholders (CCNI, DWI and UR) were again undertaken recently to achieve buy-in to the WIIM2 methodology. • Ongoing review of the WIIM process ensures the methodology remains focused on NI Water's customer promises.

KEY MILESTONES	Target	Status
1. DG3 incorporated into WIIM 2	March '15	Completed Apr '16
2. WIIM methodology now operating as a BAU.		BAU
3. WIIM2 methodology to be communicated to key stakeholders	May 17	On Target
4. WIIM methodology shared with key stakeholders when changes are made to methodology	As required	BAU

Activity completed to date and its outcome

The company shall engage with stakeholders on the development of its water mains prioritisation process to incorporate the outcome of PC15 consumer engagement including:

A. Interruption to Supply

- CEOG analysis ran in parallel with development of WIIM. Ideally, we would have waited for conclusion of CEOG analysis before completing WIIM and building PC15 business plan but this would have meant missing submission deadline for PC15 business plan.
- Gap analysis was conducted after completion of CEOG analysis in order to ascertain extent to which WIIM was aligned to CEOG analysis.
- Gap analysis established that strong alignment existed, with the absence of DG3 from the model acknowledged by NI Water as an area, which had to be addressed. Other than DG3, no recalibration of WIIM was required as a result of CEOG.

- Although it had initially been considered that issues around geo-coding historic DG3 data would prevent effective incorporation of DG3 into WIIM, extensive consultation within NI Water established a workable solution to DG3. NI Water CSDD staff were closely involved in bringing DG3 into the WIIM model.
- The UR were informed of the proposed approach regarding incorporation of DG3 into WIIM in a detailed response to this and a number of related queries in September 2014 (see PC15 DD Response Annex K 5 11 9 V1.4 Watermain Rehab.doc available on request).
- A formal Presentation was delivered to CCNI in September 2014 in order to inform them of progress around WIIM and explain plans regarding incorporation of DG3 into analysis.

B. Dirty Water Complaints

- Dirty water complaints were incorporated into the model from the outset – this was something that DWI was satisfied with from the outset of the development of WIIM.
- DWI, CCNI, NIAUR and DRD Water Policy were members of a group who were invited to review the tender specification of the first WIIM contract. Engagement continued throughout the development of WIIM.

C. The company will provide updates on the implementation of the prioritisation annually throughout PC15.

- The WIIM 2 project is coming to a conclusion. The WIIM 2 methodology incorporates the “Interruption to Supply” requirement

Improvements contained in WIIM2 (from WIIM 1 Methodology) are summarised below:

- Parent Length segments of water mains are now based initially on Road Junction information, resulting in construction of a NIW corporate dataset, which better models or represents the distribution network for ease of analysis. The Parent Length process reduced the number of pipeline units to be analysed from 390,000 records to 160,000 approximately, simplifying the WIIM process.
- Feedback from recent customer engagement has been incorporated into the WIIM2 approach, ensuring that methodology is customer focused.
- DG3 interruption to supply data is now captured and scored in alignment with NI Water KPIs.
- Scoring matrix is better defined, containing increased weighting for issues relating to Water Quality and DWI involvement.
- Unit Rates can be more easily programmed.
- Pipeline flushing has been incorporated.
- WIIM 2 has the ability to insert ad-hoc pipeline queries in relation to assessment of high priority customer feedback issues, in conjunction with rescoring of programme elements. Ad hoc schemes can be flagged up and separately identified from those generated through ‘bottom up’ analysis.
- Rather than the static list of outputs created during WIIM1, WIIM2 outputs are captured under a Scheme Management Tool, allowing for dynamic management of the overall programme. This will enable reaction to changes in regulatory environment or public expenditure.
- Schemes outputs are now bound into geographical work packages for delivery rather than leaving this to the Verification stage to allow for analysis of the makeup of the Work package at an earlier stage

- DG2 Pumping Schemes will soon include TOTEX costs, as opposed to CAPEX only costs under WIIM1. This has resulted in a significant decrease in promoted pumping scheme count.
- An improved understanding of Water Quality (Fe) issues has resulted in an amended methodology for allocation of incident location to supplying main.

Maximum WIIM 2 Scoring matrix summarised below:

- Scoring for each category is compiled by accruing scores from multiple drivers, with an indication of maximum scores available in each category, shown in the table and diagram below.

WIIM2 category	Maximum Score
Water Quality	2350
Flushing	200
Structural	1100
DG3 interruption to supply	400
DG2 low pressure	450
Complaints	200

NOTE ON SCORING IMPACT: A rough Initial outline analysis of WIIM 2 Schemes to date have shown the split of the overall schemes as 194km of Structural Schemes and 98km of WQ schemes, a 66:34 split.

Impact of the Balance Between WQ and Structural Schemes Due to Scoring matrix and Score Cut Off methodology (To help address Higher Priority Schemes)

WIIM 1 Length of schemes (km)		
	Water Quality	Structural
Profile of Schemes above the Cut-off Score	110	160

WIIM 2 Length of schemes (km)		
	Water Quality	Structural
Profile of Schemes above the Cut-off Score	98	194

- Note: DG2 Work packages are analysed separately

Recent work packages issued to date under the WIIM 2 methodology in 2016 - 17

During the reporting period 2016 - 2017 approx. £30M worth of schemes were passed to our EP Directorate for future delivery.

WPs 2015 WIIM 2.1	DATE PASSED TO EP
Antrim North	November 2016
Antrim South	November 2016
Banbridge South Armagh	November 2016
Craigavon	November 2016
Fermanagh North	November 2016
Fermanagh South	November 2016
Lurgan Moira	November 2016
Tyrone North	November 2016

WPs 2015 WIIM 2.1	DATE PASSED TO EP
Tyrone South	November 2016
Tyrone West	November 2016
Antrim Ballyclare	March 2017
Lisburn	March 2017
Newtownards	March 2017

Note: Further WIIM 1 Work packages were issued in April 2016 (outside the remit of this report)

Also see line 2 response, which references Water Mains Rehab programme.

Planned next steps for delivery

The company shall continue to adapt the WIIM prioritisation process in order to continually develop the rehabilitation programme for PC15 delivery.

Schemes Tool

The Schemes Management Tool, developed under the WIIM project is held by NI Water's Asset Management section and is available for analysis on request. The Tool has been developed to hold all vital scheme information and produce outputs as required by the end-user.

DEVELOPMENT OUPUT

9. Sustainable Catchment Management

Final Determination definition:
The company shall report progress on Sustainable Catchment Management annually. The report shall set out the action the company has taken and its plans for subsequent action. The report shall identify the benefits in terms of activity, improvements in raw water quality and reduction of peak flows.

PROJECT SUMMARY

- **Catchment Management Studies:**
  The aim is to undertake a scoping and planning study in each drinking water catchment, using the UKWIR framework, identifying future SCaMP NI projects to sustainably improve raw water quality. In PC15 the Catchment Management Studies are ahead of target, 18 have been completed as follows:
  - 2013/14 – Killylane, Dorisland and Clay Lake WTW's
  - 2014/15 – Derg, Lough Braden, Caugh Hill, Carmoney and Seagahan WTW's
  - 2015/16 – Altnahinch, Drumaroad and Fofanny WTW's
  - 2016/17 - Dunore Point, Castor Bay, Moyola, Ballinrees, L Macrory, L Fea and Glenhordial WTW's
- **SCaMP NI Interventions:**
  - Actions to reduce pesticides in raw water; best practice advice at agricultural shows, rush control events, farm engagement visits, press articles and amenity sector liaison. A farm liaison officer has been temporarily employed and a weed-wiping trial planned in summer 2017 and 2018. There has been positive PR and slightly reduced MCPA residuals in raw water in 2016.
  - CAFRE & NIW joint trials carried out to research rush control methods with pollution monitoring. These trials are ongoing. Results will inform best practice strategy for DAERA and NIW.
  - Wildfire initiatives have been undertaken in the Mournes to carry out effective wildfire control to prevent damage to habitats and raw water quality.
  - A number of riparian planting projects have been undertaken to reduce bankside erosion and create wildlife buffer strips along watercourses to reduce diffuse pollution.
  - A blanket bog restoration project has been completed which has improved peatland habitats and there are early signs of resultant improvements in raw water quality at peak times.
  - Habitat enhancement projects carried to meet environmental targets and improve water quality.
- **EU INTERREG VA Funding:**
  - A successful bid for €4.9m 'Source To Tap' INTERREG VA cross border SCAMP project in the Erne and Derg catchments involving a Land Incentive Scheme, Peat and Forestry pilot projects, UKWIR Catchment analysis and community engagement aspect to improve water quality. This project is beginning in 2017, with completion by 2022.
  - €175k funding obtained in partnership with RSPB NI for 'Cooperating Across Borders for Biodiversity' INTERREG VA project. This will involve restoration of the entire Dungonnell peatland catchment to improve habitats and raw water quality. This project is beginning in 2017, with completion by 2021.

KEY MILESTONES	Target	Status
1. Completion of Catchment Management Studies as per schedule	March 2018	On Target
2. Commencement of programme for completion of SCaMP NI interventions as a result of Catchment Management Studies	March 2018	On Target

Sustainable Catchment Management (SCaMP)

NI Water is currently developing Catchment Management Studies for each of its active water catchments and will follow this with catchment plans for 'mothballed' impounding reservoirs. These plans will give the detail on how the catchment land will be managed going forward to give maximum benefit to NI Water and ensure that legislative requirements are met.

Diffuse water pollution and insensitive land management may pollute surface and ground water supplies with substances such as nutrients, pesticides and microbial pathogens and increase colour, turbidity and suspended solids in abstracted water. These increase capital and operating costs of water treatment, increase the quantity of effluent and waste produced, and increase the carbon footprint of the industry. The aim of the Catchment Management Studies is to undertake a scoping and planning study of the catchment, using the approach advocated in the UKWIR framework for quantifying the benefits of catchment management, to establish the basis for a programme of catchment management that provides business benefit to NI Water. The outcome of this project will provide a basis for the preparation of business plans for catchment management in support of drinking water source protection and, in part, for meeting other WFD and corporate obligations for PC15 and beyond.

The Catchment Management Studies are being undertaken on a prioritised basis. The prioritisation rationale involves collating a series of details on each catchment and drivers needed to justify SCaMP projects, as follows:

- PRIMARY DRIVER 1 - Protect or improve the raw water quality abstracted by NI Water (Factors considered: DWI CPEO, Algae Blooms, Colour/Turbidity, TOC, Pesticides)
- PRIMARY DRIVER 2 - Protect or improve the reliability or quantity of raw water abstracted by NI Water (Factors considered: Reliability of source, Potential to improve reliability risk, Quantity, Drought Risk, Potential to remedy quantity risk.
- PRIMARY DRIVER 3 - Reduce the risk to the quality, reliability or quantity of raw water abstracted by NI Water (Factors considered: Tourism, Livestock Agriculture, Arable Agriculture, Forestry, Residential Dwellings, Industrial, Hydrocarbons, Rubbish / Fly tipping, Effluent, Septic Tanks.
- PRIMARY DRIVER 4 - Aid NI Water in managing its land portfolio and deliver its statutory responsibility under national and international obligations to protect and manage the natural environment (Factors Considered: ASSI, AONB, SPA, SAC, RAMSAR, percentage of catchment land owned by NI Water, Habitat protection or creation, Managing lands as 'carbon sink', Biodiversity management, Invasive species management).
- SECONDARY DRIVER - NI Water working with other stakeholders to improve the overall quality of the catchments from which it draws water (Non-NI Water Owned Land in Catchment). (Factors Considered: Habitat protection or creation, Biodiversity management, improved farming practices, Recreational activities, Revenue creation for NI Water.

Programme for delivery of Catchment Management Studies

During PC15 NI Water will deliver:

- *23 catchment plans (live catchments) to be delivered in first 3 years of PC15.*
- *23 catchment plans (unused catchments) to be delivered in years four to six.*

NI Water is on track to meet the delivery of the catchment plans as detailed in the programme below:

Category	Priority	Water Treatment Work Name	Catchment Management Study	Target Delivery Date	Comments
Operational WTW's	1	Killylane	2013/14	31/03/2014	Completed 31/03/14
Operational WTW's	2	Dorisland	2013/14	31/03/2014	Completed 31/03/14
Operational WTW's	3	Clay Lake	2013/14	31/03/2014	Completed 31/03/14
Operational WTW's	4	Derg (Inc Strule)	2014/15	31/03/2015	Completed 31/03/15
Operational WTW's	5	Lough Braden	2014/15	31/03/2015	Completed 31/03/15
Operational WTW's	6	Caugh Hill	2014/15	31/03/2015	Completed 31/03/15
Operational WTW's	7	Carmoney	2014/15	31/03/2015	Completed 31/03/15
Operational WTW's	8	Seagahan	2014/15	31/03/2015	Completed 31/03/15
Operational WTW's	9	Altnahinch	2015/16	31/03/2016	Completed 31/03/16
Operational WTW's	10	Drumaroad (inc Silent Valley, Annalong & Lough Island Reavey)	2015/16	31/03/2016	Completed 31/03/16
Operational WTW's	11	Fofanny	2015/16	31/03/2016	Completed 31/03/16
Operational WTW's	12	Dunore Point	2016/17	31/03/2017	Completed 31/03/17
Operational WTW's	13	Castor Bay	2016/17	31/03/2017	Completed 31/03/17
Operational WTW's	14	Moyola	2016/17	31/03/2017	Completed 31/03/17
Operational WTW's	15	Ballinrees	2016/17	31/03/2017	Completed 31/03/17
Operational WTW's	16	Lough Macrory	2016/17	31/03/2017	Completed 31/03/17
Operational WTW's	17	Lough Fea	2016/17	31/03/2017	Completed 31/03/17
Operational WTW's	18	Glenhordial	2016/17	31/03/2017	Completed 31/03/17

Category	Priority	Water Treatment Work Name	Catchment Management Study	Target Delivery Date	Comments
Operational WTW's	19	Carron Hill	2017/18	31/03/2018	In Progress - Target completion 31/03/18
Operational WTW's	20	Rathlin	2017/18	31/03/2018	In Progress - Target completion 31/03/18
Operational WTW's	21	Dungonnell	2017/18	31/03/2018	In Progress - Target completion 31/03/18
Operational WTW's	22	Killyhevlin	2018/19	31/12/2018	Being done as part of Source To Tap INTERREG VA Project - Target Catchment Characterisation Completion 31/12/18
Operational WTW's	23	Belleek	2018/19	31/12/2018	Being done as part of Source To Tap INTERREG VA Project - Target Catchment Characterisation Completion 31/12/18
Abandoned WTW's	24	Altmore (High)	2018-19	31/03/2019	Planned
Abandoned WTW's	25	Altmore (Low)	2018-19	31/03/2019	Planned
Abandoned WTW's	26	Ballintemple IR	2018-19	31/03/2019	Planned
Abandoned WTW's	27	Ballydoolagh (IR)	2018-19	31/03/2019	Planned
Abandoned WTW's	28	Ballysallagh Lower	2018-19	31/03/2019	Planned
Abandoned WTW's	29	Ballysallagh Upper	2018-19	31/03/2019	Planned

Category	Priority	Water Treatment Work Name	Catchment Management Study	Target Delivery Date	Comments
Abandoned WTW's	30	Ballyversall	2018-19	31/03/2019	Planned
Abandoned WTW's	31	Boomers Reservoir	2018-19	31/03/2019	Planned
Abandoned WTW's	32	Church Road	2019-20	31/03/2020	Planned
Abandoned WTW's	33	Conlig Lower (IR)	2019-20	31/03/2020	Planned
Abandoned WTW's	34	Conlig Upper	2019-20	31/03/2020	Planned
Abandoned WTW's	35	Craigahulliar	2019-20	31/03/2020	Planned
Abandoned WTW's	36	Creightons Green (IR)	2019-20	31/03/2020	Planned
Abandoned WTW's	37	Dunalis	2019-20	31/03/2020	Planned
Abandoned WTW's	38	Killea (WTW)	2019-20	31/03/2020	Planned
Abandoned WTW's	39	Knockbreckan	2019-20	31/03/2020	Planned
Abandoned WTW's	40	Leathemstown	2020-21	31/03/2021	Planned
Abandoned WTW's	41	Lough Cowey	2020-21	31/03/2021	Planned
Abandoned WTW's	42	Lough Money	2020-21	31/03/2021	Planned
Abandoned WTW's	43	Portavoe IR	2020-21	31/03/2021	Planned
Abandoned WTW's	44	Quolie (North)	2020-21	31/03/2021	Planned
Abandoned WTW's	45	Quolie (South)	2020-21	31/03/2021	Planned
Abandoned WTW's	46	Stoneyford Reservoir	2020-21	31/03/2021	Planned

Benefits of Catchment Management

NI Water manages 8,615 hectares of land. NI Water has embraced and adopted Sustainable Catchment Area Management Planning (SCaMP) and is seeking to build on the foundations of this put down in PC10 and PC13. Through the SCAMP NI approach, NI Water seeks to:

- Maximise the ecosystem services gained from its land holdings
- Meet its obligations under environmental legislation
- Improve operational efficiency through innovative projects
- Improve raw water consistency and quality

The benefits of the SCaMP project will be realised in the long-term, but the Catchment Management Studies completed to date have recommended a number of key outputs or recommendations, which are now being implemented in the form of the SCaMP projects and resultant benefits listed below:

Benefit 1 - NI Water will, over time, have improved raw water quality arriving at its Water Treatment Works.

Example Project – Seagahan Weed Wiping Trial Project

As a trial project NI Water are carrying out a weed-wiping project in Seagahan WTW drinking water catchment area in Co Armagh. NI Water is working with The Water Catchment Partnership and the farming industry as part of an innovative campaign to help reduce levels of MCPA in the Seagahan Reservoir catchment area. It is planned to offer a free weed-wiping service using Glyphosate, as an alternative to spraying MCPA, to demonstrate an alternative effective rush control method which causes less pollution.
The overall aim is to show that pesticide levels can be reduced in the reservoir without the need for more expensive water treatment processes. This can then be used as a test project to demonstrate the benefits of NI Water working together with farmers and possibly doing more of these type of initiatives in future in other areas. The project will have a Farm Liaison Officer working with farmers and land managers to manage the weed-wiping and promote better advice on handling, applying and disposing of grassland sprays, guidance on mechanical control of rushes and improving land condition to addressing the underlying causes of infestations. The project will be beneficial in comparing best techniques with other projects in N Ireland and used to inform individual aspects of the INTERREG VA Source To Tap project and other SCaMP NI projects going forward to ensure value for money in effectively reducing MCPA levels in watercourses.

The 2-year project in Summer 2017 and 2018 will be managed by NI Water but will be carried out in conjunction with the Water Catchment Partnership. This involves representatives from Ulster Farmers Union, Northern Ireland Environment Agency, Department of Agriculture, Environment and Rural Affairs, College of Agriculture, Food and Rural Enterprise and the Voluntary Initiative. All of these stakeholders will input knowledge and expertise which are vital to the success of the project and their cooperation and assistance is appreciated and valued by NI Water. The aim of the WCP is to deliver one message incorporating the ethos from all organisations to effectively tackle the problem of pesticides in the water environment, particularly in Drinking Water catchment areas, communicating with householders and farmers to raise awareness and provide best practice guidance on grassland pesticide use.

The project will bring the following benefits for NI Water:

- Reduced risks of DWI enforcement by demonstrating a proactive approach in the fight against MCPA
- Improve Water Quality Compliance in Seagahan catchment
- Improve Water Quality Compliance in other catchments across NI by raising awareness
- Reduced capital costs at WTW’s for MCPA removal
- Reduce operational costs at WTW’s for MCPA removal
- Influence and change farm practices to create a lasting legacy
- Build relationships with key stakeholders
- Environmental benefits for aquatic habitats and ecosystems

Benefit 2 - NI Water will, over time, reduce the risks of raw water quality incidents effecting WTW output capability.

Example Project 1 - Extensive areas of Forest Service lands exist within NI Water drinking water catchment areas. Forest Service felling and replanting activities require careful planning in order to avoid any detrimental impacts on raw water quality that is abstracted

for water treatment. In order to minimise risk to water quality guidelines have been agreed between NIW and Forestry Service in order to protect the raw water quality at each catchment. Work is ongoing with Forestry Service to improve tree felling and replanting techniques resulting in fewer high colour and turbidity incidents when forestry activities are carried out, particularly at Lough Bradan WTW. This improvement will be particularly evident during times of peak flows and high rainfall events.

Example Project 2 – A pilot project is being developed at Lough Bradan WTW to monitor quality at each of the individual intakes, then install online quality monitors and automatically control flows to the WTW, maximising use of technology to ensure that the best possible water quality is received at the WTW intake point. Improving the raw water quality in the water supply network and monitoring water quality at each abstraction point will allow the best quality water to be abstracted and will assist in reducing treatment costs.

Benefit 3 - NI Water will, over time, see an improvement in the reliability of water quantity from its upland sources.

Example Project - 'Co-operation Across Borders for Biodiversity Project' INTERREG VA Project
NI Water have been working in partnership with Royal Society for the Protection of Birds Northern Ireland (RSPB NI) and other partners on a project funded by INTERREG VA and managed locally by the Special European Union Programmes Board (SEUPB). The project is called the 'Co-operation Across Borders for Biodiversity' (CABB) Project and will begin in 2017, with completion in late 2021.

The overall objective of the CABB project is to bring about the recovery of protected habitats (active raised and blanket bog) and priority species (breeding waders and marsh fritillary at key sites) on a cross border and cross country basis. The overall CABB project has been awarded €4.6m of EU funding for projects in Scotland, N Ireland and the Republic of Ireland. CABB will contribute to delivering the EC Birds and Habitats Directives and Biodiversity Strategies in each of the three countries and will also link with strategies for climate change mitigation and adaptation and sustainable development in the three countries, as well as Programme for Government targets.

The NI Water aspect of the project will involve a €1.75k project to restore of the entire Dungonnell WTW catchment area at Garron Plateau on the Antrim Hills, which is in the catchment of Dungonnell WTW. NI Water owns 2000ha of the Garron Plateau SAC and previously 72ha of land has had drain blocking work done. Through CABB, an additional 444ha of blanket bog will be managed by blocking 38.4km of drains. NI Water will oversee the drain blocking and also aim to produce an information booklet highlighting how the work was done and the benefits delivered.
Garron Plateau is the largest expanse of intact blanket bog in Northern Ireland and it is home to protected birds of prey and rare plants such as marsh saxifrage and bog orchid. NI Water, working with the assistance of the RSPB NI and INTERREG VA aim protect and restore the peatland on the plateau, ensuring that the whole catchment is managed sustainably.
The CABB project will restore the natural hydrological conditions by blocking drains using peat, stone and sheet dams to raise the water table. This results in raising the water table and the "re-wetting" of the bog, promoting colonisation by Sphagnum moss, an essential component of a functioning bog. The creation of these peat dams reduces the water velocity in the drains and allows more settlement time. This reduces runoff and improves raw water quality and reliability by improved regulation of supply through the retention

effects of the bog. This will result in cost savings at the treatment works, as the requirement for chemical treatment to remove colour from the raw water will be reduced.

Benefit 4 - NI water will work toward meeting its environmental obligations in its catchments.

Example Project - There is an annual plan to control invasive species, rhododendron and cotoneaster, in the Mournes catchment landholding to ensure designated land is managed and environmental obligations are met. Work is currently underway to digitally map this work and monitor the progress in controlling these invasive species.

Benefit 5 - NI Water will work with stakeholders to improve the overall condition of its catchments.

The Eastern Mournes Wildfire project is carried out to reduce the risk of wildfires damaging wildlife habitats and adversely affecting raw water quality from the catchment. This project was carried out with a range of stakeholders, e.g. NIFRS, NIEA, Mourne Heritage Trust, UFU, DAERA, etc. Work is currently underway to digitally map the areas affected by wildfires and monitor areas where deliberate actions have been undertaken to control wildfires.

Benefit 6 - The people of Northern Ireland will benefit from improved biodiversity in Northern Irelands Water's land and, over time, and a reduction in the costs associated with treating raw drinking water.

Example Project – Work is ongoing in liaison with the Woodland Trust to plant riparian strips along watercourses to enhance habitats, resulting in enhanced biodiversity and improved raw water quality. This improves raw water quality through buffer zones to protect from pesticide pollution, bankside erosion and livestock encroachment/excretion in the waterway. This improvement will be particularly evident during times of peak flows and high rainfall events. One example is the riparian planting project at the Glenedra River where NI Water, The Woodland Trust and The Loughs Agency co-operated to complete a riparian tree planting project. NI Water abstract water from the Glenedra River, where water quality can frequently be poor due to bankside erosion and instability of the river. In order to improve water quality for abstraction, wildlife habitats and aquatic life, a 3.89 ha site was planted with native broadleaf trees along the banks of the river. Trees planted along river banks can provide many water management benefits, acting as a physical barrier, preventing pesticides drift from reaching watercourses and tree roots help stabilise river banks and create structural complexity in the water habitat. There is a resultant reduction in the water discolouration and sediment coming into Water Treatment Works. The cost of this type of project is small to NI Water as the other partners involved contribute significantly through internal and external funding sources.

The following SCAMP projects are planned for 2017/18:

1. Catchment Management Plans - Engage consultants to assess and collate information on all WTW's catchments where raw water is currently abstracted. Catchment Management Plans to be completed using the UKWIR approach (WR26A – "Quantifying the Benefits of Water Quality Catchment Management Initiatives"). Outcome is a list of recommendations for catchment works to improve raw water quality and enhance ecosystems/habitat. This should include a summary of land area, land use, risks to drinking water safety, to align with NIW catchment prioritisation spreadsheet. There are 23 catchment studies to be completed in total on active drinking water catchment areas. By the end of the 2016/17 financial year eighteen

catchment studies have been completed within the PC13 and PC15 period to date and it is proposed to move ahead with a further 3 studies in 2017/18. The completion of these studies will generate recommendations, which will then be actioned later in the PC15 period. It is also proposed to begin characterising the catchment areas which NI Water own but where the WTW has been abandoned. These studies will be much simpler and will primarily focus on legal requirements for designated landholdings and meeting of our SCAMP and biodiversity aims and objectives.

2. Mourne Wildfire Containment - The Silent Valley drinking water catchment area and surrounding areas of the Mournes were subject to wildfires, which damaged between 8-10 square kilometres of upland heath in the Mournes during April/May 2011. NI Water, in conjunction with Mourne Heritage Trust (MHT), NIEA and NI Fire and Rescue Service (NIFRS), commissioned a report by Wildfire Advisory Services. This paves the way for a focused and innovative approach to managing wildfire outbreaks in the wider Eastern Mournes area, considering practical wildfire management and emergency response within the drinking water catchment. In order to achieve the objectives, work is required to action the recommendations from the Wildfire Containment Report. This report has been adopted in agreement with NIEA, NIFRS, MHT and NIW. NIW are committed to proceeding with implementation as part of this partnership. During the 2017/18 period, it is proposed to carry out controlled burns to reduce the risk to the water catchment area and consider GIS mapping of areas damaged by wildfire and areas where mitigation measures have been carried out.
3. Mourne Invasive Species Control - The expansion of Rhododendron and Cotoneaster is of concern to upland heath land management for a number of reasons. There is a legal obligation for NIW to control these invasive species on our landholdings. Work has been ongoing in recent years, but the work needs to continue to further control invasive species and prevent re-colonisation. This is particularly important to help ensure that native plants have the opportunity to establish within the catchment.
4. Mournes Heathland Management - NI Water have developed a successful working relationship with Mourne Heritage Trust (MHT) and work together to mutual benefit in managing the Silent Valley catchment which is owned by NI Water. MHT have recently been successful in obtaining funding of €100k annually over the next 3 years through an Interreg Northern Periphery and Arctic programme (NPA) funding application, which was supported by NI Water. This will involve a project to carry out environmental enhancements work on NI Water owned land in the Mournes, maintenance on paths were works has been done, stitch in time to prevent erosion, some larger erosion work, develop a management plan and use the project to develop knowledge and skills and training. This will bring in a significant value of work on catchment land at no cost to NI Water. It is proposed that NI Water carry out some habitat restoration work under the SCAMP project to add value and support the MHT project and to help develop a ‘leverage’ ethos, whereby NI Water can contribute a relatively small amount, allowing NGO’s to attract larger funding sources.
5. Riparian Planting – The SCaMP NI team successful carried out riparian planting at sites in Caugh Hill and Dorisland catchments in 2016/17. These areas enhance biodiversity and help raw water quality by reducing erosion and livestock encroachment. These projects were carried out alongside NGO’s and were able to avail of match funding. It is proposed to do more of this type of work in 2017/18 as opportunities arise.

DEVELOPMENT OUPUT
10. Minimising the water quality risk from lead pipes
Final Determination: *The company shall provide an annual report detailing how the implementation of its strategic lead policy and lead replacement programme is progressing. This should explain how the company is managing this activity and targeting hotspots to maximise benefits and how it is assessing the improvements delivered by the work undertaken.* *The report shall also provide details of the activity undertaken by the company, in conjunction with other stakeholders, to develop and implement a strategic risk based approach for addressing compliance issues associated with private supply pipes and domestic distribution systems.*
Additional Details:
The lead replacement programme is 'Business As Usual' with analysis being undertaken by Asset Management and briefed for delivery to Engineering Procurement. To date the target number of lead replacement pipes per annum has been achieved**.**
PROJECT SUMMARY
• Annual update on the lead pipe replacement programme is provided through the company's AIR Return*: 'AIR 16 Submission -2015-2016 Table 47 - Line 10 – Minimising the Water Quality Risk from Lead Pipes'.* • To better inform DFI Water Policy Unit, as part of the Long Term Water Policy Strategy, a Lead Service Replacement Pilot has taken place at Craigyhill Bungalows, Larne. As part of the pilot the complete service pipes, including the Supply Pipes, were replaced to assess the cost and benefits of such an approach with a view to grant scheme being established. A Draft Internal Report on the pilot has been produced for comment prior to issuing to DFI.

KEY MILESTONES	Target	Status
1. Annual reporting provided through the AIR Return process.	Annually	BAU
2. Complete pilot study for DfI policy development.	March 16	Complete
3. Develop summary document and recommendations to assist DfI in developing policy.	March 17	Ongoing

Minimising the water quality risk from lead pipes

Part 1 – Progress of the Implementation of Strategic Lead Policy and Lead Replacement Programme

The NIW Lead Project comprised a desk top survey (alongside proactive targeted sampling) of available data from NI Water Corporate Systems relevant to lead services and analyse and collate information and data obtained onto Mapinfo layers (In Open Format) to compile a prioritised and costed schedule of lead replacements for PC15.

Work also included Scheme Prioritisation and Site Verification work including visual inspections and sampling work.

The methodology includes: -

- Prioritise by highest exceedances and densest clusters
- Desktop exercise to help focus on the areas required for further sampling verification and review
- If the network distribution pipe is considered unsuitable – pass the scheme over to Engineering Procurement Watermains Rehabilitation Team for replacement of the distribution main and the related communications pipes together.
- On site sampling and inspections to further verify priority areas
- Ensure value for money in delivery of this work by clustering work where possible

Prioritisation

The Asset Performance Networks Water Team compiled a Specification for this approach and, following a Tender exercise; Consultants were appointed to deliver the required outputs.

A quantitative, risk-focussed analysis procedure to identify lead "hotspots" across Northern Ireland was then commenced. The focus of this approach was to use available datasets in a transparent and cost effective process, which is easily repeatable or editable in the future using updated datasets or incorporating new data as it becomes available.

Taking cognisance of best industry practise and recent DWI guidance, it was agreed between NIW and the Consultant, that greater emphasis be placed on using an evidence based approach, such that once the initial hotspots were prioritised, a second stage involving customer site surveys and a water quality sampling exercise be undertaken to validate the assumptions. This approach facilitates an assessment of risk based on the combination of the likelihood (probability) of occurrence and the consequence (extent and seriousness) of the failure on the quality of water received by NI Water's consumers.
The following staged approach was adopted.

1. Data Gathering and Desktop Analysis,
2. Prioritisation of those hotspots based on probability of lead occurrence,

The various datasets were spatially analysed using MapInfo software to create "hotspot" areas based on combining clusters of unusually high concentrations of point data, such as water quality lead exceedances (>10µg/l) and watermains of a known age (i.e. those installed pre 1920). The digitisation of hotspot polygons allowed the large datasets to be rationalised into a manageable number of areas, which contained a high probability of lead occurring. A range of polygons was initially created by spatially querying various lead indicator criteria or where lead piping was confirmed to be present. They were then manually reviewed to validate the information and edited by enlarging or enclosing each, based on similar cohorts

Assignment of a prioritisation score to each dataset was derived based on the significance of each as an indicator of the likelihood of lead occurring or its impact to public health. An iterative sensitivity analysis process was also conducted to test the robustness of each assessment criteria and understand the causal relationships between datasets.
The scoring matrix assigned to each is described below.

- **Watermains Age**

Lead was used throughout Northern Ireland up until ~1975 for connecting a property to the water supply main and for internal plumbing. Lead's availability, inherent strength, malleable nature and corrosion resistance properties meant it was favoured over other metals such as copper and brass.

Accordingly, watermains of a certain age have been assessed as a good indicator of the presence of lead and the criteria in Table 1 below were used to score the age of watermain criteria. To ensure that each polygon was assessed using its predominant watermain age type, those polygons that contained only a small % of a differing age type were discounted, by applying a rule that selected the most common type of watermain age within the polygon.

Criteria Age of watermains	Score
Majority of Mains in Polygon laid after 1975	0
Majority of Mains in Polygon 1970 to 1975	1
Majority of Mains in Polygon laid 1950 to 1970	2
Majority of Mains in Polygon laid 1920 to 1949	3
Majority of Mains in Polygon laid before 1920	4

Table 1: Age of Watermain Score

- **Historical LIMS Water Quality Data**

NI Water LIMS data provided information on 25,800 water quality sample records from 2002 to 2014, which were scored based on the total numbers of samples per polygon (likelihood) and the lead parameter result (severity of impact).

Criteria Lead Result (µg/l)	No of Occurrences within Polygon(1)	Weighting Factor(2) *	Score (3)*
0	x	0	0
0.00 - 9.99 ug/l	x	0.1	1
10 -14.99 ug/l	x	1.0	2
15 - 49.99 ug/l	x	3.0	3
> 50 ug/l	x	5.0	4

(*Note The overall score is = (1 x2 x 3)

Table 2: Historical Lead Water Quality Density Score

Weighting factors were used to negate the influence of large numbers of sample data skewing the overall scores.

In order to prioritise the water quality samples based on the severity of identified water quality results the polygons were also assigned a score based on the highest exceedances. Approximately 4% of the total water quality records exceeded the Prescribed Concentration Value (PCV) of 10µg/l, with 1% (approximately 250 samples) exceeding 39µg/l.

Water quality results were also analysed to remove,

- Where a new main had been laid since the sample had been taken, (typically under the Watermains Rehabilitation Programme). In this case, it has been assumed that the communication pipe was replaced during the process.
- A more recent sample at the same location superseded the previous sample,

- **Lead Failures by DMA**

In order to apply a holistic approach across the entire water distribution system each DMA was initially scored by the percentage of lead exceedances within its boundary, relative to the total number of water quality samples taken. NI Water has approximately 1,380 DMAs which encompass its distribution network and each DMA with the exception of some trunkmain DMA's, has water quality results with which to compare. Analysis would identify the worst performing DMA, such that any potential replacement scheme would provide water quality betterment to customers within the entire DMA, and potential neighbouring or cascading DMA. The scoring system is presented in Table 3 below.

Criteria Lead Result (µg/l)	Weighting Factor (2)	Score (3)*
<10 (contains 97% of WQ samples)	0	0
10 – 20.19 (contains 1% of WQ samples)	0.5	1
20.20 - 38.99 (contains 1% of WQ samples)	1.5	2
> 39 (contains 1% of WQ samples)	2.0	3

(* Note The overall score = 2 x 3)

Table 3: Water Quality Results

A thematic illustration of those DMA's ranked by the highest percentage of water quality failure is available on request. The output showed that the largest numbers of DMA with a higher percentage of failures are concentrated in the Greater Belfast area.

- **Northern Ireland Housing Executive (NIHE) Properties**

NIHE has endeavoured to provide an extract from its digital asset dataset, which details the ownership of properties in Northern Ireland and the age of the dwelling. Once received this data can be used to verify assumptions regarding the age of watermains and identify additional areas where lead may be present.
NIHE has confirmed that it has no capital works planned in the short-term (2015) to replace kitchen or private supply pipes. Accordingly, there appears to be limited opportunity to coordinate the replacement of customer communication pipes with NIHE private supply pipes where practical, in the short term.

- **Watermains Rehabilitation Programme**

The NI Water Watermains Rehabilitation Programme Team provided detailed information in relation to the numbers of lead communications pipes replaced on each rehabilitation / replacement scheme installed between the years 2005 to 2014. Once cleansed the data provided details on some 8,150 lead pipe replacements undertaken during the Watermains Rehabilitation Programme and following a digitisation exercise the information was spatially mapped to link to the NI Water PC13 Schemes Core MapInfo table.

92% of the WMRP schemes, which involved replacement of lead communication pipes, occurred in the Greater Belfast area.
In contrast to the other data sources that were potential indicators of lead presence, this source confirmed that lead didn't exist and as such, it wasn't possible to assign a score to each polygon. In this case, the data was used to manually review each lead hotspot to,

- identify hotspots for removal following confirmation of rehabilitation (For the most part the NI Water AIC GIS data confirmed this, though this process captured any recently constructed mains that hadn't yet been returned to the NI Water AIC),
- Identify additional (neighbouring) polygons where lead was likely to be present using similar water main cohorts.

- **Corporate Asset Register (CAR)**

NI Water staff queried the Corporate Asset Register (CAR) to identify those properties that had lead communication pipes replaced or had combined services separated through opportunistic or business as normal services, since 2009.
The information was geo-referenced and analysis was targeted to identify the polygons with the largest remaining numbers of lead communication pipes, such that any potential replacement scheme would provide maximum water quality betterment to customers within the entire DMA. The scoring system is presented in Table 4 below.

Criteria Opportunistic Lead Communication Pipe Replacement	Nr of Polygon Properties with Lead Communication Pipes replaced	Score
Polygon Contains confirmed Lead Communication Pipe Replacements	No of Properties	5
Polygon Contains no confirmed Lead Communication Pipe Replacements	No of Properties	0

Table 4: Opportunistic Lead Communication Pipe Replacement Score

- **Sensitive Customers**

Given the well documented increased risk to children from increased levels of lead in drinking water (*Childhood Lead Poisoning, World Health Organisation, 2010*) a list was created of sensitive non-domestic properties from the Pointer NI dataset, which may present increased levels of risk to children. Such non-domestic properties include,

- Primary Schools,
- Nursery Schools / Day Care Centre,
- Sure Start Centre's,
- Children's Activity Centre's,
- Playgroups.

The scoring system is presented in Table 5 below.

Criteria Sensitive Property	Score
Yes	3
No	0

Table 5: Sensitive Property Score

- **Visible Lead Score**

A dataset was then created by combining information obtained from previous NIW water quality customer surveys and Customer Complaints, which details where lead pipe material has been confirmed at either the communication pipe, the service pipe or internal riser (typically at the kitchen or first floor bathroom). Given this was the only data source that confirmed the presence of lead at a particular property (in advance of the site surveys) it received the highest weighted score, where lead was deemed to be present. The scoring is provided in Table 6 below.

Criteria Lead Pipes Visible	Score
Yes	10
No	0
Unknown	0

Table 6: Lead Pipe Visible Score

To date this Project has identified and assessed 1,680 lead hotspot areas, which encapsulate some 92,400 properties across Northern Ireland (average of 55 properties per polygon). The hotspots have been prioritised for the next phase of the Lead Pipe Replacement Programme (Water Quality and Customer Site Survey) using the prescribed scoring methodology.

DWI Stakeholder Discussion

This approach was presented in detail, alongside the proposed Work packages, to DWI on 26th March 2015
The "Mapinfo" geographical presentation of the outputs and this associated methodology were very positively received at this session.

Pilot Study "Craigyhill Bungalows"

A Lead Service Pilot has recently taken place at a small development (40 or so properties)," Craigyhill Bungalows", Larne, to identify the benefits and associated costs of replacing the communications pipe within private property.

As part of the pilot, in addition to replacing the public side communications pipe, NIW replaced the private communications pipe to internal boundary of the properties. It should be noted this did not include the internal pipework. This was carried out at the 18 privately owned houses within the development. The remaining houses within the development are NIHE owned, and NIHE replaced both private communications pipework and the internal pipework. NIW carried out first draw sampling at the properties, both pre and post work.

A draft report following the pilot lead-replacement project at "Craigyhill Bungalows" has been completed and is currently being reviewed by NI Water Governance mechanisms. As suggested in last year's report the initial outputs suggest there is limited benefit in replacing private communications pipe unless all internal lead within a property is removed. As soon as the report is approved, it will be forwarded to DfI for further consideration.

These activities and the associated forums will then inform the future review strategy in this area and will help inform the approach in terms of how frequently NIW might re-sample and also the timing and volume of samples that are required, to get a clear picture of the effect that this programme of work has had on lead reduction.

Planned next steps for delivery

The company will continue with its Proactive Communications Lead Pipe Replacement Programme at circa £1 million per year.

As soon as the "Craigyhill Bungalows "Pilot Lead replacement scheme report is approved, it will be forwarded to DFi for further consideration.

PC15 Proactive Replacement Programme Proposed by Asset Management -See Table 11 for Installation Progress

	Prioritised Hotspot Location	Works Package Issued	Date Issued to	Water Quality Survey	Lead Comms Pipes Submitted	Cost @ £500/pipe
YEAR 1	Marina Park	Yes	Feb-15	Jan-15	356	£178,000.00
	Orangefield Crescent	Yes	Jun-15	Jan-15	301	£150,500.00
	Gilnahirk ph1	Yes	Jun-15	Feb-15	437	£218,500.00
	Ulsterville Gardens	Yes	Jun-15	Jan-15	414	£207,000.00
	Ebor Street	Yes	Jun-15	Feb-15	428	£214,000.00
	West Wind Terrace	Yes	PC13 LPRP	PC 13	27	£13,500.00
	Victoria Gardens	Yes	PC13 LPRP	PC 13	16	£8,000.00
	Ransevyn Park	Yes	PC13 LPRP	PC 13	84	£42,000.00
	Derryvolgie Avenue	Yes	PC13 LPRP	PC 13	66	£33,000.00
	Ballycraigy Park	Yes	PC13 LPRP	PC 13	52	£26,000.00
	Victoria Court Donaghadee	Yes	PC13 LPRP	PC 13	79	£39,500.00
TOTAL					**2260**	**£1,130,000.00**
YEAR 2	Roseberry Road (ph 1)	Yes	Sep-15	Feb-15	603	£301,500.00
	Irwin Avenue	Yes	Sep-15	Mar-15	445	£222,500.00
	Morven Park (ph1)	Yes	Mar-16	Feb-15	199	£99,500.00
	Gilnahirk ph2	Yes	Mar-16	Feb-15	434	£217,000.00
	Grand Parade	Yes	Sep-15	Jan-15	412	£206,000.00
TOTAL					**2093**	**£1,046,500.00**
YEAR 3	York Park	No	Mar-16	Dec-15	301	£150,500.00
	Tates Avenue	No	Mar-16	Feb-15	1391	£695,500.00
	Cregagh Road	No	May-16	Feb-16	449	£224,500.00
TOTAL					**2141**	**£1,070,500.00**
YEAR 4	Deramore Avenue	No	Mar-16	Dec-15	684	£342,000.00
	Roseberry Road (ph 2)	No	Mar-16	Feb-15	722	£361,000.00
	Willowholme Drive	No	Mar-16	Mar-15	445	£222,500.00
	Myrtlefield Park	No	Mar-16	Jan-16	204	£102,000.00
	Cranmore Gardens	No	Mar-16	Jan-16	128	£64,000.00
TOTAL					2183	**£1,091,500.00**
YEAR 5	Bramcote Street	No	Mar-16	Mar-15	375	£187,500.00
	Beechmount Crescent	No	Mar-16	Dec-15	722	£361,000.00
	Kirkliston Park	No	Mar-16	Jan-16	419	£209,500.00
	Ravenscroft Avenue	No	Mar-16	Jan-15	493	£246,500.00
	Eastleigh Crescent	No	Mar-16	Jan-16	90	£45,000.00
	Breda Gardens	No	Mar-16	Jan-16	50	£25,000.00
TOTAL					**2149**	**£1,074,500.00**
YEAR 6	Ainsworth Street	No	Mar-16	Jan-16	444	£222,000.00
	Dunlambert Park	No	Mar-16	Mar-15	285	£142,500.00
	Haypark Avenue	No	Mar-16	Dec-15	260	£130,000.00
	Windsor Avenue	No	Mar-16	Feb-15	82	£41,000.00
	Birch Drive	No	Mar-16	Feb-15	210	£105,000.00
	Ormiston Crescent	No	Mar-16	Jan-16	151	£75,500.00
	Wandsworth Parade	No	Mar-16	Jan-16	291	£145,500.00
	Cherryvalley Park	No	Mar-16	Jan-16	335	£167,500.00
	Lynnwood Park	No	Mar-16	Jan-16	39	£19,500.00
	Schomberg Park	No	Mar-16	Jan-16	53	£26,500.00
TOTAL					**2150**	**£1,075,000.00**
				Totals	**12,976**	**£6,488,000.00**

	Prioritised Hotspot Location	Works Package Issued	Date Issued to	Water Quality Survey	Lead Comms Pipes Submitted	Cost @ £500/pipe
YEAR 7	Orpen Drive	Mar-16	No	To be Surveyed	351	£175,500.00
	Ethel Street	Mar-16	No	To be Surveyed	567	£283,500.00
	Balfour Avenue	Mar-16	No	To be Surveyed	385	£192,500.00
	Thomas Street	Mar-16	No	To be Surveyed	316	£158,000.00
	Wellington Park	Mar-16	No	To be Surveyed	115	£57,500.00
	Milfort Avenue	Mar-16	No	To be Surveyed	167	£83,500.00
	Beechland Drive	Mar-16	No	To be Surveyed	221	£110,500.00
TOTAL					**2122**	**£1,061,000.00**
YEAR 8	Castlereagh Street	Mar-16	No	To be Surveyed	99	£49,500.00
	Montgomery Road	Mar-16	No	To be Surveyed	122	£61,000.00
	Castledona Crescent	Mar-16	No	To be Surveyed	479	£239,500.00
	Portallo Street	Mar-16	No	To be Surveyed	433	£216,500.00
	Avoniel Road	Mar-16	No	To be Surveyed	126	£63,000.00
	Braeside Grove	Mar-16	No	To be Surveyed	448	£224,000.00
	Onslow Gardens	Mar-16	No	To be Surveyed	215	£107,500.00
	Ravenhill Park	Mar-16	No	To be Surveyed	109	£54,500.00
	Hillsborough Drive	Mar-16	No	To be Surveyed	62	£31,000.00
TOTAL					**2093**	**£1,046,500.00**
YEAR 9	Kent Avenue	Mar-16	No	To be Surveyed	73	£36,500.00
	Glenbank Drive	Mar-16	No	To be Surveyed	185	£92,500.00
	Glenbryn Drive	Mar-16	No	To be Surveyed	277	£138,500.00
	Joanmount Park	Mar-16	No	To be Surveyed	583	£291,500.00
	Eastleigh Drive	Mar-16	No	To be Surveyed	106	£53,000.00
	Veryan Gardens	Mar-16	No	To be Surveyed	263	£131,500.00
	Thorndale Avenue	Mar-16	No	To be Surveyed	74	£37,000.00
	Crumlin Road	Mar-16	No	To be Surveyed	177	£88,500.00
	Somerton road	Mar-16	No	To be Surveyed	93	£46,500.00
	Kelvin Parade	Mar-16	No	To be Surveyed	170	£85,000.00
TOTAL					**2001**	**£1,000,500.00**

	Prioritised Hotspot Location	Works Package Issued	Date Issued to	Water Quality Survey	Lead Comms Pipes Submitted	Cost @ £500/pipe
YEAR 10	Knockwood Park	Mar-16	No	To be Surveyed	355	£177,500.00
	Northwick Drive	Mar-16	No	To be Surveyed	818	£409,000.00
	Orangefield Avenue	Mar-16	No	To be Surveyed	654	£327,000.00
	Cyprus Avenue	Mar-16	No	To be Surveyed	95	£47,500.00
	Clonlee Drive	Mar-16	No	To be Surveyed	84	£42,000.00
TOTAL					**2006**	**£1,003,000.00**
YEAR 11	Cherryhill Avenue	Mar-16	No	To be Surveyed	346	£173,000.00
	Cabin Hill Gardens	Mar-16	No	To be Surveyed	210	£105,000.00
	Holywood Road	Mar-16	No	To be Surveyed	368	£184,000.00
	Ardcarn Way	Mar-16	No	To be Surveyed	222	£111,000.00
	Knocktern Gardens	Mar-16	No	To be Surveyed	89	£44,500.00
	Victoria Road	Mar-16	No	To be Surveyed	192	£96,000.00
	Kings Road	Mar-16	No	To be Surveyed	424	£212,000.00
	Strandburn Drive	Mar-16	No	To be Surveyed	196	£98,000.00
	Leven Park	Mar-16	No	To be Surveyed	50	£25,000.00
TOTAL					**2097**	**£1,048,500.00**
YEAR 12	Abbey Ring	Mar-16	No	To be Surveyed	535	£267,500.00
	Church Avenue	Mar-16	No	To be Surveyed	97	£48,500.00
	Clifton Road	Mar-16	No	To be Surveyed	301	£150,500.00
	Lancaster Avenue	Mar-16	No	To be Surveyed	143	£71,500.00
	Bloomfield Road	Mar-16	No	To be Surveyed	612	£306,000.00
	Newtownards Road	Mar-16	No	To be Surveyed	315	£157,500.00
TOTAL					**2003**	**£1,001,500.00**
				Totals	**12,322**	**£6,161,000.00**

DEVELOPMENT OUPUT

11. Water Meter Renewal

Final Determination:
The company shall report progress against its programme of water meter renewal, targeted to deliver a uniform rate of replacement to ensure that all revenue meters are no more than 17 years old by the end of PC15.

PROJECT SUMMARY

NIW in accordance with the company policy on Proactive Meter Exchanges (PME) set out its PC15 programme of replacements over a 6 year period,

- The data obtained from the Rapid corporate billing system indicated 29059 water meters would meet the PME criteria during the period 2015-2021.
- It was envisaged that 4843 meter per year would be targeted for replacement over a 6 year period
- During 15/16 NIW due to better than expected success rates decided to increase the pace of replacement and was able to exchange 6,920 meters as opposed to the planned 4843
- During 16/17 NIW was again due to better than expected success rates able to increase the pace of replacement and was able to exchange 7,399 meters as opposed to the planned 4843
- During the first 2 years of PC15 NIW has proactively exchanged 14,319 meters as opposed to the proposed 9686
- Due to the accelerated rate of replacements during 15/16 &16/17 NIW plans to scale back replacements to just under 3000 meters per year for the remainder of PC15.

KEY MILESTONES	Target	Status
1. 2015/16	4.843	6,920
2. 2016/17	9,686	14,319
3. 2017/18	14,529	
4. 2018/19	19,372	
5. 2019/20	24,215	
6. 2020/21	29,058	

- As part of its PC15 Business Plan submission, NI Water stated that the company has a policy to proactively replace customers' meters which are >17 years old and or have a recorded consumption of >8000m^3.
- NI Water is aware having completed research involving extracting and testing sample numbers of customer meters that meters have the propensity to under record consumption as they get older. Wider water industry research also supports this position with many GB companies proactively replacing their meter stock from the age of 10 up to 17+ years.
- The numbers of meters matching the NI Water criteria as extracted from the company billing system and quoted to NIAUR are detailed below.

PC15 - PME Numbers							
Due for Replacement	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	
Install Year	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	Total
Meeting Age Criteria	11,634	1,682	2,105	2,905	3,038	3,712	**23,426***
Meeting Consumption Criteria							**5,633**
Overall Total							**29,059**
Proposed Replacement Programme	4,843	4,843	4,843	4,843	4,843	4,843	

*23,426 total = 25,076 – 1,650 ongoing PME jobs between Oct14-Mar15

- Pre-empting the PC15 mid-term review and in response to the regulators T47 query NI Water has to report the following progress.
- NI Water based on the above numbers has been more proactive in its PME programme during 2015/16 than originally proposed replacing 6920 meters as reported in AIR16.
- The reason for completing more replacements is that NI Water was able to secure better contract rates following the amalgamation of two former maintenance contracts used for metering into a single and more competitive meter installation and replacement contract.
- NI Water was also conscious of the 'bow wave' of meters extracted from the corporate billing system matching the age and consumption criteria in 2015/16.
- The numbers of meters detailed above and extracted from the corporate billing system as per the PME criteria are still valid today.
- The billing system has the entire customer meter stock listed against various fields known as water statuses. Examples of these meter statuses are described in the table below.

NI Water - Corporate Billing System Water Status			
1	Combination meter-low	8	RFR – compensation supply
2	Dom sub meter	9	RFR – no billable name/address
3	Domestic supplied	10	RFR – shared supply
4	DRD supply	11	RFR - unable to locate
5	Free supply	12	Sub meter
6	Not supplied	**13**	**Supplied**
7	Retain For Review (RFR)	14	Trade Effluent

- NI Water has to date focused its PME programme on the water status numbers contained within the supplied category. This status covers 72% of the entire meter stock meeting the age and or consumption criteria.
- During 2015/16 NI Water replaced 6920 meters, this equates to 59% of the meters meeting the age criteria for that year. During 2016/17 NI Water issued circa 8200

replacement jobs to the metering contractor, with a success rate of 90% this has resulted in the replacement of 7399 meters. This combined with the previous year will result in 14319 meter exchanges equating to 50% of the entire numbers anticipated over the course of PC15.

- Being able to better the original anticipated profile has enabled NIW to address the potential under recording of consumption due to the age of the meter and thus improve the accuracy of its measured consumption.
- NI Water will continue to further review its meter data associated with the other water status categories. NI Water will where appropriate issue meter exchange batches to the metering contractor through the remainder of PC15.
- NI Water following legislative changes in December 2016 removing the Art 81 obligation to fit meters on newly connected domestic premises, has recently reviewed its PME programme and the impact this will have on older meters **re-classified to domestic status**. As such, NI Water does not believe it prudent to continue proactively replacing customer meters outside of the billing category described above as 'Supplied'. The impact of this will be to significantly reduce the projected number of meters initially identified as meeting the PME criteria of age and or consumption for the remainder of PC15.

Anticipated installation rates are summarised below:

Year	15/16	16/17	17/18	18/19	19/20	20/21	Total
Meters replaced	6,920						15,350
Estimated meters to be replaced		7,399	400	7	4	620	

DEVELOPMENT OUPUT

12. Targeting sewerage 'hotspots'

Final Determination:
The company shall report on its plans to target sewerage hot spots of blockage and collapse and the development of its sewerage intervention prioritisation to incorporate the outcome of PC15 consumer engagement. The company shall provide updates on the implementation of the prioritisation annually through PC15.

Additional Details:

The Sewerage Hotspot tool is now BAU activity.

PROJECT SUMMARY

- **Hot-Spots of Blockages**
  - Monthly reports generated automatically to inform Asset Performance and CSDD.
  - Joint AP/CSDD liaison to determine and agree further root cause investigation needs.
- **Sewer Collapses**
  - Sewer collapses are repaired as and when they occur; either through CSDD intervention or through AP for EP delivery of remedial for larger scale repair needs.
- **Sewer Infrastructure Investment Model (SIIM)** is operating as a BAU tool to identify and prioritise sewer Structural Grade 4s & 5s sewer lengths for consideration for rehabilitation as one of the Capital Maintenance Planning tools.
- The SIIM is refreshed annually using updated corporate datasets (e.g. collapses, blockage, out of sewer flooding, pollution, and customer contacts etc.). Annual updates are used to inform the next year's rehabilitation investment programme.
- The rehabilitation programme is risk-based and focused on individual sewer lengths classified as '*High Risk*' and '*High Consequence*'.
- Asset Performance undertakes a targeted CCTV programme and then liaises with CSDD to confirm sewer condition and agree the extent of rehabilitation required prior programme submission to EP.
- From April '17, the rehabilitation programme will be forwarded to EP on a quarterly basis (as opposed to annually). This will allow improved delivery programming.
- Methodology reviewed periodically as BAU to maintain best practice. Next review scheduled to commence in June '18.

KEY MILESTONES	Target	Status
1. Sewer blockage 'Hot-Spot' Reporting	Monthly	BAU
2. Review SIIM methodology.	June '18	BAU

Activity completed to date and its outcome

The Hotspot tool is completed and working well. On a monthly basis, a report is run for each of the 4 areas giving the top 10 problematic sewers within each area. This enables CSDD to prioritise their sewer investigations budget. Asset Performance, in conjunction with CSDD, meet on a regular (monthly) basis to discuss the problematic sewers, which have been highlighted by the hot spot tool to identify whether further work is required.

Planned next steps for delivery

The next steps for delivery include determining whether richer data sets and information are required in order to generate more accurate reports. The purpose being to further reduce the number of blockages across the various catchments in the Province.

DEVELOPMENT OUPUT
13. Polluted Storm Water Overflows
Final Determination: *The company shall report progress on the investigation and remediation of storm-water overflows including enforcement action taken by various authorities and any remediation action undertaken.*
Additional Details:
NIEA identified 47 priority catchments where there appear to be issues with misconnections. To date NI Water has investigated 24 and has been able to resolve a number of pollution issues through "quick wins". However, it has not always been possible to close out issues, as there is a gap in the legal powers available to NI Water to remedy misconnections.
PROJECT SUMMARY
• A Working Group has been established comprising DfI's Water and Drainage Policy Division (WDPD), NI Water and NIEA to agree a new policy for dealing with misconnections. To date, 4 meeting have taken place. • WDPD, NIEA and NI Water to produce a shortened version of the good practice document titled "Investigation and rectification of drainage misconnections", condensing it to reflect present agreed procedures for dealing with misconnections. Once agreed, document to be shared with UR for comment. Document is currently in daft format for discussion and sign-off before submission to UR. • WDPD to liaise with DfI Planning Group to establish how best to promote / educate on the problems associated with misconnections. • Continued development and refinement by NI Water and NIEA has strengthened the investigatory process and working practices. • Where practicable NI Water has dealt with misconnections on a case-by-case basis. However, the vast majority of misconnections are related to washing machine connections. The Working Group is reviewing policy and legal aspects of correcting misconnections.

KEY MILESTONES	Target	Status
1. Joint Liaison Meetings	Ongoing	
2. Prepare draft good practice document	Nov17	
3. Agree and implement good practice document	Nov17	

Activity completed to date and its outcome

Stage 1 of this project has been completed which was the investigation of 24 catchments using CCTV techniques, dye testing and engaging with the public. Following on from these activities, NI Water has requested advice from its Shareholder on the next step to take on corrective actions.

The present position on Polluted Storm Water Overflows is detailed below:

- 24 Catchments out of 47 catchments highlighted with NIEA have been surveyed regarding pollution of nearby rivers.
- The surveys highlight that most of the pollution is from private connections e.g. washing machines located in garages that are connected to the roof gully, which in turn discharges into a storm water sewer.
- A meeting took place in September 2016 between NIEA, NI Water and DfI with the purpose of developing a policy to address misconnections on private properties. At this meeting, NIEA highlighted that they had identified quick wins concerning some of the misconnections. However, following further investigation by NI Water it was determined that these quick wins were not viable as they involved diverting storm water into foul sewers, which did not have the necessary hydraulic capacity.
- The Working Group continue to meet to establish how best to address private connections.

- Until a policy is developed, NI Water has not conducted any further catchment studies. This decision was made with the agreement of NIEA (2015),
- Misconnections located by NI Water on the public highway are being addressed i.e. they are being redirected to foul sewers.
- NI Water is continuing to investigate and address pollution of storm water overflows where the misconnection is on public property.

Planned next steps for delivery

The next step for delivery entails a request for clarification from DfI Water Policy Unit on the way forward: regarding potential enforcement actions.

DEVELOPMENT OUPUT
14. Storm water separation
Final Determination: *The company shall develop a plan for investing the funding allocated for storm-water separation by September 2015 which sets out the target projects and the benefits they deliver. The company shall assess the scope for storm-water separation and assess benefits it could deliver to support further investment.*
Additional Details:
This is now Business As Usual
PROJECT SUMMARY
• Stormwater separation is an option considered in all new project appraisals. • A plan has been developed using SudStudio methodology to prioritise storm separation across the Province. • The project considered a phased approach as follows: – Phase 1 – considered schools but this proved to be undeliverable due to issues with Education Authority acceptance and buy-in. – Phase 2 – consisted of major industrial premises and terraced housing. Phase 2 has been forwarded to EP to develop detailed solutions – i.e. A0 (KI605) issued to EP in December '16 for delivery of Phase 2 work. Final output costs will only be known after detailed design has been completed. – Desktop assessment of Phase 2 has the potential area removal identified as circa 1,077,150m^2.

KEY MILESTONES	Target	Status
1. PC15 Plan has been developed		Complete
2. Phase 2 schemes identified to EP for detailed design and delivery	Dec '16	Complete
3. Delivery scheduled by EP	Mar '18	On target
4. Provide input to PC21 asset management plan	Sep-Dec 2019	On target

Storm water separation

During PC15 NI Water has planned to remove 19 hectares of impermeable area develop by implementing a variety of projects which also inform the business of the cost effectiveness of storm water separation in a range of situations and catchments. For example:

- where separate systems have been merged when they join the old combined network
- industrial areas and roofs
- areas of terraced housing
- areas of semi-detached housing
- roads.

NI Water's primary aim is to identify the priority locations across Northern Ireland where the retrofitting of storm water separation / SuDS technologies would remove significant volumes of storm water from the combined sewer system. To facilitate this NI Water has employed an innovative tool: SUDS Studio^{TM},

The SUDS Studio^{TM} tool works by using GIS data to identify sources of runoff (for example roof, roads, carparks, hardstandings, etc.), sinks (locations where SuDS solutions can be installed or nearby watercourses), and pathways which connect the two. The tool has been designed to incorporate a range of complex relationships that are used to determine what

SuDS are considered feasible on any given site, and those that are not. SuDS Studio™ assesses the best solution for each source and site, and outputs its results as GIS layers containing tables that can quickly and easily be summarised in reports and easy to understand figures.

The basis of the Suds Studio™ analysis in Northern Ireland is the OSNI Vector mapping dataset. However, NI Water wishes to emphasise that SuDS Studio™ has been developed based on OS Master Map data that is significantly more detailed and functional than OSNI Vector mapping. A significant amount of pre-processing of the data has therefore been required to supplement the OSNI Vector maps in an attempt to replicate the quality of information contained in OS Master Map. It is our understanding that there is a current project within OSNI to develop a polygon based mapping dataset that is similar to OS Master Map which when finished will enhance the output derived from SuDS Studio in Northern Ireland in the future.

However, based on the current situation significant pre-processing is required due to the GIS data available in Northern Ireland (plus time to acquire and purchase additional data sets) and has extended the time taken to conduct the SUDS Studio™ analyses. This in turn has resulted in the slower identification of storm water / SuDs opportunities in Northern Ireland with which to develop NI Water's Storm Water Separation Programme of work.

Since its launch at the start of PC15, a fundamental goal of NI Water's Storm Water Separation Programme has been to develop a robust approach for identifying priority locations across Northern Ireland. This is essential for the successful retrofitting of SuDS technologies / storm water separation infrastructure for the removal of significant volumes of storm water from the combined sewer system. Time taken in developing the system is considered well spent by NI Water and will drive a successful programme going forwards.

During 2015 and 2016, NI Water's consultant has adapted SUDS Studio™ into a bespoke tool for identifying large surface areas in public ownership across Northern Ireland with potential for storm water separation / SuDS Technologies. This resulted in the identification of a large number of schools as potential pilot project sites with high estimated project costs and unfortunately didn't yield the range of situations and catchments desired by NI Water. The four schools short-listed for separation and the recommended solutions summarised from the consultant report are presented below:

- Campbell College: SuDS Studio recommends bioretention, swales and the disconnection of downpipes. Recommendations are likely to be delivered entirely within the existing Campbell College boundary. Further work required to investigate ground conditions, quantification of flows within SuDS features, quantification of benefits to the sewer system (including DG5 impacts), design development to determine footprint and landtake, costings.
- St Louise's: SuDS Studio™ recommends bioretention and potential green roofs / disconnection of downpipes. Recommendations are likely to be delivered entirely within the existing St Louise's boundary. Further work would require investigation into ground conditions, quantification of flows within SuDS features, quantification of benefits to the sewer system (including DG5 impacts), design development to determine footprint and landtake, costings. It is also to be noted about this site that it is adjacent to an extensive area of wetland (Bog Meadows) managed by the Ulster Wildlife Trust.

- Ballycastle, SuDS Studio™ recommends bioretention, potential green roofs / disconnection, of downpipes and swales. Recommendations are likely to be delivered entirely within the existing Ballycastle High School boundary. Further work is required to investigate ground conditions, quantification of flows within SuDS features, quantification of benefits to the sewer system (including DG5 impacts), design development to determine footprint and landtake, costings. Other considerations include the existing infrastructure in place on this site in that much of the system is already separately drained with only the ultimate connection point combined. As this is already a piped system consideration should be given to continuing the piped network within Moyle Road to a suitable discharge point such as an existing storm sewer or RA culvert. Consideration will need to be given to the impact of this flow on the discharge location. Buildability constraints should be considered when determining any extension to the outfall pipeline route corridor
- Dromore, SuDS Studio™ does not recommend any feasible option in this instance due to limitations with the input data. In this instance therefore, engineering judgement has recommended that Disconnection of Downpipes be considered. Recommendations are likely to be delivered entirely within the existing Dromore Central Primary School boundary. Further work is required to investigate ground conditions, quantification of flows within SuDS features, quantification of benefits to the sewer system (including DG5 impacts), design development to determine footprint and landtake, costings.

It is important to note that NI Water has already encountered significant stakeholder issues, notably with the Education Board, regarding the safety of SuDs (often used to enable storm water separation) which are yet to be resolved. This issue has been ongoing since the start of 2016 and is related to a specific scheme currently being delivered by NI Water at Clandeboye School, Green Road, Conlig. NI Water is working closely with the Water and Drainage Policy Division of DfI regarding engagement with the Education Board and their legal representatives.

Subsequently NI Water initiated Phase 2 of planning NI Water's Storm Water Separation Programme with the SUDS Studio™ tool. The tool was further modified and the initial SUDS Studio™ run identified a broader range of potential storm water separation opportunities to address the bias, which resulted in the identification of a large number of schools in Phase 1:

- 32 high density housing sites
- 61 Industrial estates and
- 28 potential quick win sites

Through the short listing process this was refined down to:

- 14 high density housing sites,
- 14 industrial estates and
- 6 potential quick win sites.

These sites were then packaged into geographically similar study areas and progressed for ground truthing connectivity checks.

Following on from the ground truthing exercise the sites which were assessed as suitable for further consideration were modelled with Infoworks to quantify the benefit that might be

achieved from storm water separation / SuDS retrofit. This has allowed us to model and assess the following sites (Table 1) which are now being considered as pilot studies from Phase 2. In total, the ***maximum potential*** area that could be removed as a result of the Phase 2 assessment is 1,077,210 m^2.

The Phase 2 opportunities mainly originate in High Density Housing areas and only one Industrial estate. Industrial estates have proven to be, on the whole, already separate systems. It should be noted that it is unlikely that the 100% separation figure modelled (total area = 1,077,210 m^2) could be achieved in reality. Therefore, these figures should be considered as an initial over estimate, which will reduce during the feasibility and implementation phases.

Furthermore, stakeholder issues will be key in determining the viability, likelihood of success and speed at which solutions can be realised. There are a number of other industrial estates and quick win sites that are also suitable for further consideration (having been ground truthed) and these will be brought forward to NI Water in a Report. The sites and potential impermeable area removal (m^2) have been presented in Table 1. It should be noted that consents are yet to be negotiated with a key stakeholder, Rivers Agency, where storm water is being separated and directed into a river or culvert.

Table 1: Phase 2 Sites identified with potential for storm water separation and SUDS solutions, including the associated potential maximum area removal values (m^2).

Location	Potential Area Removal m^2	Potential Percentage Removal Options	
		Storm Water Separation	SuDS Solutions
Alliance Avenue / Brompton Park Area, Belfast	121,000	100%	56%
Lincoln Court, Derry	76,200	100%	60%
Carnhill Area, Derry	95,290	100%	55%
Norglen Parade, Belfast	110,160	100%	64%
Springfield Rd / Cavendish Road Area, Belfast	124,660	100%	49%
St James Road, Belfast	50,860	100%	45%
Tates Avenue / Donegal Rd / Dunluce Avenue Area, Belfast	461,980	100%	52%
Maydown Industrial Estate, Derry	37,060	100%	39%

Significant delays in Phase 2 have been experienced in relation to the ground truthing connectivity checks being undertaken by a CCTV contractor. In addition, there were initial issues surrounding access to Stormont Estate, however, these were subsequently resolved with the assistance of Water and Drainage Policy Division DfI.

As part of Phase 1 Asset Management also engaged within the NI Water Capital Works Programme requesting that stormwater separation should be considered as part of the options analysis regarding drainage solutions i.e. a business as usual process. This has yielded four projects in 2015/16 and the impermeable area removal has been presented in Table 2.

Table 2 NI Water Capital Works Programme: storm water separation projects delivered in 2016/17 and impermeable area removal (m2) values.

Sub Programme	Scheme	Impermeable Area Removal m^2
24	PC15 Sewer Rehabilitation Unplanned	39
24	Olympia Leisure Centre Windsor Park Belfast	34,500
24	8-20 Sloans Street, Dungannon	16,460
24	Ben Crom Place Kilkeel	3,865
	Total Impermeable Area Removed, m^2	54,864

NI Water is endeavouring to move the Storm Water Separation Programme forward and feasibility studies for the sites identified in Phase 2 have now commenced. Once completed NI Water will be in a position to provide a more detailed programme of work which will be complemented by other NI Water Capital Works schemes containing storm water separation that arise during PC15.

DEVELOPMENT OUPUT
15. Strategic drainage study
Final Determination: *The company shall report progress on its strategic drainage study programme to complete a business case for investment to resolve strategic drainage issues by March 2020.*
Additional Details:
This work is undertaken as Business As Usual
PROJECT SUMMARY
• The PC15 prioritised programme of Drainage Area Studies has been agreed between NI Water and NIEA. (See attached Excel Spreadsheet). A copy was provided to the UR in January 2017. DAP Model Programme for PC15. • Newry DAS awarded to consultant. • Belfast DAS awarded to consultant.

KEY MILESTONES	Target	Status
1. DAS Prioritisation Programme Agreed with NIEA	Nov '16	Complete
2. Modelling and "Needs & Options" work to be used to inform PC21 asset management plan.	Sep-Dec 2019	On target

Activity completed to date and its outcome

Strategic Drainage Area Studies are under way with agreement of NIEA on the catchments to be taken forward. At present, NI Water has fourteen MBV and N&Os underway to meet the required outputs. Expenditure to date is in the region of £650k. NI Water is also involved in the Living With Water Programme (LWWP). The LWWP requires the completion of an integrated catchment, hydrodynamic water quality model for Belfast Lough and it seems that this will also require the upgrade / development of several MBVs to provide nodal inputs concerning sewer overflows. The estimate for the overall Belfast DAP is £550k.

NI Water has developed a joint prioritisation list of drainage area studies with NIEA. A data-driven approach has been employed to facilitate the integration of both network and wastewater treatment work needs to enable the whole catchments to be addressed.

Planned next steps for delivery

The next step involves completing innovative Risk Based Needs and Options studies for the agreed catchments to enable a programme of work to be taken into the next PC Period i.e. PC21. This is essential as the programme identifies NI Water projects required to address Quality drivers and Base Maintenance issues. Note that under the risk-based approach NI Water is developing solutions to address New Development in catchments with hydraulic capacity issues/risks.

DEVELOPMENT OUPUT
16. Sewer flooding report
Final Determination: *The company shall provide an annual report on property flooding alleviation and mitigation providing an update on the DG5 flooding register, progress on feasibility studies to identify solutions and progress in delivery of investment and delivery of outputs.*
Additional Details:
This is Business As Usual through the DG5 panel
PROJECT SUMMARY
• Properties added / removed from DG5 registers reported annually through the AIR submission. • Target of 14 removals for 2015/16 & 2016/17 achieved. • Update on progress on feasibility studies to identify solutions. EP have currently 5 feasibility projects ongoing; – KI 529 - One remaining property feasibility assessment outstanding – Lisnevenagh Rd. – KI 531 - Two No feasibility reports outstanding: Cathedral View, Downpatrick & Tullagh Rd, Cookstown. – KI 564 - Feasibility is ongoing, estimated submission date to NIW, August 2017. – KI 515 - One remaining property feasibility assessment outstanding - The Beeches, Portadown. – KI 509 - One remaining property feasibility assessment outstanding - Brough Road, Magherafelt. • DG5 properties resulting from the live feasibility projects have been progressed for delivery within the PC15 DG5 delivery programme. • Target for 17/18 projected for 6 removals.

KEY MILESTONES	Target	Status
1. DG5 Removals 2015/16 & 2016/17.	14	On Target

Activity completed to date and its outcome

The company supports the implementation of the Home Owner Flood Protection Scheme being delivered by NI Executive through the Rivers Agency. NI Water contributes to the Home Owner Flood Protection Scheme process by assessing whether homeowners are on NI Water's DG5 Register and whether there is a capital scheme that will alleviate the flooding over the next 5 years. NI Water retains a register of these enquiries and they are discussed at monthly DG5 Panel meetings. The DG5 Register is updated monthly with additions and removals as approved by the DG5 Panel. DG5 Register movements are recorded and provided in the Annual Information Return by NI Water. The AIR17 summary of register movements is provided in the attached document for the period 1st April 2016 to 31st March 2017.

2016 -17 DG 5 Quarterly Summary R

The solutions to address DG5 Internal Flooding properties are being developed and delivered and the investment is commensurate with the PC15 funding provided.

Planned next steps for delivery

The next step involves amassing a programme of fully appraised, detailed solutions thereby enabling NI Water to implement the removal of properties from the DG5 register as set out in the PC15 Business Plan. This will facilitate the meeting of the PC15 regulatory requirements for DG5 internal flooding property removals. Furthermore, this

approach will enable NI Water to develop the detailed DG5 programme, populated with accurate costings and numbers of properties to be addressed in the PC21 Business Plan.

DEVELOPMENT OUPUT		
17. Sustainable Urban Drainage Systems (SUDS)		
Final Determination: *The company shall record information on SUDS applications and report annually on:* *- The number of applications received; and* *- The number of schemes adopted.* *The company shall maintain a register of its decisions on SUDs applications, highlighting the reasons any application was refused.*		
PROJECT SUMMARY		
NI Water does not receive stand-alone SuDS applications. However, NI Water receives applications for future adoption of development sewers, some of which may have an integral SuDS system. • The reporting mechanism records the number of applications received and authorised for future adoption of development sewers where SuDS is an integral part of the application. • The number of development sewers adopted with a SuDS element. • Development sewers with SuDS are not refused, rather encouraged, so this value will invariably be 'nil'.		
KEY MILESTONES	Target	Status
1. Report on SUDs applications in AIR	Annually	BAU

Activity completed to date and its outcome

NI Water does not have SUDS approval forms; instead, Art.161 application forms 'Application for Agreement to Connect Sewers in a New Development' are used. For AIR17 returns, NI Water have recorded the number of Art. 161's approved which incorporate SUDS. Sewer adoption forms have been updated to capture the number of adopted SUDS systems.

Data for 2016/17

17 Housing sites adopted, incorporating SUDS utilising hyrobrake/vortex flow control.
86 Housing sites approved, incorporating SUDS utilising hyrobrake/vortex flow control.

DEVELOPMENT OUPUT

18. Implementation of the PPC requirements for Odour Management

Final Determination:
The company shall develop a plan for the implementation of PPC requirements for Odour Management by 31 March 2015, which shall be prioritised and agreed with NIEA. The company shall report progress against the delivery of this plan.

GOVERNANCE

Directorate	SRO	Project Lead	Approving Authority
Asset Delivery	Paul Harper	Angela Halpenny	EC

Additional Details:

N/A

PROJECT SUMMARY

NI Water holds 29 Pollution Prevention Control (PPC) permits for WwTW sludge centres for thickening or dewatering wastewater sludges. The permits require odour modelling to be undertaken to assess the impact from the facility on the surrounding sensitive receptors. Recognising the financial impact and resources required to undertake the necessary modelling, a prioritised list was initially agreed with NIEA in June 2015.

NIEA ranked the 29 PPC sites into the following categories:
- Priority 1 (4 sites),
- Priority 2 (8 sites),
- Priority 3 (12 sites) and
- odour modelling not required (5 sites).

The modelling is divided into 2 phases.

The first phase is a library data based, screening exercise. If this exercise identifies an impact on surrounding sensitive receptors, the site will progress to the second phase, which involves collection of site-specific olfactometry data.

Whilst NIEA asked for odour modelling of Priority 1 sites to be completed in 2015/16, delays were incurred due to the time of year for undertaking the site based odour survey during the summer months, when emissions are likely to be at their highest (May/June to September). The odour modelling is now complete for all Priority 1 sites.

KEY MILESTONES	Target	Status
1. Develop a plan for the implementation of PPC requirements for Odour Management	31 Mar 15	Complete
2. Completion of 2nd Phase odour models for priority 1 sites: Carrickfergus, New Holland, Dungannon and Whitehouse.	31 Dec 16	Complete
3. 2nd Phase odour model for the upgraded Newcastle WwTW	31 Mar 17	Complete
4. 1st Phase modelling based on library data for Priority 2 and 3 sites	31 Mar 18	On Target
5. Develop list of sites requiring 2nd Phase modelling	31 Mar 18	On Target
6. Undertake 2nd Phase modelling for sites identified in No. 4 above, selecting the priority 2 sites first, followed by the priority 3 sites	31 Mar 19	On Target
7. Using 2nd phase modelling develop and deliver a programme of work required to meet PPC odour requirements	31 Mar 21	On Target