Water & Sewerage Services
Price Control 2015-21

Draft Determination – Annex F

Outputs

July 2014



Contents page

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1.0 Introduction

1.1.1 Chapter 3 of the draft determination provides a summary of the outputs and outcomes for PC15 and further information on:

- PC15 consumer engagement;
- The definition of outputs;
- Maintaining serviceability;
- Overall Performance Assessment;
- The development of new consumer measures and satisfaction survey; and
- The development of plans to develop capability in key areas of importance to consumers.

1.1.2 This annex provides more detailed information on the outputs which are included in Tables 3.2 and 3.4 of the main document.

2.0 Consumer Outputs

2.1.1 We currently monitor performance against a basket of consumer contact measures which cover: the speed of response to billing contacts, consumer complaints, and telephone calls; whether metered bills are based on readings; and overall call handling satisfaction. This will continue into PC15 as an interim measure.

2.1.2 NI Water performance for the majority of these measures is already high and comparable to the most recently reported average performance achieved by companies in England and Wales. The proposed targets for PC15 are based on the company maintaining this relatively high level of comparative performance throughout the price control period.

Table 2.1 – Consumer response measure outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
DG6 % billing contacts dealt with within 5 working days	99.90	99.90	99.90	99.90	99.90	99.90
DG7 % written complaints dealt with within 10 working days	99.50	99.50	99.50	99.50	99.50	99.50
DG8 % metered customers received bill based on a meter reading	99.00	99.00	99.00	99.00	99.00	99.00
Call handling satisfaction score (1-5)	4.65	4.65	4.70	4.70	4.75	4.75
DG9 % calls not abandoned	99.00	99.00	99.00	99.00	99.00	99.00
DG9 % calls not receiving the engaged tone	99.90	99.90	99.90	99.90	99.90	99.90

2.1.3 Whilst these measures have provided useful indicators of improvements and comparative performance in the past, their usefulness has diminished as performance levels approach 100%.

2.1.4 As part of the collaborative working arrangements developed to support the consumer engagement research to inform PC15, a new Consumer Measures (CM) / Consumer Satisfaction Survey (CSAT) working group otherwise referred to as CM/SAT was formed. This working group, reports to the Consumer Engagement Oversight Group (CEOG) and is chaired by the Utility Regulator. Work is already underway to develop new consumer measures and a new satisfaction survey. An indicative timetable for this work is included in Section 3.0 of the draft determination Main Report.

3.0 Water Service Outputs

3.1. Overview

3.1.1 In this section we provide more detailed information on water service measures included in Table 3.2 of the main report covering:

- Properties at risk of low pressure (DG2);
- Properties experiencing interruptions to supply (DG3);
- Leakage;
- Security of supply;
- Power usage;
- Drinking water quality compliance;
- Water quality at service reservoirs; and
- Nominated outputs and activities.

3.2. Properties at risk of low pressure (DG2)

3.2.1 Since the start of the SBP period, NI Water has developed and validated a register of properties which are at risk of low pressure. At the end of the PC13 period it is estimated that this register will contain around 1,132 properties.

3.2.2 NI Water plans to remove a further 836 properties from the register by company action during PC15. The profile of delivery is show on Table 3.1.

3.2.3 The company has adjusted the outputs from its assessment to reflect past success in delivering against targeted reductions. We consider this to be appropriate so that targets remain realistic. The delivery profile also accounts for the time needed to validate that adequate pressure has been restored so that targets align with reported performance.

3.2.4 The planned reductions would leave 296 properties on the register at the end of the PC15 period and bring the percentage of properties that are at risk of low pressure broadly in line with historic average performance in England Wales.

Table 3.1 – DG2 Outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
DG2 Properties at risk of low pressure removed from the risk register by company action	92	108	157	159	160	160
DG2 Properties receiving pressure below the reference level at end of year	1,040	932	775	616	456	296

3.2.5 Work to improve supply pressure is delivered as part of NI Water's planned programme of mains rehabilitation which prioritises work on the basis of a range of issues – including burst frequency and water quality. In recognition of the competing priorities and the ongoing impact that low pressure has on consumers affected, we asked NI Water to quantify the investment required to provide water at target pressure to all properties.

3.2.6 The company has completed this work and reported the outcome of its assessment as part of its PC15 submission. This is a positive development which will help inform stakeholder consideration of appropriate levels of investment in this area.

3.3. Properties experiencing interruptions to supply (DG3)

3.3.1 Company performance on interruptions to supply is monitored using two measures:

- The percentage of connected properties that experience interruptions lasting greater than 12hrs; and
- A composite score calculated from the percentage of properties that experience interruptions lasting greater than 6hrs, 12hrs and 24hrs. Twice the weighting is applied to interruptions lasting greater than 24hrs in this score, in recognition of the impact that long duration interruptions have on consumers.

3.3.2 In previous determinations we noted that the link between DG3 improvements and investment was weak and stated that we expected the company to improve its understanding of interruptions to supply in order to develop more robust plans for improvement. We advised that we expected NI Water to consider the interaction between length of main per property, burst rates and interruptions to supply when undertaking this work and developing its proposals

3.3.3 The company's response to the PC13 draft determination stated that its revised approach to identifying and prioritising water mains would allow it to establish clear linkages between investment and beneficial outputs for the PC15 Business Plan. Despite these assurances NI Water has still not addressed this issue with respect to its interruptions to supply submission for PC15.

3.3.4 Whilst an improved methodology for prioritising water infrastructure investment has been implemented, DG3 requirements have not yet been incorporated into this process and this could take another 6-9 months. The company has also recently commenced service failure analysis for all unplanned and unwarned interruptions lasting more than 6 hours. This should lead to a greater understanding of the root cause of incidents and the necessary mitigations that need to be put in place. However the company is at the early stages of this process and does not currently have sufficient information available to inform its submission for PC15.

3.3.5 NI Water has undertaken a separate assessment of investment and outputs for PC15 due to its inability to establish clear links between the two. Its output proposals are therefore based on assumptions relating to the extension or variation of historic targets. As such, it is unclear how the company determined whether they are achievable and based on the information available we are unable to assess whether they are appropriate.

3.3.6 The company's planned outputs assume: that the target number of interruptions >24hrs remains unchanged; the target number of interruptions >12hrs reduces by 50 properties per annum (in line with PC10 and PC13 assumptions); and, that the annual reduction in the number of interruptions >6hrs is approximately 50% of that assumed for PC13.

Table 3.2 – DG3 Outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
DG3 Supply interruptions > 12hrs (unplanned and unwarned)	0.18	0.17	0.17	0.16	0.15	0.15
DG3 Supply interruptions (overall performance score)	1.07	1.05	1.03	1.00	0.98	0.96

3.3.7 The company should continue to develop its prioritisation approach and root cause analysis to inform future submissions and we will take any additional information that becomes available into account prior coming to our final determination.

3.3.8 If a more robust assessment is not available for the final determination, we will ask the company to submit a plan for the delivery of improvements to allow it to set out challenging and realistic targets in the future. We would expect this to identify the key actions necessary to deliver this outcome, the improvements that would be delivered at each stage of the process and a detailed timeline for delivery. Arrangements for monitoring NI Water's progress in delivering its proposals would be established as part of this process.

3.4. Leakage

3.4.1 During PC10 and PC13 the company has made significant improvements to the quality of information and methodology used to estimate leakage. Improvements include the adoption of industry best practice, the move from industry default to

company specific data and the adoption of best practice software. This has improved the confidence in the Leakage estimates produced by NI Water.

3.4.2 The company has also completed two assessments of its economic level of leakage during this period. This is the level at which further leakage reduction activity starts to become uneconomic. The most recent assessment, which was completed in 2013, identified an economic level of leakage of 159Mld. This figure been used to inform the leakage reduction targets set for PC15.

3.4.3 The company's economic level of leakage assessment and business plan submission has been reviewed by an independent expert on our behalf. This review has concluded that the methodologies used are now broadly in line with industry best practice, that the PC15 business case is robust and that costs represent good central estimates. We have accepted the company's proposal to reduce leakage by 12Mld during PC15 on this basis.

3.4.4 A uniform reduction of 2Mld per year during the 6 year price control period has been applied.

Table 3.3 – Leakage output for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Total leakage	163	161	159	157	155	153

3.4.5 The outturn figure of 153 Ml is 2Mld lower than that submitted in NI Water's business plan. This accounts for some anticipated outperformance in PC13 as agreed with the company.

3.4.6 The decision to go beyond the economic level of leakage aligns with consumer views expressed through the consumer engagement process and the interventions for addressing emerging supply deficits identified in the company's water resource management plan.

3.4.7 We are aware that annual performance can be influenced by external factors such as severe weather. These tend to be short lived and recoverable but have the potential to result in the company exceeding its target in any one year. We therefore believe that an allowable performance range should be set for leakage in addition to annual targets to account for potential variations. We will discuss this issue further with the company with a view to determining and including an appropriate performance range based on the targets detailed above in the final determination.

3.4.8 The company plans to undertake another economic level of leakage assessment within the next 2-3 years. We will review, and if necessary, adjust PC15 targets on the basis of the outcome of this updated assessment at the midterm review.

3.5. Security of supply

3.5.1 Security of supply is assessed using an index based on the number of properties in each of the company's Water Resource Zones (WRZs) that are considered to be in supply deficit.

3.5.2 The company's score has improved significantly since the SBP period and it now reports a maximum score of 100. In addition to capital investment, the improved assessment and modified WRZs used in the company's updated 2012 Water Resource Management Plan (WRMP) contributed to this improvement.

3.5.3 The assessment of security of supply is based on a 'dry-year annual average' condition only. The company is not able to assess security of supply under short term critical conditions such as a freeze thaw. Since these conditions can be more onerous, current performance may not be as good as the target and reported performance implies.

3.5.4 The company's next WRMP will be completed in 2017. This has the potential to impact on the security of supply assessment as the calculation is based on the number and size of the zones adopted in the planning process. The company should ensure it will be able to report security of supply against critical conditions once it has completed the next WRMP.

3.5.5 We will review the PC15 targets following the publication of the company's updated WRMP and if necessary revise them to take account of any updated information contained within it. We will also review our regulatory approach to assessing security of supply and consider any alternative approaches proposed by the company as part of this process.

3.6. Power usage

3.6.1 The annual targets for the percentage of power usage derived from renewable sources, has been profiled to meet the NI Assembly programme for government target of 40% by 2020. The company's profile for power usage accounts for planned initiatives to mitigate against increases resulting from capital investment.

Table 3.4 – Power usage outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Percentage of NI Water's power usage derived from renewable sources	20.0	25.0	30.0	35.0	40.0	40.0
Power usage	292	293	294	295	295	296

3.7. Drinking water quality compliance

Overview

3.7.1 The Department for Regional Development's draft Social & Environmental Guidance for PC15 identified the need to sustain the current high levels of drinking water quality achieved through sustained investment in water treatment and mains rehabilitation. The following compliance thresholds were identified in the guidance:

- Overall compliance >99.7%.
- OPI(TIM) > 99.1%.

3.7.2 **Overall compliance** is a key measure published in the Drinking Water Inspectorate's (DWI) annual Drinking Water Quality Report. It combines the results of statutory samples taken at water treatment works, service reservoirs and at tap into a composite measure of compliance.

3.7.3 In the past a more complex measure of 'mean zonal compliance' (MZC) was also published by the DWI and used as a regulatory target. While more complex, this was based on water quality samples at tap providing a more direct measure of the service experienced by the consumer.

3.7.4 **OPI(TIM)** is an overall performance indicator which combines compliance data for turbidity, iron and manganese as measured at consumers taps. It is used as an indicator of the deterioration of water quality in the distribution system which is due mainly to corrosion products from iron pipes.

3.7.5 The investment which NI Water proposes in its business plan is targeted at maintaining the quality of water by taking action to counter deterioration of its water mains and water treatment works. Some improvements necessary to secure compliance will be delivered in PC13 but the impact these will have on overall compliance is small.

3.7.6 The outputs submitted in NI Water's business plan simply reflect the minimum requirements published in the departments draft Social & Environmental Guidance for PC15 (i.e. overall compliance >99.7% and OPI(TIM) > 99.1%).

3.7.7 In setting targets for PC15, we have considered both recent historical performance and the natural variability in reported data which is created by the statutory regime of random sampling used to assess water quality at tap. The results of our analysis and our conclusions in relation to how performance should be monitored in PC15 are described below.

Overall water quality compliance

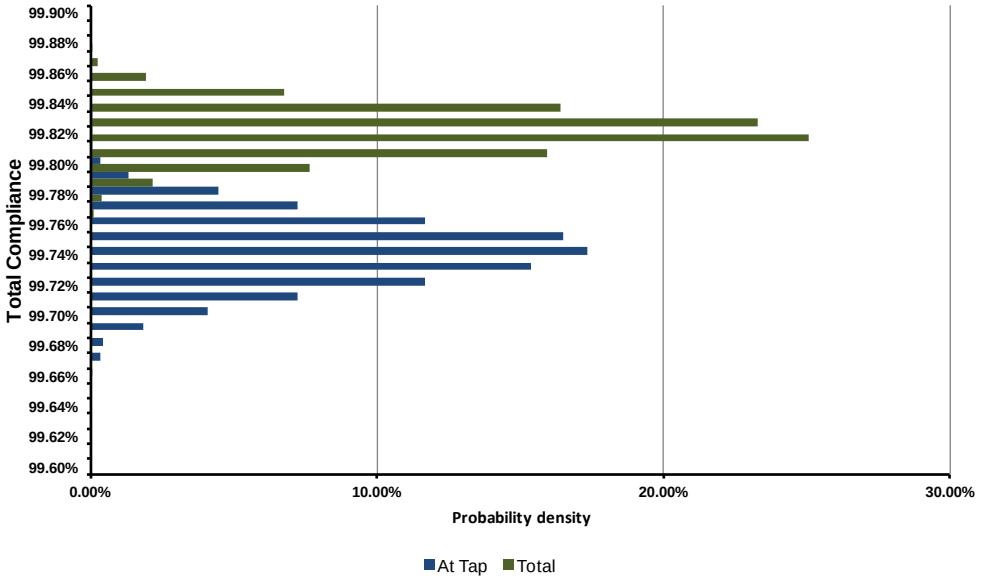
3.7.8 Overall drinking water quality compliance is a composite measure comprising of 52 parameters: 2 bacteriological and 2 chemical parameters measured at water treatment works; 2 bacteriological parameters measured at service reservoirs; and, 46 parameters measured at consumer taps.

3.7.9 We analysed data both for overall water quality compliance and water quality compliance measured solely at the consumer tap. The outcome of our assessment is shown in Figure 3.1. This analysis emphasises two points:

- There is natural background variability to reported compliance. This is caused by the random sampling regime used to assess statutory water quality compliance as well as performance issues caused by both variability in raw water quality and process failures at water treatment works. As a result compliance will vary within a range; and

- Percentage overall compliance is higher than percentage compliance measured at the consumer tap. This is a consequence of the higher percentage compliance rates at water treatment works and service reservoirs which are included in the overall measure.

Figure 3.1 - Comparison of overall compliance and compliance measure at tap



3.7.10 Overall compliance should always be greater than 99.7% during PC15, as required by the Social and Environmental Guidance. Based on our analysis we would expect the company to operate in a range which is well in excess of this target (i.e. 99.79% to 99.87%). If compliance fell below this range we would expect the company to report to us on the reasons this has happened and the action it plans to take to restore compliance to expected levels.

3.7.11 We believe that PC15 should also include a target for total water quality compliance at tap which reflects the direct service experienced by consumers. Our assessment of compliance at consumers tap indicates that we would expect the company to operate in the range 99.69% to 99.82% during PC15 and that an average value of around 99.74% might be expected. If compliance fell below this range we would expect the company to report to us on the reasons this has happened and the action it plans to take to restore compliance to expected levels.

Iron compliance at tap

3.7.12 OPI(TIM) is also subject to the variability created by the statutory regime of random sampling used to assess water quality at tap.

3.7.13 Following discussions with stakeholders it has been agreed that iron compliance would provide a simpler and equally appropriate measure of deterioration of water quality in the distribution system.

3.7.14 Therefore we have replaced OPI(TIM) with a compliance measure based on iron for PC15. We have assessed the likely variation of measured performance in

PC15 and concluded that the company would be expected to operate in the range 97.10% and 98.90% compliance. If total compliance fell below 97.10% we would expect the company to report to us on the reasons this has happened and the action it plans to take to restore compliance to expected levels.

3.7.15 The water quality targets for PC15 reflect the minimum of the likely operating range based on a lower 2.5 %-ile.

Table 3.5 – Water quality compliance outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
% overall compliance with drinking water regulations	99.79	99.79	99.79	99.79	99.79	99.79
% compliance at consumers tap	99.69	99.69	99.69	99.69	99.69	99.69
% iron compliance at consumers tap	97.10	97.10	97.10	97.10	97.10	97.10

3.8. Water quality at service reservoirs

3.8.1 The quality of water at service reservoirs is assessed using a measure based on the percentage of reservoirs sampled which have coliforms in more than 5% of samples.

3.8.2 NI Water has been fully compliant with this measure throughout PC10 and PC13. PC15 targets have been set on the basis of the company maintaining full compliance throughout PC15.

Table 3.6 – Service reservoir water quality outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
% Service Reservoirs with coliforms in >5% samples	0.00	0.00	0.00	0.00	0.00	0.00

3.8.3 NI Water has recently introduced a new methodology for prioritising service reservoir rehabilitation based on operational information, including water quality data. This feeds a prioritised programme of condition assessments which determine the specific investment to be delivered at each site through a rolling programme of work. The company has advised that its assessments will be continually updated and reprioritised on the basis of emerging information and that any work required as a result of water quality issues will automatically be promoted within the programme.

3.8.4 NI Water's proposed programme for replacing substandard water quality sample taps at service reservoirs at the start of PC15 should also minimise the risk of non-compliance as a result of 'unrepresentative' samples. Addressing the issue of 'unrepresentative' samples is a priority requirement for DWI and we will discuss the need to include an output associated with this investment with DWI and the company prior to publishing our final determination.

3.9. Nominated outputs and activities

3.9.1 In its business plan the company identified specific activities for investment. These are summarised below along with our views of the company's submission.

Water mains activity

3.9.2 The PC15 targets for water mains activity reflects the company's intention to deliver 816km of new and renewed water mains through its water mains rehabilitation programme during PC15.

Table 3.7 – Water mains activity outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Water mains activity - Length of new, renewed or relined mains	114.94	128.98	114.22	152.61	132.40	173.19

3.9.3 Figures for 2015-16 include for 27km of mains delivered as a result of carry over expenditure from PC13. These have been estimated on the basis of average unit rates for the period.

3.9.4 Proposed activity levels for the remainder of the PC15 programme have been estimated through the company's Water Infrastructure Investment Model assessments. The development and implementation of the water infrastructure investment methodology is a positive development which should allow the company to prioritise expenditure more effectively and help maximise benefits for consumers.

3.9.5 The company has not included any length associated with the investment proposed for delivering improvements to interruptions to supply. The company is to address this issue for the final determination and include any length identified in the activity target for PC15.

3.9.6 The company has indicated that it will broadly maintain its PC13 split of 60:40, between work planned for rural areas and work planned for urban / city / arterial environments. We will monitor this split in during delivery of PC15 to confirm that the balance of outputs funded has been maintained.

3.9.7 The company's assessment of the overall level of activity for PC15 is still based on an assumed funding allocation and it has further work to do to enable it to assess whether this level of activity is appropriate for maintaining serviceability. We expect the company to address this issue as part of the development and implementation of its approach to asset management planning.

Trunk main schemes

3.9.8 The constrained programme for PC15 includes two nominated trunk mains outputs:

Table 3.8 – Trunk main nominated outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Completion of nominated trunk main schemes	1	0	0	1	0	0

Carland to Cookstown trunk main

3.9.9 This proposed trunk main provides an additional supply into the Cookstown area fed from Castor Bay WTW. The trunk main partially addresses a supply deficit in the Central Water Resource Zone under dry year annual average conditions. It will provide resilience in an area which was badly affected in the 2010-11 freeze thaw event.

3.9.10 The trunk main places an additional demand on Castor Bay WTW during peak conditions and will be a key support to the Cookstown area in the event of a future freeze thaw. Before the final determination, the company should provide us with an assessment of the demand on Castor Bay WTW to ensure that the trunk main can be supplied in freeze thaw conditions.

Carmoney to Strabane strategic link watermain

3.9.11 Supplies to the area around Omagh have been critical for a number of years. The supply is isolated and relies on small WTW's with unreliable supplies. The largest of these is the Derg WTW. In the past this water treatment works drew water solely from the River Derg which is vulnerable under dry conditions. In PC13 a new abstraction from the River Strule was completed accessing a more reliable source in drought conditions. However, this is also limited by a 'hands-off' flow which means that it cannot be relied on in more extreme conditions.

3.9.12 The company proposes constructing a strategic link main from Carmoney WTW to Strabane as a supplemental supply to mitigate against loss of supply from the Derg and the Strule in extreme conditions. It is also promoted as a means of securing resilience through a freeze thaw event.

3.9.13 We have concerns that the proposed trunk main is not a robust drought measure. It is fed by water abstracted from the River Faughan which, like the rivers Strule and Derg, flows from mountains subject to Atlantic weather patterns. There is a clear risk that low flows will occur in the River Faughan at the same time as low flows in the rivers Strule and Derg. If this is the case, it might not be possible to use the trunk main in times of drought as intended. The company has recently provided us with river flow information from 1982 which indicates that the only time the Strule/Derg abstraction would have been restricted was in 1995 and, during that time, it might not have been possible to increase the abstraction from the Faughan.

3.9.14 For the draft determination, we have included investment in this trunk main in the plan. However, for the final determination, we would expect the company to:

a. Demonstrate how the trunk main will be operated during a drought and the impact this would have on the abstraction from the River Faughan;

b. Demonstrate how the trunk main would operate in normal operating conditions; and

c. Have received written confirmation from NIEA that it would not place further conditions on the River Faughan abstraction which would prevent it being used to feed the proposed Carmoney to Strabane trunk main in times of drought.

Water treatment works schemes

3.9.15 Nine nominated outputs were included in NI Water's constrained PC15 submission.

- WTW effluent quality;
- Caugh Hill washwater and sludge disposal;
- Caugh Hill treatability;
- Glenhordial sludge press;
- Glenhordial treatability;
- Carmoney DAF optimisation and treatability;
- Dorisland treatability;
- Killyhevlin treatability; and
- Derg upgrade of filters and dosing.

3.9.16 None of the nominated outputs proposed for PC15 have been identified as requirements by the Drinking Water Inspectorate or are defined as having a water quality driver by NI Water.

3.9.17 The WTW Effluent Quality project is for the completion of an ongoing programme of minor upgrades at a number of treatment works to ensure that flow measurement of sludge treatment plant effluent meets NIEA requirements. This represents a very small amount of investment and as it does not deliver a significant quality upgrade at a specific works we do not intend to include as a nominated output for PC15.

3.9.18 The upgrade to the washwater and sludge facilities at Caugh Hill, the upgrade of the sludge press to Glenhordial and the upgrade of the filters and treatment at the Derg WTW are proposed to address capacity issues and specific process requirements. Expenditure on these schemes is entirely base maintenance and

we therefore do not intend to include them as nominated outputs. Instead we expect the company to consider the need and priority of this work when balancing its base maintenance requirements within its overall base maintenance budget allocation. In doing so we would expect the company to consider the queries raised in advance of the draft determination and to consider other least cost options when determining final solutions Any money released as a consequence of this process should be made available to other elements of the base maintenance programme.

3.9.19 The justification provided for the treatability upgrade at Caugh Hill WTW was primarily historic trihalomethane (THM) compliance issues at the works. NI Water recently completed process improvements at this site in response to a Drinking Water Inspectorate enforcement order related to this issue and water quality appears to have subsequently improved. We have discussed the need for this scheme with NI Water and other stakeholders in this context and it has been agreed that monitoring of performance over a longer period is required to establish whether additional investment is needed. The scheme has therefore not been included as a nominated output in the draft determination. If performance monitoring confirms that there are ongoing issues at the site, we would expect NI Water to agree the need for additional investment with DWI and to subsequently propose inclusion of the scheme through the established Change Control process.

3.9.20 The optimisation and treatability upgrade at Carmoney has been proposed to address performance deficiencies in the DAF system during periods of high solids loading. NI Water completed a significant upgrade at this works in PC10 and the water quality appears to have subsequently improved. The company's risk assessment for the site has improved as a result of the upgrade and it acknowledges that process optimisation could potentially resolve these issues. We have discussed the need for this scheme with NI Water and other stakeholders in this context and it has been agreed that optimisation and monitoring of performance over a longer period is required to establish whether additional investment is needed. The expenditure identified for this scheme is entirely base maintenance and so we would not intend including this as a nominated output for PC15. If performance monitoring subsequently confirms that there are ongoing issues at this site, we would expect the company to consider the need and priority of this work within its overall base maintenance budget allocation.

3.9.21 The proposals for treatability upgrades at Glenhordial, Dorisland and Killyhevlin are primarily addressing based maintenance issues but also include for quality expenditure in the order of 40%. These schemes are currently at early stages of development and NI Water need to complete additional work to determine the exact requirements. We expect it to do so for the final determination. The outline proposals however appear to include process improvements that are focused on specific issues at the sites and to be reflective of best practice. These schemes have been included as nominated outputs in the PC15 draft determination on this basis.

Table 3.9 – Water treatment works nominated outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Completion of nominated water treatment works schemes	1	0	0	0	0	2

Service reservoirs and clear water tanks.

3.9.22 NI Water included proposals to increase the capacity of three clear water tanks in its constrained submission for PC15

- **Drumaroad CWT**. The company proposes constructing a tank of over 35Ml. This is to increase storage for the gravity supply to Belfast from Drumaroad WTW from less than 1hr to around 6hrs. The company has identified the primary need as the provision of strategic capacity to minimise the risk of supply interruptions associated with short term planned maintenance or breakdown of the WTW and periods of above average demand;

- **Killyhevlin CWT**. The company proposes constructing an 11.4Ml tank to replace two tanks with a capacity of around 1Ml. This will increase the storage from less than an hour to around 6.5hrs at periods of peak demand. The company has identified the primary need as the provision of additional capacity to minimise the risk of supply interruption associated with the complex operational control regime required at the site and the potential downtime associated with a unique treatment process; and

- **Lough Fea CWT**. The company proposes constructing a 12.4Ml tank to replace two existing clear water tanks with a combined capacity of around 1.55Ml. This would increase capacity from around 3.5hrs to 24hrs for average daily demand. The company has identified the primary need as the provision of strategic capacity to minimise the risk of supply interruptions associated with planned maintenance or breakdown of the WTW and periods of above average demand.

3.9.23 NI Water has confirmed that there is no water quality driver for these schemes.

3.9.24 We did not feel that the initial submission explained the need for these schemes clearly enough and asked for additional clarification to be provided through the PC15 query process.

3.9.25 The company has submitted a substantial amount of additional information to support its original business case and we had not time to review this fully for the draft determination. We have included the schemes in the list of nominated outputs for the draft determination but will review their inclusion in the final determination based on our assessment of the supplementary information provided by the company.

Table 3.10 – Service reservoir and clear water tank nominated outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Completion of nominated improvements to increase the capacity of service reservoirs and clear water tanks	0	0	1	0	1	1

Other general investment

3.9.26 In addition to the nominated outputs, funding in the PC15 determination will allow NI Water to:

- Complete inspection and maintenance work at impounding reservoirs associated with the Reservoirs Bill and the Panel Engineers assessment;
- Carry out remedial work to Camlough impounding reservoir dam;
- Complete a water resource management plan and drought plan in a combined water resource and resilience plan;
- Complete the final stage of a programme of work to ensure that flow measurement of sludge treatment plant effluent at WTWs meets NIEA requirements;
- Complete security hardening work required at water treatment works, service reservoirs and clear water tanks to comply with guidance issued under the Preservation of Services and Civil Emergency Direction 2010. We expect the department and NI Water to agree the extent of the programme of work and the priority in which it is to be undertaken;
- Continued rehabilitation of NI Water service reservoirs through a prioritised rolling programme of work;
- Invest in project development, design and procurement to secure continuity of investment into PC21; and
- Continue to make new connections to the water supply system. This includes service connections and requisitions as well as laying new water mains within new developments.

4.0 Sewerage Service Outputs

4.1. Sewer flooding

4.1.1 The need to reduce the risk of sewer flooding is consistently identified by consumers as a high priority. The outcome of the consumer engagement undertaken for PC15 showed that consumers are most willing to contribute to improvements which have a direct impact on their daily lives such as flooding.

4.1.2 We asked NI Water to develop a register of properties which are at risk of internal flooding. The company's ongoing assessment of these properties indicated that that there were 194 properties which are at risk of flooding more frequently than 1 in 20 years due to limited hydraulic capacity in the sewerage system at the end of March 2014. It estimates that this figure will fall to 124 properties by the end of PC13.

4.1.3 For PC15, the company has proposed to address risk of flooding at 62 properties which are confirmed as at risk of flooding more frequently than once in 20 years.

Table 4.1 – DG5 outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
DG5 Properties at risk of flooding - number removed from the 2 in 10, 1 in 10 and 1 in 20 risk register by company action	1	0	25	12	12	12
DG5 Properties on the 2 in 10, 1 in 10 and 1 in 20 risk register at the end of the year	155	161	142	136	130	124

4.1.4 Only fourteen of the properties the company will remove from the at risk register have been developed to the point that detailed solution were identified in the business plan. Thirteen of these will be delivered by a major drainage scheme in Belfast. The company is completing feasibility studies for known problems and should use the outcome of these studies to provide an update on investment before the final determination.

4.1.5 Most of the 124 properties remaining on the register at the end of PC15 are associated with strategic drainage solutions. They are unlikely to be addressed until these major schemes are scoped and funded. The company should identify the steps it can take to mitigate the risk of property flooding where the long term solution is linked to a major investment programme and may be delayed until that programme can be funded.

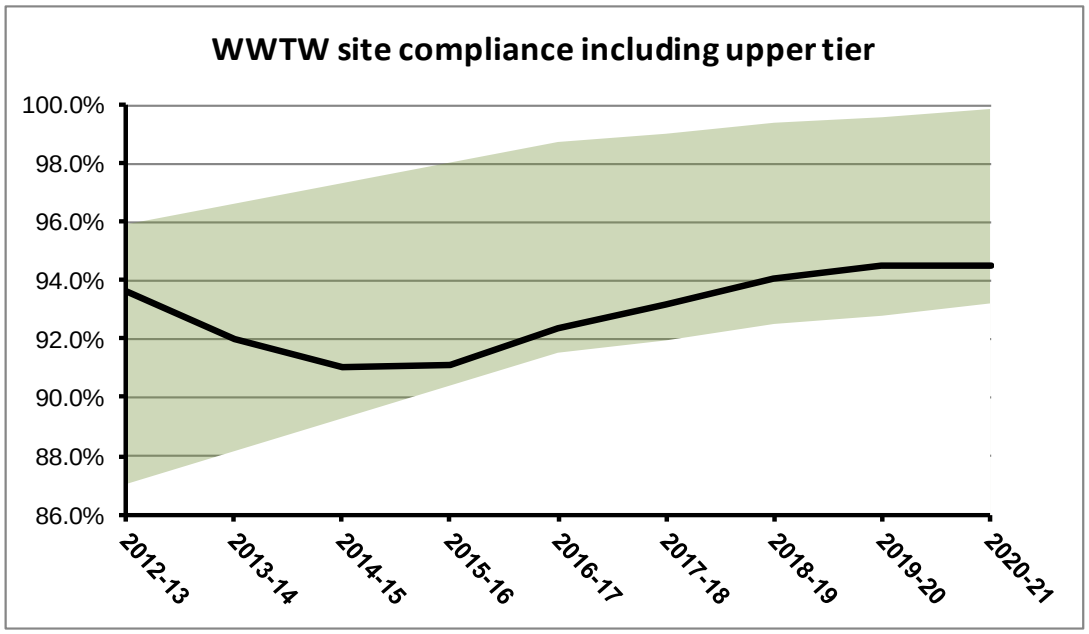
4.2. Wastewater treatment works compliance

4.2.1 PC15 wastewater treatment works compliance performance will be monitored using the following measures

- % of WwTWs discharges compliant with numeric consents
- % of total p.e. served by WwTWs compliant with numeric consents
- Small WwTW compliance (works greater than or equal to 20p.e. but less than 250p.e.)

4.2.2 Wastewater treatment works performance can be affected by a range of factors including weather conditions. In the case of NI Water which operates works that need to be upgraded, this can cause variations in compliance from year to year. We have assessed the historic performance of NI Water's treatment works and used this to estimate the likely range of compliance now and in the future. The range is shown in Figure 4.1 along with NI Water's recent performance and projected performance targets.

Figure 4.1 – % of WwTWs discharges compliant with numeric consents Operating range



4.2.3 NI Water has proposed a target at the lower end of our projected operating range. We consider this a reasonable assessment of the operating risk but we would expect the company to operate at or above this target level.

4.2.4 We have concluded that the target proposed by the company for the percentage of population equivalent compliant with numeric consents is reasonable.

4.2.5 We have concluded that the target proposed for small WwTW compliance (works greater than or equal to 20p.e. but less than 250p.e.) reflects the current level of assessed compliance and the proposed investment.

Table 4.2 – Wastewater treatment works compliance outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
% of WwTWs discharges compliant with numeric consents	91.1	92.4	93.2	94.1	94.5	94.5
% of total p.e. served by WwTWs compliant with numeric consents	98.08	98.26	98.30	99.12	99.16	99.16
Small WwTW compliance (works greater than or equal to 20p.e. but less than 250p.e.)	83.71	86.97	89.58	91.86	94.46	96.74

4.3. Pollution Incidents

4.3.1 The level of high and medium pollution incidents attributed to NI Water is higher than the level of pollution incidents attributed to water and sewerage companies in England and Wales. The company has noted a low level of investment in the sewerage system in Northern Ireland compared to investment in England & Wales over the last 20 years as a significant cause of its relatively low level of performance.

4.3.2 The company has targeted a small annual reduction in high and medium pollution incidents of one per annum over PC15. This target is based on an extension of historic trends. The 'starting point' for the reductions has been based on the average performance over the period from 2010 to 2013.

4.3.3 The company has also commented on the impact which rainfall has on pollution incidents. For example, the number of medium and high pollution incidents in 2012 was significantly lower than in previous years and the company attributes this to lower levels of rainfall. As a result the company out-performed its target for 2012 by a significant margin.

4.3.4 The company has outlined a series of initiatives it has put in place to reduce the frequency and severity of pollution incidents as part of its Pollution Reduction Strategy. It also points to work on education and awareness which is being co-ordinated through its Pollution Reduction Working Group and which it hopes will lead to fewer blockages. However, the company has not been able to quantify the impact that these will have. Nor has it quantified the impact which the investment it has made, or proposes to make, will have on pollution incidents. It is not clear how the gap in performance with England and Wales will be closed and what level of investment will be required to achieve this.

4.3.5 We believe that a more challenging target should be set for High & Medium pollution incidents in PC15. The company has delivered sustained improvements in PC13 building on improvements delivered to date. The company has delivered an average reduction of 6 per annum from 2007-08 to 2013-14.

4.3.6 One approach would be to continue this trend forward with a target of eliminating High & Medium pollution incidents by the end of PC15. But we feel that this may be unrealistic. Instead we have set a target starting on the historic trend at 2013-14 and improving by 2 per annum.

Figure 4.2 - Pollution incident performance and target

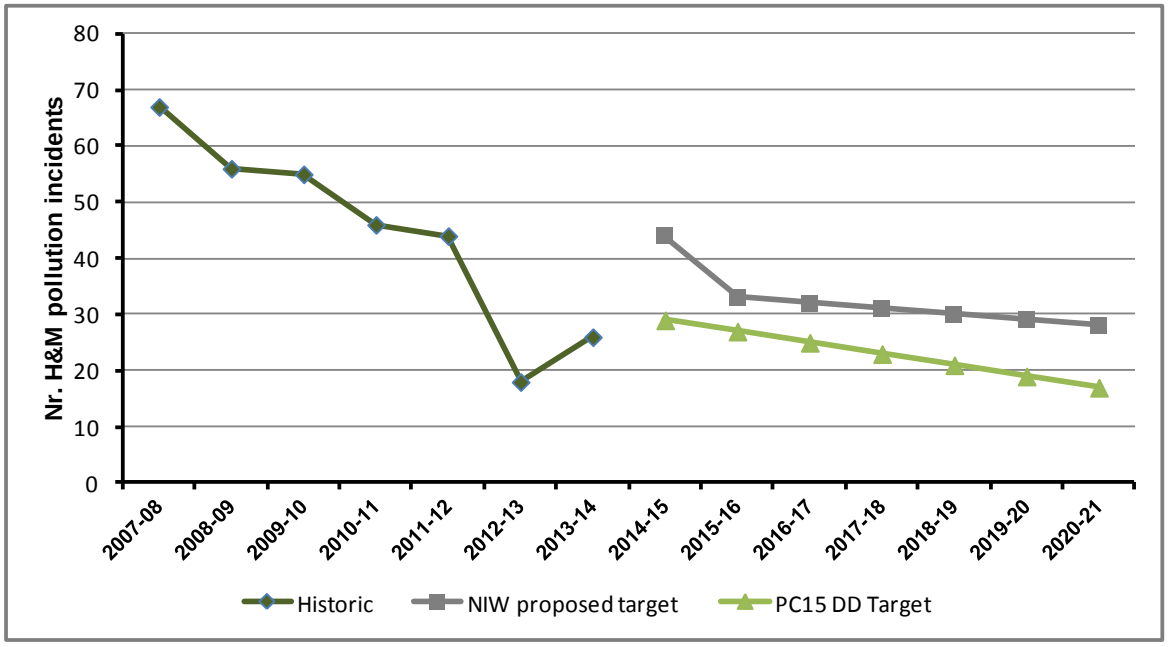


Table 4.3 – High and medium pollution incident outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Number of high and medium pollution incidents attributable to NI Water	27	25	23	21	19	17

4.3.7 The company highlights the development of a draft flow policy by NIEA and the proposed introduction of flow compliance during PC15 as a cause for concern. It indicates that application of the flow policy in conjunction with performance issues at NI Water's MBR treatment works has the potential to increase the number of pollution incidents recorded. If these risks materialise, we will consider the impact on the pollution incident target.

4.4. Nominated outputs and activities

4.4.1 Nominated outputs and activities have been identified for:

- The length of sewer replaced or relined;
- Improvements to unsatisfactory intermittent discharges;
- Improvements to wastewater treatment works; and

- Improvements to small wastewater treatment works.

4.4.2 These nominated improvements deliver specific quality improvements required by NIEA and form an integral part of the outputs to be delivered. They also contribute to the improvement in overall wastewater compliance targets described in Section 4.2.

Sewers replaced or relined

4.4.3 The draft determination allows for the renovation and renewal of 74km of sewers over the six year period of PC15. In addition the company plans to deliver some 64km of new sewers in PC15. Much of this related to adoption of sewers in new developments. The output target relates to the renovation and replacement of sewers in an urban environment.

Table 4.4 – Sewerage activity outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Sewerage activity - Length of sewers replaced or renovated	11.5	11.6	10.6	13.5	13.6	13.7

4.4.4 The rate at which sewers are renewed or replaced is remarkably low when compared to the 15,000 km of existing sewers. While this rate may reflect the age profile of the existing sewerage stock and the long life of sewerage assets, it is not supported by a robust assessment of need. We expect the company to move from the current top-down approach to investment planning to a risk based bottom up approach for identifying appropriate levels of activity. This requires the company to develop a better understanding of asset performance and deterioration and establish clearer links between investment and outputs.

Nominated improvement to unsatisfactory intermittent discharges

4.4.5 The draft determination allows for improvement to 54 unsatisfactory intermittent discharges (UIDs) to meet standards set by NIEA.

Table 4.5 – Unsatisfactory intermittent discharge outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Delivery of improvements to nominated UIDs as part of a defined programme of work	25	16	5	8	0	0

4.4.6 We have confirmed that the number of nominated outputs aligns with the list of UID outputs that has been developed and agreed between NI Water and NIEA. This list includes additional information to clarify the scope of individual schemes.

Nominated improvements to wastewater treatment works

4.4.7 The draft determination allows for improvement to 19 wastewater treatment works with a population equivalent greater than 250 to meet discharge consent standards set by NIEA.

Table 4.6 – Wastewater treatment works outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Delivery of improvements to nominated WwTWs as part of a defined programme of work	3	5	3	0	4	4

4.4.8 We have confirmed that the number of wastewater treatment works outputs aligns with the prioritised list that has been agreed between NI Water and NIEA.

Small wastewater treatment works upgrades

4.4.9 The draft determination allows the company to upgrade 45 wastewater treatment small wastewater treatment works serving a population equivalent between 20 and 250. The individual works are to be prioritised by agreement between NIEA and NI Water under the rural wastewater investment programme. The estimated number of upgrades is based on an annual budget allocation of £2m and the historic average cost for upgrading an individual works.

Table 4.7 – Small wastewater treatment works outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Small wastewater treatment works delivered as part of the rural wastewater investment programme	7	8	7	8	7	8

5.0 Serviceability

5.1.1 We use serviceability to assess whether the capability of the company's assets to provide a service is being maintained. 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.

5.1.2 We have undertaken a detailed assessment of the company's performance with respect to serviceability. This is presented in Annex G which includes additional information on the concept of serviceability and our approach to monitoring it.

5.1.3 Our assessment concludes that performance in each sub-service area is currently stable which aligns with the company's assessment. It also details our assessment of performance for individual indicator and explains how we have derived the individual performance ranges that we will use during PC15 to assess whether the company is maintaining serviceability.

5.1.4 Stable serviceability is being targeted in each sub-service area throughout PC15, as detailed below. This is in line with the requirements of the department's Social and Environmental Guidance.

Table 5.1 – Serviceability assessment outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Water infrastructure serviceability	Stable	Stable	Stable	Stable	Stable	Stable
Water non-infrastructure serviceability	Stable	Stable	Stable	Stable	Stable	Stable
Sewerage infrastructure serviceability	Stable	Stable	Stable	Stable	Stable	Stable
Sewerage non-infrastructure serviceability	Stable	Stable	Stable	Stable	Stable	Stable

6.0 New Output Measures Proposed by NI Water

6.1.1 Our PC15 reporting requirements encouraged NI Water to propose additional service measures which better reflect the qualities of service which consumers value and which are relevant to their needs.

6.1.2 Following a gap analysis of the draft social and environmental guidance NI Water has proposed the following additional measures and targets.

Table 6.1 – Additional output measures proposed by NI Water for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Number of Catchment Management Plans	6	7	7	6	7	7
Number of lead communication pipes replaced	2,815	2,815	2,815	2,815	2,815	2,815
Number of school visits	176	176	176	176	176	176
Number of events	57	57	57	57	57	57
Number of CSO and EO discharges at which event and duration monitoring equipment is installed/fully optimised, and meet NIEA requirments	57	58	58	58	58	58
Impermeable surface water collection area removed from the combined sewerage network (such as roads and pavements, roofs and hardstandings)	30,000	30,000	30,000	30,000	30,000	40,000
Number of 'sustainable solution' WWTW serving a PE > 250 delivered as part of the defined programme of work for improvements to nominated WWTWs	0	1	1	0	0	0
Number of 'sustainable solution' WWTW serving a PE < 250	0	0	0	1	1	1

Number of catchment management plans

6.1.3 The catchment management plan targets submitted reflect NI Water's intention to sequentially develop sustainable catchment area management plans (SCAMPs) for each of its 'live' water catchments, followed by the catchment plans for its 'out-of service' catchments, during the PC15 period.

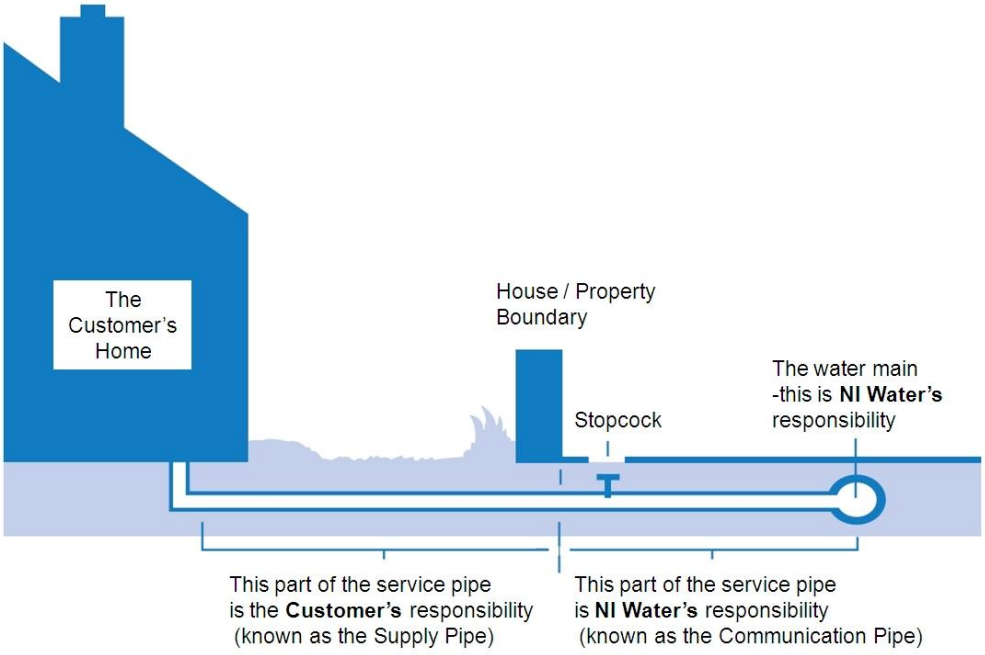
Lead communication pipe replacement

6.1.4 The quantity of lead in water leaving water treatment works is almost zero. However it can dissolve from lead pipes and fittings in the distribution system

and domestic plumbing, causing water quality to deteriorate. Historically the most common use of lead was in smaller pipes used in domestic plumbing and the 'service pipe' which connects a property to the water main. Recent regulation and practice means that lead is no longer used in either the water industry or in domestic plumbing, but there remains a legacy issue affecting older distribution systems and older properties.

6.1.5 NI Water is responsible for the pipe from the water main to the boundary of the property (the communication pipe). The property owner is responsible for the length of pipe from the property boundary to the property (the supply pipe) and any internal plumbing.

Figure 6.1 - Service pipe responsibility



6.1.6 Work undertaken by NI Water to replace lead pipes within the distribution system may only have a limited impact on lead compliance. This is because ortho-phosphoric acid dosing already minimises failures from the lead pipes that are being removed. In addition, failures may continue after the company has replaced its pipework because of lead in the supply pipes and internal plumbing on consumer premises.

6.1.7 NI Water has historically taken the following action to reduce the number of water quality failures due to lead.

- Dosing ortho-phosphoric acid to drinking water supplies to reduce the rate at which lead dissolves into the water supply;
- Replacement of lead communication pipes on mains renovated by its water main rehabilitation programme; and
- Replacement of lead communication pipes where a water quality test revealed a lead failure, or at the specific request of a consumer.

6.1.8 In addition to the above activities the company commenced a proactive programme of lead communication pipe replacement in PC13. The company will continue to undertake all of these activities throughout PC15 and will double the budget for the proactive replacement programme from £500k per annum to £1m per annum.

6.1.9 Proactive replacement forms part of the overall lead reduction strategy that the company has developed in consultation with other stakeholders. The development of this strategy has been beneficial and should help the company target investment and maximise the improvements it can deliver. The company should continue to review and develop this strategy in consultation with other stakeholders, particularly DWI.

6.1.10 NI Water estimates that the number of pipes replaced through water main rehabilitation and as a result of sampling failures and consumer requests will continue at historic rates during PC15. The number of pipes that will be replaced by the proactive programme has been estimated from the annual budget allocation using the unit rate for work undertaken in PC13. The company's estimates are detailed in the table below.

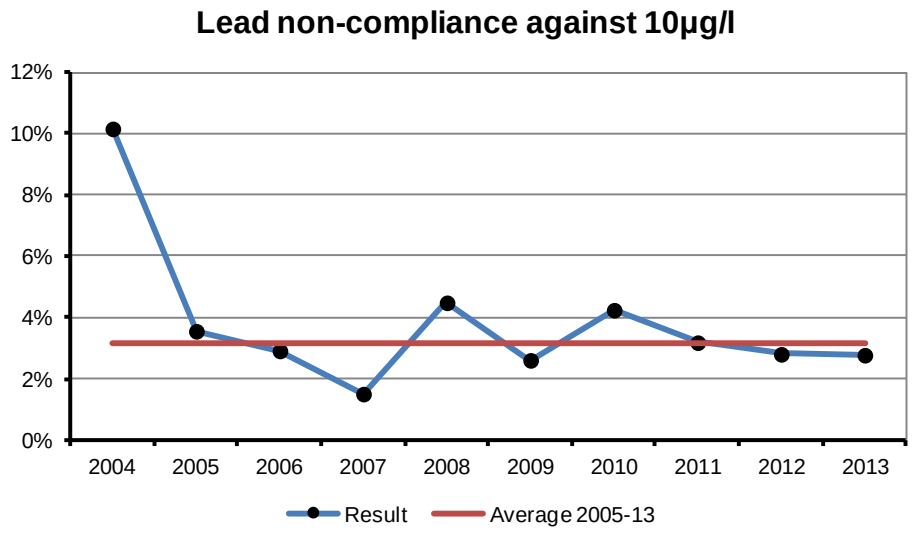
Table 6.2 –Lead communication pipe replacement estimates for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Number resulting from quality sampling and consumer requests	455	455	455	455	455	455
Number delivered by watermain rehabilitation	1,270	1,270	1,270	1,270	1,270	1,270
Number replaced through the proactive lead programme	1,844	1,844	1,844	1,844	1,844	1,844

6.1.11 The company has proposed a target for PC15 which is based on the number of pipes replaced by all of its lead replacement activities. We believe that it would be more appropriate to base targets on the proactive element only, as the numbers delivered by the other activities are more difficult to predict in the longer term due to their reactive nature. We have therefore set the company a target of replacing 1,844 lead communication pipes per annum during PC15 based on the numbers estimated for the proactive programme.

6.1.12 We will continue to monitor the number of lead pipes replaced by the company through the watermain rehabilitation programme and as a consequence of sampling or customer requests through the annual information return.

6.1.13 The regulatory standard for lead was reduced to the final European drinking water standard of 10µg/l in December 2013. The following graph shows historic performance against this standard and demonstrates that recent investment activity by NI Water has not delivered significant improvements in lead compliance at tap.



6.1.14 The need for broader action to address lead quality compliance is acknowledged within the wider stakeholder group. DRD is consulting through its Water Bill on a range of options for delivering compliance which are not solely focused on action by NI Water. We would encourage stakeholders and consumers to consider the options proposed by the department and to contribute to this debate by responding to its consultation.

6.1.15 We therefore intend to set the following PC15 targets based on the proactive lead replacement programme only.

Table 6.3 – Proactive lead replacement outputs for PC15

Output	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Number of lead communication pipes replaced through the proactive lead programme	1844	1844	1844	1844	1844	1844

6.1.16 The targets are based on NI Water estimates of the number of lead communication pipes that will be replaced by this programme. The company has used the unit rate from similar work undertaken in PC13 to estimate these numbers based on an overall annual budget allocation of £1m.

Number of school visits and events

6.1.17 NI Water has included targets for the number of school visits and the number of events attended as a measure of increased education activity.

6.1.18 There is a need for the company to set out its plan for education campaigns describing how these campaigns will be designed to change behaviour and monitored to assess awareness and effectiveness.

Number of CSO and EO discharges at which event and duration monitoring equipment is installed/fully optimised, and meet NIEA requirements

6.1.19 NI Water has proposed a measure of CSOs and EO discharges at which event and duration monitoring equipment is installed / fully optimised, and meets NIEA requirements. This reflects a list of priorities agreed with NIEA.

Impermeable surface water collection area removed from the combined sewerage network

6.1.20 The company has proposed a target for the area of impermeable surface removed from the combined sewerage network. We welcome this approach which has the potential to deliver sustainable improvement of the sewerage network. However, at this stage, we do not have sufficient information to judge whether the quantum of this target is reasonable. There is an opportunity for the company to provide supporting information in advance of the final determination.

6.1.21 The company should also set out its plan for developing storm water separation, showing how the funding included in the determination will be used to assess the potential for storm-water separation and to complete relevant demonstration projects to inform cost and effectiveness.

Number of 'sustainable solution' WWTW serving a PE > 250 delivered as part of the defined programme of work for improvements to nominated WWTWs

6.1.22 The company estimates that it can only deliver sustainable solutions at two works serving a p.e. > 250. This scale of sustainable development will only have a small impact on energy consumption.

6.1.23 In addition to delivering on this target, there is a need to accelerate the assessment of options to the extent that the company can secure land to allow further sustainable treatment to be delivered.

Number of 'sustainable solution' WWTW serving a PE < 250

6.1.24 The company estimates that it can only deliver sustainable solutions at three works serving a p.e. < 250. This scale of sustainable development will only have a small impact on energy consumption.

6.1.25 In addition to delivering on this target, there is a need to accelerate the assessment of options to the extent that the company can secure land to allow further sustainable treatment to be delivered.

7.0 PC15 Output Summary

7.1.1 The summary outputs for PC15 are set out in Table 7.1 (Consumer service and water quality outputs for PC15) and Table 7.2 (Sewerage service outputs for PC15). The output tables include projected performance for the final year of PC13 to show how the outputs planned for PC15 compare with the current period.

Table 7.1 – Customer service and water quality outputs for PC15

	Line description	Units	PC13	PC15					
A	**Consumer Service**		**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
1	DG2 Properties at risk of low pressure removed from the risk register by company action	nr	170	92	108	157	159	160	160
2	DG2 Properties receiving pressure below the reference level at end of year	nr	1,132	1,040	932	775	616	456	296
3	DG3 Supply interruptions > 12hrs (unplanned and unwarned)	%	0.19	0.18	0.17	0.17	0.16	0.15	0.15
4	DG3 Supply interruptions (overall performance score)	nr	1.08	1.07	1.05	1.03	1.00	0.98	0.96
5	DG6 % billing contacts dealt with within 5 working days	%	99.90	99.90	99.90	99.90	99.90	99.90	99.90
6	DG7 % written complaints dealt with within 10 working days	%	99.50	99.50	99.50	99.50	99.50	99.50	99.50
7	DG8 % metered customers received bill based on a meter reading	%	99.00	99.00	99.00	99.00	99.00	99.00	99.00
8	Call Handling Satisfaction score (1-5)	nr	4.75	4.65	4.65	4.70	4.70	4.75	4.75
9	DG9 % Calls not abandoned	%	99.00	99.00	99.00	99.00	99.00	99.00	99.00
10	DG9 % calls not receiving the engaged tone	%	99.90	99.90	99.90	99.90	99.90	99.90	99.90
11	Overall Performance Assessment (OPA) score (11 Measures)	nr	214	218	221	224	227	232	236
12	Total Leakage	Ml/d	165.00	163.00	161.00	159.00	157.00	155.00	153.00
13	Security of supply index	nr	100	100	100	100	100	100	100
14	Percentage of NI Water's power usage derived from renewable sources	%	20.0	20.0	25.0	30.0	35.0	40.0	40.0
B	**Quality Water**								
15a	% overall compliance with drinking water regulations	%		99.79	99.79	99.79	99.79	99.79	99.79
15b	% compliance at consumers tap	%		99.69	99.69	99.69	99.69	99.69	99.69
16	% iron compliance at consumers tap	%		97.10	97.10	97.10	97.10	97.10	97.10
17	% Service Reservoirs with coliforms in >5% samples	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C	**Water Outputs**								
18	Water mains activity - Length of new, renewed or relined mains	km	168.26	114.94	128.98	114.22	152.61	132.40	173.19
19	Completion of nominated trunk main schemes	nr	3	1	0	0	1	0	0
20	Completion of nominated water treatment works schemes	nr	3	1	0	0	0	0	2
21	Completion of nominated improvements to increase the capacity of service reservoirs and clear water tank	nr	1	0	0	1	0	1	1
D	**Serviceability**								
22	Water infrastructure serviceability	Text	Stable	Stable	Stable	Stable	Stable	Stable	Stable
23	Water non-infrastructure serviceability	Text	Stable	Stable	Stable	Stable	Stable	Stable	Stable
E	**New Output Measures**								
24	Number of Catchment Management Plans	nr		6	7	7	6	7	7
25	Number of lead communication pipes replaced	nr		1,844	1,844	1,844	1,844	1,844	1,844
26	New Customer Service Measures	tbc							
27	Number of school visits	nr		176	176	176	176	176	176
28	Number of events	nr		57	57	57	57	57	57

Table 7.2 – Sewerage service outputs for PC13

	Line description	Units	PC13	PC15					
A	**Consumer Service Sewerage**		**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
1	from the 2 in 10, 1 in 10 and 1 in 20 risk register by company action	nr	21	1	0	25	12	12	12
2	DG5 Properties on the 2 in 10, 1 in 10 and 1 in 20 risk register at the end of the year	nr	150	155	161	142	136	130	124
B	**Quality Sewerage**								
3	% of WwTWs discharges compliant with numeric consents	%	91.0	91.1	92.4	93.2	94.1	94.5	94.5
4	% of total p.e. served by WwTWs compliant with numeric consents	%	97.80	98.08	98.26	98.30	99.12	99.16	99.16
5	Small WwTW compliance (works greater than or equal to 20p.e. but less than 250p.e.)	%	79.15	83.71	86.97	89.58	91.86	94.46	96.74
6	Number of high and medium pollution incidents attributable to NI Water	nr	44	33	32	31	30	29	28
C	**Sewerage Outputs**								
7	Sewerage activity - Length of sewers replaced or renovated	km	14.00	11.51	11.64	10.61	13.50	13.55	13.65
8	Delivery of improvements to nominated UIDs as part of a defined programme of work	nr	63	25	16	5	8	0	0
9	Delivery of improvements to nominated WwTWs as part of a defined programme of work	nr	18	3	5	3	0	4	4
10	Small wastewater treatment works delivered as part of the rural wastewater investment programme	nr	16	7	8	7	8	7	8
D	**Serviceability**								
11	Sewerage infrastructure serviceability	Text	Stable	Stable	Stable	Stable	Stable	Stable	Stable
12	Sewerage non-infrastructure serviceability	Text	Stable	Stable	Stable	Stable	Stable	Stable	Stable
E	**New Output Measures**								
13	Number of CSO and EO discharges at which event and duration monitoring equipment is installed/fully optimised, and meet NIEA requirments	nr	0	57	58	58	58	58	58
14	Number of qualifying Wastewater Treatment Works delivered as part of the defined programme of improvements to comply with PPC Regulations	nr	0	0	0	0	To be defined by output from and assessment of PPC sites and NIEA		
15	Number of appraisals for which Storm Separation and Infiltration Reduction have been a key driver and have been completed and accepted by BIC or CIP. storm separation and infiltration reduction as part of the solution development	nr	0						
16	Impermeable surface water collection area removed from the combined sewerage network (such as roads and pavements, roofs and hardstandings)	m2	0	30000	30000	30000	30000	30000	40000
17	Number of 'sustainable solution' WWTW serving a PE > 250 delivered as part of the defined programme of work for improvements to nominated WWTWs	nr	0	0	1	1	0	0	0
18	Number of 'sustainable solution' WWTW serving a PE < 250	nr	0	0	0	0	1	1	1