

Water & Sewerage Services Price Control 2021-27

Draft Determination – Annex E Outputs September 2020





Contents page

1.	Introduction	4
2.	Consumer Outputs	5
	Current consumer measures	5
	New consumer measures for PC21	5
	Overall performance assessment	6
3.	Water Service Outputs	8
	Overview	8
	Properties at risk of low pressure (DG2)	8
	Properties experiencing interruptions to supply (DG3)	11
		15
	Security of supply	16
	Power usage	17
	Water quality compliance	18
	Overview	18
	PC21 Drinking water quality compliance measures	19
	Water quality at service reservoirs	21
	Nominated outputs and activities	21
	Water mains activity	21
	Trunk main schemes	22
	Water treatment works schemes	24
	Service reservoirs and clear water tanks	26
	Lead communication pipe replacement	28
	Number of school visits and other educational events	28
	Other general investment	28
4.	Sewerage Service Outputs	30
	Overview	30
	Sewer flooding	30
	Wastewater treatment works compliance	32
	Pollution Incidents	35
	Nominated outputs and activities	38
	Sewers replaced or renovated	38
	Nominated improvement to unsatisfactory intermittent discharges	39
	Nominated improvements to wastewater treatment works	40
	Small wastewater treatment works upgrades	41
	CSO and EO discharges at which event and duration monitoring equipments has been installed	ənt 41



	WwTWs upgraded to comply with PPC Regulations	42
	Impermeable surface water collection area removed from the combined sewerage network	43
	Number of sustainable WWTW solutions delivered (PE≥250)	43
	Number of sustainable WwTW solutions delivered (PE<250)	44
5.	Serviceability	45
6.	Development outputs	47
	Background	47
	PC21 Development outputs	48
7.	New output measures introduced for PC21	50
	New measures introduced by the UR	50
	Number of catchments where management plan recommendations have	
	been delivered	50
	Number of treatability studies completed	50
	New measures proposed by NI Water	51
	Number of Economic Constraint Areas Removed	51
	Number of Serious Development Restrictions Removed	52
8	PC21 Output Summary	53

اللج

A





1. Introduction

- 1.1 Chapter 3 of the draft determination main document provides a comprehensive explanation of our approach to the establishment, reporting and monitoring of outputs and outcomes for PC21.
- 1.2 It explains how we define outputs and how we have engaged with consumers, the company and other stakeholders to establish measures which are meaningful and drive improvements in performance
- 1.3 It also summarises the key outputs that will be used for assessing delivery in the PC21 period and the key benefits that these are expected to deliver.
- 1.4 This annex provides a detailed explanation of how we have established the annual targets that have been in PC21 for each of the outputs listed in the summary tables presented in Chapter 3 of the main document and in section 8.0 of this document below.



2. Consumer Outputs

Current consumer measures

- 2.1 We currently monitor performance against a basket of consumer contact measures which cover the speed of response to customer contacts (including billing enquiries, consumer complaints, and telephone calls) and whether metered bills are based on readings.
- 2.2 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 company's proposed targets for PC21 are based on it maintaining this relatively high level of performance throughout the price control period and have been accepted on this basis. These are detailed in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
DG6 % billing contacts dealt with within 5 working days	99.9	99.9	99.9	99.9	99.9	99.9
DG7 % written complaints dealt with within 10 working days	99.5	99.5	99.5	99.5	99.5	99.5
DG8 % metered customers received bill based on a meter reading	99.0	99.0	99.0	99.0	99.0	99.0
DG9 % calls not abandoned	99.0	99.0	99.0	99.0	99.0	99.0
DG9 % calls not receiving the engaged tone	99.9	99.9	99.9	99.9	99.9	99.9

Table 1: Consumer response measure outputs for PC21.

2.3 We plan to continue monitoring performance against these targets during PC21 to ensure the current high levels of performance are maintained. However whilst these measures have provided useful indicators of improvements and comparative performance in the past, their usefulness has diminished over time as performance levels have approached 100%.

New consumer measures for PC21

2.4 In recognition of the weaknesses in the PC15 consumer measures we have been working with the company and other stakeholders through the Consumer Measures / Consumer Satisfaction Survey working group (referred to as CM/SAT) to develop new measures which are more customer



Utility Regulator

- 2.5 A range of measures were considered and refined by CM/SAT and NI Water started collecting and reporting actionable data during PC15. The outcome of this collaborative approach is that the following new consumer measures have been introduced for PC21. These will become the real drivers for meaningful performance improvements moving forward.
 - Unwanted contacts.
 - First Point of Contact Resolved.
 - Net Promoter Score.
- 2.6 The PC21 performance targets proposed by the company for these measures have been informed by the data collected and the performance achieved following their implementation in PC15. These are presented in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Unwanted contacts	74,000	73,000	72,000	71,000	70,500	70,000
First Point of Contact Resolved (FPOCR) (%)	84	84	84	85	85	85
Net Promoter Score	32	33	34	34	35	35

Table 2: New consumer measures for PC21.

- 2.7 These target have been accepted in recognition of the work undertaken by NI Water to date, but we recognise that they are in the early stages of implementation. We may therefore review and refine these targets and/or set new consumer KPIs at the PC21 mid-term review.
- 2.8 Further details of the ongoing work of CM/SAT and plans in relation to the development of consumer measures are provided in Section 3.0 of the draft determination Main Report.

Overall performance assessment

- 2.9 In PC10 we introduced an Overall Performance Assessment metric as our primary measure of the service delivered by the company.
- 2.10 We have maintained the OPA as a time series that extends back to before the PC10 price control. The OPA time series provides comparison to England and Wales companies' average performance level from 2009/10 and tracks NI Water's efforts to catch up to this level.



2.11 The history of NI Water's OPA performance is shown in the graph below, from the original Strategic Business Plan (SBP) just after incorporation of NI Water, up to the reporting year 2019/20.

Utility Regulator



Figure 3.2 - NI Water OPA score from incorporation to present day

- 2.12 In PC21 we propose to retire the OPA and use two new metrics as our primary means of monitoring and reporting the performance of the company and the delivery of PC21:
 - The new consumer service measures described above.
 - The release of development constrains which is the primary driver for increased investment.
- 2.13 During PC21, we plan to continue monitoring the company's Overall Performance Assessment (OPA) for information purposes. This will ensure transparency and allow comparison as we move to new consumer measures. We do not propose to set OPA targets for PC21. Key service measures which underpin the OPA (such as water and wastewater quality compliance, pressure, interruption to supply and property flooding) will continue to be monitored and targets have been set for these aspects of consumer service.
- 2.14 However, we are aware that the OPA has been used as a means of communicating the performance of NI Water and was incorporated was use measure in the draft Programme for Government. Therefore we would welcome the views of consumers and stakeholders on our proposals to retire the OPA having continued to monitor performance through PC21.



3. Water Service Outputs

Overview

- 3.1 In this section we provide more detailed information on water service measures included in Table 3.1 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.

Properties at risk of low pressure (DG2)

- 3.2 Since the start of the SBP period, NI Water has developed and maintained a register of properties which are at risk of low pressure.
- 3.3 At the start of PC15 the number of properties on this register was 1,082. NI Water had planned to remove 836 properties during the PC15 period through company action. This should have left 296 properties on the register at the end of the period, allowing for an estimated number of 'additions'.
- 3.4 Although NI Water's PC21 business plan indicates that it will have delivered 853 removals by company action by the end of PC15, which exceeds the target, it also indicates that the number of properties on the register will be 649. This is much higher than originally anticipated because of an increase in the number of additions at the end of the period forecast by the company.
- 3.5 The company's business plan submission indicates it plans to remove 141 low pressure properties per annum during PC21. The total target of 846 compares well with the anticipated outturn for PC15 of 853 and we have accepted the company's targets for 'removals' on this basis.
- 3.6 However we remain concerned that the number of properties being reported as being removed by company action is not reflective of service improvements, as it includes significant numbers which have been added to

the register as a result of investigations rather than low pressure complaints. This issue was highlighted by the Reporter who noted that this makes realistic target setting complex and could potentially mask the fact that genuine customers that are suffering low pressure are staying on the register for a protracted period of time.

Utility Regulator

- 3.7 This is further illustrated by the fact that 134 (16%) of the removals planned for PC21 have carried over from PC15, despite the company indicating that its PC15 'removal' target has been met. This issue continues into PC21 where 565 (67%) of the removals relate to properties which are expected to be added to the register as a consequence of investigations and a planned refresh of the register. The Reporter has noted that in one year 141 of the 145 planned removals are the result of data improvement activities. This means that if PC15 carry over activity is excluded, the company is only addressing 148 existing low pressure properties through capital interventions in the PC21 period.
- 3.8 We will engage with the company between the draft and final determination to better understand the movement in register numbers and the real benefits being delivered and may adjust our targets to reflect the conclusion of this engagement in our final determination.
- 3.9 NI Water has assumed that net additions to the register due to better information will be around 94 properties per annum during PC21. It has balanced this against the projected number of removals to estimate the number of properties that will be on the low pressure register at the end of each year. The company's assessment predicts a PC21 outturn figure of 367 properties.
- 3.10 The number of annual additions used by the company for PC21 (i.e. 94) appears high when compared to the average figure of 50 per annum for the first 4 years of PC15. NI Water's PC21 figure is much higher because it has assumed that a significant increase in additions in 2018-19 will be sustained to some degree for the remainder of the PC15 period and throughout PC21. The company has advised that this increase is the result of additional properties being identified through pressure logging and analysis undertaken around properties that are already on the register.
- 3.11 Data for 2019-20 submitted in NI Water's annual information return, however shows that this higher level of additions in 2018-19 was not sustained, with numbers returning to previous levels. As a result the 2019-20 outturn figure for total registered properties was 91 lower than the company had predicted in its business plan.
- 3.12 We have used the number of properties reported at the end of 2019-20 as the basis for projecting our risk register target numbers for PC21. We have



also used a lower number of annual additions (i.e. 81) which we have based on the average for the last 4 years of PC21. We believe this is a reasonable approach as it takes into account the companies estimate for 2020-21 and the much higher number of additions in 2018-19.

3.13 The targets determined through our assessment result in a low pressure risk register total of 195 properties at the end of PC21 compared to the companies estimate of 367. The graph below compares our PC21 targets to the company's submission and historic targets and performance.



Figure 1: Properties on the DG2 risk register

3.14 The table below shows the annual low pressure targets set for PC21. The target for removals is based on the company's submission. Our risk register targets have been estimated using the approach described and presented above.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
DG2 Properties at risk of low pressure removed from the risk register by company action	147	145	143	139	137	135
DG2 Properties receiving pressure below the reference level at end of year	492	427	365	306	250	195

Table 3: DG2 outputs for PC21.

3.15 We note that the company has suggested that the number of removals should be treated a development output as it believes that the current risk register may not provide a true reflection of the number of properties



experiencing low pressure. The company has submitted a significant amount of money in its business plan to address low pressure issues and to improve the quality and confidence in its data. This includes delivery of targeted mains replacement and water pumping station installations as well as the development of the companies modelling capability and a full refresh of its low pressure register.

- 3.16 We expect the company to develop a structured plan for the completion of its investigations and the delivery of the planned data quality improvements so that an accurate baseline of low pressure properties can be established. This is necessary so that we can be confident that the information on the register and the activity being reported provides an accurate reflection of the service and improvements being delivered for consumers. The company should provide updates on this work as it progresses and we may adjust the PC21 targets based on its outcome.
- 3.17 We also expect the company to use the improved information gained through the modelling and investigations to consider what constitutes an appropriate level of service for consumers and how to best prioritise interventions to deliver the maximum benefit for consumers.

Properties experiencing interruptions to supply (DG3)

- 3.18 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 overall performance score (OPS) 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.
- 3.19 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.
- 3.20 We believe that this remains an issue with the PC21 submission where NI Water has again undertaken a separate assessment of investment and outputs due to its inability to establish clear links between the two.

3.21 However we recognise that the company has initiated a Smart Networks Interruptions to Supply Strategy for PC21 aimed at reducing customer supply interruptions. This project is designed to produce a 'step change' reduction in interruptions and help develop NI Water's data collection potential in order to facilitate the creation of a longer-term strategy. It focusses on deploying the assets required to develop the company's awareness of their network, resulting in them being able to respond to developing risks earlier, and crucially, before customers are interrupted. The focus of the investment is in identifying asset failures and mobilising a repair team as quickly as possible. NI Water intend to achieve this by implementing both proactive and reactive solutions such as, installing critical point and other monitoring devices where necessary, and by developing a well-equipped specialist response team.

Utility Regulator

- 3.22 We welcome this initiative but note that the company has not accounted for any benefits that might be delivered by this significant level of investment when setting its interruptions to supply targets for PC21. Whilst it is not unreasonable for customer to pay for trials, the company should not commit to larger scale investment unless it can clearly demonstrate the benefits being delivered and has the confidence to accept performance targets to match.
- 3.23 We have therefore accepted that the project should proceed, but as a development objective which needs to demonstrate the benefits delivered before the company takes up the full investment planned for the PC21 period. We will engage further with the company on this project and may adjust targets or funding for the final determination, or at the PC21 mid-term review, based on the outcome of company's work.
- 3.24 We also recognise that any changes in the company's approach to quantifying the number of properties affected could result in a stepped change in reported performance without an associated change in the service being delivered. So this will also need to be considered and taken into account.
- 3.25 There has been a general improving trend in interruptions to supply performance during PC15. The company's proposed targets for PC21 show a continued improvement, but the target rate is lower than proposed for PC15. The PC21 targets are based on the following underlying assumptions:
 - >6hrs an overall reduction of 300 properties (200 less than PC15)
 - >12hrs an overall reduction of 300 properties (the same as PC15)
 - >24hrs an overall reduction of 80 properties (the same as PC15)



Utility Regulator

3.27 For our assessment of the interruptions to supply overall performance score we considered outturn performance since 2013-14 as detailed in the graph below:



Figure 2: Historic DG3 overall performance score

We used the line of best fit and applied an adjustment to account for potential reduction in the delivery of benefit over time to develop a central estimate. We then established upper and lower control limits based on multiples of the standard deviation for the historic data points. The outcome of our assessment is detailed in the graph below.



Utility Regulator

Figure 3: DG3 overall performance score PC21 projection

- 3.28 This shows that the targets set by the company are above the upper boundary of expected performance based on levels of performance previously achieved.
- 3.29 We have set the PC21 targets for the DG3 overall performance score at this upper limit to account of the variability in performance for this measure. However we consider this to an absolute limit of performance rather than a central estimate and would expect performance in the period to remain within our operational performance range (excluding atypical events). If the company exceeds this target in any year we would expect it to report to us on the reasons why and the action being taking to ensure this does not happen again.
- 3.30 The Reporter also raised similar concerns in relation to the company's proposed targets, noting that the information submitted by the company appeared to show that there was a comfortable gap between outturns and targets in PC15. The Reporter highlighted that ambitious but achievable targets can help drive innovation and notable service improvements for customers. We believe that our approach to target setting aligns with the Reporter's findings.
- 3.31 The PC21 targets for interruptions to supply greater than 12hrs and for the overall performance score are summarised in the table below. This table also includes the central estimate and lower bounds of our operational performance range.



Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
DG3 Supply interruptions > 12hrs (unplanned and unwarned)	0.133	0.126	0.120	0.113	0.107	0.101
DG3 Supply interruptions OPS – Target (based on upper bound)	0.86	0.84	0.82	0.79	0.77	0.75
DG3 OPS range – Central estimate	0.57	0.55	0.53	0.51	0.48	0.46
DG3 OPS range – Lower bound	0.38	0.36	0.34	0.31	0.29	0.27

Table 4: DG3 outputs for PC21.

- 3.32 The Reporter highlighted the need for the company to include analysis of service against expenditure with links made to root cause analysis and to use root cause analysis to establish if atypical events are inside management control or not. We agree that this is required and trust that this will form part of the company's proposed ITS strategy.
- 3.33 The Reporter also noted that NI Water would like to discuss the potential for introducing "minutes per property" (in lieu of DG3 targets) at the PC21 mid-term review, for better alignment with practice in England & Wales. We look forward to engaging with NI Water on this issue once it has developed its proposals.

Leakage

- 3.34 The company has found the achievement of its leakage targets challenging in PC15. The annual PC15 leakage targets have not been met in recent years and NI Water only anticipate delivering an overall reduction of 9 Mld by the end of the price control, compared to its target for reduction of 12Mld.
- 3.35 The company has responded to this issue by submitting a business plan containing a significant increase in expenditure for leakage control and reduction. The proposed PC21 budget equates to around £28m to reduce leakage by 7Mld over the price control period. This compares to anticipated expenditure of around £16m in PC15 for the delivery of a reduction of 9 Mld.
- 3.36 A study on the sustainable economic level of leakage (ELL) was undertaken in 2019 by RPS Group in line with the development objective set for PC15. The findings of this assessment identified an economic level of leakage of 149.98Mld. This figure has been used by the company to set its proposed leakage targets for PC21 and by the end of the period the company plans to have attained the economic level of leakage.



3.37 We have accepted the proposed leakage reduction targets for the draft determination on the basis that this will achieve the assessed economic level of leakage by the end of PC21. These are summarised in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Total leakage	155	154	153	152	151	150

Utility Regulator

Table 5: Leakage output for PC21.

- 3.38 However, while we appreciate that both the natural rate of rise and the nature of leakage detection makes controlling leakage increasingly challenging as the ELL is approach, we remain concerned by scale of investment proposed for PC21 compared to the level of leakage reduction targeted. We are therefore continuing to analyse the information contained in the company's submission and subsequent query responses and may change the funding allowance or the targets in our final determination as a result of the outcome of this work.
- 3.39 The company's submission includes new and innovative projects aimed at both reducing leakage and the supply interruptions experienced by customers. We recognise the benefits that this type of investment might provide in terms of leakage reduction and customer experience. However due to the nature of these projects the benefits cannot be easily quantified until they commence. We therefore intend to implement regular check point meetings with the company during PC21 to review the outcome of these projects including the benefits they are delivering. We will consider whether continued investment is justified as part of our PC21 mid-term review based on the evidence and findings from the work undertaken in the first half of PC21.
- 3.40 The company will also undertake another economic level of leakage assessment in the next 2-3 years and we will consider if targets need to be adjusted to take account of this reassessment in our PC21 mid-term review.

Security of supply

- 3.41 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.
- 3.42 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.



3.43 The company's proposed target for security of supply in all years of PC21 is 100. This assessment is based on 'dry-year annual average' demands only and when assessed on this basis is consistent with the findings within the latest Water Resource & Supply Resilience Plan (WR&SR Plan). As a result of the completion of the WR&SR Plan, NI Water is now able to calculate a security of supply index for critical period scenarios such as a Dry Year Critical Period (DYCP) or Winter Critical Period (WCP). If an assessment was done on the basis of a critical period scenario, the predicted security of supply index would be less than 100 until work on PC21 trunk main schemes designed to mitigate against critical period deficits were completed.

Utility Regulator

3.44 We have accepted the company targets based on the Dry Year Annual Average (DYAA) targets for the purposes of the draft determination. However for the final determination we will consider whether a security of supply index based on critical period scenarios would provide a more meaningful indicator of the service being delivered.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Security of Supply Index	100	100	100	100	100	100

 Table 6: Security of supply index for PC21.

Power usage

- 3.45 The PC15 targets for the percentage of power usage derived from renewable sources was profiled to meet the NI Assembly programme for government target of 40% by 2020. NI Water achieved this target.
- 3.46 For PC21 the company has indicated that it aims to increase the total percentage of green energy used by its assets to 100%. It plans to achieve this through the optimal use of its land assets, corporate power purchase agreements and REGO accreditation.
- 3.47 We acknowledge the ambitious nature of the company's proposals for PC21 and that it plans to achieve them at no extra opex cost compared to the benchmark. The company's targets have been accepted on this basis and the profile for delivery is detailed in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Percentage of NI Water's power usage derived from renewable sources	45	45	50	50	75	100

Table 7: Power usage outputs for PC21.

3.48 Unlike in PC15, we do not currently have sight of the projected renewable



targets for Northern Ireland in the absence of the new energy strategy. We would therefore expect the company to review its proposals if it transpires that there is an insufficient supply of renewable energy available to help avoid this self-imposed target becoming a driver for increased costs.

Water quality compliance

Overview

- 3.49 The Department for Infrastructure's Social & Environmental Guidance for PC21 identifies the need to, "at minimum, maintain standards of drinking water quality, in line with current standards, and to prevent deterioration in drinking water quality through sustained investment in water treatment and mains rehabilitation". The guidance does not state any minimum requirements for specific performance measures. The priority is therefore to sustain current levels of performance.
- 3.50 For PC15, we adopted the following three target measures for drinking water quality compliance and these have been retained for the purposes of target setting in PC21:
 - Overall water quality compliance;
 - Water quality compliance at tap; and
 - Iron compliance at tap.
- 3.51 Performance data for all three measures is published in the Drinking Water Inspectorate's (DWI) annual Drinking Water Quality Report data.
- 3.52 Overall water quality compliance is DWI's principle measure for monitoring drinking water compliance. It is a composite measure comprising of 48 parameters, which combines the results of statutory samples taken at water treatment works (2 bacteriological and 2 chemical parameters), service reservoirs (2 bacteriological parameters) and at tap (42 water quality parameters).
- 3.53 Water quality compliance at consumers' taps provides a more direct measure of the service experienced by consumers as it is based solely on water quality samples taken at the point of supply.
- 3.54 Iron compliance is one of the 42 parameters measured at consumers' tap. It provides a simple measure for monitoring deterioration of water quality in the distribution system, which is due mainly to corrosion products from iron pipes. This is an important indicator as it is the largest contributor of failures to the composite measures for overall compliance and compliance at tap.



3.55 The investment which NI Water has proposed 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. Improvements necessary to secure compliance with individual water quality parameters have also been included as enhancement investment based on the outcome of water treatment works treatability studies completed in PC15.

Utility Regulator

- 3.56 The outputs submitted in NI Water's business reflect its best estimate of the compliance levels that will be achieved during the PC21 period through the delivery of planned investment.
- 3.57 In considering the targets submitted for PC21, we have adopted a similar approach to 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. The results of our analysis and our conclusions in relation to how performance should be monitored in PC21 are described below.

PC21 Drinking water quality compliance measures

3.58 To determine potential performance ranges for each of the three drinking water quality compliance measures in PC21, we analysed historic performance data. The outcome of our assessment is shown in Figure 4.



Figure 4: Drinking water quality compliance measures

3.59 This indicates that company might be expected to operate in the following performance ranges for each measure during PC21.

Output	Max	Avge	Min
% overall compliance with drinking water regulations	99.89	99.84	99.81
% compliance at consumers tap	99.84	99.76	99.71
% iron compliance at consumers tap	99.20	98.31	97.70

Table 8: UR assessed ranges for water quality compliance outputs forPC21





- 3.60 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. Our analysis indicates performance should remain within the amber and green areas of the charts; 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.
- 3.61 The minimum level of compliance that the company expects to achieve for each of these measures during PC21 is indicated by the intersection of the amber and green areas of the charts. This shows that NI Water's anticipated performance lies just below the mid-point of the range determined through our analysis for overall compliance and compliance at tap and just above the mid-point of our range for iron compliance.
- 3.62 Our assessment suggests that actual performance could fall below these targets at certain times during PC21, however the company has confirmed that it expects to outperform these targets throughout the price control period. An assessment of performance in PC15 shows that the company has performed at or above the mid-point of our range consistently during the period and so the company's expectation may be reasonable.
- 3.63 We have therefore accepted the water quality targets submitted by NI Water for PC21. These are summarised in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
% overall compliance with drinking water regulations	99.83	99.83	99.83	99.83	99.83	99.83
% compliance at consumers tap	99.74	99.74	99.74	99.74	99.74	99.74
% iron compliance at consumers tap	98.62	98.62	98.62	98.62	98.62	98.62

 Table 9: Water quality compliance outputs for PC21.





- 3.64 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.
- 3.65 NI Water has been fully compliant with this measure throughout its previous price controls and PC21 targets have been set on the basis of the company continuing to maintain full compliance throughout the PC21 period.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
% Service Reservoirs with coliforms in >5% samples	0.00	0.00	0.00	0.00	0.00	0.00

 Table 10: Service reservoir water quality outputs for PC21.

- 3.66 NI Water will undertake work in PC21 which should help maintain this performance. It will continue to prioritise service reservoir rehabilitation based on an established industry methodology introduced towards the beginning of PC15. Operational information, including water quality data will help inform a programme of condition assessments which will determine the specific investment to be delivered at each site through a rolling programme of work. These assessments will be continually updated and reprioritised on the basis of emerging information and any work required as a result of water quality issues will automatically be promoted within the programme.
- 3.67 NI Water also completed a programme of work for replacing substandard water quality sample taps at service reservoirs during PC15 and this should help minimise the risk of non-compliance as a result of 'unrepresentative' samples and provide more confidence in the sample results.

Nominated outputs and activities

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

Water mains activity

- 3.69 The PC21 targets for water main activity include 659km of new and renewed water mains that the company plans to deliver through its water mains rehabilitation programme. This programme covers water mains up to 300mm in diameter and will assist in maintaining stable service for consumers.
- 3.70 Proposed activity levels for water main rehabilitation were estimated through



the company's Deterioration Risk and Reliability Modelling (DRRM) assessments. An additional 92km of water mains was included linked to a a development project for leakage reduction.

- 3.71 The company's submission also identified it planned to lay 23km of mains delivered as a result of the DG2 Low pressure project and a further 14km under the Low pressure development output project.
- 3.72 Our target of 788km for the total length of water mains to be delivered in PC21 under this sub-programme includes the outputs from all of these projects as well as taking account of a 10km reduction for mains greater than 300mm in diameter. This represents a net increase of 120km from the 668km submitted in the company's business plan table.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Water mains activity - Length of new, renewed or relined mains	131.354	131.354	131.354	131.354	131.354	131.354

 Table 11: Water mains activity outputs for PC21.

3.73 The company raised a risk that the DRRM modelling includes a number of short lengths of water main which are impracticable to replace in isolation, and that the length of mains replacement required to maintain service might therefore be underrepresented. We will consider this issue further for the final determination.

Trunk main schemes

- 3.74 NI Water submitted the following proposals for the construction of trunk mains during PC21.
 - Two trunk mains to address deficits in supply demand balance as identified in the company's water resource and supply resilience plan:
 - Carmoney to Strabane Strategic Link Watermain: This addresses a 3 MI/d supply demand deficit in Western WRZ and provides resilience of up to 14MI/d for an outage at one of the WTWs within Western WRZ.
 - Castor Bay to Ballydougan Trunk Main: This addresses deficit in Southern WRZ and meets supply demand balance by increasing transfer capacity from 95 Ml/d to 115 Ml/d.
 - Four trunk mains to improve resilience between Water Resource Zones:



- Northern Resource Zone Resilience: This will deliver a system which will permit up to 21MI/d to be transferred from within the Northern Resource Zone to Ballinrees WTW to provide full resilience during an outage or major incident at the WTW.
- Western Resource Zone Resilience: This will provide full Western Resource Zone resilience at any one of the WTWs in the zone during an outage or major incident by allowing transfers from the Northern Resource Zone of up to 17MI/d. It will also address a supply demand deficit of 3 MI/d within Western WRZ.
- Central WRZ Resilience and Supply: This will increase the imported flow from Carland SR to the Cookstown trunk main to 4.7 Ml/d. It will also improve resilience across the Central WRZ and mitigate the impact of an outage event at Lough Fea WTW or Moyola WTW.
- Castor Bay Outage September 2019: This will improve water supply resilience to Castor Bay WSZ by providing a back-feed from Dunore Point WTW and/or Drumaroad WTW. This mitigates the risk of widespread interruptions to supply in the event of a complete or partial outage at Castor Bay WTW.
- Six trunk mains to provide additional capacity in the company's trunk network supplying service reservoirs in order to maintain levels of service to existing customers:
 - High Tober.
 - Edenasop to Killeter.
 - Blacklough to Crocknabohill.
 - Woodend to Drain main.
 - Killyhevlin Cavanacross B.
 - Whitespots B.
- Two trunk mains to provide capacity for future development:
 - Skeoge Link TM: Provides additional capacity for recent growth and new development and provides the reference level of service (pressure) to some 5,000 customers.



 Crescent Link TM: Provides additional capacity for recent growth and new development and provides the reference level of service (pressure) to approximately 1,250 customers.

Utility Regulator

- 3.75 These projects have been included in the draft determination as they deliver consumer benefits by helping to improve security of supply, improve resilience and release constraints for development.
- 3.76 The profile of the delivery of these outputs is detailed in the table below. We note that the delivery plan for this programme of work is 'back end' loaded and prior to our final determination we will ask NI Water to consider whether any of the outputs, and the benefit that they deliver to consumers, can be brought forward.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Completion of nominated trunk main schemes	0	4	0	3	1	6

Table 12: Trunk main nominated outputs for PC21.

Water treatment works schemes

- 3.77 NI Water operates 23 water treatment works which deliver approximately 590 MId into supply. This includes around 260 MId produced by the 4 PPP water treatment works operated by NI Water Alpha.
- 3.78 NI Water has proposed investment at 20 of its water treatment works sites in PC21. This investment involves 22 schemes as two different investment requirements have been identified for two of the sites.
- 3.79 The PC21 investment proposals fall into 2 categories.
 - Investment at water treatment works where there have been persistent failures against regulatory drinking water quality standards and enforcement is in place, or where there is deemed to be a high risk of persistent failures moving forward based on assessed performance. NI Water seeks support directly from DWI for this type of investment through an 'Annex A' process. In this case, we take DWI's agreement as validation of the investment need.
 - Investment to help secure general improvements in performance at other works in terms of water quality, reliability, resilience and efficiency. For example, improvements to coagulation or filtration to help make processes more robust. In this case NI Water does not seek support from DWI and we determine the need based on the evidence submitted by the company.





- 3.80 The Annex A proposals cover the water quality investment the company believes is required at the following 13 water treatment works sites:
 - Killyhevlin; Clay Lake; Lough Fea; Seagahan; Altnahinch; Dungonnell; Drumaroad; Derg; Caugh Hill; Castor Bay (Alpha PPP); Dunore Point (Alpha PPP); Ballinress (Alpha PPP); Moyola WTW.
- 3.81 DWI has completed its initial assessment of the need for investment at these as a consequence of water quality concerns. Two of the proposals received unqualified agreement, four received agreement pending the receipt of additional information on specific elements of the proposal and further information is required on three of the submissions before DWI will be able to make an assessment.
- 3.82 Until the additional information requested from NI Water is provided, DWI will not be able to confirm its final decision on all of the Annex A water treatment works and we will not be able to confirm the nominated outputs associated with the Annex A element of the programme. We will do this in the final determination.
- 3.83 In the meantime we have included all of the Annex A water treatment works apart from the Alpha PPP sites in the nominated output list. The Alpha PPP sites have been excluded because they were purchased by NI Water from the previous concessionaire recently following a due diligence exercise. We therefore assume NI Water assured itself that it was taking over fit for purpose assets which were operationally robust and capable of meeting regulatory standards. We would therefore expect that any additional investment requirements would be primarily for base maintenance purposes.
- 3.84 The remainder of the investment proposals cover other general improvements required at the following 9 water treatment works sites:
 - Loughmacrory; Fofanny; Carran Hill; Belleek; Glenhordial; Lough Bradan; Killyhevlin; Carmoney; Glenhordial.
- 3.85 We recognise that some level of ongoing investment to help secure general improvements in performance in terms of water quality, reliability, resilience and efficiency is likely to be required at these sites. We have therefore included them as nominated outputs for PC21. Between the draft and final determination we will engage further with the company to confirm the extent of the work required and the level of funding needed. If it transpires that the investment at any site is mainly for base maintenance purposes we may decide to remove it from the nominated output list.
- 3.86 The profile for delivery of the nominated water treatment outputs is shown the table below. The number of outputs in 2024-25 has been reduced from 7





to 3 as a consequence of the removal of the 4 PPP works,

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Completion of nominated water treatment works schemes	1	2	2	3	1	9

Table 13: Water treatment works nominated outputs for PC21.

3.87 It can be seen that the majority of delivery is towards the end of PC21. This was the case both with and without the PPP outputs. This will mean that customers will have to wait a considerable period of time before they see the benefits. This is of particular concern for Annex A works which would be expected to be of higher priority and is an issue that was raised by DWI in its response to the company submission. Caugh Hill WTW is a specific example. This has been deferred in two previous price controls and represents over 40% of the total cost of Annex A investment, yet it is not scheduled for delivery until the final year of PC21. It is unclear why this would be the case if the need is clearly established. We will consider this further for the final determination. We will also ask NI Water to consider whether any of the priority outputs, and the benefit that they deliver to consumers, can be brought forward in the programme prior to confirming the delivery profile in our final determination.

Service reservoirs and clear water tanks

- 3.88 NI Water has included proposals to increase the capacity of one service reservoir and two clear water tanks in PC21. There is also funding included to allow it to complete one PC15 scheme. Details are provided below:
 - Loughmacrory Hill SR. The existing service reservoir has a capacity of 0.8MI and holds less than 3.5 hours storage for the 6,000 customers served. NI Water proposes constructing a new 5MI reservoir at a new site close to the existing reservoir to address the significant shortfall between the current storage and the average service reservoir storage of 35hrs. The company has identified the primary driver for this scheme as supply demand and security of supply risks. The provision of additional capacity will minimise the risk of supply interruption to customers in the area.
 - Fofanny Clear Water Tank. The existing clear water tank has a capacity of 15MI and has a storage time of around 7hrs at peak demand. It distributes water to a population of 76,500 across the water resource zone, of which 8,000 receive direct supply from the tank. The company proposes constructing a new 10MI clear water tank at a new site close to the existing one to increase overall capacity



to 25MI. This will help address the shortfall to the average clear water tank storage position of 24hrs. The project has been prioritised due to growth in the area resulting in the current reservoir being undersized and unable to cope with diurnal demands. The company highlights unplanned interruptions that have occurred as a result of this and the lack of further development potential in the area.

- Seagahan Clear Water Tank. The existing clear water tank has a capacity of 2.3Ml and has a storage time of around 5hrs at peak demand. It serves an estimated population of 32,500 and due to development in the area, is now undersized. The company proposes constructing a new 8ML clear water tank at a new site close to the existing one to address the significant shortfall between the current storage and the average service reservoir storage position of 24hrs. The company states that the lack of available storage in the existing tank has led to customer interruptions and is preventing further development in the downstream network.
- Drumaroad CWT. This scheme is being carried over from PC15 and is mostly complete. The company is in the process of constructing a 35MI tank. This is to increase storage for the gravity supply to Belfast from less than 1hr to around 6hrs. Funding for this scheme was approved in PC15.
- 3.89 The initial submission did not explain the need for these schemes clearly enough and so we asked the company to provide additional clarification through the query process. The company provided additional information to support its original business case and we are satisfied that each project is justified on the basis of risk. We have therefore included all the new schemes in the list of nominated outputs for the draft determination as detailed in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Completion of nominated improvements to service reservoirs and clear water tanks	0	0	0	0	3	0

Table 14:Service reservoir and clear water tank nominated outputs forPC21.

3.90 All three schemes are planned for delivery towards the end of PC21. For the final determination we will ask the company whether it is able to bring forward any of this investment so that the risk to consumers is addressed earlier.





- 3.91 The target set for proactive lead communication pipe replacement in PC15 was 1,844 per annum or 11,064 over the price control period. NI Water expects to outperform this target in PC15 and deliver 11,203 replacements.
- 3.92 It has been agreed by key stakeholders that NI Water should continue the PC15 rate of replacement into PC21. The company's PC21 targets are therefore as follows.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of lead communication pipes replaced through the proactive lead programme	1,844	1,844	1,844	1,844	1,844	1,844

Table 15: Proactive lead replacement outputs.

Number of school visits and other educational events

3.93 NI Water has based its targets for the number of school visits and the number of educational events in PC21 on the targets that were set for PC15. The proposed targets have been accepted on the basis that this represents a reasonable level of activity.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of school visits	176	176	176	176	176	176
Number of events	57	57	57	57	57	57

 Table 16:
 Number of school visits and events.

3.94 The company should continue 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. We would expect this to be informed by the experience and learning gained in PC15.

Other general investment

- 3.95 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 Act and the Panel Engineer assessments undertaken in PC15:
 - Commence the next round of impounding reservoirs inspections and



complete inspections at all controlled service reservoirs;

- Complete the next water resource and supply resilience plan;
- Complete the next economic level of leakage assessment;
- Complete security hardening work required at service reservoirs 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 PC27; 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. Sewerage Service Outputs

Overview

- 4.1 In this section we provide more detailed information on sewerage service measures included in Table 3.2 of the main report covering:
 - Properties at risk of out of sewer flooding (DG5);
 - Wastewater treatment works compliance;
 - Pollution incidents; and
 - Nominated outputs and activities.

Sewer flooding

- 4.2 The need to reduce the risk of out of sewer flooding is consistently identified by consumers as a high priority. The outcome of the consumer engagement undertaken for the last price control showed that consumers are most willing to contribute to improvements which have a direct impact on their daily lives, such as flooding.
- 4.3 NI Water maintains a register of properties which are at risk of internal flooding. The DG5 performance measure used to set price control targets relates to properties considered to be at risk of internal flooding as a result of hydraulic incapacity of the sewerage system.
- 4.4 At the start of PC15 there were 179 properties on the flooding register which were at risk of flooding more frequently than 1 in 20 years. The company's target was to remove 62 properties in PC15. In its PC21 business plan submission NI Water indicates that it expects to have removed 46 properties by the end of the PC15 period, which represents a shortfall of 16 against the PC15 target. NI Water acknowledges that this sub-programme has been subject to considerable change during PC15 with several of the PC15 nominated projects being subject to delay and change in scope.
- 4.5 The company also had a target for the number of properties on the risk register at the end of the period which was 124. The company expects to achieve this target despite the shortfall in the number of properties removed by company action. This is because the net movement in property numbers on the register due to better information has been negative rather than positive as assumed at the time of the PC15 business plan submission. The net reduction in the first five years of PC15 has been 15.
- 4.6 For PC21, the company has proposed removing 57 properties by company



Utility Regulator

- 4.7 However in establishing its annual targets for the number of properties on the register, the company has assumed that there will 6 net additions per annum, equating to 36 over the PC21 period. This means that the register total would only reduce by 21 by the end of PC21 despite its target of 57 removals. Accounting for the PC15 carry over of 16 properties and the addition of 36 properties, it can be seen that the PC21 target only equates to 5 existing properties being removed over the period. This would not appear to be an ambitious target for an issue that the company has acknowledged is the top priority for its consumers. It would also indicate that properties including additions would be staying on the register for an extended period of time. Our expectation is that once a property has been confirmed through modelling it would be removed within a 6 year price control period.
- 4.8 The justification for NI Water's assumption that an average of 6 properties will be added to the register each year in PC21 is not clear. We note that even if the impact of removals due to better information is ignored, the additions due to better information (actually flooded or modelled) in the first five years of PC15 only averaged 3 per annum. NI Water's assumption is therefore not reflective of recent performance data. The conservative nature of the company's approach is evident in the outturn figure for 2019-20 which was 4 properties lower than the business plan estimate.
- 4.9 In establishing the DG5 risk register targets for PC21 we have taken account of the 2019-20 outturn data and used this as the basis of our PC21 projections. We have accepted the company's figures for properties removed by company action and applied these moving forward. We have then allowed for additions to the register at the annual rate experienced in the first 5 years and taken the conservative approach of not allowing for any removals due to better information.
- 4.10 The targets determined through our assessment result in a DG5 risk register total of 78 properties at the end of PC21 compared to the companies estimate of 103. The graph below compares our PC21 targets to the company's submission and historic targets and performance.





Utility Regulator

Figure 5: Properties on the DG5 risk register

4.11 The table below shows the 'out of sewer' flooding targets set for PC21. The target for removals is based on the company's submission and the risk register targets are based on the outcome of our assessment as explained and presented in the graph above.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
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	0	0	20	6	10	21
DG5 Properties on the 2 in 10, 1 in 10 and 1 in 20 risk register at the end of the year	120	123	106	103	96	78

Table 17: DG5 outputs for PC21.

Wastewater treatment works compliance

- 4.12 In PC21 we intend to monitor wastewater treatment works compliance using the same measures that were used in PC15, i.e.:
 - % of WwTWs discharges compliant with numeric consents.
 - % of total population equivalent (PE) served by WwTWs compliant with numeric consents.
 - Small WwTW compliance (works greater than or equal to 20PE. but less than 250PE).
- 4.13 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. To account for this issue when establishing appropriate targets, we have assessed the historic performance of NI Water's treatment works and used this to estimate the likely range of compliance now and into the future. The range for percentage works compliance is shown in Figure 6 and the range for percentage population equivalent compliance is shown in Figure 3. We have also included NI Water's recent actual performance and its projected PC21 targets for comparison. These are denoted by the grey line.



Figure 6: Operating range for % of WwTWs whose discharges are compliant with their numeric consents.



Figure 7: Operating range for % of population equivalent served by works which are compliant with their numeric consents.



4.14 The light green bands represent the lower and upper quartiles of probability density in our assessments, while the dark green band represents the central 50% of probability density. The step change in performance for percentage population equivalent compliance in 2022-23 reflects the fact that two relatively large works will become non-compliant due to a change in consent standards in that year.

Utility Regulator

- 4.15 It can be seen that while NI Water's proposed targets follow a similar trajectory to our assessment, they lie at the bottom or below our predicted operating range. There are a number of reasons for this:
 - NI Water has assumed that works that failed in an unannounced sampling pilot scheme during PC15 will continue to fail in the future. There is no evidence to support this. The agreed regulatory framework for compliance monitoring and reporting is not due to change in PC21. Compliance for these works will therefore be assessed and reported under the same compliance framework as it was prior to the pilot. We have therefore not taken a similar approach of altering the treatment of these works in our assessment.
 - There are five small works which are due to cross the threshold into the greater than 250PE size band in PC21 and there is one works which will move from a coastal consent to a river consent. We believe that the company has assumed that all these works will fail. We have taken a less conservative approach and assumed that 50% of these works will pass.
 - NI Water has used updated population equivalent figure in its assessment which are slightly higher than those currently used. We have continued to use the current figures following confirmation from NIEA that they would continue to be used for compliance monitoring purposes.
- 4.16 We have taken a conservative approach and set the PC21 compliance targets for '%WwTWs' and '%PE' at the bottom of our operational performance range. These targets represent the minimum level of performance we expect the company to achieve and we would expect NI Water performance to lie above this target and within our range during PC21.
- 4.17 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. We note that NI Water estimate that only 3 out of about 300 small WwTWs will be non-compliant at the end of the PC21. This represents a reduction of 27 from the final year of PC15. We will ask NI Water to demonstrate how it has



ensured consistency between the information used to assess this target level of compliance and the number of small WwTWs that the company proposes to improve under the rural wastewater investment programme prior to the final determination.

4.18 A summary of the wastewater compliance targets set for PC21 is provided in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
% of WwTWs discharges compliant with numeric consents	92.44	92.02	92.44	93.00	93.28	94.54
% of total p.e. served by WwTWs compliant with numeric consents	98.35	94.95	95.17	95.46	95.60	95.41
Small WwTW compliance (works greater than or equal to 20p.e. but less than 250p.e.)	90.76	91.09	93.07	95.05	97.03	99.01

Table 18: Wastewater treatment works compliance outputs for PC21.

Pollution Incidents

- 4.19 The number 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 previously 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 cause of this lower level of performance.
- 4.20 The company's business plan submission forecasts an outturn of 23 high and medium pollution incidents at the end to PC15. This appears to be based on its final year target for PC15, rather than performance achieved in the period to date, as the reported number of incidents at the end of 2019-20 is already significantly lower at 13. This issue was highlighted by the Reporter who indicated that the company's outturn figure was not a legitimate final year forecast based on historic trending, risk analysis or other asset management decision making factors.
- 4.21 The company's submission stated that it had based its PC21 forecast targets on historical trend analysis. This is not evidenced by the data as the company's projected target at the end of PC21 is higher than actual performance in 2019 -20. This anomaly results from NI Water using a starting point for its projections which is significantly higher than the actual performance achieved in PC15.

4.22 The average annual reduction of around 1.3 adopted by the company in PC21 is approximately 60% of the average annual reduction achieved in the first 5 years of PC15. This might not be unreasonable as returns might be expected to diminish over time as the number of incident becomes lower.

Utility Regulator

- 4.23 The company suggested to the Reporter that its assessment had included allowances for weather, blockages, capacity issues, increased use of monitors and changes in regulatory approach. However, the Reporter was unable to identify any analysis that attempted to estimate what incremental allowance had been allowed in the forecast for each of these factors or why it was appropriate.
- 4.24 We therefore believe that more challenging targets, which take account of the sustained improvement delivered by the company to date, should be set for high and medium pollution incidents in PC21.
- 4.25 Our projected targets have been established by considering the historic rate of improvement and then allowing for diminishing returns on performance as the number of pollution incidents reduces. Our assessment results in an annual reduction similar to that used by the company. However the PC21 outturn figure of 7 high and medium pollution incidents is much lower than the company's, as we have projected our figures from current actual performance.
- 4.26 The outcome of our assessment aligns closely with the findings of the Reporter who indicated that a target of around 5 to 8 incidents by the end of the PC21 period would be more appropriate than that proposed by the company. We note that this would bring NI Water broadly in line with average performance in 2018-19 for the six water and sewerage companies in England and Wales that report a comparable measure.
- 4.27 The graph below shows the outcome of our assessment. It compares our PC21 targets to the company's submission and historic targets and performance.



Utility Regulator

Figure 8: Pollution incident performance and targets.

4.29 Our annual targets for high and medium pollution incidents in PC21 are summarised in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of high and medium pollution incidents attributable to NI Water	12	11	10	9	8	7

Table 19: High and medium pollution incident outputs for PC21.

- 4.30 In the PC21 audit report the Reporter suggested the company should:
 - Use continuously updated estimates of risk and performance in order to target operational activities and investment.
 - Examine the link between investment and service for the wastewater infrastructure sub-service, as there was limited evidence of the company aligning expenditure on pollution related activities and service.
 - Incorporate further specifics and granularity into the root cause analysis to allow more sophisticated risk management and asset management approaches to feed into investment decision making, work planning and forecasting.
- 4.31 We concur with the Reporter's suggestions and expect the company to take action to put them in place



Nominated outputs and activities

- 4.32 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.
- 4.33 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 the overall wastewater compliance targets described in Section 4.12.

Sewers replaced or renovated

4.34 The company proposes to renovate and renew around 61km of sewers over the PC21 price control period as detailed in the table below. This compares to a target of 74km and a projected outturn of 75km in PC15. The company anticipates that the majority of the PC21 output length will be delivered through renovation rather than replacement.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Sewerage activity - Length of sewers replaced or renovated	10.1	10.1	10.1	10.1	10.1	10.1

 Table 20:
 Sewerage activity outputs for PC21.

- 4.35 The rate at which sewers are renewed or replaced is remarkably low when compared to the 16,200 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.
- 4.36 In PC15 we said that we expected 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.
- 4.37 The company has introduced deterioration, risk and reliability modelling for PC21 and used it for some elements of the submission. However the company did not consider it robust enough to estimate requirements for this part of the programme. The company therefore used PC15 run rates to estimate requirements for PC21.



4.38 We expect the company to continue to develop the capability of its risk based methodology during PC21 so that it can use it confidently to establish clear links between investment and outputs in its submission for PC27.

Utility Regulator

Nominated improvement to unsatisfactory intermittent discharges

- 4.39 NI Water has a significant number of combined sewer overflows and wastewater pumping stations that can discharge to the environment. Compliance standards for these discharges are set by NIEA and overflows that are in breach of compliance are known as Unsatisfactory Intermittent Discharges (UIDs).
- 4.40 The company expects to deliver improvements to 62 UIDs in PC15 against a target of 78. NI Water acknowledges that this sub-programme has been subject to considerable change during PC15 with several of the PC15 nominated projects being subject to delay and change in scope.
- 4.41 The company proposes delivering improvement to 136 unsatisfactory intermittent discharges (UIDs) to meet NIEA standards during PC21. This includes 13 UIDs which are carrying over from PC15 and 94 UIDs associated with the living with water programme. This represents a significant increase from the anticipated delivery in PC15.
- 4.42 NIEA has agreed a prioritised list of UIDs for delivery in PC21 with NI Water and the company has submitted a detailed list of schemes in its business plan. However we are aware that a significant number of the drainage area studies that are needed to confirm requirements remain outstanding. The content of the programme and the priority of outputs may change as a consequence of the completion of this work.
- 4.43 For the draft determination we have accepted the number of UID outputs included in the company submission as well as the profile for delivery, as detailed in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Delivery of improvements to nominated UIDs as part of a defined programme of work	4	18	17	16	22	59

Table 21: Unsatisfactory intermittent discharge outputs for PC21.

4.44 It can be seen that the majority of delivery is towards the end of PC21 with over 40% of the outputs due to be delivered in the last year of PC21. This may be partially explained by the need to complete drainage area studies and develop robust solutions in the early years of PC21, but we are aware



that this is a concern for NIEA in terms of the delivery of environmental improvements. We will engage with both NIEA and NI Water prior to the final determination to ensure that the final list of outputs and the profile for delivery is reflective of need and the outcome from drainage area studies as they are completed.

Nominated improvements to wastewater treatment works

- 4.45 NI Water plans to deliver improvements at 45 wastewater treatment works with a population equivalent greater than 250 during PC21. These upgrades are required to meet discharge consent standards set by NIEA and to release development constraints. This compares to an expected outturn of 18 for PC15 against a target of 19. Four of the P21 outputs relate to the Living with Water programme and four of the remaining outputs will be delivered using sustainable solutions.
- 4.46 NIEA has agreed a prioritised list of wastewater treatment works for delivery in PC21 with NI Water and the company has submitted a detailed list of schemes in its business plan. However we are aware that a significant number of the studies and options appraisals that are needed to confirm the requirements and solutions remain outstanding. The content of the programme and the priority of outputs may change as a consequence of the completion of this work.
- 4.47 For the draft determination we have accepted the number of wastewater treatment works outputs included in the company submission as well as the profile for delivery. These are detailed in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Delivery of improvements to nominated WwTWs as part of a defined programme of work	4	0	1	9	13	18

Table 22: Wastewater treatment works outputs for PC21.

4.48 As with the UID programmes, it can be seen that the majority of delivery is towards the end of PC21, with almost 70% of the outputs due to be delivered in the last two years of the period. This may partly be a consequence of the need to complete investigations and develop robust solutions in the early years of PC21, but we are aware that the associated delays in delivering environmental compliance is a concern for NIEA. We will engage with both NIEA and NI Water prior to the final determination to ensure that the final list of outputs and the profile for delivery is reflective of need and agreed environmental priorities.





4.49 Our determination allows the company to upgrade 36 wastewater treatment works serving a population equivalent between 20 and 250, as detailed in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Small wastewater treatment works delivered as part of the rural wastewater investment programme	6	6	6	6	6	6

Table 23: Small wastewater treatment works outputs for PC21.

- 4.50 This reflects the number of outputs included in the company's business plan submission and the company has indicated that it intends to deliver three of the outputs using sustainable solutions. This target number will allow NI Water to address the works that are expected to be non-compliant at the end of PC15 plus some additional works that might become non-compliant during the price control period.
- 4.51 The individual works to be delivered will be agreed and prioritised by NIEA and NI Water through the established rural wastewater investment programme.
- 4.52 During our engagement with NI Water on the draft determination the company indicated it wanted to increase the number of outputs from 36 to 47. We advised NI Water that any further increase would have to be justified on the basis of need and value for money.

We are aware that NI Water are now engaging with NIEA on the extent of the programme and we will consider the outcome of this process for the final determination. As this is a prioritised programme of work which is agreed with NIEA, we would have expected the company to have initiated this engagement prior to developing its proposals for the PC21 business plan submission.

CSO and EO discharges at which event and duration monitoring equipment has been installed

4.53 The PC15 target was to install 347 event and duration monitors at Combined Sewer Overflows (CSO) and Emergency Overflows (EO). By the end of PC15 the company expects to have delivered 269, a shortfall of 78. The company indicates this is primarily because they have installed monitors which are more expensive but provide enhanced functionality. It maintains



that they are more useful, particularly from the perspective of hydraulic model validation, because they measure both duration and volume.

- 4.54 NI Water has proposed to install a total of 744 event duration monitors over the 6 year PC21 period. 646 will be installed at CSO and EO discharge locations in line with criteria agreed with NIEA. The criteria is primarily based on a 2km inclusion radius to shell fish, bathing water and other designated areas. A further 98 will be installed at WwTW where there are discharges which are currently unmonitored.
- 4.55 We understand that this programme reflects a list of priorities agreed with NIEA and the targets and profile have been accepted on this basis.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of CSO and EO discharges at which event and duration monitoring equipment is installed/fully optimised, and meet NIEA requirements	66	67	117	166	166	162

Table 24: Number of CSO and EO discharges at which event andduration monitoring equipment is installed.

WwTWs upgraded to comply with PPC Regulations

- 4.56 NI Water has a requirement to ensure the sludge thickening and dewatering facilities operated at their WwTW and WTW are compliant with the Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2013 (PPC). Sixteen PPC upgrades are expected to be delivered in PC15.
- 4.57 Fifteen WwTWs have been identified as requiring a determination in PC21 to establish whether a PPC permit is required. If this is necessary, the licencing application will be made along with the associated odour surveys and capital improvements. These requirements are agreed in conjunction with NIEA and the outputs have been accepted on this basis. The profile of delivery is summarised in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of qualifying Wastewater Treatment Works delivered as part of the defined programme of improvements to comply with PPC Regulations	0	0	4	3	4	4

Table 25: Number of WWTW upgraded to complying with PPCRegulations.





Impermeable surface water collection area removed from the combined sewerage network

- 4.58 The company commenced a programme of removing areas of impermeable surface from the combined sewerage network in PC15. We welcome this approach as it has the potential to deliver sustainable improvement of the sewerage network. NI Water's PC15 target was to remove 190,000m² and it expects to outperform this by delivering 341,467m².
- 4.59 The company's business plan submission indicates that it intends to remove 218.724 hectares of impermeable surface in PC21. The outputs entered in the business plan tables however equated to 21.724 ha. We queried this with the company and they have confirmed that the submitted figures were out by a factor of 10. We have therefore adjusted the PC21 outputs accordingly as detailed in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Impermeable surface water collection area removed from the combined sewerage network (such as roads and pavements, roofs and hardstandings) (m ²)	364,540	364,540	364,540	364,540	364,540	364,540

Table 26: Impermeable surface water collection area removed from thecombined sewerage network.

4.60 The company has stated that its estimated areas for removal within PC21 have a low confidence level as no detailed appraisal of specific locations has been completed. We therefore expect the company to complete any necessary investigations and develop a structured plan for delivery before it commits to any investment.

Number of sustainable WWTW solutions delivered (PE≥250)

- 4.61 The company plans to deliver sustainable solutions at four wastewater treatment works serving a population equivalent ≥ 250 in PC21. This compares to an expected outturn of five in PC15.
- 4.62 However NI Water has indicated that the proposed sustainable solutions such as Aerofac, Phragmifiltre and Nereda are all at pilot stage and could not be fully considered as preferred solutions for the nominated WwTW at the time of the submission.
- 4.63 We would have expected NI Water to have submitted a more defined and considered plan for the delivery of sustainable solutions in PC21 in line with



the expectations set out in our PC15 final determination. There is clearly a need for a focus on the assessment of options so that it can identify suitable sites and secure the necessary land to allow further sustainable treatment to be delivered.

4.64 The planned profile for delivery in PC21 is detailed in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of 'sustainable solution' WWTW serving a PE ≥ 250 delivered as part of the defined programme of work for improvements to nominated WWTWs	0	0	0	1	1	2

Table 27: Number of 'sustainable solution' WWTW (PE≥250) delivered.

Number of sustainable WwTW solutions delivered (PE<250)

- 4.65 The company expects to deliver three sustainable solutions in PC15 in line with its target. It has set a similar target for PC21 but has not yet identified which specific small wastewater treatment upgrades are going to be delivered this way.
- 4.66 Again we would have expected NI Water to have completed sufficient investigations in PC15 to allow it to submit a more defined and considered plan for the delivery of sustainable solutions at small works in PC21. We expect NI Water to progress this work moving forward.
- 4.67 The planned profile for delivery in PC21 is detailed in the table below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of 'sustainable solution' WWTW serving a PE < 250	0	0	0	1	1	1

 Table 28: Number of 'sustainable solution' WWTW (PE<250) delivered.</th>





5. Serviceability

- 5.1 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.
- 5.2 We have undertaken a detailed assessment of the company's performance with respect to serviceability, which is presented in Annex F. This provides additional information on the concept of serviceability and our approach to monitoring it. It also explains how we have derived the individual performance ranges that we will use during PC21 to assess whether the company is maintaining serviceability.
- 5.3 Our assessment concludes that performance in each sub-service area is currently stable. This aligns with the company's assessment. This is illustrated by the trend in the primary indicators used to assess serviceability in each service area presented in Figure 5.1: Trend in performance for serviceability primary indicators below.





5.4 Stable serviceability is being targeted in each sub-service area throughout PC21, as detailed below. This is in line with the requirements of the department's Social and Environmental Guidance.



Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
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

 Table 29: Serviceability assessment outputs for PC21.

I



6. Development outputs

Background

- 6.1 Not all the outputs which NI Water must deliver can be measured against numerical targets in the short to medium term. The work which NI Water undertakes to develop its capability and introduce new techniques is equally important for the long term development of the services it provides to consumers and the cost of those services.
- 6.2 As a result we introduced development outputs in PC15 to help ensure that the company was able to identify and balance investment priorities and maximise the benefits delivered to consumers. 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.
- 6.3 PC15 included 18 key development objectives which are listed in the table below.



Ref	Description
01	Development of new consumer measures
02	Plan for Asset Maintenance
03	Preservation of Services and Civil Emergency Measures Direction (PSCEMD)
04	ICAT Strategy
05	Water resource management plans and drought plan
06	Sustainable Economic level of Leakage
07	Controlled Reservoir Safety
08	Water mains prioritisation
09	Sustainable Catchment Management
10	Minimising the water quality risk from lead pipes
11	Water meter renewal
12	Targeting sewerage 'hotspots'
13	Polluted Storm Water Overflows
14	Storm water separation
15	Strategic drainage Study
16	Sewer flooding report
17	Sustainable Urban Drainage Systems (SUDS)
18	Implementation of the PPC requirements for Odour Management

Table 30: PC15 development objectives.

6.4 We will report on the delivery of these objectives in our final determination once we have reviewed the progress reports submitted by the company in its annual information return for 2019-20.

PC21 Development outputs

6.5 The principle of establishing and reporting on development outputs has also been incorporated into the PC21 process and NI Water has proposed a list of 23 outputs which it believes should be categorised in this way. These are set out in Table 31 below.



Ref	Development Objective	Sub-Prog
01	Consumer Engagement	N/A
02	Consumer Protection / Customer Care Register	N/A
03	NI Water Alpha Ltd - WTWs Treatability Improvements	SP04a
04	DWD Recast & Emerging Issues Study	SP04z
05	Refresh of DG2 Register	SP08z
06	Targeted Mains Renewals in High Leakage Areas	SP08z
07	Leakage Innovation	SP09z
08	Smart Networks – ITS Strategy	SP09z
09	WwPS / CSO Quality (UID) and WwPS (Capacity increase)	SP12b & 12c
10	Event Duration Monitors WwPS/CSOs	SP12b
11	Cranfield Catchment, Kilkeel Storm Separation	SP12g
12	Storm Water Separation	SP12g
13	Real Time Network Modelling	SP12z
14	Urban Drainage Modelling - Live Models for IOC	SP20g
15	Innovation Initiatives	SP20g
16	Urban Drainage Modelling - Studies to Inform PC27 - Top 271 Priority Drainage Areas	SP20g
17	Raw Water Trunk Main Rehabilitation	SP20 & 23c
18	Culmore DA KL554 - Skeoge Link Road	SP24a
19	LWWP Networks	SP12b & 12d
20	LWWP Wastewater Treatment Works	SP16b
21	AD - Asset Strategy - Wastewater Asset Performance Modelling	SP20g
22	AD - Asset Strategy - Water Asset Performance Modelling	SP20g
23	Facilities H&S Compliance	SP20e

Table 31: Development Objectives for PC21.

6.6 We have commented specifically on some of these outputs in our draft determination capex annex (Annex I). For the final determination we will review the supporting information provided by the company to determine which of these outputs should be taken forward as development outputs in PC21. We will also set out our expectations with regard to delivery, monitoring and reporting for each of the outputs so that progress and the associated benefits can be assessed.





7. New output measures introduced for PC21

New measures introduced by the UR

7.1 We have introduced two new water service output measures for PC21.

Number of catchments where management plan recommendations have been delivered

- 7.2 We introduced a PC21 target for delivery of catchment management plan recommendations in recognition of the fact that NI Water will have completed plans for all its 'live' catchments in PC15. The previous PC15 target for the completion of plans is therefore no longer relevant and has been removed.
- 7.3 At the start of PC21 there will be 23 active catchment management plans in place. The focus for PC21 will therefore be to progress from planning to implementation of solutions to contribute to achieving SCAMP objectives.
- 7.4 The company plans to deliver a prioritised list of interventions in 20 catchments in PC21. The prioritisation process has considered the water quality and environmental drivers that are appropriate for the interventions being undertaken and that are likely to contribute to achieving SCAMP objectives.
- 7.5 The company's targets for this work have been accepted.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of catchments where management plan recommendations have been delivered	0	3	4	5	5	3

Table 32: Number of catchments where management planrecommendations have been delivered.

Number of treatability studies completed

- 7.6 We have introduced this target for PC21 to help ensure that NI Water develops a structured plan for the completion of treatability studies in time to inform water treatment work investment requirements for PC27. We expect this work to be prioritised in conjunction with DWI. The treatability studies for PC21 were issued to DWI late in the process and this has impacted on the ability to come to conclusions on investment for the draft determination.
- 7.7 The company plans to complete 12 WTW treatability studies to inform PC27 investment requirements as detailed in the table below. This covers around



50% of the total WTW asset base. The company then plans to undertake an equivalent number of studies in each regulatory period, so that each individual WTW is assessed at least once within any two PC periods.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of treatability studies completed	0	0	0	12	0	0

Table 33: Number of treatability studies completed.

- 7.8 NI Water will need to ensure that all studies are completed in line with the delivery profile so that the outcomes are available in time to inform its PC27 submission. We also expect it to prioritise the studies in consultation with DWI so that the programme addresses water treatment works that are of greatest priority.
- 7.9 Our reporting requirements also encourage NI Water to propose additional service measures which better reflect the qualities of service which consumers' value and which are relevant to their needs. This should include the company's assessment of whether there are any gaps between the current list of performance measures and requirements of the social and environmental guidance for the price control period.

New measures proposed by NI Water

7.10 The company proposed two additional sewerage service measures to reflect ongoing work to remove economic constraints due to capacity issues in its wastewater treatment works and networks, as this forms a significant element of the submission for PC21.

Number of Economic Constraint Areas Removed

- 7.11 Economically constrained areas (ECAs) are priority hub towns that face economic development freeze conditions or severe growth constraints due to inadequate sewerage infrastructure.
- 7.12 NI Water estimates that there are currently 25 ECAs and it as indicated that it plans to release economic development for 12 of these in PC21.
- 7.13 The targets and profile submitted by the company have been accepted and are detailed below.





Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of Economic Constraint Areas Removed	0	0	0	2	1	9

Table 34: Number of Economic Constraint Areas Removed.

Number of Serious Development Restrictions Removed

- 7.14 Serious development restrictions (SDRs) is the term used for other non-hub towns where the sewerage infrastructure (either treatment capacity, network or both) is deemed to be at full capacity
- 7.15 NI Water estimates that there are currently 91 SDRs and it as indicated that it plans to release constraints for 37 SDRs in PC21.
- 7.16 The targets and profile confirmed by the company have been accepted and are detailed below.

Output	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Number of Serious Development Restrictions Removed	4	0	0	8	9	16

 Table 35: Number of Serious Development Restrictions Removed.



8. PC21 Output Summary

8.1 The summary outputs for PC21 are set out in Table 36 (Consumer service and water quality outputs for PC21) and Table 37 (Sewerage service outputs for PC21) below. These tables include actual performance for 2019-20 as submitted in the company's annual information return to show how the outputs planned for PC21 compare with the current performance.

Line	Line description		PC15	PC21					
A	Consumer Service		2019-20	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
1	DG2 Properties at risk of low pressure removed from the risk register by company action	nr	115	147	145	143	139	137	135
2	DG2 Properties receiving pressure below the reference level at end of year	nr	626	492	427	365	306	250	195
3	DG3 Supply interruptions > 12hrs (unplanned and unwarned)	%	0.088	0.133	0.126	0.120	0.113	0.107	0.101
4	DG3 Supply interruptions (overall performance score)	nr	0.79	0.57	0.55	0.53	0.51	0.48	0.46
5	DG6 % billing contacts dealt with within 5 working days	%	99.97	99.9	99.9	99.9	99.9	99.9	99.9
6	DG7 % written complaints dealt with within 10 working days	%	99.95	99.5	99.5	99.5	99.5	99.5	99.5
7	DG8 % metered customers received bill based on a meter reading	%	99.5	99.0	99.0	99.0	99.0	99.0	99.0
8b	Unwanted contacts	nr	67,013	74,000	73,000	72,000	71,000	70,500	70,000
8d	First Point of Contact Resolved (FPOCR)	%	90	84	84	84	85	85	85
8e	Net Promoter Score	nr	42	32	33	34	34	35	35
9	DG9 % Calls not abandoned	%	99.5	99.0	99.0	99.0	99.0	99.0	99.0
10	DG9 % calls not receiving the engaged tone	%	100.0	99.9	99.9	99.9	99.9	99.9	99.9
11	Overall Performance Assessment (OPA) score (11 Measures)	nr	246	Not used	Not used	Not used	Not used	Not used	Not used
12	Total Leakage	MI/d	161	155	154	153	152	151	150
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	%	44	45	45	50	50	75	100
в	Quality Water								
15a	% overall compliance with drinking water regulations	%	99.90	99.83	99.83	99.83	99.83	99.83	99.83
15b	% compliance at consumers tap	%	99.84	99.74	99.74	99.74	99.74	99.74	99.74
16	% iron compliance at consumers tap	%	98.89	98.62	98.62	98.62	98.62	98.62	98.62
17	% Service Reservoirs with coliforms in >5% samples	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
С	Water Outputs								
18	Water mains activity - Length of new, renewed or relined mains	km	149	131	131	131	131	131	131
19	Completion of nominated trunk main schemes	nr	0	0	4	0	3	1	6
20	Completion of nominated water treatment works schemes	nr	1	1	2	2	3	1	9
21	Completion of nominated improvements to increase the capacity of service reservoirs and clear water tank	nr	1	0	0	0	0	3	0
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	PC15 Additional Output Measures								
25	Number of lead communication pipes replaced	nr	1,781	1,844	1,844	1,844	1,844	1,844	1,844
26	Number of school visits	nr	229	176	176	176	176	176	176
27	Number of events	nr	143	57	57	57	57	57	57
F	PC21 Additional Output Measures								
29	Number of catchments where management plan	nr	n/c	0	3	4	5	5	3
30	Number of treatability studies completed	nr	n/c	0	0	0	12	0	0

 Table 36:
 Customer service and water quality outputs for PC21.



Line	description	Units	PC15	PC21					
Α	Consumer Service Sewerage		2019-20	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
1	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	nr	1	o	0	20	6	10	21
2	DG5 Properties on the 2 in 10, 1 in 10 and 1 in 20 risk register at the end of the year	nr	119	120	123	106	103	96	78
В	Quality Sewerage								
3	% of WwTWs discharges compliant with numeric consents	%	94.90	92.44	92.02	92.44	93.00	93.28	94.54
4	% of total p.e. served by WwTWs compliant with numeric consents	%	99.50	98.35	94.94	95.17	95.46	95.6	95.41
5	Small WwTW compliance (works greater than or equal to 20p.e. but less than 250p.e.)	%	89.29	90.76	91.09	93.07	95.05	97.03	99.01
6	Number of high and medium pollution incidents attributable to NI Water	nr	13	12	11	10	9	8	7
С	Sewerage Outputs								
7	Sewerage activity - Length of sewers replaced or renovated	km	18.5	10.1	10.1	10.1	10.1	10.1	10.1
8	Delivery of improvements to nominated UIDs as part of a defined programme of work	nr	3	4	18	17	16	22	59
9	Delivery of improvements to nominated WwTWs as part of a defined programme of work	nr	2	4	0	1	9	13	18
10	Small wastewater treatment works delivered as part of the rural wastewater investment programme	nr	9	6	6	6	6	6	6
D	Serviceability								
11	Sewerage infrastructure serviceability	Text	Stable						
12	Sewerage non-infrastructure serviceability	Text	Stable						
E	PC15 Additional 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	37	66	67	117	166	166	162
14	Number of qualifying Wastewater Treatment Works delivered as part of the defined programme of improvements to comply with PPC Regulations	nr	7	0	0	4	3	4	4
15	Impermeable surface water collection area removed from the combined sewerage network (such as roads and pavements, roofs and hardstandings)	m2	59,586	364,540	364,540	364,540	364,540	364,540	364,540
16	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	0	0	1	1	2
17	Number of 'sustainable solution' WWTW serving a PE < 250	nr	0	0	0	0	1	1	1
F	PC21 Additional Sewerage Output Measures								_
18	Number of Economic Constraint Areas Removed	nr	n/c	0	0	0	2	1	9
19	Number of Serious Development Restrictions Removed	nr	n/c	4	0	0	8	9	16

 Table 37:
 Sewerage service outputs for PC21.

I