Annual Information Return 2023 for

Public Domain

PART 2

Development Outputs

47	Development Outputs

Social and Environmental Guidance priorities for Water and Sewerage Services (2021-27)

48	Social and Environmental Guidance priorities for Water and Sewerage Services (2021-27)

Section 3 - Level of Service Methodologies

Key outputs

DG2 - Low Pressure

DG3 - Supply Interruptions

DGS - Flooding

DG6 - Response to Billing Contacts

DG7 - Response to Written Complaints

DG8 - Bills for Metered Customers

DG9 - Telephone Contact

Table 47 - Development Outputs

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DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
0	**Master DO Programme**	**All**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON FOR MASTER PROGRAMME

The UR Monitoring Expectations column in Annex T had a common expectation for most DOs of:

We expect NI Water to - Develop and submit an updated programme for the delivery of this objective.

This expectation is fulfilled by the attached Master DO Programme v0 07/07/23 pdf for this AIR submission.

Adobe Acrobat Document

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
01	**Consumer Engagement**	**N/A**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
C&OD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

The purpose of this objective is to ensure that we are considering both the views and perceptions of customers that contact NI Water as well as the silent majority of customers who do not need to contact us. *(Note: reason development text from PC21 FD ANNEX T is blank).*

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27
(Note: This is not to confirm solution spend)

PC21 only ☒	**PC27 only ☐**	**PC21 and PC27 ☐**

PROJECT SCOPE

Strategic

We have entered a long-term strategic partnership with engagement experts Ipsos MORI that will run through to the middle of PC21. In their role, they will:

- Provide leadership and management of effective and appropriate ongoing customer and stakeholder engagement.
- Conduct an annual omnibus survey to ensure that we are considering the views and perceptions of the silent majority.
- Spend 3-4 days per year reviewing industry trends, attending engagement sector conferences and researching innovative engagement approaches to ensure that engagement activities are always evolving and improving.
- Undertake a consumer research and engagement review/appraisal at the mid-point of PC21.

At the mid-point of PC21, we will commence retender of strategic consumer engagement contract in preparation for PC27.

Operational

In tandem, we will continue to learn from our daily interactions with customers by:
analysing the type of contacts to help us prioritise what matters to our customers;
continuing to survey them on a near real-time basis;
using this information to develop insight that we will share with our operational colleagues and agree actions to drive improvement offering our customers contact choices that complement their lifestyle.

No changes to the above scope.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

Agreed actions and tangible initiatives to drive customer satisfaction improvements that have been developed in conjunction with operational colleagues and based upon survey response analysis and insights collected from customers. *(Note: project outcomes text from PC21 FD ANNEX T is blank).*

No change to outcomes.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES
N/A
UR MONITORING EXPECTATIONS
NI Water did not provide any detail in its submission beyond the scope of this development objective. The objective is currently at the early stage of introducing new consumer metrics and KPIs in year1 and year 2 of PC21 to inform the Mid-term Review (see long list of new consumer measures and metrics included under PC21 FD Main Report - Section 3 Outputs and Outcomes). The CM/SAT Working Group will develop the long list of new consumer measures and metrics. We also propose that a new Codes of Practice sub-group of the CEOG should report to CEOG on progress regarding the forthcoming review of NI Water's Codes of Practice and consumer promises. The UR will work with NI Water and other stakeholders to agree the exact detail of the associated monitoring requirements. As a minimum, progress will be monitored and reported on through the annual cost and performance report process. It is anticipated that work will need to be undertaken by the PC21 Mid-term Review or earlier.
HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED
22/23 Update: **Strategic** • Annual Omnibus survey (conducted by Ipsos MORI) completed for 22/23 with results due to be shared with UR and CCNI at a CM/SAT Meeting in June 23. • The mid-term review of NI Water Customer Measures is nearing completion. CM/SAT has been meeting monthly since Jan 23 to agree improvements to the Unwanted Contacts and Net Promotor Score measures as well as potential future measures that the CM/SAT group will develop through the remainder of PC21. • The review of NIW Codes of Practice is now complete. The revised Codes of Practice were formally approved by UR on 24th Aug 22 and launched by NI Water in October 22. **Operational** • NI Water continue to survey customer contacts through the Voice of the Customer programme. Results and insights continue to be shared with operational colleagues through monthly meetings where improvement initiatives are developed and discussed. • Based upon customer views and survey responses NI Water have developed a Customer Measures Improvement Plan which includes end to end journey reviews, improvement initiatives and milestones. A Customer Programme Portfolio Board has also been established to monitor progress and ensure governance.
PROGRAMME
See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE					
Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Conduct 21/22 Annual Omnibus Survey	N/A – No milestone within FD	N/A – No milestone target within FD	Apr 22	Complete	
Develop 22/23 action plan based upon real time customer survey information and contact analytics.	N/A – No milestone within FD	N/A – No milestone target within FD	May 22	Complete	
Completion of Codes of Practice (CoP) review	N/A – No milestone within FD	N/A – No milestone target within FD	Aug 22	Complete	Formally approved by UR in Sept 22
Work with UR and other CM/SAT stakeholders to review consumer metrics, COP, surveys and insights.	N/A – No milestone within FD	N/A – No milestone target within FD	Continuous	On Target	CM/SAT continues to meet on a regular basis, with monthly meetings since Jan 23 to discuss changes to customer measures and metrics.
Progress update to be provided in 2022 Annual Information Return	N/A – No milestone within FD	N/A – No milestone target within FD	June / July 22	Complete	
Progress update to be provided in 2023 Annual Information Return	N/A – No milestone within FD	N/A – No milestone target within FD	Jul 23	On Target	
Conduct 22/23 Annual Omnibus Survey	N/A	N/A	April 23	Complete	
Develop 23/24 action plan based upon real time customer	N/A	N/A	May 23	Complete	

survey information and contact analytics.					
Agree Mid-term changes to customer measures and metrics.	N/A	N/A	July 23	On going	
Agree need / requirements of a consumer research and engagement review/appraisal at the mid-point of PC21.	N/A	N/A	Sept 23	On target	
KEY MILESTONES FOR SOLUTION INVESTMENT					
N/A	N/A	N/A	N/A	N/A	N/A
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO **(2018/19 prices)**		**Forecast Cost of DO** **(Nominal Prices)**		**Commentary on Material Total Cost Changes for DO**	
N/A		N/A		N/A	
PC21 FD Estimated Cost of Solution **(2018/19 prices)**		**Forecast Cost of Solution** **(Nominal Prices)**		**Commentary on Material Solution Cost Changes**	
N/A		N/A		N/A	
ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)					

21/22 Update:

- Annual Omnibus Survey – We have completed our 21/22 Customer Satisfaction and Advocacy Survey. Results are positive with a good increase in domestic advocacy (58%-66%) and other satisfaction measures staying roughly the same.
- Customer Surveys & Insights – We are continuing to survey all customers that contact NI Water, analysing results and sharing monthly with operational colleagues. We have developed a 22/23 Customer Measures Improvement Programme based upon these results.
- Code of Practise Review – Internal reviews rounds have been completed, proposals have been shared and endorsed by CCNI and proposed changes shared with NIAUR. Genesis have been appointed to design new documentation.

22/23 Update:

- Annual Omnibus Survey – We have completed our 22/23 Customer Satisfaction and Advocacy Survey. Results will be shared with UR and CCNI in June 23.
- Customer Surveys & Insights – We are continuing to survey all customers that contact NI Water, analysing results and sharing monthly with operational colleagues. We have developed a 23/24 Customer Measures Improvement Programme which includes end to end journey reviews, improvement initiatives and milestones. A Customer Programme Portfolio Board has also been established to monitor progress and ensure governance.
- Code of Practise Review – Now complete.

• Customer Measures & Metrics - CM/SAT has been meeting monthly since Jan 23 to agree improvements to the Unwanted Contacts and Net Promotor Score measures, as well as potential future measures that the CM/SAT group will develop through the remainder of PC21.
PLANNED NEXT STEPS FOR DELIVERY
• Customer Measures & Metrics - Agree changes to customer measures and metrics in advance of PC21 mid-term. • PC21 mid-point consumer research and engagement review/appraisal – agree need / requirements with CM/SAT group by Sept 23. • Annual Omnibus Survey - Conduct 23/24 survey in Q4. • Customer Surveys & Insights - Continue to survey all customers that contact NI Water, analysing results and sharing monthly with operational colleagues.
PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX
N/A
IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME
N/A
IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☐	No ☒	Comments

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE
Failure to agree mid-term changes to customer measures and metrics on time – Low risk as discussion are close to conclusion.
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
N/A
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There is no linkage to other Development Objectives

Development Objective – Expenditure Summary

N/A – No expenditure.

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
02	**Consumer Protection / Customer Care Register**	**N/A**

GOVERNANCE

Directorate	SRO	Project Lead
C&OD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

The purpose of this objective is to ensure:

- the needs of vulnerable or disadvantaged domestic customers are prioritised.
- the continued promotion of services for vulnerable customers.
- active participation with the UR Consumer Protection Programme.

(Note: project outcomes text from PC21 FD ANNEX T is blank).

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27
(Note: This is not to confirm solution spend)

PC21 only ☐	PC27 only ☐	PC21 and PC27 ☐

PROJECT SCOPE

While our household customers do not directly pay a water bill and therefore are not financially vulnerable in relation to our services, we recognise that there are vulnerabilities due to age, disability, or medical conditions. We will:

- Actively promote our Customer Care Register and the benefits it offers our customers;
- Continue to work closely with CCNI, the Utility Regulator and the range of other organisations on the Consumer Vulnerability Working Group to support their initiatives and promote our services to these customers; and
- Continue to work with other utilities to jointly promote our services and grow our Customer Care Register.

The Utility Regulator has commenced their Consumer Protection programme priority projects of best practice frameworks (1 and 2). We will actively participate in the Utility Regulator's flagship projects to promote best practice across our Organisation.

No changes to the scope.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

Project outcomes for the Consumer Protection / Customer Care Register Development Objective:

- continued growth of NI Water's Customer Care Register
- active participation with the UR Consumer Protection Programme

(Note: project outcomes text from PC21 FD ANNEX T is blank).

No change to outcomes.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

NI Water did not provide any detail in its submission beyond the scope of this development objective.

This development objective is linked to the obligations for NI Water under the Consumer Protection Programme. It is expected to deliver benefits for consumers through enhanced

protection measures delivered, monitored and reported against established best practice benchmarks across regulated industries in the UK.

These projects are currently under development and will be progressed in line with the Consumer Protection Programme and Best Practice Frameworks Project.

The UR will work with NI Water and other stakeholders to agree the exact detail of the associated monitoring requirements. As a minimum, progress will be monitored and reported on through the annual cost and performance report process.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

- NI Water has continued to engage with the UR Consumer Protection Programme returning a formal response to the Best Practice Framework consultation in April 22 and is currently waiting to hear from UR regarding outputs from this consultation exercise.
- In the meantime, NI Water has continued to promote and grow its Customer Care Register and progressed with consumer vulnerability accreditations as per the PC21 FD.

PROGRAMME

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Response to Best Practice Framework consultation.	N/A – No milestone within FD	N/A – No milestone target within FD	Apr 22	Complete	
Undertake GAP analysis for potential future BSI 18477 Inclusive Service Provision assessment.	N/A – No milestone within FD	N/A – No milestone target within FD	Apr 22	Complete	
Continue to engage with stakeholders on NIAUR's Best Practice Consumer Protection Programme.	N/A – No milestone within FD	N/A – No milestone target within FD	Continuous	On Target	
Progress update to be provided in 2022 Annual Information Return	N/A – No milestone within FD	N/A – No milestone target within FD	June / July 22	Complete	

Progress update to be provided in 2023 Annual Information Return	N/A – No milestone within FD	N/A – No milestone target within FD	Jul 23	On Target	
Executive Committee endorsement for JAM Card Proposals	N/A	N/A	March 23	Complete	
Commence roll out of JAM Card training to staff	N/A	N/A	April 23	Complete	
Complete JAM accreditation	N/A	N/A	July 23	On Track	
KEY MILESTONES FOR SOLUTION INVESTMENT					
N/A	N/A	N/A	N/A	N/A	N/A
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO (2018/19 Prices)		**Forecast Cost of DO (Nominal Prices)**		**Commentary on Material Total Cost Changes for DO**	
N/A		N/A		N/A	
PC21 FD Estimated Cost of Solution (2018/19 Prices)		**Forecast Cost of Solution (Nominal Prices)**		**Commentary on Material Solution Cost Changes**	
N/A		N/A		N/A	
ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)					

21/22 Update

- Customer Care Register – We are continuing to promote the benefits and services of our Customer Care Register through various advertising campaigns including a joint leaflet with NIE. In 21/22 we increased the number of customers on our register by 7%.
- Consumer Protection – We are continuing to engage with NIAUR and other stakeholders as part of the NIAUR led "Best Practice Consumer Protection Programme". In 21/22 we attended several stakeholder meetings and workshops, providing feedback when required to the programme team. We have completed introductory meetings with both BSI and NOW group regarding "BSI 18477 Inclusive Service Provision" and "Just a Minute" accreditations. In April 22 we completed the GAP analysis for BSI 18477, the first stage of the process.

22/23 Update:

- Customer Care Register – We are continuing to promote the benefits and services of joining our register through various advertising campaigns. In 22/23 we started to use targeted paid social media adverts, reaching over 78k customers in a single campaign. In 22/23 we increased the number of customers on our register by 14%.
- Consumer Protection – We are continuing to engage with NIAUR and other stakeholders as part of the NIAUR led "Best Practice Consumer Protection Programme". In 22/23 NI Water returned a response to the Best Practice Framework consultation and are currently awaiting outputs from this exercise.

• Vulnerability Accreditations – Following Executive Committee approval in March 23, we commenced the roll out of JAM Card accreditation to all NIW staff. We hope to achieve this accreditation in July 23.
PLANNED NEXT STEPS FOR DELIVERY
• Continued promotion and growth of our Customer Care Register • Further discussion with UR and other stakeholders following outputs of the Best Practice Framework consultation. • Completion of JAM accreditation and continued work towards ISO 22458 Inclusive Service Provision.
PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX
N/A
IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME
N/A
IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☐	No ☒	Comments

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE
N/A
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
N/A
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There is no linkage to other Development Objectives.

Development Objective – Expenditure Summary

N/A – No expenditure

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
03	**NI Water Alpha Ltd - WTWs Treatability Improvements**	**04a**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

This Project is currently at appraisal stage and sufficient detail is not available at present to fully assess requirements.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	**PC27 only ☐**	**PC21 and PC27 ☒**

PROJECT SCOPE

NI Water Alpha Ltd operates and maintains four WTWs (Dunore Point, Castor Bay, Ballinrees and Moyola) to deliver clean and safe water into the distribution network. A review is currently underway to ensure that all four of these works are compliant with regulatory and NI Water internal standards. Remedial actions necessary to address any shortcomings against the standards will also be identified.

No change to scope.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

- Reduced risk of compliance failure,
- Maintaining a stable service in relation to provision of clean and safe drinking water,
- Allow assessment of potential future funding need.
- Needs and Options Report

It should be noted Treatability Reports and associated Business Cases act as the Needs and Options Report as described in the EC Dashboard key deliverables for this DO.

No change to PC21 FD project outcomes.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, the UR expects NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of expenditure.
- Keep stakeholders updated on developments and proposals through the ORG.
- Share completed treatability studies with Utility Regulator and DWI.
- Submit appropriate Annex A documentation to DWI, allowing sufficient time for consideration/approval.
- Complete and submit a change control to stakeholders for consideration/approval (if required).

- Submit business cases for solutions, including costs and justification, to UR for determination (if required).

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

As part of the AIR 22 submission for this development objective an updated programme was submitted to the UR. This programme has broadly been followed since the AIR22 submission although there are changes for the subsequent period.

A change control for Ballinrees was submitted in November 2022 with engagement with UR as required. The formal change control was submitted via ORG ensuring wider stakeholder engagement including DWI. In addition there have further engagements with DWI through the ongoing Drinking Water Inspectorate/ NI Water Compliance meetings. All information relevant to support the Change Control including the background treatability information and supporting Business Cases have also been shared.

As supported by DWI, Annex A information was not submitted for Ballinrees as it was not a requirement as a Regulation 31 Notice was in place for MCPA and Taste & Odour exceedances which negated the need for Annex A documentation.

PROGRAMME

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Completion of appraisal and update PC21 business case	Jan 21	Superseded		N/A	As highlighted in AIR22 it was no longer NI Waters intention to complete Change Controls/ Business Cases for NI Water Alpha sites within the timescales originally envisaged as these have now been prioritised in conjunction with all WTWs in relation to the overall
Completion of regulatory Change Control process	Apr 21	Superseded		N/A	

					treatability pilot programme.
Annual Engagement with UR as part of AIR Return			Annually	On Target	
On-Going Engagement with Stakeholders including DWI			On-Going	On Target	
Ballinrees - Pilot Study			Feb 22	Complete	
Develop and submit (to the UR) an updated programme for the delivery of this objective			June/ July 22	Complete	As part of the AIR 22 submission for this development objective an updated programme was submitted to the UR.
Ballinrees - Submit appropriate Annex A documentation to DWI.			Aug 22	N/A	Annex A information was not submitted for Ballinrees as it was not a requirement as a Reg 31 Notice was in place for MCPA & tase & Odour exceedances, negating the need for further Annex A documentation.
Ballinrees – Submit Change Control and engage with stakeholders on proposals.			Aug 22	Complete	A Change Control with subsequent engagement was submitted in November 2022.
Dunore & Castorbay – Pilot Studies			Jan 24	Delayed	The treatability study for Dunore was originally planned for 2023 but now planned for

					2024. This is due to planned works on the site in 2023 which would interfere with the treatability study.
Dunore & Castorbay – Develop Business Cases as appropriate to inform Mid-Term Review update and engage with Stakeholders on Proposals			Jun 24	Delayed	On review of overall Treatability and Funding priorities NI Water do not intend to seek funding for these sites in PC21 and business cases will be developed to inform PC27 submission in **Jan 26**
Dunore & Castorbay - Submit appropriate Annex A documentation to DWI.			Jun 24	Delayed	As above, although Annex A documentation will be submitted to DWI as appropriate this will be developed to inform the PC27 submission in **Jan 26**
Moyola – Pilot Study			Jul 24	On Target	The treatability study for this site has been brought forward in substitute of Foffany treatability study as deemed a higher priority.
Moyola – Develop Business Case			Apr 25	On Target	

as appropriate to inform PC27 Submission					
KEY MILESTONES FOR SOLUTION INVESTMENT					
NI Water A1 options and business case complete	Apr 22	Superseded		N/A	As highlighted in AIR22 it was no longer NI Waters intention to complete Change Controls/ Business Cases for NI Water Alpha sites within the timescales originally envisaged as these have now been prioritised in conjunction with all WTWs in relation to the overall treatability pilot programme.
NI Water cost & programme understood and construction start	Apr 23	Superseded		N/A	
Beneficial Use	Mar 25	Superseded		N/A	
Ballinrees Upgrade - Commencement			Mar 23	Complete	
EXPENDITURE					

FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO** (Nominal prices)	**Commentary on Material Total Cost Changes for DO**
£0.00m	£5.757m	The updated costs reflect the costs of the large scale Treatability Pilots used at the sites. These large-scale pilots have the ability to replicate numerous issues and risks at WTWs and establish the optimum solutions to resolve. It should be noted an estimate of £2m has been used for pilot studies at Dunore & Moyola

PC21 FD Estimated Cost of Solution (2018/19 prices)	Forecast Cost of Solution (Nominal prices)	Commentary on Material Solution Cost Changes
£7.41m	£18.632m	This reflects the latest estimated cost of the upgrade of Ballinrees WTW required to satisfy the Reg 31 Notice in place for MCPA and Taste & Odour exceedances. (Project no: JA341,111,112, 181, 191)

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

As part of the AIR 22 submission for this development objective an updated programme was submitted to the UR. This programme has broadly been followed since the AIR22 submission although there are changes for the subsequent period.

A change control for Ballinrees was submitted in November 2022 with engagement with UR as required. The formal change control was submitted via ORG ensuring wider stakeholder engagement including DWI. In addition there have further engagements with DWI through the ongoing Drinking Water Inspectorate/ NI Water Compliance meetings. All information relevant to support the Change Control including the background treatability information and supporting Business Cases have also been shared.

As supported by DWI, Annex A information was not submitted for Ballinrees as it was not a requirement as a Regulation 31 Notice was in place for MCPA and Taste & Odour exceedances which negated the need for Annex A documentation.

It should be noted the Change Control for Ballinress has been approved by ORG.

PLANNED NEXT STEPS FOR DELIVERY

As detailed in the key milestones the next steps involve delivering the pilot studies for the three remaining Alpha sites. It is anticipated the that pilots for both Castor Bay and Moyola will be carried out in 23/24 with Dunore Point in 24/25. The outputs of these will then inform the long-term solution for the sites.

As previously highlighted on review of overall Treatability and Funding priorities NI Water do not intend to seek funding for these sites in PC21 and business cases will be developed to inform the PC27 submission for which the final submission is due in Jan 26. As part of the submission Annex A documentation will be submitted to DWI as appropriate.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

N/A

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

There was no defined capital delivery programme linked to this development output following the Final Determination.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☐	No ☒	Comments

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

If the Development Objective isn't delivered the risks include:

- Lack of future funding for NI Water Alpha WTWs
- Increased risk of Water Quality Failures & Associated Customer Complaints
- Increased risk of Interruptions to Supply

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
Identify relevant funding for NI Water Alpha WTWs to ensure: • Regulatory Water Quality Standards can be achieved into the future. • Ensure security of supply
LINKS WITH OTHER DEVELOPMENT OBJECTIVES
There are no linkages with this development objective to any other development objectives.

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment/Project Code
Civil				
M&E				
Materials / Equipment				
NIE				
Lands				
Site Investigation				
Consultancy				
Pilot Studies	3.147	2.610	5.757	JL795,112, 191 JG095, 111 JI280, 111 £2m estimate for pilot studies at Dunore & Moyola
Totals	**£3.147**	**£2.610**	**£5.757**	
PC21 Projected Spend on Development Objective			**£5.757**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
04	**DWD Recast & Emerging Issues Study**	**04z**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

In February 2018, the European Commission adopted a proposal for a revised (recast) of Drinking Water Directive (DWD) (98/83/EC) to improve the quality of drinking water and provide greater access and information to citizens. This has yet to be formally adopted by the EU and, subsequent to this, by UK legislation. However there will be implications for NI Water's operating model should it be adopted and a study is required to evaluate the impact of this legislation.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	**PC27 only ☒**	**PC21 and PC27 ☐**

PROJECT SCOPE

A review of the current proposal for a "Directive of the European Parliament and of the Council on the quality of water intended for human consumption (recast)" to ascertain future impacts and opportunities should the recast be formally adopted. Also to review emerging issues such as antimicrobial resistance and microplastics.

No change to scope.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

Allow assessment of potential future funding need.

Additional Detail to the above outcome is:
A key deliverable will be a report to estimate the capital and operational investment requirements for each new measure, plus the requirement for capture and analysis of sampling data.

No change to PC21 FD project outcomes.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, the UR expects NI Water to:

- Develop and submit a programme for delivery based on the transposition and implementation requirements.
- Engage and seek DWI support for the proposals through ongoing engagement.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any additional work which will flow from the successful completion of the development stages.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

- **Develop and submit a programme for delivery based on the transposition and implementation requirements.**
  No decision has been made on the transposition of the DW Recast Directive into new Drinking Water Regulations in Northern Ireland therefore a programme for delivery cannot be developed at this stage. This will be a Ministerial (NI Executive) decision.
- **Engage and seek DWI support for the proposals through ongoing engagement.**
  Ongoing engagement is in place with the DWI. Updates on the transposition of the DW Recast Directive into new Drinking Water Regulations in Northern Ireland or the development of new Drinking Water Regulations in Northern Ireland aligned to the Recast Directive are provided to NI Water by the DWI through the following DWI/MIW meetings:
  - DWI/NIW Compliance Programmes Review meeting – see minutes of meeting 26/01/2023.

    DWI NIW Compliance Programı
  - DWI/NIW Asset Delivery Directorate Triannual Meeting – see minutes of meeting 20/02/2023.

    DWI NIW ADD Triannual Meeting -2(
- **Engage with UR staff on the timing of additional engagement, reviews and the determination of any additional work which will flow from the successful completion of the development stages.**
  N/A until there is a decision on the requirement for transposition into new Drinking Water Regulations in Northern Ireland or that new Drinking Water Regulations, aligned to the Recast Directive, will be issued.

PROGRAMME

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Unable to quantify milestones until such times that the DWD Recast is adopted into UK legislation (or otherwise)	Blank	Blank	N/A	N/A	Original milestone replaced by individual milestones below.
Submission of	N/A	N/A	N/A	N/A	AIR22 had Jun22.

programme to UR					Individual programme superseded by Master DO Programme
Provide update in 2022 Annual Information Return	N/A	N/A	AIR 22	Complete	For evidence see AIR22 (Table 47, Section 4 commentary)
Provide update in 2023 Annual Information Return	N/A	N/A	AIR23	On Target	N/A
Provide update in 2024 Annual information return	N/A	N/A	AIR 24	On Target	To be completed in 2024 in line with 2024 Annual Information return
KEY MILESTONES FOR SOLUTION INVESTMENT					
Unable to quantify milestones until such times that the DWD Recast is adopted into UK legislation (or otherwise)	Blank	Blank	N/A	N/A	N/A
EXPENDITURE [See Also Table DO1 below]					

FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal prices)**	**Commentary on Material Total Cost Changes for DO**
£0.283m	£0.32m	Extent of need not yet known and cannot be predicted
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
TBC	TBC	Any solution is likely for PC27 implementation at the earliest.

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Background

- On 1 February 2018, the European Commission published a proposal for a recast of the Directive on the quality of water intended for human consumption (the Drinking Water Directive).
- On 16 December 2020, the European Parliament formally adopted the revised Drinking Water Directive. The directive came into force on 12 January 2021. Member States have two years to transpose it into national legislation, by January 2023. Transposition includes implementation timescales, where appropriate.

Key features of the revised Directive are:

- Reinforced drinking water quality standards, some of which are more stringent than WHO recommendations.
- Tackling emerging pollutants, such as endocrine disruptors and PFAS, as well as microplastics.
- A preventive approach favouring actions to reduce pollution at source by introducing the DWSP risk-based approach.
- Measures to ensure better access to water, particularly for vulnerable and marginalised groups.
- Measures to promote tap water, including in public spaces and restaurants, to reduce (plastic) bottle consumption.
- Harmonisation of the quality standards for materials and products in contact with water, including a reinforcement of the limit value for lead.
- Measures to reduce water leakages and to increase transparency of the sector.

Brexit / EU Exit – implications to transposition of the EU Drinking Water Directive

- The UK left the EU on 31 January 2020.
- The transition period, during which nothing changed, ended on 31 December 2020.
- The rules governing the new relationship between the EU and UK took effect on 1 January 2021.
- The Drinking Water Directive Recast came into effect on 12 January 2021, after the UK had left the EU.

Devolved Administrations

- Defra has made no decision on whether the Drinking Water Directive Recast changes will be implemented in the UK (England & Wales) through revised drinking water regulations.
    - Defra may determine to implement the regulatory changes either in whole or partially (e.g. drinking water standards only)
    - There is no pressure to meet EU timeframe for transposition to revise Drinking Water Regulations.
- **Update May 2023**
  A Drinking Water Quality - Advisory Standards Board is to be set up. The Standards Board will use science and evidence to make recommendations to Ministers for future updates to standards where there are new and emerging contaminants, updated toxicological data and other areas where standards may be improved in order to protect public health and improve confidence in drinking water. The Standards Board will operate in a 5 yearly legislative review cycle.
- The Scottish Government have determined to remain aligned to EU Regulations
    - Scotland is working towards new Public Water Supply Regulations to be in place for January 2023.

- **Update May 2023**
  New Public Water Supply Regulations in Scotland came into force on 1 January 2023 [The Public Water Supplies (Scotland) Amendment Regulations 2022].

- Northern Ireland – Ireland / Northern Ireland Protocol - Northern Ireland will remain aligned to a limited set of rules related to the EU's Single Market.
  - No decision has been made on whether NI will transpose the Drinking Water Directive in whole or part into Regulations.

- **Update May 2023**
  There is no change to this position.

The Protocol potentially has implications for potable water used in food production and the trade of goods on the single market – i.e. water used for food production will need to comply with EU legislation. Food Standards regulations may therefore require that the water quality standards of the EU Drinking water Directive are transposed into new Drinking Water Regulations in Northern Ireland. If the protocol is withdrawn then the requirement for alignment to the set of rules related to the EU's Single Market and therefore Food Standards Regulations would no longer apply and as such there would no longer be a requirement to transpose DW directive.

PLANNED NEXT STEPS FOR DELIVERY

Northern Ireland - Next steps & progress

To date no decision has been made on whether Northern Ireland will transpose the Drinking Water Directive Recast in whole or part into Regulations. The DWI have met on a number of occasions with DAERA Policy to consider Transposition of the drinking water quality aspects of EU Drinking Water Directive Recast in line with the Protocol and Food Standards requirements. The DWI have provided a briefing note to the DEARA Minister and have noted that they have provided a submission to the DAERA Minister in May 2022, noting that they are working on the water quality aspects of the Recast directive.

The DWI have provided updates on their work to date to NI Water through routine DWI/NIW regulatory meetings, thereby facilitating a close watching brief by NI Water on the potential for transposition or new drinking water regulations in line with the Recast Directive. An NI Water workshop with the DWI was held on 13 June 2022.

The timeline for implementation of new drinking water regulations may not align with the business planning PC cycle and as such any increase in expenditure that may result will have to be incorporated into NI Water budgets outside of the current PC21 period. NI Water have noted to the DWI that changes in relation to transposition of the recast directive or new drinking water regulations will need to be factored into the PC27 Determination.

NI Water has undertaken an initial review of the potential water quality parameter and monitoring changes to meet the requirements of the Drinking Water Directive Recast in respect of regulatory and operational sampling and analysis including:

- New parameters
- Revised PCVs
- Revised sampling frequencies

See next section and Annex 1.

The DWR team made a presentation to NI Water EC in November 2021 on the initial assessment carried out on the DWD Recast.

NI Water have liaised with Scottish Water on the work they have undertaken on the transposition into new Public Supply Regulations in Scotland. A meeting was held via MS Teams on 10 May 2022. Further liaison will be undertaken as necessary as Scottish Water as we continue to review and assess the potential impacts of the regulatory changes to

parameters, monitoring frequency and analysis through new drinking water regulations. Surveys are being undertaken for a number of the potential new parameters to understand the risk for compliance against the regulatory limit as set in the Recast Directive. This will help to feed into any work required for this development objective to assess strategic cost estimates should there be a decision to issue new drinking water regulations in line with the Recast Directive.

Overview of changes / impacts – parameters and monitoring requirements

A number of new parameters have been included e.g. PFAS & watch list emerging substances of concern such as endocrine disruptors, microplastics. This will have implications for new analysis method development and laboratory capacity requirements.

a. New parameters

Bisphenol A	Microcystin-LR	Nonylphenol (watchlist only)
Chlorate	Sum of PFAs	Beta-estradiol (watchlist only)
Chlorite	Somatic coliphages	
HAA	Uranium	

Nonylphenol and beta-estradiol are watch list parameters and not regulatory compliance parameters. The wording is that they “should be added to the watch list to be established by the Commission pursuant to this Directive”.

b. Changes to parameters / monitoring requirements

- Changes to minimum frequency of sampling and analysis for some parameters, which will result in an associate increase in costs.
- New parameters will require new instrumentation and method development, which will result in an associate increase in costs.
- Lead – the regulatory standard will remain at 10ug/l until 2036 and then reduce to 5ug/l. There will be a requirement to work towards the reduced standard over this period. This will require increased capital expenditure in lead pipe replacements and increased operational expenditure for Orthophosphoric acid dosing for plumbosolvency control. Policy changes in respect of dealing with the customer side lead pipe would be required as compliance for lead in drinking water is at the point of use.
- Turbidity at WTW – new operational monitoring requirement. May require capital expenditure for accredited/validated online turbidity monitoring for final water going into supply. There will also be an ongoing maintenance cost and cost associated with instrumentation replacement schedules.
- Chlorate and chlorite – potential for capital expenditure for additional storage tanks and improved management of the age of sodium hypochlorite to reduce the risk for formation of these compounds through hypochlorite degradation.
- More emphasis on risk assessment approach (DWSP – source to tap risk management). This may provide an opportunity to reduce frequency of sampling and analysis for some parameters based on actual results and risk assessments.

It is agreed that the cost, spend on the DO should remain. This is to ensure that if there is a decision to transpose the Recast DWD, or to issue new Drinking Water Regulations that align with the Recast DWD water quality aspects, that this money would be available to carry out strategic cost estimates for:

- Cost impacts associated with sampling, monitoring, accreditation and reporting.
- Capital cost impacts on the laboratory.
- Capital cost impact of new operational monitoring requirement.

• Capital cost impacts associated with achieving compliance with new and revised regulatory standards.
PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX
N/A
IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME
N/A Extent of need not yet known and cannot be predicted. Any solution is likely for PC27 implementation at the earliest.
IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☐	No ☒	This DO has no link to the PC21 plan outputs.

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE
To date no decision has been made on whether Northern Ireland will transpose the Drinking Water Directive Recast in whole or part into new Drinking Water Regulations. Due to this it is not possible to move any further forward with this Development Objective. There is a risk that the required capital costs to meet the requirements of new drinking water regulations are not captured for PC27 planning.
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
New Drinking Water Regulations in Northern Ireland aligned to the Drinking Water Recast would ensure that drinking water standards in Northern Ireland would be comparable to those in the EU Member States and in Scotland.
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There are no current links to any other Development Objectives.

Development Objective – Expenditure Summary

There has been no expenditure to date.

Table DO1 Expenditure on Development Objective (Nominal cost base)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Consultancy	None	£0.32m	£0.32m	
Totals	**£0**	**£0.32m**	**£0.32m**	
PC21 Projected Spend on Development Objective			**£0.32m**	

Annex 1 - Parameter changes analysis – assumptions & risks

	2017	Recast			
Parameter	**Concentration or Value (maximum)**	**Concentration or Value (maximum)**	**Units of Measurement**	**Comment on parameter change**	**Risk / Action**
Enterococci	0	0	number/100ml	Change to frequency of monitoring (increased to frequency of coliforms) - core parameter - must always be monitored at the minimum frequency.	Increased numbers of samples – sampling & analysis resource impacts.
Escherichia coli (E. coli)	0	0	number/100ml	No change - core parameter - must always be monitored at the minimum frequency.	
Total coliforms	0	-	number/100ml	No change - core parameter - must always be monitored at the minimum frequency.	
Antimony	5	10	µ g/l	**Increase in PCV** (Note WHO recommended increase to 20ug/l).	Method would require adjustment to account for revised PCV.
Bisphenol A		2.5	ug/l	New parameter - endocrine disrupting compound.	Method development. – in house analysis would require new instrumentation and method development along with additional analytical resource. Expected to be low risk in drinking water. Survey being undertaken across all WTW sites to determine potential risk in raw waters.

	2017	Recast			
Parameter	Concentration or Value (maximum)	Concentration or Value (maximum)	Units of Measurement	Comment on parameter change	Risk / Action
Chlorate		0.25	mg/l	New parameters Chlorate & Chlorite are predominantly disinfection by-products from hypochlorite degradation. Action may be required to reduce risk of formation to meet compliance - chemical procurement (chemical strength, volume) and storage (e.g. temperature control, prevention of exposure to light and minimisation of storage time). Note: WHO proposed a value of 0.7ug/l (3 x greater than level in the recast). To be considered further: - The wording in the recast DWD states "A parametric value of 0.70 mg/l shall be applied where a disinfection method that generates chlorate, in particular chlorine dioxide, is used for disinfection of water intended for human consumption." As hypochlorite-based disinfection generates chlorate will the DWI seek to	Method development – in house analysis would require new instrumentation or changes to current instrumentation and method development along with additional analytical resource. Assessment of risk from current procurement and storage of sodium hypochlorite will be required. Survey being undertaken across all WTW sites to determine potential risk / levels of chlorate & chlorite.
Chlorite		0.25	mg/l		

	2017	Recast			
Parameter	Concentration or Value (maximum)	Concentration or Value (maximum)	Units of Measurement	Comment on parameter change	Risk / Action
				introduce the standard at 250µg/l or will there be a relaxation on this for sites where we use sodium hypochlorite or on-site electrolytic chlorination.	
Chromium	50	25	µ g/l	The parametric value of 25 µg/l shall be met, at the latest, by 12 January 2036. The parametric value for chromium until that date shall be 50 µg/l.	Method would require adjustment to account for revised PCV. Expected to be low risk to meet revised standard. Potential for leaching from customers internal fittings. Method would require adjustment to account for revised PCV.

Parameter	2017 Concentration or Value (maximum)	Recast Concentration or Value (maximum)	Units of Measurement	Comment on parameter change	Risk / Action
Haloacetic acids (HAAs)	-	60	ug/l	New parameter - disinfection by-product.	Method development – in house analysis would require new instrumentation or changes to current instrumentation and method development along with additional analytical resource. Survey to be undertaken across all sites to determine potential risk. Assessment of risk – PC21 pilot plant treatability studies for DBPs, including HAAs to inform PC27.
Lead	10	5	µ g/l	The parametric value of 5 µg/l shall be met, at the latest, by 12 January 2036. The parametric value for lead until that date shall be 10 µg/l. There will be a requirement to work towards the reduced standard over this period.	Compliance will still be at the customer tap – risk from customer side lead. Expected decrease in compliance with the PCV. Method would require adjustment to account for revised PCV.
Microcystin-LR	-	1	ug/l	New parameter. This parameter shall be measured only in the event of potential blooms in source water.	Method development. – in house analysis would require new instrumentation and method development along with additional analytical resource. Expected to be low risk to meet PCV.

Parameter	2017 Concentration or Value (maximum)	Recast Concentration or Value (maximum)	Units of Measurement	Comment on parameter change	Risk / Action
					Note: we have been measuring this operationally at some sites with algae risk in the raw water.
PFAS Total	-	0.5	ug/l	New parameter. 'PFAS Total' means the totality of per- and polyfluoroalkyl substances. This parametric value shall only apply once technical guidelines for monitoring this parameter are developed in accordance with Article 13(7) i.e. By 12 January 2024, the Commission shall establish technical guidelines. Member States may then decide to use either one or both of the parameters 'PFAS Total' or 'Sum of PFAS'. Note: We have undertaken 2 annual raw water surveys to assess risk - all low-level risk.	Industry method development required – very few labs currently with accreditation for the range of PFAS compounds to be tested. – in house analysis would require new instrumentation and method development along with additional analytical resource. Unknown what the frequency of monitoring required will be – risk based or set frequency? - Annual surveys being undertaken to assess risk based on DWI guidance and Recast Directive parameters – all results show low risk. Approach agreed with DWI and results shared with DWI.
Sum of PFAS	-	0.1	ug/l	New parameter. 'Sum of PFAS' means the sum of per- and polyfluoroalkyl substances considered a concern as regards water intended for human consumption listed in point 3 of Part B of Annex III. This is a subset of 'PFAS Total'	

Parameter	2017 Concentration or Value (maximum)	Recast Concentration or Value (maximum)	Units of Measurement	Comment on parameter change	Risk / Action
				substances. Note – above PFAS Total – may only be required to measure PFAS Total or Sum of PFAS.	
Turbidity (WTW) - operational monitoring and none to exceed 1 NTU	1	0.3NTU in 95% of samples and none to exceed 1 NTU	NTU	Change in monitoring requirement. For WTWs with >10,000m3 per day into supply continuous sampling required e.g. online monitoring. Capital expenditure requirement - Will require turbidity monitor on water going into supply and requirements for calibration / accreditation / validation. Note: would be expected that a daily sample for laboratory analysis will still be required.	Capital expenditure – accredited/validated online turbidity monitoring post CWT (water into supply). Will apply based on volume of water into supply (i.e. sites currently on daily monitoring).
Turbidity (Customer tap)	4	Acceptable to consumers and no abnormal change	NTU	Change to PCV - This potentially has implications for customer complaints of discoloured water. Note: national requirements may still require a parametric value for analysis purposes.	Need to understand what the trigger will be e.g. number / %age of complaints per population received. Will there still be a national PCV?
Selenium	10	20	µ g/l	Increase in PCV (Note WHO recommended increase to 40ug/l).	Method would require adjustment to account for revised PCV.

	2017	Recast			
Parameter	**Concentration or Value (maximum)**	**Concentration or Value (maximum)**	**Units of Measurement**	**Comment on parameter change**	**Risk / Action**
Uranium		30	ug/l	New parameter.	Expected to be low risk to meet PCV.
Colour	20	Acceptable to consumers and no abnormal change	mg/l Pt/Co	Change to PCV - This potentially has implications for customer complaints of discoloured water . Note: national requirements may still require a parametric value for analysis / monitoring purposes.	Need to understand what the trigger will be e.g. number / %age of complaints per population received. Will there still be a national PCV?
Turbidity (WTW) - operational monitoring and none to exceed 1 NTU	1	0.3NTU in 95% of samples and none to exceed 1 NTU	NTU	Change in monitoring requirement. For WTWs with >10,000m3 per day into supply continuous sampling required e.g. online monitoring. Capital expenditure requirement - Will require turbidity monitor on water going into supply and requirements for calibration / accreditation / validation. Note: would be expected that a daily sample for laboratory analysis will still be required.	Capital expenditure – accredited/validated online turbidity monitoring post CWT (water into supply). Will apply based on volume of water into supply (i.e. sites currently on daily monitoring).
Turbidity (Customer tap)	4	Acceptable to consumers and no abnormal	NTU	Change to PCV - This potentially has implications for customer complaints of discoloured water.	Need to understand what the trigger will be e.g. number / %age of complaints per population received.

Parameter	2017 Concentration or Value (maximum)	Recast Concentration or Value (maximum)	Units of Measurement	Comment on parameter change	Risk / Action
		change		Note: national requirements may still require a parametric value for analysis purposes.	Will there still be a national PCV?
Oxidisability		5	mg/l O2	New parameter. This parameter need not be measured if the parameter TOC is analysed. Note: we analyse TOC currently so unlikely to be required.	No action expected.
Colony count 37o C	No abnormal change	-		No longer in the DW directive - could be maintained in Regulations as a National Requirement	Will there still be a national PCV?
Tetrachloromethane	3	-	µ g/l	No longer in the DW directive - could be maintained in Regulations as a National Requirement	Will there still be a national PCV?
Legionella	-	< 1 000	CFU/l	This potentially could be covered by current monitoring programmes (e.g. HSE NI).	Need to understand who would be required to undertake this – can it be via HSE as current.
Somatic coliphages	-	50 (for raw water)	Plaque Forming Units (PFU)/100 ml	New parameter. This parameter shall be measured if the risk assessment indicates that it is appropriate to do so. If it is found in raw water at concentrations > 50 PFU/100 ml, it should be analysed after steps of the treatment process	Method development if risk assessment shows this is a risk. Increased laboratory resource if analysis required - No known capability for this testing currently available in UK water industry. PC27 treatability – assessment of log removal (similar to

	2017	Recast			
Parameter	Concentration or Value (maximum)	Concentration or Value (maximum)	Units of Measurement	Comment on parameter change	Risk / Action
				in order to determine log removal by the barriers in place and to assess whether the risk of a breakthrough of pathogenic viruses is sufficiently under control.	assessment for Crypto risk in treatability studies).

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
05	**Refresh of DG2 Register**	**08z**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

A refresh of the NI Water DG2 Register is required to increase confidence in the process used to identify properties experiencing low pressure below the 15m minimum level of service. This is evidenced by the fact that in recent years a significant number of DG2 properties were added to the register. This is mainly due to properties at a similar elevation to properties on the DG2 Register, which is only realised by pressure logging and detailed analysis. For example in Year 4 (2018/19) 184 properties were added to the register whilst 176 were removed from the register, which is a net increase of 8 properties. As such, NI Water considers it is necessary to undertake a refresh of the register, which will use all available pressure information including model outputs to target pressure logging in the highest priority low pressure areas.

By AIR23, the DG2 Register has now been fully refreshed via detailed pressure logging and analysis.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27		
PC21 only ☐	**PC27 only ☐**	**PC21 and PC27 ☒**

PROJECT SCOPE

The refresh of the DG2 Register will require a dedicated DG2 team who will use all available GIS data, logged pressures and models to prioritise areas for DG2 logging. This will allow properties to be added and removed from the register.

The highest priority DG2 properties will be analysed on the model to develop optimum solutions. Lowest TOTEX solutions will be identified which may include operational solutions such as rezoning the low pressure properties onto a higher pressure supply or increasing the outlet settings of PRV/WPS. Capex solutions will include upsizing water mains or new/upgraded water booster stations. These network improvement schemes will be prioritised for construction.

We need to continue with post-construction pressure logging as part of the DG2 Investigation Report to confirm the removal of properties from the DG2 Register.

The estimated Development Objective costs from the business plan will be:

<u>1953 - Studies to Inform Water Infra</u> (total of £6.6m for modelling studies)
1 No. FTE (Full Time Equivalent) resource over the 6 years of PC21 to update and maintain the DG2 Register (£300k)
Purchase stock of pressure loggers (£38k)
1 No. FTE to compile potential schemes from the model build programme, and verify schemes for construction through the Water Mains Rehabilitation (£300k)

<u>SP00 Cap Salaries:</u>
2 FTE technician resources to undertake pressure logging for 2 years of PC21 (£120k)

The 'Solution Investment' costs estimates for the two DG2 low pressure projects are:

1539 – DG2 Low Pressure (£8.18m) – Capex schemes comprising mains upsizing & booster WPS solutions.
2617 – Low Pressure Development Output (£1.92m) – Capex allowance for operational solutions (e.g. increasing outlet setting of PRV/WPS)

No change to scope.

It should be noted that the **scope of the Development Objective is limited to the refresh of the DG2 Register** which is now complete and suitable for use in developing solutions to resolve customer low pressures.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

- Proactive approach to maintaining the DG2 Register of low pressure properties
- Increased certainty and prioritised register of low pressure issues
- Resolving highest priority DG2 issues, with improved customer outcomes
- Efficiencies and savings associated with proactive approach and dedicated DG2 team

No change to PC21 FD project outcomes.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition the UR expects NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages. An update on results of the initial desktop studies and logging exercise as well as the implications that this has for the DG2 Register is likely to be required as part of the engagement process.
- Engage with UR staff on the revision of PC21 DG2 targets following completion of the DG2 Register 'refresh' if required.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

AIR22 provided an update on the progress on each milestone.

The UR meeting on 19/12/22 confirmed the completion of the DG2 Refresh by the end of August 2022, which has increased the number of DG2 properties from 578 to 1,908. See attached slides.

DG2 Refresh Summary_131222.pd

The UR plans to meet NIW again at the end of August 2023 to review the impact the DG2 Refresh will have on the DG2 targets, which will be agreed during the Mid Term Review.

PROGRAMME

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE					
Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Develop a desktop GIS layer of 'at risk' low pressure areas	Jun 20	Delayed	May 21	Complete	Completed May 21. Delayed as had to be done on a zone by zone basis to suit batches of pressure logging
Initial logging exercise to verify highest priority locations for DG2 removal schemes	Dec 20	Complete	N/A	N/A	Completed Dec 20 on target
Develop new dedicated DG2 team	Sep 21	Complete	N/A	N/A	Completed Oct 20 ahead of target
Complete refresh of DG2 Register	Mar 24	Complete	N/A	N/A	Completed Aug 22 well ahead of target
Develop and implement a process and resource to maintain the DG2 Register as BAU activity	N/A	N/A	Aug 22	Complete	Completed Aug 22 on target
Initial engagement with UR including programme, review of targets and future plans	N/A	N/A	Dec 22	Complete	Completed Dec 22 on target
Meet with UR to review and agree DG2 targets for remainder of PC21.	N/A	N/A	Aug 23	On target	N/A

The following two milestones are supplementary tasks that are outside the scope of the Development Objective to refresh the DG2 Register:					
Develop Power BI dashboard for monthly DG2 Reporting			Sep 22	Delayed	Delayed due to lack of internal resources, however outside scope of DO
For Mid-Term Review, consider alternatives to DG2 Register i.e. using permanent Pressure Monitoring Points (PMP) and customer contacts			Apr 24	Not started	Postponed to end of PC21 period when most PMP sites have been installed and we have researched approaches used by UK companies
KEY MILESTONES FOR SOLUTION INVESTMENT **(note this section is relating to the implementation phase of the DG2 removal schemes which is outside the scope of the Development Objective to refresh the DG2 Register)**					
Issue first batch of DG2 removal schemes to contractors	Mar 21	Delayed	May 21	Complete	Completed May 21
Develop further packages of DG2 removal schemes during remainder of PC21	N/A	N/A	N/A	N/A	Ongoing. See Work Packages below
Issue Work Package 2 of DG2 removal schemes to Capital Delivery team	N/A	N/A	Jan 22	Complete	Completed Mar 22
Develop a Preliminary Water Schemes GIS layer for all DG2 removal schemes	N/A	N/A	Mar 22	Complete	Completed Jun 22
Add workbank of schemes to Prelim Water Schemes GIS layer for costing	N/A	N/A	2023-27	Ongoing	Schemes have been drafted and will be added to Prelim Layer to suit agreed DG2 target, funding levels, and

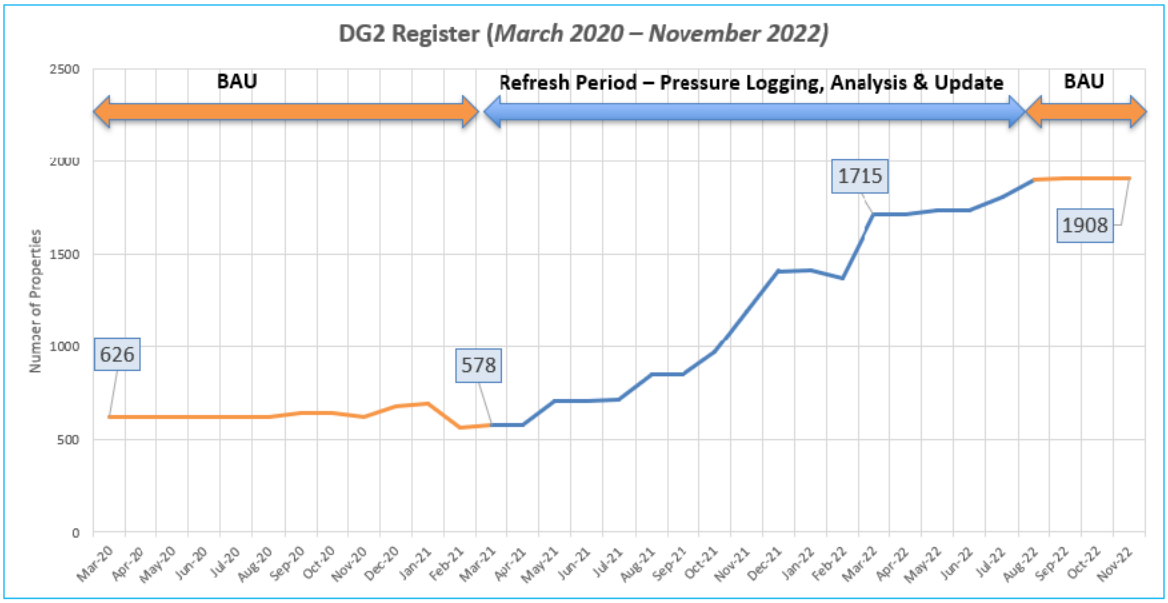
					delivery team (WP4 schemes have been identified)
Review PC21 DG2 targets (estimated cost per DG2 removal)	N/A	N/A	2023-27	Ongoing	Cost per DG2 removal has been calculated for AIR23
For Mid-Term Review, estimate overall outturn cost per DG2 removal, funding levels and number of DG2 removals	N/A	N/A	Sep 23	On Target	Costs of DG2 removals and PC21 targets to be reviewed by UR in spring/summer '23 for MTR submission Sep 23

EXPENDITURE [See Also Table DO1 below]

FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal prices)**	**Commentary on Material Total Cost Changes for DO**
£0.76m (2018/19)	£0.515m (nominal, 2022/23). Covers DG2 Refresh plus solution development	Actual cost was lower than estimated. Reasons include: • Less effort than anticipated • Update/maintenance of DG2 Register is being done in-house
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
£10.1m	£10.1m	Cost of schemes issued up to WP3 is estimated at £6.0m. Further WP(s) TBC following UR's review for MTR. Retaining FD of £10.1m as best forecasted estimate at this stage and a more accurate forecast will be available after NIW meets the UR in Aug 23.

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

The refresh of the DG2 Register, and as such this Development Output is now fully complete. There has been a sharp and significant increase in the number of properties on the DG2 Register due to the refresh.



The refresh has increased the Register from 578 (Mar '21) to 1,908 (Nov '22), which is an increase of 1,330 properties.

PLANNED NEXT STEPS FOR DELIVERY

NIW continues to engage with the UR regarding the DG2 targets for PC21. The UR is currently reviewing the impact this significant increase has on the PC21 target for DG2 removals and the funding levels during the remainder of PC21. The required funding and targets will be reviewed and agreed as part of the Mid Term Review.

NIW is proposing that this Development Objective (i.e. to refresh the DG2 Register) is closed down following the UR's review in spring/summer 2023.

Maintenance of the DG2 Register is now a Business As Usual activity, along with the development of Work Packages which will continue throughout the remainder of PC21 to suit the agreed targets, funding and delivery resource/programme.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

Some additional OPEX funding will be needed to operate the new booster Water Pumping Stations (8no. to date), however for this small number the OPEX impact will be minimal. All the booster WPS have been assessed as the optimal solution after first considering rezoning and mains upsizing, so in these eight cases there is no alternative to pumping. Additional OPEX to maintain and operate other new assets such as new mains and PRVs will be negligible and should be offset by the replacement of older assets under these DG2 work packages.

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

There have been no material changes to scope or programme. The refresh of the DG2 Register was completed in August 2022 and a workbank of schemes is available for the remainder of PC21 and into PC27. Therefore, there is no impact from this Development Objective on the delivery programme.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☒	No ☐	Various Capital and Ops Capital projects, primarily Capital project JI227.

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE
N/A. Development Objective is now complete.
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
Proactive, planned, robust, efficient, and best value resolution of customer low pressure problems.
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There is no linkage between this Development Objective "Refresh of DG2 Register" and any other Development Objectives.

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment				
NIE				
Lands				
Site Investigation				
Consultancy	0.515	0	0.515	JI193 "DG2 Register Refresh". Lower than estimated at FD (£0.76m)
Pilot Studies				
Add Others as necessary				
Totals	**£0.515m**	**£0**	**£0.515m**	
PC21 Projected Spend on Development Objective			**£0.515m**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
06	**Targeted Mains Renewals in High Leakage Areas**	**08z**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
C&OD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

Analysis of existing leakage levels are indicating that the projected leakage reduction targets are becoming increasingly difficult to achieve. The Natural of Rise (NRR) has increased over recent years and there is not clarity on whether it is as a result of ongoing deterioration of the distribution network, the impact of weather or even a combination of both.

The PC21 projected CAPEX for mains renewals is £82.89m, which equates to 0.41% of the network per year. This projected capex for mains renewal is required to maintain stable serviceability across the network for customer contacts, unplanned supply interruptions, low water pressure and drinking water quality, however it does not include NRR as a driver. As such it does not address the risk associated with a non-stable network in relation to NRR.

As achieving the leakage reduction target continues to prove challenging in PC15, NI Water is very keen to explore the use of targeted mains renewals as a method to have a more stable NRR. A £10m budget has been suggested for a mains renewal programme to assess the impact on addressing the NRR.

A significant element of our bursts and leakage is on PVC and asbestos cement mains. NIW has 10,500 km of PVC and 1,200 km of asbestos cement mains which is an abnormally high proportion of these materials compared to other Water UK companies. The NI Water PVC mains have an average age of 42 years and the asbestos mains have an average age of 61 years.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27		
PC21 only ☐	**PC27 only ☐**	**PC21 and PC27 ☒**

PROJECT SCOPE

A project will be required to develop a best practice approach and methodology for targeted mains renewal to address leakage issues as follows:

- Utilise current work activity outputs undertaken as a part of the Leakage Programme to develop the best practice approach and methodology to target mains renewal to counter the NRR and leakage in targeted DMAs. Utilise guidance documents such as UKWIR's "The Impact of Burst-Driven Mains Renewals on Network Leakage Performance".
- Develop a programme of work for the renewal of specific mains in those targeted DMAs.
- Monitor the benefits to NRR and leakage, post renewal, as well as other non NRR and leakage benefits (financial and non-financial). Undertake an overall assessment of TOTEX benefits and payback periods for these completed mains renewals to help inform better long term planning decisions.
- Utilise this NRR mains renewal methodology, as a trial throughout the PC21 period, to understand whether such a programme of work has proven benefits that can be subsequently used as the basis for an enhanced programme in PC27.

The Development Objective costs will be a portion of the IPAC project **2576 – AD Asset**

Strategy Water Asset Performance Modelling. An allowance of £100k has been made for 'Update to WIMM' and an estimated **£30k** of this will be apportioned to developing an approach and methodology for Targeted Mains Renewals in High Leakage Areas.

The 'Solution Investment' costs estimates are a **£10m** portion of the overall water mains rehabilitation costs within **2296 – Watermains Rehabilitation** (total of £92.9m Business Plan).

No change to scope.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

- Help address the increasing NRR and achieve target leakage reductions
- Reduce interruptions to supply, improve customer service delivery and reduce customer minutes lost whilst improving the reportable DG3 Interruptions to Supply figures

A key deliverable is a best practice methodology and a programme of work for the renewal of specific mains in targeted DMAs.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition the UR expects NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages. Provision of a copy of the best practice approach/methodology and an update on how it has been applied to identify and prioritise mains renewals is likely to be required as part of the engagement process.
- Engage with UR staff on the implications for PC21 Leakage targets if required.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

Initial Audit was completed after the conclusion of PC21 year 1, in June 2022.

Update presentation was provided to UR on 18th October 2022.

PROGRAMME

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	FD21 Annex T Milestone Target Date	Status Vs FD21 Target	Current Milestone Target Date	Status Vs Current Target	Commentary on Material Milestone Date Changes ***AND / OR*** Reasons for any material Delay
Submit updated	N/A	N/A	Mar 27	On target	Programme updates are

programme to UR.					provided to the UR with each AIR return
Develop the best practice approach and methodology to target mains renewal to counter the NRR and leakage in targeted DMAs	Jun 20	N/A	Sep 22	Complete	Outline approach developed to identify mains sections in three batches and issued to AD. Presented to the UR in Oct 22. Review by RPS determines that NIW approach is consistent with UKWIR guidance. NOTE - The original date proposed in Annex T (Jun 20) was unachievable as the FD was not available at this time. Therefore 'N/A' has been entered against Jun 20.
Application of methodology as part of the overall update of WIMM, to develop work packages of water mains rehabilitation schemes for construction.	Mar 21	N/A	Oct 23	Delayed	Development of further work packages to be in line with NIW's outline approach, being consistent with UKWIR guidance, in consideration of RPS review recommendations and any post-benefits analysis undertaken. Update of WIIM to be linked with outcome of benefit analysis. Delay due to construction

					timelines. NOTE - The original date proposed in Annex T (Mar 21) was unachievable as the FD was not available at this time. Therefore 'N/A' has been entered against Mar 21. In AIR22 it was anticipated that this milestone would be completed by Sept 22, however delays in the construction timeline and the requirement for the DMAs to 'settle down' and post-construction benefits analysis has resulted in a forecast date of Oct 23
KEY MILESTONES FOR SOLUTION INVESTMENT					
Issue first batch of 'Targeted Mains Renewals in High Leakage Areas' schemes (as part of update to WIMM) ready	Mar 21	N/A	Mar 22	Complete	NOTE - The original date proposed in Annex T (Mar 21) was unachievable as the FD was only being made available and time was required to prepare the methodology and develop the work package of schemes. Therefore 'N/A'

for issue to contract ors.					has been entered against Mar 21. The first batch of schemes was issued to the Asset Delivery team for inclusion in a work package in Mar 22, and hence this milestone was completed in Mar 22.
Undertake benefits analysis and develop further packages of targeted mains renewals during remainder of PC21	N/A	N/A	Mar 27	On Target	Benefits analysis ongoing and to be progressed as packages within DMAs are completed. Further packages to be developed and to consider findings of any benefits analysis undertaken.

EXPENDITURE [See Also Table DO1 below]

FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal prices)**	**Commentary on Material Total Cost Changes for DO**
£0.03m	£0.039m	Cost is negligible and estimated forecast includes RPI. Cost to date is approx. £0.005m for consultancy review of outline approach with minimal BAU resources being used to identify potential schemes. Remaining costs to undertake ongoing benefits analysis.
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
£10m	£12.91m	FD uplifted as per RPI used in Nov 2022 OBR

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Key milestone target dates have been impacted as a result of a delay in the delivery of the Final Determination and the issuing of appropriate tenders to award.
Outline approach has been developed to specifically target renewal of PVC and AC mains disproportionally contributing to leakage within DMAs and not currently identified via traditional WIMM methodologies. RPS Group Consultants have reviewed NI Water's outline approach which identified mains targeted for renewal and have determined the NIW approach to be consistent with UKWIR guidance.

A review of this approach was undertaken by RPS Group Consultants regarding industry related studies and available guidance documentation with the development of a best practice methodology for NI Water.
Utilising the outline approach, sections of main have been identified, prioritised and submitted to the Asset Delivery team for review and programming into existing proposed work package areas for construction.

The mains replacement programme, of PVC & AC mains sections with high NRR and leakage, was issued in three batches to the Asset Delivery team. Asset Delivery reviewed each corresponding batch to determine delivery packages, costings and delivery timescales. The scope of work within each of the three batches, and progress of work under each batch, is shown in the table below.

			Completed schemes	
Batch No.	**No of mains**	**Cost**	**No of mains**	**Cost**
1	32	£2,945k	21	£2,225k
2	17	£1,386k	10	£867k
3	31	£1,828k	16	£786k
Totals	**80**	**£6,159k**	**47**	**£3,878k**

Post-benefits analysis has commenced for 3nr DMAs where all sections of mains identified for renewal have been constructed. Dates of eligibility for benefits analysis are September 2022, December 2022, and February 2023.

PLANNED NEXT STEPS FOR DELIVERY

Benefits analysis will continue as mains sections are completed within DMAs. It is expected that this will be an ongoing iterative analysis process with the determination of full benefits only likely to become apparent after several years.

It is proposed to identify batch 4 of leakage targeted mains for renewal by developing the WIMM methodology in line with NIW's outline approach, being consistent with UKWIR guidance, in consideration of RPS review recommendations and any post-benefits analysis undertaken.

The identification of further batches will consider the iterative findings of the ongoing benefits analysis.

It is proposed to submit an updated programme to the UR as part of the Mid Term Review.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

N/A

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

None

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b			
Links to Tables Completed	Yes ☒	No ☐	Comments – Leakage packages are primarily JI228 (WP1), JI270 (WP2) and JI279 (WP3)
RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE			
Although construction and delivery costs continue to increase, it is proposed to adhere to the PC21 FD Estimated Cost of Solution of £10,000k (adjusted to nominal prices). Risks include • Constrained resources to deliver all the planned schemes and packages during PC21			
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE			
Future reduction in leakage resulting in lower abstraction rates, less use of energy and materials and wider environmental benefits.			
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES			
It is understood there is no linkage between this Development Objective (Section 6) and any other Development Output within Table 47.			

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment				
NIE				
Lands				
Site Investigation				
Consultancy	£0.005m	£0.032m	£0.039m	Note the £0.039m is the FD £0.03m adjusted to nominal.
Pilot Studies				
Add Others as necessary				
Totals	**£0.005m**	**£0.032m**	**£0.039m**	
PC21 Projected Spend on Development Objective			**£0.039m**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
07	**Leakage Innovation**	**09z**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
C&OD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

Leakage detection and reduction has become more challenging in recent years, particularly with an increasing Natural Rate of Rise. NI Water has introduced initiatives such as the CALM network training facility, transient logging, and researching and trialling new techniques such as satellite imagery, use of encapsulation repair fittings and fast logging. However, NI Water must keep up with technological advances in leakage detection equipment and methods if we are to reduce leakage to the Sustainable Economic Level of Leakage (SELL) of 150 Ml/d by the end of PC21.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	PC27 only ☒	PC21 and PC27 ☐

PROJECT SCOPE

The Leakage Innovation methods and equipment are contained within the project 1647 - Leakage Enhancement. The cost estimates are as follows:
Acoustic logging **(£1.68m)**
Satellite imagery **(£1.5m)**
New equipment – GRP/Gas/Drones **(£0.25m)**

No change to scope.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

- Assist with locating leaks
- Help to achieve the leakage reduction targets
- More efficient leakage detection
- Improve H&S of leakage operatives

New Technologies Assessment and Recommendations Reports as trials are completed.

No change to PC21 FD project outcomes.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages. An update on results of the trials and pilot studies is likely to be required as part of the engagement process. Broader engagement on leakage delivery and engagement may also be required.

- Engage with UR staff at the Mid-term Review on the provision of funding for the remainder of PC21, noting UR comments on funding dependency in Annex I of the PC21 determination.
- Engage with UR staff on the implications for PC21 Leakage targets if required.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

- UR advised of progress in annual cost and performance report process
- NIW presented update to UR on 18th October 2022 – see attached presentation given to UR 'DO7 - Leakage Innovation Table 47 Section 7'

PROGRAMME

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Submit updated programme to UR	N/A	N/A	Mar 27	On Target	Programme updates are provided to the UR with each AIR return
Output report on current satellite imagery trial	Mar 21	N/A	Mar 27	On Target	NOTE - The original date proposed in Annex T (Mar 21) was unachievable as the FD was not available at this time. Therefore 'N/A' has been entered against Mar 21.
Analysis on satellite imagery trial 1	N/A	N/A	Mar 22	Complete	Evidence to be provided – see attached presentation 'DO7 - AIR Report Leakage Innovation Table 47 Section 7', Slide 4
Satellite imagery trial 2	N/A	N/A	Mar 27	On Target	N/A
Purchase of acoustic and	Mar 23	N/A	Mar 27	On Target	NOTE - The original date

transient loggers					proposed in Annex T (Mar 23) was unachievable as DO was to take place over the course of PC21 with ongoing trials, so N/A has been entered against Mar 23.
Investigate and undertake trials on other satellite imagery technologies, with a report on output.	Mar 27	Ongoing	Mar 27	On Target	Continuing to use satellite technology in targeted areas throughout PC21
Purchase of other equipment (thermal camera drones, Ground Penetrating Radar, and private gas detectors) with trials and periodic reports on outputs	Mar 27	Ongoing	Mar 27	On Target	Ongoing trials and use of innovative methods
Update UR on results of trials and pilot studies Engagement meetings to be arranged between UR and NIW in due course	N/A	N/A	Mar 27	On Target	Met with UR on 18/10/22, will continue to meet UR throughout PC21
KEY MILESTONES FOR SOLUTION INVESTMENT					
N/A	N/A	N/A	N/A	N/A	N/A
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)		**Forecast Cost of DO (Nominal prices)**		**Commentary on Material Total Cost Changes for DO**	
£3.43m		£4.430m		Forecast Cost of DO has been uplifted for inflation – figures are from the Nov 2022 OBR	
PC21 FD Estimated Cost of Solution (2018/19 prices)		**Forecast Cost of Solution (Nominal prices)**		**Commentary on Material Solution Cost Changes**	
£0m		£0m		No solution costs within this period	

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)
Output report on current satellite imagery trial - Under the PC21 Leakage Strategy key area for Innovation; Satellite imagery leak detection is a strategic solution being explored by NI Water to monitor the water distribution system to facilitate leakage detection. Satellite Imagery provides remote sensing solution for locating leaks on potable water network across any type of terrain by scanning for ground saturation displaying areas of potential leakage. A procurement exercise was undertaken and in January 22 a new contract was established for the use of satellite imagery with an experienced supplier. NIW completed two pilot scans utilising satellite imagery in 2020/21 covering parts of the East, South and West of NI. 2655 Points of Interest (POIs) were generated by the scan, where 1226 POIs were associated defects, giving a leak/POI success rate of 46.2%. **Purchase of acoustic and transient loggers** –This key milestone is in effect 'Utilisation of acoustic noise logging to locate and repair leak and review subsequent effectiveness of such technology'. This reflects the ongoing trial nature of this innovation and any goods or services associated with this technology. The target date should be updated to Mar-27 as this key milestone spans the PC21 period. Acoustic logging is an area of technology within the water industry that is developing with advances in the equipment. In early 2022 NI Water established a procurement mechanism to purchase and trial acoustic logger technology using three leading suppliers of this type of technology. During 2022-23 and beyond, this technology will continue to be tested in order to establish the best performing loggers for NI Water's network. Hydro Loggers were purchased and used as part of a pilot in 5 DMAs to assess their ability to locate leaks, and how they might be useful as another leakage detection tool. The results of the logger trial using the Hydro Logging technique was proven to be successful and would indicate the technology could provide benefits in a number of aspects of leakage management and detection. They are currently being used in other DMAs as leakage detection equipment. Acoustic loggers from 2 separate suppliers were purchased and trialled across DMAs in the South and West regions. Work is still ongoing in determining their best use but they have had success in locating leakage and could provide benefits within leakage detection and management. Acoustic loggers will continue to be used through PC21. Using NI Water's Professional Services Framework IF180 contract, Atkins were appointed to undertake an acoustic logging trial using FIDO acoustic loggers ('Bugs') to help identify potential leak locations within the Malone Road DMA, in South Belfast and a second adjacent DMA. This trial however proved to be unsuccessful in that we did not see benefits from using this technology compared to other acoustic methods. **Investigate and undertake trials on other satellite imagery technologies, with a report on output** - NIW have completed two successful pilot scans utilising satellite imagery in 2020/21. In 2022 NI Water set up a new Satellite Imagery Detection contract and the remaining areas of the network not already captured during the initial pilot phases were scanned. For 2022, 1502 Satellite Point of Interest (POIs) were investigated, with 679 leaks being identified, giving a leak/POI rate of 45%. Two further sweeps have since taken place with these POIs still currently under investigation by leakage teams. **Purchase of other equipment (thermal camera drones, Ground Penetrating Radar, and private gas detectors) with trials and periodic reports on outputs** - NIW have undertaken trials utilising an innovative non-disruptive repair technique on customer side

leakage. The Scheme involves the insertion of a small device called an Aquapea into the water pipe that will repair the leak without the need for excavation within customer properties. Aquapea was trialled where 9 properties (within the East area) with known private side leakage were selected for the pilot; these properties were selected based upon suitability. Overall, the Aquapea had an 11% success rate, which was much lower than expected. Factors impacting upon success included: leak size, supply arrangements (shared supply), leaking joints & pressure etc.
Due to the various types of customer side leaks (in terms of leak size, supply arrangements & complexity etc), the trial demonstrated that Aquapea product would not be a cost effective BAU tool to resolve customer side leaks identified by NIW.

NI Water engaged a light aircraft survey company, APEM, to undertake an aerial survey of 123km of trunk mains in the Fofanny supply zone and identified has having flow audit imbalances.
The survey techniques utilised high resolution visible and near-infrared imagery and advanced imagery analytics to identify points of interest (POIs) regarding leakage. Optimum conditions for surveying are when vegetation is under dry weather stress.
78nr POIs were identified with investigation ongoing and 15nr leaks detected. In addition, 682nr cattle troughs were identified. These will be investigated with the potential of identifying illegal usage or increasing billed consumption.

NI Water has been working with a consultant regarding the use of detection dogs to find leaks. Two dogs have been recently trained and are being utilised for leakage detection in both DMA and trunk main surveys. A review of their detection performance continues however at this stage results are encouraging.

PLANNED NEXT STEPS FOR DELIVERY

As trials of satellite (or similar) imagery technologies, acoustic & transient loggers, and the purchase of other equipment or innovative goods and services progress over time, NI Water will critically evaluate each innovation to determine its benefits.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

- Upkeep/maintenance of equipment. i.e. logger batteries/replacement loggers
- Calibration needed with leakage equipment

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

No impact of scope/programme on Capital Delivery as no solutions exist.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☐	No ☒	N/A as no solutions exist

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

- Funding constraints affecting ability to continue purchasing equipment

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE

- Future reduction in leakage resulting in lower abstraction rates, less use of energy and materials and wider environmental benefits

LINKAGE TO OTHER DEVELOPMENT OBJECTIVES

There is no linkage with other Development Objectives.

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment	£ 0.237m	£ 0.869m	£ 1.106m	
NIE				
Lands				
Site Investigation				
Consultancy	£ 0.660m	£ 2.421m	£ 3.081m	
Pilot Studies	£ 0.052m	£ 0.191m	£ 0.243m	
Add Others as necessary				
Totals	**£ 0.949m**	**£ 3.481m**	**£ 4.430m**	
PC21 Projected Spend on Development Objective			**£ 4.430m**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
08	**Smart Networks – ITS Strategy**	**09z**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
C&OD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

The needs for Smart Networks were identified as part of our Interruptions to Supply (ITS) Strategy where the primary aim is to improve customer service. Advances in technologies will enable NI Water to quickly identify asset failures and mobilise repair squads, thus minimising the customer impact. This investment will help achieve a CALM network, improve reliability, improve customer response, reduce customer minutes lost and meet our targets for reportable DG3 figures.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	**PC27 only ☐**	**PC21 and PC27 ☒**

PROJECT SCOPE

We need to develop the scope for Smart Networks, which will involve the installation of various equipment and improving our methods to allow us to monitor in real time and know what is happening across the network. It will involve further roll-out of PMA permanent monitoring, the design and installation of control equipment and remote sensors, improved mains designs and temporary supply points at key sites.

The level of resource needed for the 'Development Objective' at this concept stage is assumed as 1 FTE over the 6 year period (£300k). Depending on the scale of work required and programmes for completion, this level of resource is likely to increase but at this stage the scope is unknown. This resource cost has not been included in any specific IPAC project.

The capital investment for Smart Networks is in IPAC Project 1665 – Smart Networks – ITS Strategy (£7.0m).

No change to scope.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

- Improves customer service by monitoring the network to quickly identify and repair asset failures
- Helps to achieve a CALM network
- Helps to meet our targets for reportable DG3 figures.
- Provides better facilities for alternative supplies during major interruptions
- Minimises customer impact by improving the location and operability of valves

New Technology Assessment and Smart Networks Trial Outcomes Report.
Smart Networks Strategy Report.

No change to PC21 FD project outcomes.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS
Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to: • Develop and submit an updated programme for the delivery of this objective. • Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages. An update on results of the studies and trials is likely to be required as part of the engagement process. • Engage with UR staff on the implications for PC21 interruptions to supply targets if required, including the potential for introducing customer minutes lost targets at the PC21 Mid-term Review.
HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED
• UR advised of progress in annual cost and performance report process • Presented update to UR on 18th October 2022
PROGRAMME
See Master DO Programme v0 dated 07/07/23.
KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Submit updated programme to UR	N/A	N/A	Mar 27	On Target	Programme updates are provided to the UR with each AIR return
UR Liaison & Engagement	N/A	N/A	Mar 27	On Target	Presentation given to UR on 18th October 2022 – Please see attached Presentation 'DO8 - UR Smart Networks Table 47 Section 8'
Initial reviews of existing assets and network 'readiness' for Smart Networks. This includes permanent monitoring sites, control equipment, telemetry coverage, mains designs and asset standards, and	Mar 21	Ongoing	Mar 27	On Target	Ongoing desktop investigations will continue until end of PC21

temporary supply points. Prepare Business Case and obtain the necessary approvals.					
Develop packages of Smart Networks capital works and progress a rolling programme of approvals and procurement for the design and construction of the works.	Mar 27	Ongoing	Mar 27	On Target	Ongoing programme throughout rest of PC21
KEY MILESTONES FOR SOLUTION INVESTMENT					
Complete first batch of pilots and testing of Smart Networks technologies, with periodic reviews and output reports.	Mar 23	Complete	Mar 23	Complete	First batch of Improved Control WBS sites completed, please see attached presentation 'DO8 - AIR Report Smart Networks Table 47 Section 8 June 23', slide 17
Complete further batches on a rolling programme	Mar 27	Ongoing	Mar 27	In Progress	Ongoing throughout PC21

EXPENDITURE [state cost base for all costs e.g. FY18/19 – See Also Table DO1 below]

FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal prices)**	**Commentary on Material Total Cost Changes for DO**
£0.3m (TBC during development)	£0.118m	Forecast Cost of DO figure based on information from Smart Networks Budget Profile as seen in Annex 1
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
£5.189m	£6.654m	Forecast Cost of Solution based on uplifted budget taken from

		Nov 2022 OBR - Annex 1 table has not yet been fully uplifted to match this Forecast

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

The activities outlined below have been identified to deliver a smarter network technology to support further reductions in supply interruptions, reducing the number of lost minutes per property, and improving the level of service to our customers:

The needs for Smart Networks were identified as part of our Interruptions to Supply (ITS) Strategy where the primary aim is to improve customer service. We will develop the scope for Smart Networks, which will involve the installation of various innovative equipment and improving our methods to allow us to monitor in real time and know what is happening across the network.

See Annex 1 for a breakdown of costs.

PRV flow / pressure modulation controllers.

Under the Smart Networks/ITS project we aim to prioritise 80 x PRVs which impact customer service e.g., high pressure variation within the Pressure Managed Area (PMA) causing low pressure during the day and high pressure at night.
6 x PRV schemes were installed in 21/22. 12 x PRV schemes were installed in 22/23.

Telemetry Installations at WBS

NI Water's current position is there are 234 operational WBS of which 53 WBS still require telemetry to be installed in PC21. **3 x WBS have been upgraded to telemetry in 21/22. 9 x WBS have been upgraded to Telemetry to provide vital network information in 22/23, with a further 5 sites, that only gave basic data, upgraded in 22/23. PC21 total to date of 12 new Telemetry installations, 5 upgrades.**

Improved / Smart controls at WBS

50 high priority WBSs have been identified for Improved/Smart real time pressure controls where pumped outlet pressure requires better control across the 24-hour period.
9 x WBS have been upgraded to Smart Controls in 21/22. 15 x WBS have been upgraded to Improved/Smart real time pressure controls in 22/23. PC21 total to date of 23 upgraded sites.

See Annex 2 for WPS prioritisation matrix

Pressure Monitoring of all 3071 PMA's

A permanently deployed pressure logger is a key component of a Smart Network providing daily pressure data in relation to the properties within that PMA.
Installation work for approx. 120 PPMP connections have been completed in 21/22. 400 PPMP connections have been completed in 22/23.

Additional Fast Fill Points.

Fast fill points are permanent installations on the networks to enable tankers to be filled directly from the water network. We have 11 FFPs at present and during PC21 we aim to provide up to an additional 13 fast fill points for full coverage across each area supplied from the 24 x WTWs. **1 x new FFP installed in 21/22. 3 x new FFPs installed in 22/23.**

Additional Mobile Pumps

Mobile pumps significantly reduce the pumping time from tankers to assets such as service reservoirs. **NI Water have purchased 3 x new fast flow mobile pumps in 21/22. 1 x large Mobile Booster Trailer was purchased in 22/23; this has 3 x VSD pumps, which can and has been used for both planned and unplanned interruptions and during major incidents to keep customers in supply.**

Flow modulation on large users.

Our aim for PC21 was to install a flow modulated PRV on large users where their daily demand profile is causing large flow and pressure fluctuations across the DMA. **Continuing to gather data in order to plan best solution, should progress in 23/24.**

Water Quality Monitoring within top DMAs.

Our aim is to install a small number of permanent monitors connected to telemetry as an early warning of water quality problems. **1 x permanent Water Quality Monitoring Installation in 22/23.**

Purchase portable transient loggers.

Loggers allow the identification of transients, and the subsequent resolution which will create a calmer network reducing bursts, interruptions, reducing leakage and water quality issues. **45 units ordered along with 50 new batteries for existing units, awaiting delivery.**

Transient / surge reduction on existing assets.

This is the capital required to reduce transients on up to 13 existing assets following the transient logging and analysis. **1 x Transient/surge reduction scheme in 22/23, this was installed at Ballybracken Doagh WPS to reduce transients that had caused several interruption to supply events.**

Development of a Smart Network Trial & Smart Network Strategy.

This will allow to evaluate the technology in conjunction with data analytics and provide appropriate learnings to develop an overarching Smart Network strategy.
Plan to progress the trial in 2023/24.

PLANNED NEXT STEPS FOR DELIVERY

The initiatives listed in the 'Activity completed to date and its outcome' table below commenced in 2021/22 and will continue to be delivered throughout the rest of the PC21 period.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

Some operational and maintenance costs will be associated with permanently installed equipment, for example sensors/monitoring equipment , VSDs, loggers and batteries.

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

No significant scope/programme changes

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☒	No ☐	Comments – solutions are being delivered via Ops Capital funding

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

- Funding constraints affecting ability to continue purchasing equipment

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
• The installations of, and advances in, these technologies listed above will enable NI Water to quickly identify asset failures, through improved data and visibility, and mobilise repair squads, thus minimising the customer impact. • The activities will help maintain supply to customers and help achieve a CALM network, improve reliability, improve customer response, reduce customer minutes lost and meet our targets for reportable DG3 figures.
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There may be a very small potential linkage between Smart Networks (DO8) and Smart Metering (DO24) as part of development of the Smart Networks Trial/Strategy. Data from smart meters may be useful in building data towards the Smart Networks Trial.

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment	£0.019m	£0.019m	£0.038m	
NIE				
Lands				
Site Investigation				
Consultancy				
Pilot Studies		£0.08m	£0.08m	
Add Others as necessary				
Totals	**£0.019m**	**£0.099m**	**£0.118m**	
PC21 Projected Spend on Development Objective			**£0.118m**	

Annex 1

*PC21 Smart Network Budget Profile

Assets	Delivery Route	PC21 Quantity	*Estimated Unit Cost	Quantity	2021/22	Quantity	2022/23	Quantity	2023/24	Quantity	2024/25	Quantity	2025/26	Quantity	2026/27	Total PC21
PRV flow/pressure modulation controllers	COD	80	£9,644	6	£57,861	16	£154,296	16	£154,296	16	£154,296	14	£135,009	12	£115,722	**£771,480**
Telemetry installations for Water Booster Stations (WBS)	COD	53	£18,000	3	£54,000	9 (+5 upgrades)	£146,000	10	£180,000	10	£180,000	10	£180,000	10	£180,000	**£920,000**
Improved controls at WBS	COD	50	£13,009	9	£85,425	15	£210,000	12	£156,000	12	£156,000	5	£65,000	0	£0	**£670,425**
Flow modulation (new PCV installation) on large users	CWP	39	£8,000	0	£0	0	£0	1	£8,000	1	£8,000	1	£8,000	1	£8,000	**£32,000**
Pressure Monitoring of all 8071 PMA's. (note 1300 under Leakage project)	COD	1871	£1,200	120	£144,000	351	£421,200	350	£420,000	350	£420,000	350	£420,000	350	£420,000	**£2,245,200**
Water Quality Monitoring - permanent installations	CWP, transfer to	16	£21,000	0	£0	1	£21,758	4	£84,000	4	£84,000	4	£84,000	3	£63,000	**£336,758**
Water Quality - portable units	CWP	3	£5,500			0	£0	3	£16,500	0	£0	0	£0	0	£0	**£16,500**
Purchase portable transient loggers	CWP	37	£336	0	£0	45	£19,065	0	£0	0	£1,250	0	£0	0	£1,250	**£21,565**
Transient / surge reduction on existing assets (assume intervention is PRV installation)	CWP, transfer to	13	£26,000	0	£0	3	£44,777	3	£78,000	3	£78,000	3	£78,000	3	£78,000	**£356,777**
Additional Fast Fill Points	COD	13	£25,300	1	£15,329	3	£105,204	3	£75,900	3	£75,900	3	£75,900	0	£0	**£348,083**
Mobile Pumps	COD	3	£15,400	3	£46,214	3	£6,670	0	£0	0	£0	0	£0	0	£0	**£52,884**
Specialised quick response trailers	COD	1	£41,266	1	£41,266	0	£0	0	£0	0	£0	1	£50,000	0	£0	**£91,266**
Development of a Smart Network Trial & Smart Network Strategy / Roadmap	CWP	1	£80,000	0	£0	0	£0	0.25	£20,000	0.75	£20,000	0.25	£20,000	0.25	£20,000	**£80,000**
TOTAL					**£441,896**		**£1,128,570**		**£1,102,696**		**£1,177,446**		**£1,115,909**		**£885,972**	**£5,942,889**

* *Total amounts for years 21/22 and 22/23 are actuals, next four years were based on figures which have not yet been adjusted for inflation.*

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
09	**WwPS / CSO Quality (UID) and WwPS (Capacity increase)**	**12b & 12c**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

This development output is required as the Drainage Area Plan (DAP) models used to define the solutions for the PC21 Business Plan have not yet been developed to Statement of Need status.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☒	**PC27 only ☐**	**PC21 and PC27 ☐**

PROJECT SCOPE

Combined Sewer Overflows, Wastewater Pumping Station CSO's and emergency relief overflows that are assessed to be unsatisfactory intermittent discharges in accordance with NIEA Summary Guidance document in relation to Intermittent Discharges V1.9 March 2015.

Aim of this DO is to achieve scope certainty for named PC21 UIDs.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

- 94 No UIDs (Including WwPS Capacity increase sites) addressed in PC21,
- Reduced H&S risk to operatives,
- Reduction of pollution incidents exceeding discharge consent potentially improving water quality,
- Sufficient network capacity to accommodate current and future development.

Proposed project outcomes

Point of Clarification: The Final Determination targets the delivery of 136 UIDs, not 94 (as outlined in Annex T). Of these 25 are PC15 carryover schemes, with the remainder, 111 to be confirmed through scope certainty Batch submissions.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages.
- Engage with NIEA on the needs, priorities and programme for delivery.
- Submit business cases for solutions, including costs and justification, in accordance with agreed timetable to UR for determination.
- Engage with UR staff on the implications for PC21 nominated output targets if required.

Note that this links to other PC21 development objectives related to programme scope/uncertainty.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

NIW provide NIEA with monthly progress updates on DAP progress through the Wastewater Investment Group. NIW has developed a dashboard which tracks progress,

provides visibility of priorities and future workload planning in relation to Statement of Needs.

NIEA has provided a Statement of Need for every named asset in the PC21 programme in relation to sub programme 12b.

PROGRAMME

Statement of Need tracker

SoN Tracker.pptx

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Fully developed solution (NIW Stage A1). An estimated 60% prior to the PC21 mid-point review.	Mar 24	Complete	Mar 23	Complete	Complete for 100% of studies ahead of milestone target date
Develop and submit an updated programme for the delivery of this objective.			June/July 2022 (Air 22)	Complete	Complete – sufficient evidence for scope certainty batch submission
Engage with NIEA on the needs, priorities and programme for delivery.			Mar 23	Complete	Complete
Submit business cases for solutions, including costs and justification, in accordance with agreed timetable to UR for determination.			Sep 21 - Mar 23	Complete	Complete
Submit batch 1 – 13 UID's			Sep 21	Complete	Complete – sufficient evidence for scope certainty

					batch submission
Submit batch 2 – 19 UIDs			Mar 22	Complete	Complete – sufficient evidence for scope certainty batch submission
Submit batch 3 – 29 UID's			Sep 22	Complete	Complete – sufficient evidence for scope certainty batch submission
Submit batch 4 – 50 UIDs			Mar 23	Complete	Complete – sufficient evidence for scope certainty batch submission. Evidence provided in letter/email sent for DO25.
KEY MILESTONES FOR SOLUTION INVESTMENT					
Delivery of solution investment within the PC21 business period			Mar 27	On Target	This milestone is under the remit of Capital Delivery

EXPENDITURE [See Also Table DO1 below]		
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal prices)**	**Commentary on Material Total Cost Changes for DO**
£14m	£1.5m	*Costs are significantly lower than estimated in Annex T and absorbed in DO16 under KI749 – Business as Usual DAP programme (Year 1).*
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
£148.04m	TBC	*To be confirmed by the MTR process.* NI Water are investigating these costs and will provide an update for the AIR23 submission

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Activity completed to date and outcomes

Following submission of PC21 business case, this Development Output has been divided into 4 batch submissions to be submitted to the UR at regular intervals with a completion date of March 23.

Statements of Need have been received for all drainage catchments which contain PC21 projects (12b). All batch submissions (1-4) have been completed, achieving scope certainty of 111 no. UIDs.
Precautionary solutions have been developed by Asset Management and subsequently handed off to Capital Delivery teams for costing.

PLANNED NEXT STEPS FOR DELIVERY

Development objective is complete – no planned next steps.

Estimated spend on Development Objective NI Water are investigating these costs and will provide an update for the AIR23 submission.			
LINKS WITH OTHER DEVELOPMENT OBJECTIVES			
This Development Output is linked to S16 (Studies to Inform PC27), S19 (LWWP Networks), S20 (LWWP Wastewater Treatment Works), S25 [Addressing scope uncertainty for the Mid-term Review]. See Master DO Programme v0 which details the links listed above.			
PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX			
N/A			
IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME			
N/A			
IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b			
Links to Tables Completed	Yes ☒	No ☐	Comments
RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE			
N/A			
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE			
Scope certainty achieved for 111 UIDs.			

Development Objective – Expenditure Summary

Please refer to DO16 for expenditure summary.

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment				
NIE				
Lands				
Site Investigation				
Consultancy	£1.5m	£0	£1.5m	*Costs are significantly lower than estimated in Annex T and absorbed in DO16 under KI749 – Business as Usual DAP programme.*
Pilot Studies				
Add Others as necessary				
Totals	**£1.5m**	**£0**	**£1.5m**	
PC21 FD Projected Spend on Development Objective			**£1.5m**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
10	**Event Duration Monitors WwPS/CSOs**	**12b**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

The Event Duration Monitoring (EDM) WwPS/CSO programme of work has been classified as a development output due to the significant amount of further investigation required to confirm the priority, scope and scale of monitoring required, including interaction with DAP models currently under development.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27		
PC21 only ☐	**PC27 only ☐**	**PC21 and PC27 ☒**

PROJECT SCOPE

Original Scope

The revised Bathing Water Directive now requires NI Water to monitor and log dates and times of when CSOs release storm water to sensitive waters as listed:

1. Designated Shellfish Waters,
2. Designated Bathing Waters,
3. Special Areas of Conservation (SACs),
4. Marine Conservation Zones (MCZs),
5. Water Framework Direction (WFD) classifications meeting a less than good status,
6. Designated as sensitive under Urban Wastewater Treatment Directive.

Updated Scope

The revised Bathing Water Directive now requires NI Water to monitor and log dates and times of when CSOs release storm water to sensitive waters as listed:

1. Designated Shellfish Waters,
2. Designated Bathing Waters,
3. Special Areas of Conservation (SACs),
4. Marine Conservation Zones (MCZs),
5. Water Framework Direction (WFD) classifications meeting a less than good status,
6. Designated as sensitive under Urban Wastewater Treatment Directive.

A prioritisation process is ongoing for the above and multi-criteria approach is being developed for remainder of EDMs in PC21 and PC27.

Development of EDM policy and asset standards by Wastewater Strategy team to cover the following:

- Hardware requirements
- CSO validation techniques for external reporting in near real time
- Data analysis and digital data display platform
- A communications plan for providing this information to NIEA and the general public by PC27.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

Asset Management have adopted the data – this has led to changes in scope to deal with regulatory risk.
As part of PC27 planning a WQ priority piece is going on to expand the EDM programme in order to collect data for strategic asset risk profiling. This is to ensure that catchments in priority areas have 100% EDM coverage to enable several key functions:

- WWRR – statutory requirements for near real-time reporting of EDM spills
- Model confidence DAP vs EDMs
- Solution confidence
- Development of an EDM reporting dashboard – this is for key metrics on asset performance but also for maintenance and validation of spill reporting.

PROJECT OUTCOMES

Original Project Outcomes

- To provide overflow data to inform NIEA of spills to the environment
- To alert CSDD of maintenance required at network CSOs
- Prevent premature spillages

Updated Project Outcomes

- To provide overflow data to inform NIEA of spills to the environment and compliance with impending statutory requirements for near real-time reporting of EDM spills
- To alert CSDD of maintenance required at network CSOs
- Prevent premature spillages
- EDM Reporting Dashboard
- Increased hydraulic model confidence

The key deliverables are:

- An EDM Reporting Dashboard (in near real-time)
- Increased hydraulic model confidence

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

Project outcomes enhanced as further benefits can be realised from monitoring CSOs. Emerging legislation is also driving statutory requirements on reporting of CSO spills.

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages.
- Engage with NIEA as required on the priority, scope and scale of monitoring required.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED
UR advised of progress in AIR22 return. Agreed programme (internally and with NIEA) of EDM delivery is provided in this AIR23 return. NIEA have been regularly engaged with in 21/22. Meetings with NIEA have been suspended throughout 22/23 due to NIEA time constraints but is going to be discussed at WWRR meetings in future.
PROGRAMME
See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
NIW Stage A0 A1 Options and Business case complete	Mar-23	On Target	Mar 21	Suspended	Agreement with NIEA that delivery of EDM programme is to be split into 3 batches covering 2 years each. Target for PC27 remains unchanged
Submit updated programme to UR	N/A	N/A	June/July 22 (AIR22)	Complete	See AIR22
Engage with UR.	N/A	N/A	2021-27	On Target	
Engage with NIEA.	N/A	N/A	2021-27	On Target	
NIW Stage A0/A1 Options and Business case complete for year 1 and 2	N/A	N/A	Mar 21	Complete	
NIW Stage A0/A1 Options and Business case complete for year 3 and 4	N/A	N/A	June 23	On Target	
NIW Stage A0/A1 Options and Business case complete for year 5 and 6	N/A	N/A	Mar 25	On Target	

KEY MILESTONES FOR SOLUTION INVESTMENT					
Delivery of first 41 sites	Apr 21	Not possible	Mar 22	Complete	Original Date was the start of PC21, amended to end of YR1
Completion of EDM Programme	Mar 27	On Target	Mar 27	On Target	

EXPENDITURE [See Also Table DO1 below]		
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal prices)**	**Commentary on Material Total Cost Changes for DO**
£2.6m	£3.386m	No change other than inflationary increase
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
£23.96m	£31.135m	No change other than inflationary increase

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Initial workshops have been completed in 21/22 with NI Water and NIEA on a two month cycle. Meetings with NI Water and NIEA ceased for 22/23 due to NIEA time constraints. Internal workshops are taking place monthly. These workshops have been set up to make sure all the required information and work needed, is captured, and set out in a proper program of work. It was agreed within NI Water to break down the programme into 3 phases and have separate Business Cases for each phase as set out on the milestones above. This phasing was Year 1&2, Year 3&4 and Year 5&6. A breakdown of this work is as follows:

- The installation of the EDMs to date:

21/22 Installs	21/22 Target	22/23 Installs	22/23 Target
52	50	83	50

- Telemetry set ups
  This work is ongoing as the new EDMs are installed.
- Reporting template
  Discussions is ongoing with NIEA on format of this report.
- All information captured on CAR/Budi
  Hand over agreement has been agreed between Capital delivery/Operations and the CAR Team.

For 21/22 this work was discussed on a 2 month basis with NIEA. Meetings for 22/23 were postponed due to NIEA time constraints. NI Water is to propose new subgroup to meet with NIEA to cover EDMs and Flow compliance for time efficiencies.

Continued meetings with NIEA and Internal stakeholders, getting agreement with the programme and keeping them informed on the milestones and any delays NI Water may come across.

PLANNED NEXT STEPS FOR DELIVERY

The next steps of the EDM programme are to complete the installation of the EDMs as set out in the programme below along with approved Business Cases.

		PC21 Outputs						
Project		2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	Totals
1 KI696 Phase (Years 1 & 2)	Target	50	50	0				100
	Actual	52	83	40				175
2 KI699 Phase (Years 3 & 4)	Target			100	150	0		250
	Actual			0	0	0		0
3 KI700 Phase (Years 5 & 6)	Target					150	146	296
	Actual					0	0	0
KI835 WwTW F Comp & EDM's	Target	16	17	17	16	16	16	98
	Actual	0	0	0	0	0	0	0
PC21 Cumulative Total	Target	66	67	117	166	166	162	744
	Actual	52	83	40	0	0	0	175
							Target Total:	744
							Actual Total:	175

As part of PC27 planning a WQ priority piece is going on to expand the EDM programme to collect data for strategic asset risk profiling. This is to ensure that catchments in priority areas have 100% EDM coverage to enable several key functions:

- WWRR – statutory requirements for near real-time reporting of EDM spills
- Model confidence DAP vs EDMs
- Solution confidence
- Development of an EDM reporting dashboard – this for key metrics on asset performance but also for maintenance and validation of spill reporting.

To achieve 100% EDM coverage in the high priority catchments temporary EDM loggers will be rolled out where gaps are identified until the main capital project can install permanent loggers.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

It has been highlighted during the start of this work, that increased funding will be needed to carry out the maintenance and reporting of the new EDMs in PC27. This will be considered as part of the PC27 planning processes. Currently, it is not envisaged that any additional CAPEX is needed in PC21. Work is ongoing to try and evaluate how much CAPEX is required in PC27 and a management strategy for EDMs

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

With the need to have 100% EDM coverage in priority catchments and secondary line of project work will be commenced in 23/24 to rollout temporary EDM loggers. This will enhance the current programme as it gives NI Water data insights at a quicker rate to the current programme rollout.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☒	No ☐	Comments

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

As other stakeholders, in particular external, learn about this programme, there is an increase in Freedom of information requests for this type of information. The concern is the information is being used in a particular way which it was not set up to do, giving distorted expectations.

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
Wider benefits of this development objective include: • Asset performance insights • A move towards real time monitoring and predictive analytics – proactive approaches to reducing spills • Improving the confidence in hydraulic models
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There is some linkage to other Development Objectives, as follows: • Section 12 – Storm Water Separation

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment				
NIE				
Lands				
Site Investigation				
Consultancy	0.526	2.860	3.386	KI696, JI700, KI699
Pilot Studies				
Add Others as necessary				
Totals	**0.526**	**2.860**	**3.386**	
PC21 Projected Spend on Development Objective			**3.386**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
11	**Cranfield Catchment, Kilkeel Storm Separation**	**12g**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

There is a history of external out-of-sewer flooding in the catchment, due to the limited feasibility work currently completed and the absence of a current hydraulic model.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☒	**PC27 only ☐**	**PC21 and PC27 ☐**

PROJECT SCOPE

Complete optioneering and scope development including onsite investigation, DAP modelling, connectivity checks and stakeholder engagement on the two options proposed to achieve separation of storm water for the Kilkeel Storm Separation project.

No change to scope.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

Potential to Remove Scope

Reason - Business as Usual activities

Estimated NIW Stage A1 Options and Business case complete.
Engage with NIEA and other stakeholders on needs and options and the programme for delivery as required.

PROJECT OUTCOMES

- Ecological and Environmental Impact – reduction in out of sewer flooding due to reduced flows
- Alignment with Strategic Aims and Objectives
- Sustainable Development – reduction in OPEX costs (and therefore electricity) of WwPS and WwTW
- Sustainable Development – increased capacity in the sewers allowing for future developments to be granted connections.

No change to PC21 FD project outcomes.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages.
- Engage with NIEA and other stakeholders on needs and options and the programme for delivery as required.
- Submit business case for solution, including costs and justification, in accordance with agreed timetable to UR for determination.
- Engage with UR staff on implications for PC21 DG5 targets if required.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

- Programmes for delivery of this objective developed and submitted with regular updates
- Engagement with other stakeholders including NIEA, DFI, Council, and others, and continues throughout the programme as required. This is a BAU activity.
- Business case will be submitted at part of the PC 21 Mid Term Review and will include costing and justification.
- No DG5s will be delivered under this project and PC21 DG5 outputs will retain unaffected.

PROGRAMME

See Master DO Programme v0 dated 07/07/23.
P6 Programme is supplied in this update and is being developed alongside the business case.

Programme dates below relate to internal NIW dates which relate to the delivery project are not to be confused with regulatory submission.

Asset management meet with UR staff to discuss Development Objectives.

Programmes	Sub Programmes	PC21 IPAC	CPMR ID	Project Name	IF180	IF105	A00100 - ECI Period		A00120 - Planning Submission/Granted		A10090 - Business Case Ready	A10100 - Business Case Submission	A10110 - Business Case Approval	SKD0140 - CIP Project Submission	SKD0150 - CIP Project Approval	A10120 - A1 Form Approval	A30400 - NIE Purchase Request Placed/Installed		A30600 - LSR 1 Form Submitted
12 - Sewerage programme	12g - Storm Water Separation	1831	63250	Cranfield Catchment, Kilkeel Storm Separation	AECOM Ltd	AG Wilson	12/04/2022	23/05/2024			23/05/2024	06/06/2024	20/06/2024	04/07/2024	18/07/2024	01/08/2024			08/02/2024

A30670 - Acquisition Complete/Wayleave Granted		A30700 - Roads C4 Estimate Submitted	A30710 - Roads Purchase Request Placed/Complete		Pre A00105 - DAP MBV Completion Date	Pre A00107 - DAP Options Completion Date	Pre A00108 - IEM Baseline Completion Date	Pre A00109 - IEM Options Completion Date	RM 00101 - VM2 Workshop complete	RM 00301 - VM3 Workshop complete	RM 00401 - VM4 Workshop complete	SKD0010 - A0 Start Date	SKD0030 - A1 Approval	SKD0050 - A3 Approval	SKD0070 - A3 Construction Start to A3 Construction Finish		SKD0090 - A3 Total Beneficial Use	SKD0110 - A3 D2 Handover	SKD0130 - A4 Form Approval Date
03/05/2024	01/08/2024				04/11/2022				23/05/2024			01/04/2023	01/08/2024	02/09/2024	01/10/2024	01/10/2025	01/10/2025	30/12/2025	30/12/2026

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	FD21 Annex T Milestone Target Date	Status Vs FD21 Target	Current Milestone Target Date	Status Vs Current Target	Commentary on Material Milestone Date Changes ***AND / OR*** Reasons for any material Delay
Estimated Date for DAP Needs and Options Completion (Cranfield DAP complete)	Jun 21	Complete	No Change	Complete	N/A
Develop and submit an updated programme for the delivery of			Dec 22	Complete	Project update completed as part of Scope Certainty Batch 4 submission

this objective.					
Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages.			Mar 23	On going	NIW Asset Management liaise with UR. Awaiting response of Scope Certainty submissions as part of the PC21 Mid Term Review
Engage with NIEA and other stakeholders on needs and options and the programme for delivery as required.			Mar 23	To be Removed	<u>To be removed as is BAU activity.</u> Ongoing and as required, Project team liaised with NIEA for draft consent, with further sign off by NIEA prior to A1. Full WOC to be completed prior to construction completion.
Submit business case for solution, including costs and justification, in accordance with agreed timetable to UR for determination			Mar 23	Complete	Submitted under Batch 4 Scope Certainty.
Engage with UR staff on implications for PC21 DG5 targets if required.			Aug 24	Removed	Removed due to no DG5s on project, 5 DG5s mentioned in the original business case relate to the entire Culmore DA. None will be delivered under this project.
Estimated NIW Stage A1 Options and	Dec 22	Delayed	Aug 24	To be Removed	<u>To be removed from DO11 as BAU activity</u>

Business case complete					DAP outputs identified areas of further site investigation required prior to confirmation of Option. A1 date moved back to allow time for completion of ECI works

KEY MILESTONES FOR SOLUTION INVESTMENT
(Note this section is relating to the construction phase which is outside the scope of the Development Objective.)

Commencement of construction	Aug 23	Delayed	Oct 24	On Target	DAP outputs identified areas of further site investigation required prior to confirmation of Option. Construction date moved back to allow time for completion of ECI works

EXPENDITURE [See Also Table DO1 below]

FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal prices)**	**Commentary on Material Total Cost Changes for DO**
£0.2m	£0.275m	Only inflation update added.
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
£1.99m	£2.580m	Updated costs reflective of revised storage requirements from DAP and further design from the original Final Determination. Details contained in Scope Certainty Batch 4 submission.

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Completed activities have been highlighted within the key milestone sections. Annex T estimated spend has been superseded with revised costs in the business case.
The Business case was submitted to the UR in March 2023 as part of Batch 4.

PLANNED NEXT STEPS FOR DELIVERY

Local modelling Needs and Outcomes used to size options for inclusion within A1 Business Case, which will identify the preferred solution.

Engagement with Stakeholders as part of project delivery process.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

Additional OPEX funding is included within IPAC and highlights what will be needed to carry out the maintenance of the new equipment. IPAC was included within the PC21 submission.

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

ECI ground truthing the sewer network to help achieve the capital delivery/outputs.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☒	No ☐	Comments

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

Risk that "ground truthing" proves that neither of the two options will achieve Storm Separation.
Risk that NIEA do not accept the preferred solution.
Project specific risks shown below;

Risk	Impact of risk (H/M/L)	Likelihood of risk (H/M/L)		Mitigation measure
		Status Quo	Recommended Option	
NIEA fines/bad publicity due to compliance failure	H	H	L	Provision of storage and screening to meet NIEA requirements.
Out-of-sewer flooding continues resulting in clean-up costs and bad publicity	H	H	L	Provision of storage to eliminate out-of-sewer flooding. Post-stage two flow monitoring to determine whether stage three works are needed to be completed
Delays/change to design	M	NA	L	Additional investigative works to refine the proposed option.
Poor ground conditions	H	NA	H	Further GI works are recommended following further refinement of proposed option. Ground conditions are currently assumed to be poor.
Lack of funding	H	NA	M	Development and selection of most cost-effective option following additional investigation works.
Planning permission	M	NA	L	Early engagement with relevant planning department.
Health and Safety	H	H	L	Early engagement with NI Water Operations.
Lands	H	NA	M	Early engagement with landowners. Selection of option with least impact.
Overall Risk		H	L	

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
- Greater certainty on the success of the preferred option; - Increased headroom at receiving WwTW; - Reduction in Opex at Cranfield WwTW & associated WwPS's
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There are no current links to any other Development Objectives.

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment/ Project Code(s)
Civil		0.000		
M&E		0.000		
Materials / Equipment		0.000		
NIE		0.000		
Lands		0.000		
Site Investigation		0.000		
Consultancy	0.088	0.187	0.275	(KV230)
Pilot Studies		0.000		
Totals	**£0.088**	**£ 0.187**	**£ 0.275**	
PC21 FD Projected Spend on Development Objective			**£ 0.275**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
12	**Storm Water Separation**	**12g**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

Original Text

Throughout Northern Ireland many wastewater networks are overloaded resulting in out of sewer flooding, unacceptable intermittent discharges (UIDs), restrictions to new developments and higher operational costs through the storage, conveying (including pumping) and treating of combined foul and surface water flows. The projects are regarded as development outputs due to the early stages of feasibility at the time of submission, critical unknown constraints include connectivity within the system to confirm GIS/modelling data and cross connection investigation, confirmation of contributing areas, limited feasibility to inform the capacity of the proposed receiving water course and required discharge consent or design feasibility and limited or no stakeholder engagement.

Updated Text

Throughout Northern Ireland many wastewater networks are hydraulically overloaded resulting in out of sewer flooding, unacceptable intermittent discharges (UIDs), restrictions to new developments and higher operational costs through the storage, conveying (including pumping) and treating of combined foul and surface water flows and associated carbon footprint. The named projects are regarded as development outputs due to the early stages of feasibility at the time of submission.

Critical unknown constraints include connectivity within the system to confirm GIS/modelling data and cross connection investigation, confirmation of contributing areas, limited feasibility to inform the capacity of the proposed receiving water course and required discharge consent or design feasibility, and limited or no stakeholder engagement.

Note that changes to original text in Annex T relate to improvements to technical accuracy of the original text, linkages to our Net Zero ambitions and improved grammar.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27		
PC21 only ☐	**PC27 only ☐**	**PC21 and PC27 ☒**

PROJECT SCOPE

Original Scope

The estimated removal of 218.72 Ha of impermeable area that discharges storm water into the foul / combined sewerage network. The project needs have been identified in three strands;

1. Historic DAP surface water separation opportunities. Six projects have been promoted for consideration (Kilkeel, Preistland Road – Bushmills, York Street – Belfast, Belleck, Foyle Street Londonderry and Cranfield). (Cranfield iPAC 1931 and Foyle Street – Londonderry iPAC 1210 detail is included within a separate business case, referenced within this document for completeness of the 12g Storm Separation programme.)
2. Opportunity for separation of surface water from the foul/combined network identified via GIS analysis or network field manager interview.
3. Opportunities developed in conjunction with works on the sewerage network

for other reasons where storm separation can be achieved at reasonable additional cost.

Updated Scope

The estimated removal of 218.72Ha impermeable area (with an amended target to be developed as part of the PC21 MTR) that discharges storm water into the foul / combined sewerage network. The project needs have been identified in three strands;

1. Initially, six projects have been identified from historic DAP studies for further investigation
    a. Preistland Road, Kilkeel.
    b. Bushmills
    c. York Street, Belfast,
    d. Belleek
    e. Foyle Street Londonderry (iPAC 1210)
    f. Cranfield. (iPAC 1931)
2. Development of an Infiltration and Ingress Management Strategy to efficiently and economically target the sources of I&I.
3. A digital system will be developed for the tracking of opportunity, through feasibility to intervention and benefits realisation.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

After the first two years of PC21, it was identified that a change to strategy in this development output was needed. Opportunities for surface water direct ingress removal has been limited when ground truthed due to issues surrounding corporate records. Initial “quick wins” whereby our GIS records indicated a surface to foul/combined connection are only returning a 40% positive opportunity for direct ingress removal. The area connected to this is currently assumed and there has to be an initiation of further surveys and constructability to realise a constructable opportunity. There was also no linkage to wider Blue Green Infrastructure opportunities. Outside of the six named projects leading into PC21, there hasn’t been any viable construction opportunities confirmed.

This called for a new approach – the Infiltration and Ingress (I&I) Management Strategy. In April 2023, NI Water initiated work on this strategy and the development output led by the Wastewater Strategy team to ensure linkages to strategic drivers, environmental regulatory drivers and capital planning for PC21/PC27. This is with a view to improvement of the success rate “on the ground” and consideration of economic and strategic drivers.

PROJECT OUTCOMES

Original Project Outcomes

- Ecological and Environmental Impact – reduction in UID spills due to reduced flows within the sewerage network, recharging of urban water courses providing increased dilution and retention of storm water.
- Alignment with Strategic Aims and Objectives
- Sustainable Development – reduction in OPEX costs (and therefore electricity) of WwPS and WwTW including improvement in biological performance.
- Sustainable Development – increased capacity in the sewers allowing for future developments to be granted connections and creation of headroom capacity in system.

Updated Project Outcomes

Alignment with NI Water Strategic Aims and Objectives:

1. **Ecological and Environmental Impact** – reduction in UID spills due to reduced flows within the sewerage network, recharging of urban water courses providing increased dilution and retention of storm water. Contribution towards WFD River Basin Management Objectives.
2. **Net Zero and Climate Resilience**– reduction in OPEX costs and reduction in carbon footprint through reduced electricity consumption. Improvement to WwTW biological performance, particularly in activated sludge plants and adds resilience capacity for climate change.
3. **Development Constraints** – increased capacity in the sewers allowing for future developments to be granted connections and creation of headroom capacity in system.
4. **Customer** – improved customer impact through reduction of internal and external flooding and complaints around flushing of toilets, for example.
5. **Biodiversity** - with Blue Green Infrastructure opportunities and associated benefits that BGI has on communities.
6. **Statutory Requirements** – contributes to new and emerging statutory Legislation and policies related to Wastewater Regulation Reform (WWRR):
    a. Environment Act and Urban Wastewater Treatment Directive (recast)
    b. WwTW Flow Compliance non-compliance management plans
    c. EDM Spill reporting and measures to reduce
    d. Long Term Wastewater Catchment Planning (DWMPs and/or IUWWMPs)

The key deliverables are:

- Draft Business Case for PC21 SWS
- Infiltration and Ingress (I&I) Management Strategy
- Prioritised list of capital projects

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

Wastewater Regulation reform (WWRR) is preparing NI Water for a new Environmental Regulatory regime in PC27. This is to bring NI Water in line with the rest of the UK in terms of CSO spill reporting, flow compliance at WwTW and emerging legislation to reduce the harm of wastewater on receiving waters. The new approach will bring us in line with other UK mainland utilities in their ambition to dramatically reduce CSO spills in the long term, understand and manage our networks more efficiently, reduce our carbon footprint, and protect receiving waters from harm. I&I Management plays a key part in those long term plans.

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition we expect NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages.
- Engage with NIEA and other stakeholders on needs, options, priorities and the programme for delivery as required

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

UR has been advised of progress in annual cost and performance report process. Submissions in 2022 completed and current report highlights progress on DO to date.

To date, NI Water have removed 3.2 Ha at a cost of £4.8m (£1.5m/Ha). NI Water believe a more efficient approach is required and have commissioned a consortium of framework consultants to develop and Infiltration and Ingress (I&I) Management Strategy. A programme for this piece of work is underway with key next steps identified further in this report.

NI Water are to arrange a meeting with UR staff to discuss the change in approach to increase efficiency. It is proposed that this will be through the MTR process and PC27 working groups in advance of March 2025.

NI Water are in the process of agreeing the policies related to CSO spill reporting and Flow compliance with NIEA, of which I&I Management are a cornerstone.

PROGRAMME

A project programme is being developed with framework consultants based on the key milestones for delivery for AIR24 further in this report.

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
The development of the storm separation programme is ongoing throughout PC21 (Individual named projects have development milestones, please refer to	Mar 27	On Target	N/A	N/A	Internal NIW discussions are seeking agreement with the UR to change this milestone to the milestone “establish a strategy for I&I management…” as the current approach is not yielding significant progress and efficiency.

the Storm separation business case 1790 et al)					
Establish a strategy for I&I Management across all projects and functions. Including a benchmark for economic level of I&I intervention and prioritise investigations/investment	N/A	N/A	2024	On target	Replace the Annex T DO key milestone with this milestone and agree this with the UR.
Submit updated programme to UR	N/A	N/A	2021-27	Ongoing	
Engage with UR.	N/A	N/A	2021-27	Ongoing	
Engage with NIEA.	N/A	N/A	2021-27	Ongoing	
Establish a methodology for storm separation across all projects and functions	N/A	N/A			Milestone to be removed rationalised within the I&I Strategy milestone
Understand the budget for storm separation only projects	N/A	N/A			Milestone to be removed rationalised within the I&I Strategy milestone
Identify a benchmark for economic storm separation and prioritise	N/A	N/A			Milestone to be removed rationalised within the I&I Strategy milestone
A1 business case for year 3 and 4 of PC21 – named schemes	N/A	N/A	Jun 23	On target	
Delivery of capital programme	N/A	N/A	2021-27	Ongoing	

Development of a digital Platform to track opportunity through to benefits realisation	N/A	N/A	2021-27	Ongoing	Suggested new target to better manage all I&I activity across the business
KEY MILESTONES FOR SOLUTIONS INVESTMENT					
Completion of the investment to achieve the target of 218.72Ha	Mar 27	On Target	Mar 27	On Target	Suggest revising target and agree with UR for MTR (Sept 23). CAPEX Solutions to be delivered for PC27
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal prices)**			**Commentary on Material Total Cost Changes for DO**	
£0.57m (18/19 prices)	£2.647m (nominal prices)			Increase in funding to realise Surface Water Management opportunities as ground truthing required and extra funding to realise Blue Green Infrastructure opportunities.	
PC21 FD Estimated Cost of Solution (18/19 prices)	**Forecast Cost of Solution (Nominal prices)**			**Commentary on Material Solution Cost Changes**	
£14.3m (18/19 prices)	£18.928m (nominal prices)			No change other than inflationary increase and currently still sufficient for updated scope.	
ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)					
An internal meeting took place in March 2023 to review progress and efficiency against the Development objective to date between Wastewater Strategy, Capital Delivery, Operations and Developer Services. It was agreed that Wastewater Strategy should take the lead in this programme introducing a change in approach to improve success rate and linkages to wider Wastewater Strategy priorities. NI Water subsequently initiated the Infiltration and Ingress Management Strategy with the aim to have this completed and agreed by March 2024. It has been agreed that continual engagement is the best way forward for increasing the success rate of this development objective and linking it to wider strategic objectives and tracking those in a digital platform. Work on the digital platform for tracking the delivery has commenced and implementation into the wider business is underway. A refresh of the business case is being undertaken to complement the new approach to targeting the problem. This will be developed for the MTR submission. In summary, the new approach will:					

- Re-prioritise the areas for investigation by incorporating new and existing datasets and linking these to wider wastewater strategy priorities and capital planning.
- Introduce cost beneficial efficiency indicators to ensure greater benefits are realised and that fieldwork is targeted.
- Trail innovation to increase efficiency of survey work and ground truthing. Other innovative data analysis techniques will help to establish the type of hydraulic stress in a catchment.
- Digital platform creation as the one centralised version of the truth for I&I management so capital interventions and benefits can be tracked.
- Measuring and setting pre and post intervention indicators in a catchment so that the multitude of benefits are captured and not measuring success on a hectarage removed basis as the programme feeds into long term wastewater strategic planning and scenario development.

Engagement with NIEA is ongoing through various regulatory forums as to how this development objective is helping NI Water manage hydraulic stress.

Update on Schemes set out in Annex T

The following schemes are being assessed:

Named Scheme	Target (Ha)	Cost (£m)	Status
Belleek	?	?	Investigations underway
Kilkeel	?	?	ECI for cost effectiveness
Bushmills	1.0	0.489	(IPAC 1943) Construction (ECI)
York Street (Belfast)	-	-	Not cost effective – abandoned.
Foyle Street	1.8	2.048	(IPAC 1210) Construction (ECI)
Cranfield	1.0	2.304	(IPAC 1931) Construction (ECI)
Totals	**3.8**	**4.841**	

In total, to date, NI Water are estimating 3.8 Ha removed at a cost of £4.8m (£1.25m/Ha). Based on this current approach, NI Water will not deliver the 218Ha target in PC21 but will engage with the Regulator to establish a revised target for the PC21 MTR. However, with a change strategy, NI Water are hoping to improve overall efficiency of the hectarage removal rate, whilst contextualising it with other strategic drivers and benefits.

Some projects, such as the Ravenhill Road scheme, have removed 3.47Ha of surface water ingress but cost has been difficult to breakdown as they were a secondary benefit to a larger conveyance capacity upgrade.

It is envisaged that further funding may be required when a coherent strategy is realised around the viability of and efficiency of managing surface water ingress. For example, special projects, requiring large CAPEX in Belfast and in Culmore may have to be funded outside of this business case and associated development output.

PLANNED NEXT STEPS FOR DELIVERY
The next steps for this development output is set out below: • The development of an Infiltration and Ingress Management Strategy • Prioritisation of areas linked to wider Wastewater Strategy objectives • Identify a benchmark for economic I&I removal and prioritise • A programme of survey work and creation of standardised survey specification and data returns – stored centrally. • The further development of a common digital platform for tracking of opportunities through to delivery and intervention benefits. • Further investigation, feasibility, ECI and economic appraisal on identified schemes to feed into business cases for year 3 and 4 named schemes. • Ascertain the conceptual feasibility of BGI interventions as a management technique. • Measure baseline and performance improvement metrics pre and post construction to ascertain wider benefits of I&I management.
PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX
• To be confirmed with solutions
IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME
By adopting a strategy that links all data sources, instrumentation and surveys alongside an economic analysis of I&I should lead to a more efficient and cost effective surface water management programme. This should lead to a higher success rate in ground truthing potential schemes and scope certainty of the proposed construction outputs. This will help achieve the capital delivery/outputs programme and linked the programme to other wastewater strategic drivers.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b			
Links to Tables Completed	Yes ☒	No ☐	Comments

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE
Risks include: - Data availability and accuracy - Delay of ground truthing programme due to contractor resource issues - Delay of ground truthing programme due to external issues (i.e. traffic management permits from DFI Roads) - Availability of hardware for monitoring sewers (wide spread demand in UK due to recent statutory changes) A risk register will be developed for the Strategy.
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
Wider benefits include: - Community engagement and education with potential Blue Green Infrastructure schemes - Wider stakeholder collaboration opportunities
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There is some linkage to other Development Objectives, as follows: • Section 10 – Event Duration Monitors WwPS/CSOs • Section 13 – Real Time Network Modelling

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment				
NIE				
Lands				
Site Investigation	0.101	1.792	1.893	KI674 + KI745
Consultancy	0.000	0.754	0.754	TBC
Pilot Studies				
Add Others as necessary				
Totals	**0.101**	**2.546**	**2.647**	
PC21 FD Projected Spend on Development Objective			**2.647**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
13	**Real Time Network Modelling**	**12z**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

Control, monitoring and automation of the sewerage network, and creating a digital twin via live network modelling, has the potential to maximise the capacity of the sewerage network, reducing out of sewer flooding, pollution and blockages, it also has the potential to assist NIW with operational maintenance and targeted intervention, providing efficiency through targeted maintenance investment.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	PC27 only ☐	PC21 and PC27 ☒

PROJECT SCOPE

Undertake trial studies to ascertain the benefits and mechanisms to allow NI Water to transition toward real time network modelling in specific networks.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

Original Outcome

- Maximise the capacity of the sewerage network
- Reduction in out of sewer flooding, pollution and blockages
- Assist NIW with operational maintenance and targeted intervention, providing efficiency through targeted maintenance investment

Replace outcome:

- Assist NIW with operational maintenance and targeted intervention, providing efficiency through targeted maintenance investment

With outcome:

- Collaboration with Operations to drive towards pro-active maintenance, targeted intervention and operational efficiencies

Add the following outcomes:

- Explore potential for Ingress and Infiltration (I&I) reduction
- Asset analysis (i.e. run pump times and failures) for asset health monitoring

A key deliverable will be a technology assessment report, benefits assessment and business case for PC27 and digital implementation strategy if deemed essential to address strategic planning risks.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

The project has been set up to look holistically with all the internal stakeholders to realise benefefit of “smart networks” and live modelling across all business functions. This has led to a drive towards exploring if NI Water can realise more benefits and achieve a wider range of project outcomes to satisfy strategic objectives.

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition we expect NI

Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages. An update on the results of the studies/trials is likely to be required as part of the engagement process.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

UR has been advised of progress to date in AIR22 return. During AIR22 this project was to be started in 2024. This is now going to be taken forward earlier, in April 2023, with programmes to be developed by June 2023.

PROGRAMME

A detailed programme for the trials is currently in development, for completion in June 2023.
See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Estimated NIW Stage A1 Options and Business Case Compete	Mar 23	Delayed	Mar 24	On Target	This DO was originally deferred to 2025 but brought forward a year as it is deemed essential to inform PC27.
Update UR with methodology and how it will be applied	N/A	N/A	Mar 24	On Target	
Develop and submit an updated programme	N/A	N/A	Mar 24	On Target	
Update UR on the results of the studies/trials	N/A	N/A	Mar 25	On Target	
Review Larne system for learning opportunities	N/A	N/A	Mar 25	On Target	
MILESTONES FOR SOLUTION DEVELOPMENT					
Completion of the investment to provide pilot projects	Mar 27	On Target	Mar 27	On Target	

within the sewerage network					

EXPENDITURE [See Also Table DO1 below]

FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal prices)**	**Commentary on Material Total Cost Changes for DO**
£0.096m	£0.127m	No change other than inflationary increase. This will be reviewed in AIR 24 after pilots.
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
£0.71m	£0.941m	No change other than inflationary increase This will be reviewed in AIR 24 after pilots

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Since the Final Determination, no activity has been undertaken with respect to DO13 until March 2023. In March 2023 the Wastewater Strategy team has taken over responsibility for this DO. A procurement exercise was undertaken in March 2023 to appoint consultancy support to deliver on this output. A scoping exercise will be commenced for trial catchments by June 2023.

PLANNED NEXT STEPS FOR DELIVERY

It has been agreed that Watewater Strategy will lead on this DO. Consultancy support was appointed in April 2023 and work will begin on strategy and scoping of trial catchments.

Instrumentation of the trial catchments will commence in August 2023.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

It is envisaged that there may be some OPEX from CAPEX and this will be determined during solution development.

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

No impact of scope/programme changes on capital delivery as no solutions exist yet.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☐	No ☒	Comments N/A as no solutions exist

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

Risks include:

- Delay of ground truthing programme due to contractor resource issues
- Delay of ground truthing programme due to external issues (i.e. traffic management permits from DFI Roads)
- Availability of hardware for monitoring sewers (widespread demand in UK due to recent statutory changes)

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE

DO13 can link in with DO12. With increased instrumentation in the sewer network, advances in rainfall application to assets etc. we can analyse this data to not only give us a real time view of our assets but also insights into where we have excess flows in the network which could be from I&I sources. This can also lead to increased model confidence due to more data coverage and therefore increased confidence in the capital

solutions recommended from modelling.
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There is some linkage to other Development Objectives, as follows: • Section 12 – Storm Water Separation • Section 10 - EDMs

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil	0			
M&E	0			
Materials / Equipment	0			
NIE	0			
Lands	0			
Site Investigation	0			
Consultancy	0	**£0.127**	**0.127**	
Pilot Studies	0			
Add Others as necessary	0			
Totals	**£0**	**0.127**	**0.127**	
PC21 Projected Spend on Development Objective			**0.127**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
14	**Urban Drainage Modelling - Live Models for IOC**	**20g**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

Develop and cost a methodology to allow NI Water to transition to Real Time network modelling (through trial studies) to facilitate identification of problems before they manifest in flooding or pollution incidents.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☒	PC27 only ☐	PC21 and PC27 ☐

PROJECT SCOPE

Develop and cost a methodology to allow NI Water to transition to Real Time network modelling to support the IOC. This will allow NI Water to better understand its network, create opportunities to optimize network operation and allow better informed decisions before and during incidents.

This project is a R&D project in order to identify potential opportunities through the use of Artificial Intelligence and its applicability to the Wastewater pumping system.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

During phase one of the project, the supplier requested a change to the telemetry system to enable a real-time solution due to latency within the existing system. This occurred August 2022 and a new trial period commenced on the 12/09/2022.

PROJECT OUTCOMES

This may allow a more proactive approach and provide agile decision making based on dynamic scenarios. It will also help us understand our network better, create opportunities to optimise network operation and allow better informed decisions during operation of the Assets.
PC21 FD project outcome will form the basis for the further decision-making process. Changes were made to the system; the trial was recommenced. Optimization of the system was undertaken; results and findings will be presented at the end of the trial period.

The key outcome of this Development Objective is the development of situational awareness dashboards and alerting systems for IOC responses from Real Time Network Modelling.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages. Provision of a copy of the methodology and an update on how NI Water intends to apply it is likely to be required as part of the engagement process.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

- Met with the Reporter for AIR 22
- Updated progress and risks
- Identified key communication issue with system and modified timeline
- Outlined expectations for the 23/24 financial year
- Flow volumes to the works and energy efficiencies will be monitored and outcomes presented
- Engagement with UR on Methodology etc – NIW will carry out changes to the system, monitor and adjust configuration as necessary & publish report. Following the outcomes of this phase we will engage with the UR. A date for engagement with the UR will be determined when the trial is complete and the trial outcomes are known.

PROGRAMME

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Feasibility (desktop) study	N/A	N/A	Jan 21	Complete	*Milestone 1.* See Supplier feasibility report Section 14_Milestone 1_FLOW UK NIW Solu
Initial test running	N/A	N/A	Oct 21	Complete	*Milestone 2.* See minutes 02/09/2021 progress meeting Section 14_Milestones 2-5_Ev
Optimise solution and identify constraints	N/A	N/A	Mar 22	Complete	*Milestone 3.* See flow north coast monitoring ww team 03/02/2022
Identify solution to communication problem	N/A	N/A	May 22	Complete	*Milestone 4.* See 25/08/2022 plc discussions
New comms solution	N/A	N/A	Aug 22	Complete	*Milestone 5.* See e-mail

installed					14/09/2022
Batch 1 – Two catchments	2023		2023	Reliant on outcome of trial	Decision will be based on trial outcome
Batch 2 – Three catchments	2024		2024	Reliant on outcome of trial	Decision will be based on trial outcome
Submit updated programme to UR	N/A	N/A	Oct 22	Reliant on outcome of trial	Deferred until more outputs are available
Engage with UR staff	N/A	N/A	Dec 22	Reliant on outcome of trial	Deferred until more outputs are available
Provide UR with update on the results of the studies/trials. North Coast development project combining real-time data, network model and machine learning application	N/A	N/A	Q1 23/24 financial year	On target	Update meeting delayed due to pump failure at key asset – this is under investigation
New Technology Assessment and Recommendations Report	N/A	N/A	Q3 23/24 financial year	On target	New milestone in AIR23 (key deliverable on dashboard)
Estimated NIW Stage A1 Options and Business case complete	N/A	N/A	Q3 23/24 financial year	Reliant on outcome of trial	Was Mar 23. Initial analysis will be conducted in Q3 23/24 due to pump failure noted above
KEY MILESTONES FOR SOLUTION INVESTMENT					
Real Time Network Modelling	TBC	N/A	Q3 23/24 financial year	Reliant on outcome of trial	Analysis of trial to establish benefits
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)		**Forecast Cost of DO (Nominal prices)**		**Commentary on Material Total Cost Changes for DO**	
£0.6m		£0.804m, which is £0.6m indexed to nominal prices (cost TBD – based on trial)		N/A	

PC21 FD Estimated Cost of Solution (2018/19 prices)	Forecast Cost of Solution (Nominal prices)	Commentary on Material Solution Cost Changes
TBC	TBC	Solution cost is unknown at this stage

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

- Feasibility assessment started
- Deployment of test solution in North Coast zone – changes required to PLCs at local sites and server installed in NI Water ICT environment
- Assessment of constraints – key outcome – changes requested by the A.I. system are not being transferred at correct time to local site – new radio requirement identified
- P.O. placed for faster radio system and install currently being scheduled with site teams
- Install of radios completed August 2022
- New test commenced 12/09/2022

A progress tracker showing individual tasks is shown below:

Title	Start Date	End Date	Type
Feasibility Study (FLOW Simulation)	09/04/2020	28/01/2021	Study
FLOW Implementation	01/12/2020	28/07/2021	Milestone
Subscription Active	04/08/2021	03/08/2022	Milestone
FLOW active	10/10/2021		Milestone
Watchdog functionality integrated with PLC	12/10/2021		PLC change
Solved FTP server down	17/11/2021	30/11/2021	PLC change
Assessment of data telemetry delays	15/03/2022		Data analysis
Assessment conclusion on time delay	22/03/2022		Data analysis new approach need
Proposal for new comms	20/04/2022		Radios and new antenna
Proposal out for consultation	23/05/2022		Discussion had between RDH AND NIW
New radios agreed upon	30/05/2022		PO raised
PO SIGNED-OFF	06/06/2022		Radio order placed
Install planned	18/07/2022		Install commenced
Commissioning	25/07/2022	01/08/2022	System operational
Simulation re-started under new conditions	15/08/2022	03/02/2023	Implementation, analysis of new data set and performance
Review of data and recommendations of possible roll out to further WwTP site	03/02/2023	01/03/2023	Did the study meet goals and objectives

PLANNED NEXT STEPS FOR DELIVERY

Due to the latency with the original communications, the trial will be extended until Q4 23 -24, Financial year

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

Ongoing subscription likely to be £45k/year per zone.

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

This project is to assess the feasibility of this platform and the applicability to NI Water. No further capital projects have been progressed at this stage.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b			
Links to Tables Completed	Yes ☐	No ☒	Comments N/A – no capital projects as yet
RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE			
Key risks are as follows • Cost / benefit analysis may indicate that value is not achievable • Telemetry system is not suitable and will require significant upgrades – this is a likely outcome if the solution is expanded to other areas. Note that telemetry constraints have now been resolved for the trial area • Peak flow reduction may not be achieved			
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE			
Solution may support the reduction of maximum flows to the WwTW (to be proven) Additional analysis may be used from the system to identify potential asset failures – e.g. pump efficiencies. The information from the trial may be used to support other projects across the company.			
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES			
There is a linkage to DO 13 (Real time network modelling) – further development work on this DO will establish the linkage and interdependencies.			

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment		£0.274m	£0.274m	Radio communication and pumps
NIE				
Lands				
Site Investigation				
Consultancy				
Pilot Studies	£0.170m		£0.170m	
Add Others as necessary	£0.045m	£0.315m	£0.360m	For subscription costs
Totals	**£0.215m**	**£0.589m**	**£0.804m**	
PC21 Projected Spend on Development Objective			**£ 0.804m**	Estimating £0.804m which is £0.6m from Annex T indexed to nominal prices

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
15	**Innovation Initiatives**	**20**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

Innovation projects are required to ensure NI Water keep up to date with new and efficient techniques. Innovation projects by their nature are difficult to identify in advance but NI Water are continually striving to be innovative and use new techniques that may provide the desired efficiencies. The funding being applied for the PC21 period is to pilot and trial new technologies to assess their benefits and potential integration into business as usual. The funding will not be used for full scale integration.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☒	PC27 only ☐	PC21 and PC27 ☐

PROJECT SCOPE

- To develop a more focused Innovation Programme to cover key areas identified by the business as being critical and linked to NI Water's vision and values. To be more proactive and seek solutions to specific questions.
- Innovation initiatives in the areas of: Capital Efficiencies; Operational Efficiencies; and Future Innovation.
- Pilot studies and trials of new technologies to assess their benefits and potential integration into business as usual.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

- Capital Efficiencies -To identify and evaluate processes that can provide capital efficiencies through trials and pilot projects.
- Operational Efficiencies- To identify and evaluate processes that can provide OPEX efficiencies.
- Future Innovation - innovations that will take place over the PC21 period and in particular areas that are not directly related to efficiencies.
- NI Water will concentrate efforts on those innovative initiatives likely to benefit us the most.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages. Provision of an update on the focus areas identified, innovation programme (once developed) and the outcome of subsequent trials and pilots is likely to be required as part of the engagement process.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED					
UR advised of progress in Annual Information Returns 2022 and 2023. NI Water has no specific plans to engage with the UR but we will do so as required.					
PROGRAMME					
See Master DO Programme v0 dated 07/07/23.					
KEY MILESTONES FOR DEVELOPMENT OBJECTIVE					
Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Submit updated programme to UR	TBC	Complete	July 22	N/A	N/A
Engage with Regulators	TBC	Complete	July 22	N/A	Meetings held with Regulators at several WTW with pilot trials. Innovation Programme shared in AIR Returns
Update UR on focus areas, innovation programme and trials/pilots	TBC	Complete	July 22	N/A	N/A
Innovation strategy workshop to review key business areas and identify opportunities to be progressed during PC21	Feb/Mar 20	Complete Workshop held 10/06/2022	June 2022	N/A	Covid delays and slower recruitment than anticipated during PC21 period. The November 2021 EC/Board Risk Committee helped focus innovation in NI Water.
Obtain Board approval for innovation "focus areas"	April/May 20	Complete	November 2021 and 2022	N/A	Presentations made on NI Water Innovation to

					EC/Board Risk Committee in Nov 21 & 22.
Develop Innovation Programme for 2021–23 comprising list of specific innovation trials and pilots to cover first two years of PC 21	Oct 20	Complete	No change	N/A	N/A
Prepare individual pilot and trial project business cases	TBC	On-Going	No change	N/A	N/A
Tender of approved pilot and trial projects	TBC	On-Going	No change	N/A	N/A
On-site trials and evaluation of results and benefits	TBC	On-Going	No change	N/A	N/A
Annual review of outputs from programme of pilots/trials by the Asset Delivery Director	Dec 22	Delayed	April 23	Complete	It was decided to move this meeting to the end of the financial year rather than the end of the calendar year. Otherwise the activity is complete with no impact on the Innovation Programme.
KEY MILESTONES FOR SOLUTION INVESTMENT					
Roll-out of successful pilot projects. (As dictated by detailed programme)	TBC	N/A	July 22 and 23	N/A	Programme being rolled out and shared in AIR returns.

EXPENDITURE [state cost base for all costs e.g. FY18/19 – See Also Table DO1 below]		
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal Prices)**	**Commentary on Material Total Cost Changes for DO**
£2.22m	£2.84m	-
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal Prices)**	**Commentary on Material Solution Cost Changes**
TBC	TBC	-

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Engage with Regulators

During PC21 NI Water has engaged with regulators such as the Drinking Water Inspectorate via regular compliance meetings and updated them on Pilot WTW projects and has continued to meet with the NIEA / NI Water Investment Group which covers initiatives such as innovative IEM modelling and innovative blue/green pilot solutions.

Furthermore, the PC21 Environmental Quality Group has been re-established and meets to discuss the wastewater programme notably infrastructure and UIDs. This will involve discussion of sustainable and cost proportionate wastewater capital solutions, their catchment context in terms of environmental performance outcomes in the receiving environment as informed by Integrated Environmental Modelling (IEM) e.g., in Dundrum Bay.

Innovation strategy workshop to review key business areas and identify opportunities to be progressed during PC21.

A review was completed during 2021 - "Bringing Innovation Out of The Shadows and associated Case Studies (November 2021)." The Innovation Review identified focus areas and the findings of the Innovation Review were placed on NI Water's external website in July 2022.

A workshop was held on 10th June 2022 to review Wastewater Innovation Strategy. It identified priorities within the 4 main asset types.

Obtain Board approval for innovation "focus areas".

As directed by the NI Water business the innovation assessment and focus areas were presented to the EC Risk Committee in November 2021 and an update was provided in November 2022.

Develop Innovation Programme for 2021 – 2023 comprising list of specific innovation trials and pilots to cover first two years of PC 21

The target completion dated for this objective has been revised to Dec 2023. NI Water staff were recruited as Efficiency and Innovation Managers in April and June 2022.

An innovation dashboard has been developed to capture and monitor Innovation projects that form part of the "Innovation Programme" being led by the Water and Wastewater Efficiency and Innovation teams. In addition, it is anticipated that this dashboard will also capture other innovative projects being delivered within the business.

Given the nature of Innovation, this dashboard is regularly updated, both to include new processes and equipment for inclusion within the Innovation Programme, but also to reject

those items that on further investigation do not fit with business needs.

Prepare individual pilot and trial project business cases.

Ongoing throughout the PC21 period. Individual pilots and trials have been progressed within the capital programme and have used early contractor involvement and some small technology trials have been at no cost to NI Water.

Tender of approved pilot and trial projects

This is dictated by detailed programme and is ongoing throughout the PC21 period. Company frameworks and procurement processes have been followed as required by the programme and followed NI Water governance.

On-site trials and evaluation of results and benefits

(Within two months of trial completion)

Several pilots and trials have been successfully completed by Efficiency and Innovation staff in Investment Management and used to inform innovative NI Water capital solutions for investment during PC21 and in PC27, particularly in water non-infrastructure.

Estimated DO15 costs associated with planned innovative pilot trials aimed at delivering Capex and Opex efficiencies via new technologies and optimization assessments are presented in the Solution Investment Table below. The results of these trials / studies will be reported on their completion.

Annual review of outputs from programme of pilots / trials by the Asset Delivery Director

There are regular meetings held with the AD Director and Head of Asset Management on Innovation and a formal review with the AD Director is held at the end of each financial year. This year's meeting was held on 24th April 2023.

See Table Below on next page for Activities Completed to Date.

NB This is the Innovation Programme

Description	Reason for Doing	Original Target Date	Status vs Original Target Date	Original Cost Estimate	Current Target Date	Status vs Current Target Date	Current Estimated Cost/Spend	Comments
Anney's Well Borehole.	To evaluate the performance of filter media in treating the Anney's Well borehole water and the feasibility of introducing the treated water into different stages of Lough Fea WTW.	July 22 - Aug 22	Completed	£20-40k	N/A	N/A	£0k	Completed under JB742 (£0k). Anney's Well Borehole Scheme Investigations. **Report in folder.**
Castor Bay Filter Media Trial.	To evaluate the performance of AFM in primary filters for reduction of THM's. Also, for filter optimisation.	Sept 22 - Oct 22	Completed	£40-60k	N/A	N/A	£60k	Completed under JG094. Total cost £60k. **Report in folder.**
Dunore Point Filter Media Trial.	To evaluate the performance of AFM in primary filters for reduction of THM's. Also, for filter optimisation.	Jan 23 - Feb 23	Completed	£40-60k	N/A	N/A	£60k	Completed under JA342. Total cost £60k. **Report in folder.**
Algae Control	To trial new innovative ultrasonic technology (LG Sonic) to aid in Algae Control and Clay Lake WTW. This will improve the lakes composition in water quality parameters.	Install & Commission July 22	Delayed	£220-260k	Oct 22	Completed	£224k	Commissioning completed Oct 22 under project JF622. Currently collecting data. Total spend £224k. **Full Report to follow in due course once the efficacy of the unit has been assessed.**
Ballinrees Filter Media Trials	To evaluate the performance of AFM in primary filters for reduction of THM's. Also, for filter optimisation	Jul 22 to Dec 22	Completed	£50-£100k	N/A	N/A	£60k	Completed under JC406. Total cost £60k. **Report in folder.**
Gortglenaghan & Shanmoy Boreholes	*Evaluate AFM treatment for Borehole water.*	*Feb 23 to Mar 23*	*Superseded by Project below*	*£40-80k*	*N/A*	*N/A*	*N/A*	*Superseded by the Project immediately below:*
Gortglenaghan Borehole & THM Analyser	Evaluate AFM treatment for Borehole Water and purchase and install In-Line THM Analyser to prove the efficacy of the technology.	Mar 23	Completed	£70k	N/A	N/A	£70k	Gortglenaghan Borehole complete. **Report in Folder.** Shanmoy Borehole currently on-hold. THM Analyser purchased and installed 17/04/23. Report to follow in due course after

Description	Reason for Doing	Original Target Date	Status vs Original Target Date	Original Cost Estimate	Current Target Date	Status vs Current Target Date	Current Estimated Cost/Spend	Comments
								running system for a minimum of 6 months to prove the efficacy of the analyser.
						Total Spend to Date (Water Team)	**£474k**	
Fats Oils and Grease (FOG) removal trial	Start of Project information gathering/scope confirmation.	Apr 22	Completed	£0k	N/A	N/A	£0k	Free Proof of Concept Trial Completed.
ARMPhos Trial	Start of project information gathering / scope confirmation/ Site Selection	Jun 22	Rejected	£0k	N/A	N/A	N/A	Rejected during scoping exercise based on bed blinding issues encountered by other water companies.
Kandu Trial (Phase 2 - Scoping)	Kandu Trial (Phase 2) in Newry and Dungannon area (Wastewater network discharge monitoring). Start of Project information gathering / scope confirmation.	Apr 22	Completed	£0k	N/A	N/A	N/A	Scoping Completed
Low Temperature Anaerobic WW treatment	Low Temperature Anaerobic WW treatment Start of project information gathering / scope confirmation/ Site Selection.	Apr 22	Paused	N/A	N/A	N/A	N/A	
Elutions	Elutions / Digital Twin- Start of project information gathering / scope confirmation (Early engagement)	Apr 22	Rejected Aug 22	£0	N/A	N/A	N/A	Rejected during scoping exercise
Bio-Cage sludge	Bio-Cage sludge trial Start of project information gathering / scope confirmation.	July 22	Complete	N/A	N/A	N/A	N/A	
					Total Spend to Date (Ww Team)		**£0k**	**Staff resources used for scoping projects and free proof of concept trial completed.**

PLANNED NEXT STEPS FOR DELIVERY (See Table Below for Next Steps for Delivery)

Description	Reason for Doing	Original Target Date	Status vs Original Target Date	Original Cost Estimate	Current Target Date	Status vs Current Target Date	Current Estimated Cost/Spend	Comments
Camlough WTW	*To evaluate the feasibility of bringing Camlough WTW back on-line. The 12-month trial involves new innovative technologies.*	*2022/23*	*Superseded to Project Below*	*£200 - £300k*	*N/A*	*N/A*	*N/A*	*Superseded by the Project immediately below:*
Nano-Filtration Pilot	To prove the efficacy of Nano-Filtration using Moyola site as a base for use of water source and disposal of brine. Nano-Filtration is a chemical free treatment process. Small footprint for the volume of water treated. Potential option for water resilience and additional drinking water supply in the future. Moyola has been selected as a site that requires an upgrade in output of a minimum of 5MLD. Nano-Filtration is an option to use for 5MLD depending on performance during the trial.	Started Feb 23 Completion Aug 24	On-Target	£441k	Same as Original	On-Target	£441k Total Cost. £100k Spent to Mar 23.	Nano-Filtration unit going straight to Moyola WTW to join up with Pilot Plant. Moyola has been selected as site that requires an upgrade in output of a minimum of 5MLD. Nano-Filtration is an option to use for 5MLD depending on performance during the trial. Pilot Plant trial to start circa July/Aug 23 for a period of 1 year.
Site Filter Investigations (Multiple Sites)	To investigate all media types used in filtration within various treatment plants.	Feb 23 - Mar 24	On-Target	£100-£150k	Same as Original	On-Target	£150k Total Cost. £40k spent to Mar 23.	On-Going
Lough Macrory WTW	*Install AFM into two remaining Primary Filters. Upgrade Poly Pumps.*	*Nov 21 - Sep 22*	*Delayed*	*£20-£40k*	*N/A*	*N/A*	*N/A*	*Delayed. Priorities have moved this down the list. To be investigated again at Mid-Term review.*
Clay Lake WTW	*Media Replacement & Chemical Treatment Optimisation.*	*Mar 22 - Sep 23*	*Delayed*	*£20-£30k*	*N/A*	*N/A*	*N/A*	*Delayed. Priorities have moved this down the list. To be investigated again at Mid-Term review.*
Altnahinch WTW	Full site Optimisation.	Mar 23 - Mar 24	On-Target	£50k	Same as Original	On-Target	£200k Total Cost.	4 Projects Moved into One Project. No material changes in

Glenhordial WTW	Full site Optimisation.	Mar 23 - Mar 24	On-Target	£50k			£100k Spent to Mar 23	scope, target dates or costs.
Seagahan WTW	Full site Optimisation.	Mar 23 - Mar 24	On-Target	£50k				
Dorisland WTW	Full site Optimisation.	Mar 23 - Mar 24	On-Target	£50k				
Caugh Hill WTW	*MIEX Plant Trial*	*Aug 22 - Aug 23*	*Superseded to below Project*	*£50-£80k*	*N/A*	*N/A*	*N/A*	*Superseded to immediate below Project. MIEX Pilot Trial will be getting set-up with a full-scale Pilot Plant. Estimated to start end of June 23/start of July 23.*
ATI Filter Smart Units.	To purchase and Install 10 x ATI Filter Smart Units to prove the Efficacy of the technology.	Apr 23 - Sep 23	On-Target	£100k	Same as Original	N/A	£100k Total Cost. £0k Spent TD	On-Going.
Belleek WTW	*Install AFM media in primary filters with associated relocation of chlorine dose. This will facilitate an efficiency through the removal of Manganese filters.*	*Aug 22 - Jan 23*	*Delayed*	*£20-£50k*	*N/A*	*N/A*	*N/A*	*Delayed. Priorities have moved this project down the list. To be investigated again at Mid-Term review.*
Second Filter Media Trailer, including Particle Size and Colour Analysers	With the amount of work required a second filter media trailer is recommended.	Summer/Autumn 22	Build Subject to Budget Approval	£180-£220k	Summer 23	On-Target	£275k Total Cost. £135k Spent to Mar 23.	On-Going.
Moyola WTW Filter Media Trial.	To evaluate the performance of AFM in primary filters for reduction of THM's. Also, for filter optimisation.	July 23 - Aug 23	On-Target	£60k	Same as Original	N/A	£60k Total Cost. £0k Spent TD	On-Going
						Total Cost on On-Going Projects (Water Team)	**£1,226k**	
						Total Spend to Date on On-Going Projects (Water Team)	£375k	
						Total Spend to Date on Completed Projects (Water Team)	**£474k**	
						Total Overall Cost (Water Team)	**£1,700k**	

Kandu Trial (Phase 2)	Kandu Trial (Phase 2) in Newry and Dungannon area (Wastewater network discharge monitoring). 12 Month on site trial	May 23 to May 24	Ongoing	£240k	Same as original	On Target	£240k	On Target. Sensor deployment commenced 17/4/23
Fats Oils and Grease (FOG)	Fats Oils and Grease (FOG) removal trial 12 Month on site trial	Mar 23 to Mar 24	Ongoing	£77K	Same as original	On Target	£77k	On Target. Site trial started 3/3/23
Low Temperature Anaerobic WW treatment	Low Temperature Anaerobic WW treatment. Limited applicability to NI Water sites. Project suspended awaiting results of OFWAT funded trial being led by Thames Water.						£0k	Project suspended awaiting results of OFWAT funded trial being led by Thames Water
Oxidation Ditch Retrofits	Oxidation Ditch Retrofits - Start of project information gathering / scope confirmation/ Site Selection.	Sept 22	Deferred	£500k	June 23 to May 25	-	£0k	Estimated at £500K dependent on-site selection (L)
MABR Pilot trials	MABR Pilot trials- Start of project information gathering / scope confirmation/ Site Selection. Liaison with Severn Trent.	Apr 22	Scoping on going	TBC				MABR Pilot trials- Start of project information gathering / scope confirmation/ Site Selection. Liaison with Severn Trent.
Bio-Cage sludge trial pilot	Bio-Cage sludge trial pilot live – being PM by operations trial commenced Mar 23	Mar 23 to Jan 24	On Target project started March 23	£23K			£23k	On Target project started March 23
Nanofloc	Nanofloc - to evaluate the improvement in flocculation / treatment quality & capacity achieved that may be achieved - Start of Project information gathering/scope confirmation.	Mar 23 to April 25	Scoping- and trial site selection ongoing	TBC on site selection estimated at £150K (M)				TBC on site selection estimated at £150K (M)
NanoBubbles	NanoBubbles – A potentially more energy efficient /	Dec 22 to Mar 25	Scoping - discussions	Estimated at £50K				Estimated at £50K (M)

	effective method of aeration small scale pilot investigations. (A free of charge) proof of concept trial was completed in Dec 22		ongoing with supplier	(M)				
BioMag	BioMag to evaluate the improvement in treatment quality & capacity achieved that may be achieved by the addition of Bio Mag a form of Magnetite. Start of Project information gathering/scope confirmation.	Mar 23 to Feb 25	Scoping	TBC on site selection estimated £200K (M)				TBC on site selection estimated £200K (M)
Static Sludge Thickener	Static Sludge Thickener to evaluate the improvement in sludge quality achieved by the use of a static thickener. Start of Project information gathering/scope confirmation.	Mar 23 to June 23	Scoping	TBC on site selection estimated £200K (L)				TBC on site selection estimated £200K (L)
Salsnes Filter	Salsnes Filter - A low footprint alternative to Primary Settlement Tanks that can be also used for peak lopping Start of Project information gathering/scope confirmation.	Oct 23 to Oct 24	Awaiting Triage	TBC on site selection Estimated £250K (L)				TBC on site selection Estimated £250K (L)
Nuove Energie Primescreen	Nuove Energie Primescreen - A low footprint alternative to Primary Settlement Tanks that can be also used for peak lopping Start of Project information gathering/scope confirmation.	Oct 23 to Dec 24	Awaiting Triage	TBC on site selection Estimated £250K (L)				TBC on site selection Estimated £250K (L)
Storm Harvester Intelligent	Storm Harvester Intelligent Sewer Suite Wastewater network optimisation using	Sep 23 to Aug 25	Awaiting Triage	TBC on site selection Estimated				TBC on site selection Estimated £250K (M)

Sewer Suite	machine learning and hyperlocal rainfall forecasting. Start of Project information gathering/scope confirmation			£250K (M)				
Biodec Biobloc Filter media	Biodec Biobloc Filter media Plastic Structured Cross Flow Media for filters. Improved capacity and quality Start of Project information gathering/scope confirmation.	Jul 23	Awaiting Triage	TBC on site selection Estimated £150K (L)				TBC on site selection Estimated £150K (L)
BIO Phree	BIO Phree A phosphorous removal process based on a resin and ion exchange Start of Project information gathering/scope confirmation.	Mar 24 to April 25	Awaiting Triage	TBC on site selection Estimated £400K (L)				TBC on site selection Estimated £400K (L)
Screenless CSOs	Screenless CSOs A CSO design that is modular in construction and is designed to prevent litter pollution from entering the environment at the CSO. Start of Project information gathering/scope confirmation.	May 23 to June 25	Awaiting Triage	TBC on site selection Estimated £500K (L)				TBC on site selection Estimated £500K (L)
					WASTEWATER TOTAL COST	**Committed**	**£340K**	**Medium Confidence = £650k Low Confidence = £2250k**

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX			
N/A			
IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME			
N/A			
IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b			
Links to Tables Completed	Yes ☐	No ☐	Comments
RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE			
Innovation is associated with inherent risk. This is managed by conducting scoping phases, small scale pilots and where sufficient data is available the conduct of full-scale trials at carefully selected sites and frequently using offline test systems.			
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE			
Water and Wastewater capital and operational efficiencies opportunities are identified, and innovation moves into BAU.			
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES			

The Innovation Case Studies document (2021) illustrates some links with other Development Outputs such as:

- DO5 - Refresh of DG2 Register. This innovative involves the use of data and systems and there is engagement between the Efficiency and Innovation staff and the staff in Water Strategy and Modelling teams. There is no specific investment that draws on DO15 funding.
- DO9 - WwPS / CSO Quality (UID) and WwPS Capacity increase. This is an area of Innovation focus and the integrated use of DAP information with Urban Drainage Modelling and IEM is essential to drive innovative and efficient solutions. There is linkage via Head of Investment Management and the Wastewater Efficiency and Innovation Manager that assess solutions, business cases, costs and seek the application of innovative technologies and approaches wherever possible to deliver efficiencies. The Head of Investment Management chairs the NIEA/ NIW Investment Group which is a monthly forum to engage with NIEA on WwPS / CSO Quality (UID) and WwPS capacity increase needs, priorities and programme for delivery.
- DO13 Real Time Network Modelling. There is linkage via Head of Investment Management and the Wastewater Efficiency and Innovation Manager with the Head of Wastewater Strategy regarding the planning of trial studies to ascertain the benefits and mechanisms to allow NI Water to transition toward real time network modelling in specific networks. When appropriate there will be engagement with NIEA via the Investment Group chaired by the Head of Investment Management.
- DO16 Urban Drainage Modelling - Studies to Inform PC27 - Top 271 Priority Drainage Areas. There is linkage via Head of Investment Management, Capital Programme Manager, Wastewater Efficiency, and Innovation Manager with the Head of Wastewater Strategy regarding DAPs required for scope certainty and their interdependency with D09 as stated above.
- DO19 LWWP Networks. Similar linkage and synergies to D09, D013 and D016 via Investment Management and the Wastewater Efficiency and Innovation Manager and the NIEA/ NIW Investment Group.

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
16	**Urban Drainage Modelling - Studies to Inform PC27 - Top 271 Priority Drainage Areas**	**20g**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

This is required as NI Water's hydraulic models are key assets used to inform strategic studies, the Capital Works Programme and infrastructure planning. At the end of PC15, over 50% of NI Water's model stock was around 15 years old and has not been maintained.

Up to date models are required to inform scope certainty for named UID projects in PC21 and to inform needs for PC27 planning.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	PC27 only ☐	PC21 and PC27 ☒

PROJECT SCOPE

Develop the scope and specification for the network models for the Top 271 Priority Drainage Areas including the extent of modelling and verification required.

No change to scope definition.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

Enhancing NI Water's ability to successfully address a number of its core areas:

- Economy – modelling will support growth planning decision making.
- Environment – Investigate over 1000 network assets where impact to environment is unknown.
- Customer – minimise the duration and maximise the accuracy of increasing levels of customer service and decreasing risk to the business.

The following provides more detail for the abovementioned original Project Outcomes:

- Scope certainty achieved for 111 UIDs, informed by DAP studies.
- Evidence from DAPs has also facilitated the de-scoping/removal of UIDs from the PC21 programme.
- Studies have contributed to over £150M of capital efficiencies, with potential for more savings in PC21 and PC27
- To date, PC21 DAPs have identified over 450 UIDs

Key Deliverables:

- Hydraulic Models
- Capital Recommendations

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to:

- Develop and submit an updated programme for the delivery of this objective.

- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages.
- Engage with NIEA to agree priorities and the programme for delivery as required.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

Table 40b outlines DAP programme.

NIW provide NIEA with monthly progress updates on DAP progress through the Wastewater Investment Group. NIW has developed a dashboard which tracks progress, provides visibility of priorities and future workload planning.

PROGRAMME

Refer to Table 40b.

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Develop and submit an updated programme for the delivery of this objective.	N/A	N/A	June/ July 2022 (AIR 22)	Complete	See annual AIR submissions
Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages	N/A	N/A	2023-24	On Target	N/A
Engage with NIEA to agree priorities and the programme for delivery as required	N/A	N/A	2021-26	On Target	N/A
Model Builds – Batch 1, 2 and	2021/22	Superseded	N/A	N/A	Original milestone

3					superseded by individual Batch 1, 2 and 3 milestones below
Model Builds – Batch 4,5, and 6	2022/23	Superseded	N/A	N/A	Original milestone superseded by individual Batch 1, 2 and 3 milestones below
Model Builds – Batch 7 and 8	2023/24	Superseded	N/A	N/A	Original milestone superseded by individual Batch 1, 2 and 3 milestones below
Model Builds – Batch 1 – released date March 21	N/A	N/A	Completion Mar 22	Complete	AIR22 had Q4 2022 (meaning end Q4 financial year 2021/22. See sample evidence provided for Table 40b
Model Builds – Batch 2 – release date July 22	N/A	N/A	Anticipated Completion Dec 23	On Target	AIR22 had Q3 2023 (meaning end Q3 financial year 2023/24)
Model Builds – Batch 3 – release date March 23	N/A	N/A	Anticipated Release date Mar 25	Delayed	AIR22 had Dec24. Release date to be delayed until end of 2024/25 to ensure optimised delivery of PC27 solutions. This delay does not affect PC21 delivery.
Model Maintenance	2021-27	On target	2021-27	On Target	N/A
KEY MILESTONES FOR SOLUTION INVESTMENT					
Capital Interventions	PC27	On target	PC27	On Target	Under the remit of Capital Delivery
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)		**Forecast Cost of DO (Nominal prices)**		**Commentary on Material Total Cost Changes for DO**	
£7.77M		£9M		£9M is reforecast best estimate to complete scope of DO16.	

PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
TBC	TBC	N/A

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Following completion of the PC21 business plan, the original batches for DAP delivery were streamlined into 3 sprints to simplify delivery (thus replacing previous references to Batches 1-8). Reference sample evidence provided for Table 40b.

- 194 DAPs and Rural model builds completed
- 55 Statement of Needs received from NIEA (recorded on dashboard)
- Approx. 1000 UIDs recorded on NIW's Discharge Register
- SON Dashboard created and shared on monthly basis with NIEA
- Scope certainty achieved for 111 UIDs
- Over 120 assets updated onto CAR based on survey data (facilitated through Mark Up process)

PLANNED NEXT STEPS FOR DELIVERY

To complete delivery Batch 2 of DAP. It is anticipated that these studies (127 number) will be completed by December 2023. NIW will continue to liaise with the Environmental Regulator to ensure timely delivery of environmental drivers as set out in the Statement of Need.

Model Maintenance activity has commenced and is a key recommendation of 2022 NIW Internal Audit. Internal Audit has requested that NIW develop a strategy by January 2024.

Extract from Audit '*The Network Modelling teams should document procedures including roles and responsibilities, defining a model maintenance methodology, triggers and frequency of maintenance etc'.*

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

N/A

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

Outputs have been prioritised to support delivery of PC21 capital delivery programme with scope certainty achieved for all 12b nominated schemes.

In addition, Batch 1 and Batch 2 completion will ensure that Needs can be fed into PC27 planning thus avoiding any future scope certainty submissions.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☒	No ☐	Comments

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

Risks have been recorded on the DAP risk register.

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE

Further wider benefits achieved:

- Scope certainty achieved for over 111 UIDs, informed by DAP studies.
- Evidence from DAPs has also facilitated the de-scoping/removal of UIDs from the PC21 programme.
- Studies have contributed to over £150M of capital efficiencies, with potential for more savings in PC21.
- PC21 DAPs have identified over 450 UIDs.

LINKAGE TO OTHER DEVELOPMENT OBJECTIVES

Development Output Section 16 (Urban Drainage Modelling – Studies to Inform PC27)

provides evidence based asset data across 271 catchments and as such is linked to the following Development Objectives:

- Section 09 (WWPS/CSO Quality UID, Section 19 (LWWP Networks)
- Section 20 (LWWP Wastewater Treatment Works and
- Section 25 (Addressing scope certainty for the Mid Term Review).

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment				
NIE				
Lands				
Site Investigation				
Consultancy	4.73	4.27	9.0	See expenditure commentary above.
Pilot Studies				
Add Others as necessary				
Totals	**£4.73**	**£4.27**	**£9.0**	
PC21 Projected Spend on Development Objective			**£9.0M**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
17	**Raw Water Trunk Main Rehabilitation**	**20/23c**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

A prioritised list of Raw Water Trunk Mains for rehabilitation is still to be established through pro-active condition assessments.
IPAC project 2285 – Raw Water Trunk Main Rehabilitation was the Solution cost.

Additional detail:
Some raw water trunk mains have experienced structural failures which have a significant impact on the operation of Water Treatment Works and hence the potential to cause significant interruptions to customers. An assessment of the Raw Water Trunk network is required to determine the risk and consequences of failure.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	PC27 only ☐	PC21 and PC27 ☒

PROJECT SCOPE

A Deterioration and Risk & Reliability Model was developed for Raw Water Trunk Mains (including Aqueducts & Structures) to inform the PC21 submission. On review, given the fact there is very little failure data to drive these models, the statistical relationships to predict failure are very uncertain and therefore the outputs from the models have not been used as part of the PC21 submission. Given the risk of supply interruptions if a Raw Water asset was to fail, a budget has been identified for prioritised Raw Water Trunk Main Rehabilitation in PC21.

A prioritised list of Raw Water Trunk Mains for rehabilitation will be established through pro-active condition assessments under project '2576 – Asset Strategy Performance Modelling'. The rehabilitation project will be carried out under '2285 – Raw Water Trunk Main Rehabilitation'.

Additional scope is to ensure that the 'Out of Service' raw water infrastructure is maintained in a safe state of repair.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

The additional scope, to ensure that the 'Out of Service' raw water infrastructure is maintained safely, has arisen from reported structural issues on air well chambers along the abandoned Mourne Conduit.

PROJECT OUTCOMES

Reduction in risk of interruptions to supply.

An additional outcome is to ensure that the 'Out of Service' raw water infrastructure is maintained in a safe state of repair to minimise Health and Safety risks.

A key deliverable is a prioritised list of raw water assets for rehabilitation, followed by recommendation reports, capital project business cases and iPAC costings.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

See Commentary on Material Changes to Scope.

UR MONITORING EXPECTATIONS
Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition we expect NI Water to: • Develop and submit an updated programme for the delivery of this objective • Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages. An update on the condition assessment approach applied and how this has been used to identify and prioritise interventions is likely to be required as part of the engagement process.
HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED
After the completion of some condition assessments and analysis on the highest priority raw water trunk mains, NIW will engage with the UR. NIW is likely to be able to do this by March 2025 (as per milestone below).
PROGRAMME
See Master DO Programme v0 dated 07/07/23.
KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Submit updated programme to UR	N/A	N/A	Jun 22	Complete	See AIR22 submission
Provide UR with update on condition assessment approach	N/A	N/A	Mar 25	On target	AIR22 date - January 2023 Date revised to March 25. Delayed by need to develop methodology and approach for testing syphons and air wells. Plan to engage with UR either during MTR or more likely during PC27 working groups by Mar 25.
Establish preliminary prioritised list	Apr 21	Delayed	Nov 25	On target	AIR22 date - Autumn 2022

of Assets for potential rehabilitation					Date revised to Nov 25. Delayed due to additional scope (i.e. out of service assets), limited budget and consideration of innovative intervention types.
Completion of pro-active Condition Assessments of prioritised Raw Water Assets	Apr 23	Delayed	Sept 26	On target	AIR22 date - December 2023 Date revised to Sep 26. Delayed due to additional scope (i.e. out of service assets), limited budget and consideration of innovative intervention types.
Confirm final prioritised list of Raw Water Assets for Rehabilitation	Apr 24	Delayed	Dec 26	On target	AIR22 date - April 2024 Date revised to Dec 26. Delayed due to additional scope (i.e. out of service assets), limited budget and consideration of innovative intervention types.
KEY MILESTONES FOR SOLUTION INVESTMENT					
Complete delivery of prioritised rehabilitation programme	Mar 27	On target	Mar 27	On Target	AIR22 date – March 2027
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)		**Forecast Cost of DO (Nominal prices)**		**Commentary on Material Total Cost Changes for DO**	
£0.4M		£1.19M		Best forecast at this early stage for desktop, inspection and some minor intervention work	

PC21 FD Estimated Cost of Solution (2018/19 prices)	Forecast Cost of Solution (Nominal prices)	Commentary on Material Solution Cost Changes
£1.00M	£0M	The DO is to inform PC27 capital solutions. Any minor intervention work in PC21 is likely to be negligible cost and undertaken as base maintenance.

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

To date the activities are:

- Review of the initial Raw Water Pipeline prioritised list and consideration of suitable pipeline testing locations
- A desktop review, field inspection of key assets and accommodation works on the Mourne Conduit to facilitate more detailed investigations and condition assessments. See attached report on Mourne Conduit Surveys.

PLANNED NEXT STEPS FOR DELIVERY from June 23 to June 24

The planned next steps are to progress the following:

- Internal inspection of River Bann pumping main
- Inspections at two high risk air wells on the abandoned 'out of service' Mourne Conduit, near Carryduff. Determine any potential interventions
- Inspections at Newcastle Syphons to identify any restrictions
- Condition testing of Spelga IR to Fofanny WTW raw water trunk main due to recurring bursts.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

Likely to be negligible additional OPEX from CAPEX, however unknown at this early stage.

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

N/A as no solutions are developed yet.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☐	No ☒	Comments N/A as no solutions yet

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

Risks include:

- Lack of available internal or external resources to meet programme date
- Uncertainty in scope and methodologies at this early stage of the assessments
- Access to some of the assets can be extremely challenging due to the mountainous terrain

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE

The wider benefits include:

- A more robust and resilient raw water network to maintain supplies of water to WTW
- A reduction in the risk of unplanned interruptions to customers

LINKAGE TO OTHER DEVELOPMENT OBJECTIVES

The is no linkage to other Development Objectives.

Note that linkage was previously identified with Section 22 AD - Asset Strategy - Water

Asset Performance Modelling, but given that the scope “2. Raw water aqueducts and structure investigations” is being removed due to duplication with this Section 17, linkage no longer exists.

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment				
NIE				
Lands				
Site Investigation	£0	£1.19m	£1.19m	JH003
Consultancy				
Pilot Studies				
Add Others as necessary				
Totals	**£0m**	**£1.19m**	**£1.19m**	
PC21 Projected Spend on Development Objective			**£1.19m**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
18	**Culmore DA KL554 - Skeoge Link Road**	**24a**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

Under the Derry Area Plan 2011, approximately 230 ha of land was zoned for development in the Glengalliagh area, to the North West of Derry, comprising approximately 8,000 properties. Historic needs and options report indicate a pumping solution will be required to convey foul flows to the treatment works at Culmore. The option outlined within this submission was taken from a historic 2011 DAP needs and options report and as such this option is regarded as a development output due to the need to re-verify the catchment and solution options stage.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☒	C27 only ☐	PC21 and PC27 ☐

PROJECT SCOPE

Provision of a solution to convey flows from Skeoge Link Road development area (230 ha of land, estimated 8,000 properties) to the works at Culmore.

Summary of Scope Refinement
Project scope quantity references changed from properties to Population Equivalent (PE).
Extent of lands to be served has increased to include existing development areas.
Total population served by the proposed scheme is approximately 19,350PE.
Total area for all approx. 297 ha.
New population growth served: 11,800PE.
Existing population redirected to the new scheme: 7,550PE.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

As noted above, scope has increased to serve the required area and population as the existing network is overloaded and a common solution is more cost effective than two separate solutions.

Potential to Remove Scope

Reason - Business as Usual activities

A1 Options and Business case complete.
Engage with NIEA and other stakeholders on needs and options and the programme for delivery as required.

PROJECT OUTCOMES

- Provide an updated business case to UR as part of PC21 Mid Term Review after route of pumping main has been agreed with DfI Roads.
- Comply with requirement to serve new development in Glengalliagh area with sewerage infrastructure facilitating growth and development within the area for approximately 8,000 new properties, plus existing properties north of A515 and industrial areas.
- Reduce network capacity issues to Pennyburn combined sewer and surrounding network reducing the risk of out of sewer flooding.
- Reduction in the number of CSO spills to receiving watercourse improving water quality.

Additional anticipated Project Outcomes

- Facilitate the redirected flow associated with existing properties (7,550PE and 67 ha).

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

A larger and a smaller catchment with the Culmore DA will be redirected to Skeoge from Pennyburn WwPS. The PE of the re-directed catchment is approx. 7,500PE plus 50PE and will have an impact on flows at Pennyburn, which is currently over-capacity.

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages.
- Engage with NIEA and other stakeholders on needs and options and the programme for delivery as required.
- Submit a business case for the final solution, including costs and justification, to UR for determination.
- Engage with UR staff on implications for PC21 DG5 targets if required.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

- Programmes for delivery of this objective developed and submitted with regular updates
- Engagement with other stakeholders including NIEA, DFI, Council, and others, and continues throughout the programme as required
- Business case will be submitted at part of the PC 21 Mid Term Review and will include costing and justification.
- No DG5s will be delivered under this project and PC21 DG5 outputs will retain unaffected.

PROGRAMME

See Master DO Programme v0 dated 07/07/23.

P6 Programme is supplied in this update and is being developed alongside the business case.

Programme dates below relate to internal NIW dates which relate to the delivery project are not to be confused with regulatory submission.

Asset management meet with UR staff to discuss Development Objectives.

Activity	Start	Finish
A00100 - ECI Period		03/07/2023
A00120 - Land Identification Complete	Milestone	04/04/2023
A10100 - Business Case Submission	Milestone	01/08/2023
A10110 - Business Case Approval	Milestone	01/10/2023
A10120 - A1 Form Approval	Milestone	01/12/2023
A10130 - Planning Permission Period	07/12/2022	28/07/2023
A30100 - Tender Preparation		
A30110 - A3 Approval		12/01/2024
A30120 - Design Period		
A30130 - Construction On Site Period	29/01/2024	31/03/2026
A30140 - Project Beneficial Use Finish		31/03/2026
A30150 - Asset Data Return Period		31/03/2026
A30160 - D2 Handover Date		31/03/2026
A44000 - A4 Approval		31/03/2027

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	FD21 Annex T Milestone Target Date	Status Vs FD21 Target	Current Milestone Target Date	Status Vs Current Target	Commentary on Material Milestone Date Changes ***AND / OR*** Reasons for any material Delay
Culmore DAP Options & Needs est. complete	Dec 20	Superseded			New replacement milestone below
Develop and submit an updated programme for the delivery of this objective.			Jun 23	On Target	P6 Key dates provided. See Master DO Programme.
Engage with NIEA and other stakeholders on needs and options and the programme for delivery as required.			Mar 26	To be Removed	To be removed as is BAU activity. Ongoing and as required, No engagement required for DO but Project team

					liaise with NIEA for draft consent. Further sign off by NIEA prior to A1. Discussions ongoing with DfI Roads and Rivers.
Submit business case for solution, including costs and justification, in accordance with agreed timetable to UR for determination.			Sep 23	On Target	Business Case being drafted and will be submitted to UR as part of PC 21 mid-term review.
Engage with UR staff on implications for PC21 DG5 targets if required.			April 23	Removed	Removed due to no DG5s on project, 5 DG5s mentioned in the original business case relate to the entire Culmore DA. None will be delivered under this project.
Culmore DAP Options & Needs est. complete			Feb 24	On Target	DAP N&Os being updated, delay due to the prioritisation of PC21 projects. The preferred solution for this DO has been incorporated into the hydraulic model.
Estimated land purchase cost & programme	Jun 23	On Target			Negotiations ongoing with relevant

understood					landowners
A1 Options and Business case complete	Dec 23	On Target		To be Removed	To be removed from DO11 as is BAU activity
KEY MILESTONES FOR SOLUTION INVESTMENT **(Note this section is relating to the construction phase which is outside the scope of the Development Objective)**					
Construction commencement onsite	Jul 24	On Target	Jan 24	On Target	Option has been built into the hydraulic model with no negative effect. Allowing the original target date of Jul 24 to be brought forward. Subject to Planning and land approvals
Construction completion	Jul 26	On Target	Mar 26	On Target	Project being advanced to address ongoing issues in Culmore DA catchment
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)		**Forecast Cost of DO (Nominal prices)**		**Commentary on Material Total Cost Changes for DO**	
£96k		£377k		Scheme specific modelling and undertaking the ECI phase. Annex T costs submitted in error. Corrected in this document.	
PC21 FD Estimated Cost of Solution (2018/19 prices)		**Forecast Cost of Solution (Nominal prices)**		**Commentary on Material Solution Cost Changes**	
£0.71m		£8.160 m		Originally pumping to Pennyburn WwPS which now has limited capacity, along with engineering and traffic management challenges of implementing a pipeline route down the A2 Buncrana Road. Current scheme has two new WwPSs and pumps directly to	

		the Culmore trunk sewer. Annex T costs submitted in error. Corrected in this document.

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Culmore DAP Needs and Options completion has been delayed from December 2020 until February 2024 as a result of the original timeframe being unrealistic due to the complexity of the Culmore Catchment and prioritising of PC21 workload. This project has been input and tested in the latest hydraulic model.

Annex T estimated spend has been updated to reflect revised timelines. It should be noted that originally the Annex T estimated spend on this development objective was £96k and estimated capital investment on solution was £0.71m. These figures do not reflect cost estimates within the Final Determination figure, which was £6.6M in 2018/19 prices. Costs may be further refined going forward as the project moves through the NIW Capital Works Programme Gateways. The original solution was modelled in the DAP completed in PC10. Changes in legislation and methodology have resulted in an increase in flows and development catchment.

The current scheme has been modelled using the latest verified model and is now priced using IPAC. The scheme will serve new development and reduce the potential for out of sewer flooding in the Galliagh catchment.

PLANNED NEXT STEPS FOR DELIVERY

Engagement with Stakeholders as part of project delivery process.

An updated Business Case will be submitted as part of the Mid Term Review.

Continuation of work DAP Options and Needs as well as identification of land costs and impact of land negotiation on programme.

Issue wayleaves, secure planning permission, complete design and costing, complete contract documents, procurement.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

Additional OPEX funding is included within IPAC and highlights what will be needed to carry out the maintenance of the new equipment. IPAC was included within the PC21 submission.

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

It is currently estimated that construction will be completed during 2026.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☒	No ☐	Comments

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

Risk that Landowners object to using their land for NIW use
Risk that Planning permission is not granted or that permission is delayed
Risk that the necessary Consents are not in place to suit the programme

Risks	Likelihood of Risk (H/M/L)	Impact of Risk (H/M/L)	Mitigation Measures
Land purchase and access arrangements	**H**	**H**	Advanced land purchase/access negotiation will be implemented to reduce the delivery risk.
Availability of required power supply	**M**	**M**	Given the topography of the land, the proposed capital solution will require a pumped solution. Early engagement with NIE once proposed power demands are understood will reduce this risk to delivery.
Planning Permission, Environmental studies and Consents	**M**	**H**	Early and continued engagement with Planning department and relevant stakeholders
Poor Ground Conditions	**H**	H	GI and service investigation to be undertaken
Social and Political Constraints	**H**	M	NI Water will continue to liaise with key stakeholders including political representatives and environmental groups.
PC21 Funding levels	**H**	M	Funding allocation to this work stream may be insufficient in PC21 to invest in capital intervention at this location.
Fluvial Flood Risk	**M**	M	The site for the proposed Skeogelands WwPS lies between two watercourses. DfI Rivers flood hazard mapping indicates that the site is not within the indicative floodplain, and is not within the detailed flood extent for a 0.1% AEP event (1 in 1,000 year flood event).

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
Additional capacity within the sewerage network allowing for future predicted growth and reducing the risk of out of sewer flooding.
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There are no current links to any other Development Objectives.

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment/ Project Code(s)
Site Investigation				
Consultancy	0.077	0.300	0.377	(KL544)
Pilot Studies				
Totals	**£0.077**	**£0.300**	**£0.377**	
PC21 FD Projected Spend on Development Objective			**£0.377**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
19 20	**LWWP Networks & LWWP WwTW**	**Networks: 12b, 12d, 12g WwTW: 16b**
GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	Networks: [redacted] WwTW: [redacted]	Networks: [redacted] WwTW: [redacted]
REASON DEVELOPMENT OBJECTIVE IS NECESSARY		
At the time of the PC21 BP submission this investment had not reached regulatory certainty. In order to reach Final Determination (FD) it was agreed UR submissions in batches FD by mid PC21.		
DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27		
PC21 only ☐	**PC27 only ☐**	**PC21 and PC27 ☒**
PROJECT SCOPE		
In response to a number of serious flooding events and concerns regarding deteriorating water quality in Belfast Lough the NI Executive approved the creation of the Living With Water Programme (LWWP) in July 2014 lead by DfI. The aim of LWWP is to develop a Strategic Drainage Infrastructure Plan (SDIP) for the six WwTWs and their associated drainage catchments, which input to Inner Belfast Lough. Since the creation of the LWWP Board in January 2015 stakeholders have been working together to develop the most cost effective and sustainable plan that will address legacy issues and provide a wide range of benefits to society. In May 2017 a LWWP Integrated Environmental Modelling (IEM) Ecosystem Approach was agreed by DfI, NI Water, DAERA, NIEA and NI UR to inform capital investment. In 2018 NI Water and its stakeholders recognised that the Belfast SDIP detailed appraisals would not be completed to fully inform the PC21 Business Plan and therefore decided the LWWP elements of this would be based on a "Straw Man" solution. This development objective is to develop the Straw Man solution presented as part of the PC21 Outline Capital Submission into a final Strategic Drainage Investment Plan solution. Final solutions to resolve the water quality, UID and DG5 issues will require completion of modelling, including IEM, and site based investigations to identify the optimum solutions. (Change from Annex T is words 'water quality' added to the last para to merge Project Scope paras from ref 19 and 20). No change to scope since AIR22.		
COMMENTARY ON MATERIAL CHANGES TO SCOPE		
N/A		
PROJECT OUTCOMES		
Networks • Protect against flooding and comply with the EU Floods Directive (water quantity): Resolve internal DG5 flooding; Work with stakeholders to develop integrated options to manage flood risk • Enhance the environment and comply with the EU Water Framework Directive (water quality): Reduced risk of compliance failure; Contribute towards Inner Belfast Lough progressing towards "Good" status under the water Framework Directive		

- Provide the capacity needed to continue to facilitate the new connections necessary for economic growth
- Take opportunities to remove rainwater from foul sewage and return to nature as close as where it lands as possible.
- Support ongoing economic development in manner with blue/green infrastructure that aligns with the overall 5, 10 and 25 year planning horizons.

Change from Annex T: Last 2 bullet points above added for networks to align to LWWP approach.

WwTW

- Reduced risk of compliance failure
- Contribute towards Inner Belfast Lough progressing towards "Good" status under the water Framework Directive
- Provide sufficient wastewater treatment capacity to cater for future economic growth

No change to PC21 FD Project Outcomes.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to:

- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages.
- Engage with DfI, NIEA and other stakeholder on needs, priorities and the programme for delivery.
- Submit Regulatory business cases, including costs and justification, in accordance with the agreed timetable to UR for determination.
- Engage with UR staff on the implications for PC21 nominated output targets as required.

Note that this links to other PC21 development objectives related to programme scope/uncertainty.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

- A Director of the UR is a member of the DfI Led LWWP Board, which meets three times a year. At these meetings, the UR receives updates from LWWP Partners progress on the LWWP, including progress by NI Water.
- Development and delivery of the LWWP is through a collaborative approach, through this collaboration NI Water staff regularly engage with DfI, NIEA and other stakeholder on needs, priorities and the programme for delivery through the development of LWWP Catchment Delivery Plans and a range of BAU processes.
- NI Water submitted most of the LWWP related PC21 Regulatory Business Cases by the end of the Batch 4 submission, including costs and justification, in accordance with the agreed timetable to UR for determination. The exception was the three business cases relating to Belfast WwTW, which are to be submitted as part of the Mid-Term Review.
- NI Water is engaging with UR staff on the implications for PC21 nominated output targets as required under the PC21 Mid-Term Review process.

PROGRAMME					
Delivery of NI Water's elements of the LWWP Belfast SDIP is under a P6 programme that is controlled and updated by NI Water's CPMO Team. See Master DO Programme v0 dated 07/07/23.					
KEY MILESTONES FOR DEVELOPMENT OBJECTIVE					
Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Provide input to the LWWP Belfast SDIP to support the public consultation and then completion of the final plan for approval by the NI Executive	31/12/21	Complete	No Change		
Provide input to the DfI LWWP Governance Framework, so that this can be approved by the LWWP Board Partners, including the UR	Q4 2020/21	Complete	No Change		
Procurement Strategy for LWWP	Q2 2020	Complete	No Change		
Outcome (Needs Stage) of Drainage Area Plans	Q1 2021	Complete	No Change		
Outcome (Needs Stage) of Integrated Environmental Modelling	Q4 2021	Complete	No Change		
Develop a Master Programme for the LWWP in Primavera P6, and instigate monthly updates against this to the NIW LWWP Board	30/11/21	Complete	No Change		
Review the	30/01/22	Complete	No Change		

LWWP Master Programme and determine which LWWP Business Cases will be submitted to the UR under MTR Regulatory Submission Batch 2, 3 and 4					
Submit PC21 MTR Regulatory Submission Batch 2 to UR	31/03/22	Complete			
Submit PC21 MTR Regulatory Submission Batch 3 to UR	30/09/22		No Change	Complete	
Submit PC21 MTR Regulatory Submission Batch 4 to UR	31/03/23		No Change	Substantially Complete	Ref note on the 3 BCs not submitted by end of March 2023
Develop a detailed action plan for all of the key actions necessary to achieve the MTR Regulatory Submissions and then efficiently deliver the outputs and achieve the PC21 LWWP Investment Profile then monitor implementation of this action plan, with monthly updates provided to the NIW LWWP Board	30/11/21	Complete	No Change		
Provide updates on progress on development and delivery of NI Waters PC21 elements of the LWWP to each LWWP Board,	31/03/21	Complete	No Change		

which is chaired by DfI and attended by the UR.					
KEY MILESTONES FOR SOLUTION INVESTMENT (Networks)					
DAS and / or IEM appraisal studies (number of, on a rolling programme)	Q4 2022	On Target	No Change	Substantially Complete	DAS and IEM Work continues for NIEA to conclude the scope of some elements – see DO16
Preparation of business cases for developed solutions on a rolling programme	From Q4 2022	On Target	No Change	On Target	
Beneficial use	From Q4 2024	On Target	No Change	On Target	
For evidence refer: • to PC21 Mid-Term Review LWWP RBCs • records of NIW LWWP Board Meetings • records of DfI LWWP Board Meetings • LWWP P6 Programme • NI Water part input to DfI for the revised LWWP SOC (submitted 28/04/23)					
KEY MILESTONES FOR SOLUTION INVESTMENT (WwTW)					
WWTW appraisal studies (number of, on a rolling programme)	Up to Q4 2023	On Target	No Change	On Target	
Preparation of business cases for each WwTW on a rolling programme	Up to Q4 2023	On Target	No Change	On Target	
Beneficial use of WwTW excl. outfalls (number of on a rolling programme)	Q1 2028	On Target	No Change	Some that were in the PC21 BP strawman solution will be delayed (Carrickfergus and Greenisland)	
EXPENDITURE [See Also Table DO1 below]					

FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal Prices)**	**Commentary on Material Total Cost Changes for DO**
DO19 ~£11.5m DO20 ~£11.5m	DO19 ~£17.5m DO20 ~£12.5m	Key differences are due to a combination of inflation and

Note that the figures above were for PC21 Period DO related costs.	Note that the figures above are for PC21 Period DO related costs. Costs for PC27 period are to be determined as part of the PC27 BP process.	additional appraisal and catchment delivery work being necessary to define the scope of network projects.
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal Prices)**	**Commentary on Material Solution Cost Changes**
DO19 ~£377m DO20: ~ £580m (incl. sea outfalls) ~£320 (excl. sea outfalls) Note that these included the cost of the DO	DO19 ~£696m DO20: ~ £1,215m (incl. sea outfalls) ~£907 (excl. sea outfalls) Note that these include the cost of the DO	Difference is due to a combination of inflation and improved scope definition following DAS, IEM and Appraisals

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Public consultation for the LWWP Belfast SDIP took place and following approval by the NI Executive, the DfI Minister launched the final plan at Belfast Castle on 9 November 2021. This included significant input from NI Water.

NI Water helped DfI to prepare the LWWP Governance Framework document. Most of the document was approved by the DfI LWWP Board on 12 May 2022, with the final document approved by the DfI LWWP Board on 2 Feb 2023.

The Procurement Strategy for LWWP was completed and the key recommendation was to set up a Major Projects Partnering Framework (MPPF). This was approved by the NIW LWWP Board, NI Water EC and Board. Following a competition process, on 26 May 2022 NI Water's Board approved that the MPPF be awarded and the successful suppliers were notified. The first secondary competition to select the team for Belfast WwTW commenced in the summer of 2022 with the team selected at the end of October 2022. The secondary competition to select the team for Kinnegar WwTW and Sydenham WwPS commenced in Feb 2023 and is on track to select the preferred team at the end of May 2023. The next secondary comp is on track to commence in June 2023.

All 6 DAPs have been progressed to completion of the needs stage. Progress reports on this provided to each NIW LWWP Board meeting. DAPs are now being revisited and revised to reflect the findings of the Integrated Environmental Modelling through the Outline Optioneering Process.

Needs Stage of Integrated Environmental Modelling is complete with the results shared at a workshop attended by LWWP Partners, including the UR. The IEM has informed development of the PC21 MTR RBC solutions through the Outline Optioneering Process.

Master Programme for the LWWP in Primavera P6 developed and is being used to track progress and inform programme & project management.

PC21 MTR Regulatory Business Cases have been submitted to the UR for all LWWP PC21 projects. These informed by DAS and/or IEM appraisal studies.

NI Water provides progress updates ahead of each DfI LWWP Board, which are also presented by NI Water staff at each meeting. These meetings are attended by a UR Director.

Beneficial use for Networks are on track.

Beneficial use for WwTW are mostly on track. However, due to increasing costs across the LWWP WwTWs, the upgrade of Greenisland WwTW and Carrickfergus WwTW have been deferred by 3 years – DfI was informed through NI Water's part input to the revised SOC and LWWP Partners being informed through engagement related to their roles on the LWWP Governance Groups, including the LWWP Board.

A revised profile of NI Water's forecast of the investment required to deliver its elements of the LWWP to the end of the PC27 period is being prepared for submission to DfI by the end of April 2023. The project costs within this align to the costs in the PC21 MTR Regulatory Business Cases.

Below is a screenshot of the LWWP Batch4 Submission files and appendices submitted to the UR.

Name	Date modified	Type	Size
1135_Appendix Data	31/03/2023 08:39	File folder	
1292_Appendix Data	30/03/2023 23:25	File folder	
1507 1509 1522 1523 1527 1530 1573 1575_Appendix Data	29/03/2023 18:23	File folder	
1593_Appendix Data	30/03/2023 19:27	File folder	
1594_Appendix Data	05/04/2023 16:05	File folder	
1605_Appendix Data	29/03/2023 18:29	File folder	
1733 1353 1932_Appendix Data	30/03/2023 18:53	File folder	
1979 1949 1987_Appendix Data	29/03/2023 15:32	File folder	
2750 1160_Appendix Data	05/04/2023 15:39	File folder	
KR750_Appendix Data	31/03/2023 13:12	File folder	
1135 KR671 Henderson Ave DG5 Outline BC v1.4	30/03/2023 22:53	Adobe Acrobat Docu...	493 KB
1292 Dunlambert Park CSO Outline BC_Updated Mar 2023v2.0	30/03/2023 22:56	Adobe Acrobat Docu...	451 KB
1507 KR734 Kinnegar DA CSOs Outline BC_Updated Mar 2023v1.1	29/03/2023 17:41	Adobe Acrobat Docu...	637 KB
1593 KR739 Kinnegar WwTW Outline BC_Updated Mar 2023v6	30/03/2023 22:58	Adobe Acrobat Docu...	1,303 KB
1594 KR725 Whitehouse WwTW Outline BC_Updated Mar2023v8	30/03/2023 22:59	Adobe Acrobat Docu...	1,408 KB
1605 KR632 Sydenham_WwPS Outline BC_Updated Mar 2023v1	29/03/2023 18:09	Adobe Acrobat Docu...	1,017 KB
1651 KR751 Belfast WwTW Demolition of Bretland RBC March 2023 v1.0	31/03/2023 12:19	Adobe Acrobat Docu...	708 KB
1657 KR721 Kennedy Way Hub - Regulator Business Case 15_03_23	30/03/2023 23:00	Adobe Acrobat Docu...	1,241 KB
1702 KR727 Greenisland WwTW Outline BC_Updated Mar 2023v0.8	29/03/2023 16:29	Adobe Acrobat Docu...	3,578 KB
1733 1353 1932 Glenmachan Strategy Outline BC_Updated Mar 2023v0.8	30/03/2023 09:18	Adobe Acrobat Docu...	2,077 KB
1800 KR728 Carrickfergus WwTW Outline BC_Updated Mar 2023v0.7	29/03/2023 16:15	Adobe Acrobat Docu...	6,105 KB
1947 KR755 Belfast Tunnel TPS Outline BC_Updated Mar 2023vPO3	30/03/2023 23:03	Adobe Acrobat Docu...	780 KB
1987 et al KB562 Carrickfergus UIDs Outline BC_Updated Mar 2023v1.1	29/03/2023 16:06	Adobe Acrobat Docu...	497 KB
2746 KR588 Ravenhill Avenue Flood Alleviation Summary BC_v 1.0	30/03/2023 23:04	Adobe Acrobat Docu...	383 KB
2750 et al Whitehouse Outline BC_Updated Mar 2023v2.0	30/03/2023 22:55	Adobe Acrobat Docu...	637 KB
KR750 Telemetry Tower Relocation Small BC_Updated Mar 2023 v1	31/03/2023 13:15	Adobe Acrobat Docu...	501 KB

PLANNED NEXT STEPS FOR DELIVERY

Now that the RBCs have been submitted, the next stages for NI Water's LWWP Projects include:

- OBC and A1 Approval
- Procurement
- FBC and A3 Approval
- Planning Permission
- Capital Delivery

The key milestones for all LWWP Large Projects are set out in NI Water's part-input to DfI for the 2023 revised SOC.

These are all post Development Output steps.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX
Any additional OPEX from CAPEX requirements in the PC21 Period was set out in the PC21 MRT RBCs. A separate exercise is being undertaken to estimate the extent of required maintenance funding as part of the MTR.
IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME
The work to define NI Water's PC21 period related LWWP outputs for the PC21 MTR has been collated and added to revised estimates of the work required to complete the objectives of the LWWP Belfast SDIP. This has resulted in the overall estimate of NI Water's parts of the LWWP Belfast SDIP increasing from c£1.2bn to £1.9bn (in nominal terms, post assumed UR efficiency challenge). This has forced the deferral of the upgrades of 2 WwTW to the PC27 period. This will likely require that NI Water elements of the LWWP Belfast SDIP that are to be delivered from April 2027 will either have to be delivered over a longer period of time, or level of LWWP funding increased. NI Water has provided this revised estimate to DfI to inform the 2023 revision of the LWWP Strategic Outline Case (SOC). The way ahead is being discussed by LWWP Partners, including the UR, through engagement at the DfI led LWWP Board, the next meeting of which is on 25 May 2023.
IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☒	No ☐	Comments

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE
The Development Output risks related to the submission of RBCs for the PC21 MTR have passed.
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
Identify relevant funding for LWWP Networks and WTWs projects to ensure: • Reduced risk of compliance failure; Contribute towards Inner Belfast Lough progressing towards "Good" status under the water Framework Directive. • Support ongoing economic development with blue/green infrastructure that aligns with the overall 5, 10 and 25 year planning horizons and improves the quality of the streetscape.
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
Development Output S19 LWWP Networks is linked to the following Development Objectives: • S09 WwPS/CSO Quality UID and WwPS Capacity increase • S12 Storm Water Separation • DO16 Urban Drainage Modelling - Studies to Inform PC27 Development Outputs S19 & 20 LWWP Treatment and Networks are also linked to DO • S25 Addressing scope certainty for the Mid Term Review.

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Note that the figures below are for PC21 Period DO related costs (share of DAP, IEM, CapSal plus Appraisal Fees) and exclude the delivery stage of the projects. DO related costs for PC27 period and beyond are to be determined as part of the PC27 Business Plan process.

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Consultancy	£11m	£19m	£30m	Includes DAP, modelling & Capital Salaries
Pilot Studies				
Totals	**£11m**	**£19m**	**£30m**	**Spend to end of March 23 (nominal prices)** DO19 ~ £4.5m DO20 ~ £6.5m **Anticipated Future Cost (nominal prices)** DO19 ~ £13m DO20 ~ £6m **Total Cost of DO (nominal prices)** DO19 ~ £17.5m DO20 ~ £12.5m
PC21 FD Projected Spend on Development Objective			**FD21 Annex T Estimated Total Cost of DO (2018/19 prices)** DO19 ~£11.5m DO20 ~£11.5m	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
21	**AD - Asset Strategy - Wastewater Asset Performance Modelling**	**20g**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

We need to develop risk-based asset performance modelling tools and assessments for wastewater assets to inform detailed intervention during PC21.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	**PC27 only ☐**	**PC21 and PC27 ☒**

PROJECT SCOPE

1. Updates to the Sewage Risk & Consequence Models
2. Rising Mains Asset Prioritisation Development
3. Development of Siphon Asset Maintenance Data
4. Development of CSO Asset Maintenance Data
5. Development of Infiltration Strategy

No Change to scope.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

The overall objective of this project is to facilitate enhanced investment planning and prioritisation of sewer base maintenance and rehabilitation programmes through adoption of a repeatable and robust, risk-based approach, and to optimise the flow of data to asset performance functions within NI Water. This will facilitate confident decision making and increased efficiencies during the implementation of the base maintenance programmes.

No Change to PC21 FD Project Outcomes.

A key deliverable is the prioritisation tool that will risk score for each sewer line to facilitate decision making and target interventions.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages.
- An update on the modelling tools once developed and how NI Water intends to use them to identify and prioritise interventions is likely to be required as part of the engagement process.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

No formal monitoring undertaken other than AIR process.

PROGRAMME					
See Master DO Programme v0 dated 07/07/23.					
KEY MILESTONES FOR DEVELOPMENT OBJECTIVE					
Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Submit updated programme to UR			2021-27	On Target	
Engage with UR.			2021-27	On Target	
Engage with NIEA.			2021-27	On Target	
Provide update to UR on modelling tools once developed			Jan 24	On Target	
Appointment of Consultants	Jun 21	Complete	No Change	N/A	
Development of Tool	12 months (Jun 22)	Delayed	Dec 22	Complete	The Sewer Rehab Prioritisation Tool will enable decisions to be made on the management of sewage assets, with a Total Risk Score being assigned to each sewer. The prioritisation tool is an info asset based application which will allow a report to be generated listing out a prioritised list based on the total risk score. A summary of the background scripts of the prioritisation tool is attached in the 'Activity Completed to Date' section below. Staff changes and delay in data returns has led to slippage.

Updates to the Sewage Risk & Consequence Models	March 23		Dec 23	On Target	Staff changes and delay in data returns has led to slippage but testing and validating of model outputs ongoing.
Rising Mains Asset Prioritisation Development			Mar 24	On Target	
Development of Siphon Asset Maintenance Data			Mar 24	On Target	
Development of CSO Asset Maintenance Data			Mar 25	On Target	
Development of Infiltration Strategy			Mar 25	On Target	
KEY MILESTONES FOR SOLUTION INVESTMENT					
Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Outputs utilised to generate and inform detailed intervention Projects for delivery by NI Water during PC21	2021-27	On Target	2024-27	On Target	Programme slippage due to staff changes and data return delays. From Dec 2023 the Sewage Risk and Consequence Model will be available to generate and inform detailed intervention. Solution outputs will be funded under Base Maintenance.
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)		**Forecast Cost of DO (Nominal prices)**		**Commentary on Material Total Cost Changes for DO**	
£0.55m		£0.707m		No change. £0.707m is reflective of FD amount uplifted by RPI.	

PC21 FD Estimated Cost of Solution (2018/19 prices)	Forecast Cost of Solution (Nominal Prices)	Commentary on Material Solution Cost Changes
TBC	£0m	Solution outputs will be funded from Base Maintenance programme

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Development of the Sewer Rehabilitation Prioritisation Tool (SRPT) and methodology has progressed. This has included the continued identifying of relevant data held by NI Water that will be beneficial and providing availability/access. The prioritisation tool is an info asset based application which will allow a report to be generated listing out a prioritised list based on the total risk score. The prioritise list can then be exported in PDF/excel, etc format. A summary of the background scripts of the prioritisation tool is attached. Progress meetings continue on a fortnightly basis. Change in staff and delay in data returns has led to slippage of programme.

NIW SRPT Methodology.docx

SRPT Methodology - Section 4.1.msg

SRPT - Summary.msg

PLANNED NEXT STEPS FOR DELIVERY
The first phase of this program is to update the Sewage Risk & Consequence Models, which is underway with a completion target date of December 2023. After which the tool can be assessed and installed into Business as usual. NI Water intend to try out the tool and have CCTV survey work prioritized to enable the sewer maintenance programme to continue throughout PC21 and help with PC27 Outputs. All CCTV work carried out throughout the Business will also be able to be linked back into this tool, which will then be able to be prioritised also as part of the overall programme. (E.g.) CCTV work carried out as part of Drainage Area Programme (DAPs) can be assessed. At present NI Water are using the PC15 Methodology for the start of the PC21 sewer maintenance programme, which enables NI Water to meet its targets at the start of PC21 and not playing catchup waiting on the new methodology and falling behind on its targets. Once the tool has been assessed and approved, NI Water will start the rest of the programme as set out below. Phase 2 will be the creation of a Rising Mains Asset Prioritisation system. Target date for completion is March 2024. Phase 3 will be the development of Siphon Asset Maintenance program. Target date for completion 2024. Phase 4 will be the development of CSO Asset Maintenance program. Target date for completion 2025. Phase 5 is the development of an Infiltration Strategy. Target date for completion 2025. It is the intention of NI Water that Phases 1 to 4 will all be held within one data set. This will enable a full prioritisation program to be set out. The aim of the programme is to have all information stored in the one location, regarding survey work and sewer maintenance. This will also link back to Corporate Asset Register.
PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX
N/A
IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME
Developments budget The development budget will be assessed on an annual basis, enabling NI Water to see how the expenditure is delivering the over programme. As the programme is set out in Phases, it makes it easier to assess. The Capital Budget will be able to be assessed annually also, the creation of the new tool will enable NI Water to have a capital maintenance programme, prioritised to whatever budget is given.
IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☐	No ☒	Comments N/A

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE
Availability of suitable and accuracy of data.

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
Better and focused base maintenance investment, maintaining level of service reducing risk of asset failure.
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
No links to other Development Objectives.

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil	-	-	-	
M&E	-	-	-	
Materials / Equipment	-	-	-	
NIE	-	-	-	
Lands	-	-	-	
Site Investigation	-	-	-	
Consultancy	0.123	0.55	0.707	No change. £0.707m is reflective of FD amount uplifted by RPI.
Pilot Studies	-	-	-	
Add Others as necessary	-	-		
Totals	**£0.123**	**£0.55**	**£0.707**	
PC21 FD Projected Spend on Development Objective			**£0.707**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
22	**AD - Asset Strategy - Water Asset Performance Modelling**	**20g**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

We need to develop risk-based asset modelling tools and assessments for water assets to inform detailed interventions during PC21.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	PC27 only ☐	PC21 and PC27 ☒

PROJECT SCOPE

1. Strategic trunk main condition assessments
2. Raw water aqueducts and structure investigations
3. External specialist support to verify and package rehab schemes
4. SR condition assessments
5. PPRA
6. Development of strategic SV/AV inspections
7. Water quality sampling strategic network

COMMENTARY ON MATERIAL CHANGES TO SCOPE

Removed Scope

Reason – duplication with other Development Objectives

2. "Raw water aqueducts and structure investigations" is removed as it is duplicated by DO17 Raw Water Trunk Main Rehabilitation
7. "Water quality sampling strategic network" is removed as the water quality performance across the strategic network will be monitored using permanent and temporary water quality units under DO8 Smart Networks – ITS Strategy

Potential to Remove Scope

Reason - Business as Usual activities

3. External specialist support to verify and package rehab schemes
5. PPRA
6. Development of strategic SV/AV inspections

Retained Scope

Reason – technology and approach is still developing

1. Strategic trunk main condition assessments
4. SR condition assessments

PROJECT OUTCOMES

1. Plan work packages to deliver schemes efficiently and effectively for the Watermains Rehabilitation Programme (WMRP).
2. Identify benefits, costs and targeted intervention expenditure on the clean water networks
3. Address Network Serviceability
4. Maintain adequate Customer Service
5. Understand and react in advance to potential Trunk Main potential failures
6. Understand and react in advance to potential Service Reservoir Water Quality failures

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

If scope reduction is accepted, the following outcome is removed:

1. Plan work packages to deliver schemes efficiently and effectively for the Watermains Rehabilitation Programme (WMRP).

Outcomes 2-6 are relevant to the remaining scope.

A key deliverable of this development objective is assessments of the condition of our potable strategic pipelines and Service Reservoirs, to inform better investment decisions for the PC27 period.

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition, we expect NI Water to:

- Develop and submit an updated programme for the delivery of this objective.
- Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages.
- An update on the modelling tools once developed and how NI Water intends to use them to identify and prioritise interventions is likely to be required as part of the engagement process.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

On the assumption that the scope is reduced to

- "1. Strategic trunk main condition assessments"
- "4. SR Condition Assessments"

NIW will be engaging with the UR, either during the Mid Term Review (MTR) or more likely during the PC27 working groups, to continue these assessments after the MTR. This will include new technologies and best practice inspection techniques to assess the condition of strategic mains and SR structures, and their prioritisation for rehabilitation.

PROGRAMME

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 Target**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Submit updated programme to UR	N/A	N/A	Jun 22	Completed	AIR22 had Mar 23. See annual AIR submissions
Provide UR with update on condition assessment approach	N/A	N/A	Mar 24	On Target	AIR22 had Mar 24. Will be engaging with UR on remaining scope

					either during MTR or more likely during the PC27 working group by Mar 25.
Strategic Trunk Main Condition Assessments	2021-2027	On target	2021-2027	On Target	*Milestone 1* Phase 1 complete Dec 22 – see evidence. Phase 2 ongoing. Outputs will inform PC27.
Raw Water Aqueducts and Structure Investigations	2021-2027	N/A	N/A	Removed	Removed from DO22. Duplication of DO17
External Specialist Support to Verify and Package Rehab Schemes	2021-27	N/A	N/A	To be Removed	To be removed from DO22 as BAU. *Note Phase 1 WP completed Sep 22-Feb 23. Phase 2 WP planned for Sep 25.*
SR Condition Assessments	2021-2027	On target	Mar 27	On target	*Milestone 2* AIR22 (electroscanning reports) had : • Output reports by summer 22 • Inspections by Mar 23 Note packages are developed on annual basis. Assessments will continue after MTR, funding dependant
PPRA	2021-27	N/A	N/A	To be Removed	To be removed from DO22 as

					BAU. Note outputs are in annual AIR returns
Development of SV/AV inspections	2022-25	N/A	N/A	To be Removed	To be removed from DO22 as BAU.
Water Quality Sampling Strategic Network	2022-25	N/A	N/A.	Removed	Removed from DO22. Duplication of DO08
KEY MILESTONES FOR SOLUTION INVESTMENT					
Outputs utilised to generate and inform detailed intervention Projects for delivery by NI Water during PC21	2021-2027	On target	2021-2027	On target	No change. Will also inform PC27
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)		**Forecast Total Cost of DO (Nominal prices)**		**Commentary on Material Total Cost Changes for DO**	
£3.35M		£4.8M for original scope (OR £3.9M if scope is reduced)		Combination of JI215, JI272 & JI130.	
PC21 FD Estimated Cost of Solution (2018/19 prices)		**Forecast Cost of Solution (Nominal prices)**		**Commentary on Material Solution Cost Changes**	
TBC		£0M		£0M is best estimate of forecast cost, and this may change if any high priority rehabilitation is identified for PC21 spend during the assessments. The likelihood of this is low, but possible.	
ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)					

On the assumption that the scope is reduced to

- "1. Strategic trunk main condition assessments"
- "4. SR Condition Assessments"

1. Strategic trunk main condition assessments

Activities completed to date include:

- *See Milestone 1a map of Strategic Pipeline Inspections to demonstrate completion of Strategic Trunk Main Condition Assessments – Phase 1.*
- Inspections on Omagh Ring Main *(see Milestone 1b Condition Assessment report to support completion of Strategic Trunk Main Condition Assessments – Phase 1).*

- Inspections on Ballymena Ring Main and Drumaroad WTW to Sampsons Stone.

4. SR Condition Assessments

Activities completed to date include:

- Traditional visual inspections of SRs
- Electro scanning of Concrete surfaces to inform efficient and effective concrete repairs.
- *See Milestone 2 SR Concrete Repair Amphora report for an example of the innovative technologies being trialled.*

PLANNED NEXT STEPS FOR DELIVERY

On the assumption that the scope is reduced to

- "1. Strategic trunk main condition assessments"
- "4. SR Condition Assessments"

1. Strategic trunk main condition assessments

Planned next steps include:

- condition inspections on the Caugh Hill to Derry and Dunore WTW Strategic /Transmission Mains.

4. SR Condition Assessments

Planned next steps include continuation of:

- Traditional visual inspections of SRs
- Electro scanning of Concrete surfaces to inform efficient and effective concrete repairs.
- Throughflow analysis of SRs

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

As none of the equipment is permanent, the additional OPEX from CAPEX will be zero/negligible.

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

N/A as no solutions exist as yet.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☐	No ☒	Comments N/A

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

Risks include:

- Uncertainties associated with new innovative technologies which are yet to be tried and tested

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE

Wider benefits include:

- Improvement in the delivery of robust and resilient water infrastructure
- Improvements in customer experience and levels of service

LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
There is no linkage to other development objectives. The removal of Raw Water Trunk Main Rehabilitation (due to duplication with Section 17) and the removal of Water Quality sampling strategic network (due to duplication with Section 08) means there is no longer any linkage with these DO's. The remaining scope (i.e. condition assessments of strategic pipelines and SRs) is not linked to any other Development Objectives.

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
23	**Facilities H&S Compliance**	**20e**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

In depth Health and Safety audits were prompted by specific actions included within our Corporate H&S Strategy Action Plan 2018-2021. These audits have confirmed the following:

- A significant lack of legal compliance with respect to basic 'hard' facilities management responsibilities, including fire safety, legionella assessment, asbestos management, control and general maintenance and servicing of some fixed plant and equipment;
- Lack of competently trained personnel on site in charge of premises related issues;
- Lack of training for field operative / plant managers (and consequent lack of knowledge) in regulatory requirements for management of premises, such as DSEAR, fire safety including emergency light testing, legionella, asbestos management;
- A lack of grounds or property maintenance budget as stated by some premises and field managers;
- A common view that premises maintenance is not a priority.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	**PC27 only ☐**	**PC21 and PC27 ☒**

PROJECT SCOPE

- Continued development of a Facilities Management Strategy and implementation of recommended outputs from audits and surveys is required.
- Meeting minimum statutory obligations with regard to managing asbestos containing materials, basic fire safety provisions and plant and equipment maintenance amongst others.
- If such work is not undertaken, some employees and contractors will remain exposed to both health and safety risks that could result in fatality, life-changing injury or permanent ill-health symptoms.
- Compliance with statutory obligations also significantly reduces the potential for prosecution, regulatory fines and associated civil claims, increased insurance costs and reputational damage.
- An organisation cannot become 'World Class' unless it first aspires to comply with its legal obligations'

No change to scope.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES
Report and audit showing compliance with minimum statutory H&S obligations. Health and safety legal compliance and minimising risk to: • Employees and contractors • Potential for prosecution • Regulatory fine • Increasing insurance costs, and • Reputational damage No change to PC21 FD Project outcomes.
COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES
N/A
UR MONITORING EXPECTATIONS
Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum. In addition we expect NI Water to: • Develop and submit a programme for the delivery of this objective. • Engage with UR staff on the timing of additional engagement, reviews and the determination of any outcomes flowing from the successful completion of the development stages. An update on how the Facilities Management Strategy is being developed and used to identify and prioritise interventions to meet legislative requirements is likely to be required as part of the engagement process.
HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED
Progress is monitored at a number of levels via a monthly dashboard reporting system. The dashboard report is delivered at different monthly management meetings, Board level, Executive Committee and Risk Committee. The Dashboard monitors key project milestones and compliance. Programmes such as Fire Safety, Legionella and PUWER have been sub-divided into prioritised risks and progress is monitored on these sub programmes and reported monthly also. Programmes such as asset surveys and high risk remedial actions have been complete. Risk Assessments have been renewed for Asbestos, Fire Risk and Legionella across 900 sites. A PPM Plan was commenced PC21 Year2. This PPM programme is being delivered on an incremental release of sites with the aim to reach full compliance at 900 sites within PC21. Progress is dependent on funding. To reach compliance, investment has been required to replace large parts of the asset list, examples are alarm systems and Legionella controls. The Facilities Management strategy is to develop and implement a permanent programme of inspection and testing across all the relevant buildings to meet SFG20 specification. SFG20 is the industry standard for building maintenance specification. Extracts from reports to NI Water Executive Committee are attached at the end of this document. The UR is provided with updates on progress of the DO through the AIR process.
PROGRAMME
See Master DO Programme v0 dated 07/07/23. A high level summary of activities associated with this Development Objectives is

presented below:

Key Dates (PC21 - 2021-2027)	21/22	22/23	23/24	24/25	25/26	26/27
Facilities building surveys (922 sites)	□					
Facilities compliance remedial actions	□	□				
Phased Planned Preventative Maintenance schedule		□	□			
Risk assessments Fire, Legionella, Asbestos	□	□				
Fire, Legionella & Asbestos remedial Actions		□	□			
Risk Assessments & remedials Public Accessible sites			□			
Risk assessments PUWER		□	□	□		

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	FD21 Annex T Milestone Target Date	Status Vs FD21 Target	Current Milestone Target Date	Status Vs Current Target	Commentary on Material Milestone Date Changes ***AND / OR*** Reasons for any material Delay
Initial H&S Surveys	2021-27	Complete	N/A	Complete	H&S surveys are complete. This formed a Remedials Programme and a Planned Preventative maintenance Programme – evidence at end of this report.
Projects categorised and prioritised	N/A	N/A	2022	Complete	Prioritisation of Remedials and PPM programme.
Provide update to UR	N/A	N/A	AIR23	On target	

KEY MILESTONES FOR SOLUTION INVESTMENT

Facilities upgrades	2021-27	On target	2021-27	On target	No change

EXPENDITURE [See Also Table DO1 below]

FD21 Annex T Estimated Total Cost of DO (18/19 prices)	Forecast Cost of DO (Nominal prices)	Commentary on Material Total Cost Changes for DO
£10m	FM £19.8m (IPAC 2603 & 2604) + H&S £5m	FM – Number of sites to have facilities remedial work and planned preventative maintenance has increased significantly from initial PC21 planning – now c900 sites are in scope.

PC21 FD Estimated Cost of Solution (18/19 prices)	Forecast Cost of Solution (Nominal prices)	Commentary on Material Solution Cost Changes
TBC	Included in forecast cost of DO above	As outlined above

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

Activity Completed to date and its outcome

- The Corporate H&S Strategy Action Plan 2018-2021 was updated to reflect more detailed and measurable actions to cover the period 2020-25.
- The new Corporate H&S Strategy and Action Plan 2020 – 2025 was endorsed in June 2020 comprising 4 workstreams:-

(i) FM compliance
(ii) H&S Management System
(iii) SHE Software
(iv) Cultural Development

- A detailed work programme has been developed to reflect this.
- The 4 workstreams have been categorised as either 'compliance' or 'improvement' with prioritisation given to the former.
- Workstream (i) and (ii) are wholly or mainly compliance and workstreams (iii) and (iv) are deemed as improvement projects.
- The work programme has been prioritised as Top 5 compliance projects, other high priority compliance projects and all other programme projects.
- Compliance surveys were completed by 03/22
- Progress is reported monthly to NIW EC and NIW Board as well as NIW Risk Committee each quarter.

A new centralised Facilities Management team has been established under the Head of Future Workplace. The FM team will deliver the outcomes required under workstream (i) FM compliance.

A PPM schedule has been established for 900 NIW sites – to be rolled out over PC21. By March 2023, it was planned to increase the number of compliant sites from 62 sites to 262 sites; this was achieved on schedule.

PLANNED NEXT STEPS FOR DELIVERY

- Continue to deliver detailed programme of work, monitor and manage programme
- Revise costings and budget requirements to deliver the programme based on detailed work activities. The original estimate in the FD of £10m for facilities (2603 & 2604) has been revised to approx. £19.8m over the six year period 21/22- 26/27 (subject to review and potential change). The current estimate for H&S activities is £5m over the six year period 21/22- 26/27.
  Both Facilities and H&S Outputs will be subject to annual programmes and budgets.
- Continue to report monthly to NIW EC and NIW Board on progress of delivery and spend against approved budget.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

The proposed facilities maintenance expenditure over PC21 is currently forecast at £19.8m.

The proposed H&S expenditure over PC21 is currently forecast at £5m.

Ongoing Capex requirements to maintain the compliance levels achieved by the end of PC21 will be included in the PC27 business plan.			
IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME			
N/A			
IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b			
Links to Tables Completed	Yes ☒	No ☐	Comments Outputs from DO23 have no material impact on programme for projects in the Tables 40, 40a and 40b
RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE			
Price fluctuations due to volatile market. Resources, high demand for skilled trades and high staff turnover in the building trades.			
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE			
Benefits • Statutory Workplace Compliance. • ISO 14001 & ISO 9001 audit compliance. • Reduce risk of injury to the workforce, contractors and visitors. • Life cycle planning for all facility assets. • Asset information and condition register. • Reduce risk of prosecution or claims. • Centralised experienced team.			
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES			
At this point, based on present knowledge, there is no direct evidence to demonstrate that there is a link between this Development Objective and the other Development Objectives.			

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment / Project Code(s)
PPM	1.8	6.5	8.3	KI737, KI800, KI801,KI802, KI803, KI804
FM Remedial	2.7	5.2	7.9	
Consultancy	1.6	2	3.6	
Pilot Studies				
Totals	**£6.1m**	**£13.7m**	**£19.8m**	
PC21 Projected Spend on Development Objective			**£19.8m**	

Table DO2 Facilities Expenditure on Development Objective

Project	21/22 (k)	22/23 (k)	23/24 (k)	24/25 (k)	25/26 (k)	26/27 (k)	TOTAL (k)
PPM Compliance Inspections	225	1,150	1,350	1,400	1,300	1,300	**6,725**
PPM Remedial Minor repairs	100	300	350	400	200	200	**1,550**
Base Maintenance Remedial Works	1,354	1,300	1,300	1,300	1,200	1,200	**7,654**
FM specialist support	310	350	450	400	400	350	**2,260**
Specialist Risk Assessments	805	100	300	150	150	150	**1,655**
	2,794	**3,200**	**3,750**	**3,650**	**3,250**	**3,200**	**19,844**

Table DO3 H&S Expenditure on Development Objective

H&S Projects	21/22 (k)	22/23 (k)	23/24 (k)	24/25 (k)	25/26 (k)	26/27 (k)	TOTAL (k)
Asbestos	258	13	13	13	13	13	**323**
DSEAR & personal gas monitoring	272	200	150	150	100	100	**972**
Lightning Protection		100	60	13	13	13	**199**
PUWER	41	363	800	600	400	300	**2,504**
Work at Height Equipment Surveys		140	20	20	20	20	**220**
Tree Safety Management		120	60	50	40	30	**300**
Occupational Road Risk	219	120	150	10	10	10	**519**
	790	**1,056**	**1,253**	**856**	**596**	**486**	**5,037**

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
24	**Smart Meters**	**19**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
C&OD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

Undertake sufficient pilots to adequately assess the effectiveness and associated benefits of smart metering technologies (AMR / AMI / NBioT) to substantiate continued investment in smart metering technologies post the PC21 mid-term review.

The pilots will seek to provide proof of technology, assessment of range & reliability of signal strength, implementation issues / risks.

An evaluation report, incorporating a long-term cost benefit analysis, on smart metering technologies will be produced to enable an informed funding decision to be made at the mid-term review stage.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☐	**PC27 only ☐**	**PC21 and PC27 ☒**

PROJECT SCOPE

Left blank in Annex T.

The scope of this development objective is to undertake pilots to assess the effectiveness and benefits associated with smart meters.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

The key outcomes include:

- A better understanding of smart meter technologies and their effectiveness and benefits
- A medium and long term cost effective plan for the metering programme which facilitates the transition to smart meters

A key deliverable is an evaluation report, incorporating a long-term cost benefit analysis, on smart metering technologies to enable an informed funding decision.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum.

This development output has been introduced by the Utility Regulator. It has been included so that the benefit of smart meter installation can be considered and tested based on work undertaken in the first half of PC21, in advance of committing to similar investment for the remainder of the price control period. We will engage with NI Water to establish the exact detail of the associated monitoring requirements but it is expected that NI Water will be required to:

- Develop and submit a programme for the delivery of this objective.
- Engage with us on the timing of additional engagement, reviews and the

determination of any outcomes flowing from the project.

- Provide a report on the benefits of smart metering informed by work undertaken in the early years of PC21. This should include a long-term cost benefit analysis.
- Engage with UR staff at the PC21 Mid-term Review on the provision of funding for the remainder of PC21, noting UR comments on funding dependency in Annex I of the PC21 determination.

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

NI Water has had regular, constructive & positive engagement with the Utility Regulator during 2022/23. Meeting in October 22, November 22 and January 23 (see three sets of PowerPoint slides as evidence). During which we have provided updates on the performance of the smart metering technologies being trialled, whilst also obtaining absolute clarity from the Utility Regulator on their expectations re Smart Metering, the associated £2.5M Smart Metering uplift and the assumptions contained therein.

PROGRAMME

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	**FD21 Annex T Milestone Target Date**	**Status Vs FD21 TargePht**	**Current Milestone Target Date**	**Status Vs Current Target**	**Commentary on Material Milestone Date Changes *AND / OR* Reasons for any material Delay**
Provide update to UR on Smart metering activities and outcomes to date	N/A	N/A	Q3 22/23	Complete	See three sets of PowerPoint slides (Oct22, Nov22 & Jan23)
Develop and submit a Smart Metering pilot programme	N/A	N/A	Q4 22/23	Delayed	Due to reaching the limit of authorised contractual spend on existing Metering Contract we have been unable to progress any further Smart Metering trials in advance of the PC21 Mid Term Review. Whilst progressing with the retender of Metering Contract we

					have focused our attention on knowledge sharing with other Water Utilities and obtaining information from User Groups and attendance at Smart Metering / Networking conferences.
Engage with UR on timing of additional engagement, reviews and the determination of any outcomes	N/A	N/A	Q4 22/23	Complete	See three sets of PowerPoint slides (Oct22, Nov22 & Jan23)
Produce a Year 1 Summary of findings from Key Account Smart Metering Pilot	N/A	N/A	Q1 23/24	On Target	N/A
Provide a report on the benefits of smart metering incorporating a long term cost benefit analysis	N/A	N/A	Q2 23/24	On Target	N/A
Engage with UR to facilitate a funding assessment at the PC21 Mid-term Review	N/A	N/A	Q2 23/24	On Target	N/A
KEY MILESTONES FOR SOLUTION INVESTMENT					
N/A	N/A	N/A	N/A	N/A	N/A
EXPENDITURE [See Also Table DO1 below]					
FD21 Annex T Estimated Total Cost of DO (2018/19 prices)		**Forecast Cost of DO (Nominal prices)**		**Commentary on Material Total Cost Changes for DO**	
Blank (in Annex T). £1.8M FD21 budget		£1.8m plus inflation up to nominal prices		Note that Annex T was blank. The FD was £2.5M less £0.7m (assigned to the	

		Leakage Programme as highlighted in FD21 Annex I) = £1.8M Forecast cost is TBC following completion of the meter re-tender and subsequent compilation of long-term cost benefit analysis. NI Water are aware the long-term cost benefit analysis will provide an opportunity to maintain the existing £1.8M Smart Metering uplift - but will not facilitate a requirement for increased funding.
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
Blank	N/A	N/A as there are no solutions. All smart metering costs in PC21 are being considered in the DO above.

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

NIW has provided detailed updates to the Utility Regulator on Smart Metering activities during 2022/23. Meeting in October 22, November 22 and January 23 (see three sets of PowerPoint slides)
Highlights of which are as follows:

Oct-22

- Sought clarification on Utility Regulators expectations on both PC21 £2.5M Smart Metering uplift and Development Output No24.
- Provided an update on Smart Metering pilots – AMR / AMI. This included 70no. smart meters installed as a pilot across the Queens University buildings (see costs provided as evidence)
- Outlined a proposed accelerated AMR installation strategy (requiring no additional funding)

Nov-22

- Utility Regulator provided absolute clarity on Smart Metering £2.5M funding elements and associated assumptions re AMR / AMI volumes, unit prices and ancillary costs.
- NI Water confirmed understanding and partial agreement of Smart Metering £2.5M funding elements, raising concerns re AMI unit prices e.g. £261 NBIOT cost for PC21 Period vs £30 funding per Final Determination.
- NI Water highlighted the need to retender the current Metering Contract as it did not envisage substantial requirements re Smart Metering ,therefore does not currently provide a framework nor competitive pricing, for the purchase of Smart Metering technologies.
    - Primarily dumb & AMR meter focused.
    - No contractual price re critical smart metering components:

- Antenna
- AMI Module
- Portal Access
- SIM / Line rental

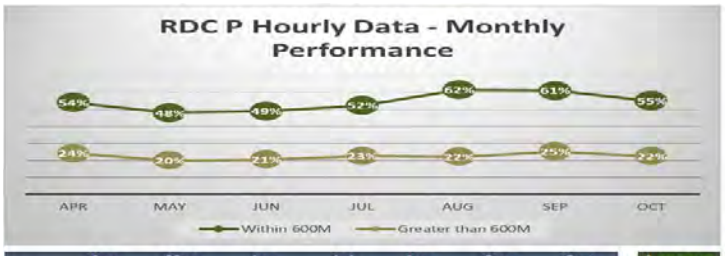
- Provided an update on AMI technology performance from Smart Metering Pilot as follows:
  - **Wize AMI Module:**

Consistent excellent level of performance.

Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	% of Cumulative Data
96%	98%	97%	97%	97%	96%	96%	96%	96%	96%	97%

Circa 4KM Antenna rage
Average antenna signal strength at meter 9.78 (out of 10).
Circa **97% of all 15min data** (Dec-Sep) intervals received.
Only criticism of current Wize Module is as a 'standalone' module it does not facilitate AMR 'Drive By' reading.

  - **Diehl AMI Module:**



	Apr	May	Jun	Jul	Aug	Sep	Oct	Average
NB IoT	78%	88%	90%	87%	79%	79%	81%	83%

Diehl Radio (RDCP) technology performance is significantly below that of Wize Radio technology.
Even **within** the expected / typical **600M** antenna range - only circa **55% of the hourly data** is being received.
- >600M – only circa 20% of the hourly data is being received.

  - **NBIOT Module:**
    Circa 80% of hourly data received.

Jan-23

- NI Water provided an update on the Metering Contract re-tender
- Sought clarification / indicative Mid Term Review submission deadlines
- NI Water provided an update on Knowledge Sharing exercise with Scottish Water who have commenced a substantive Smart Metering Pilot – encompassing circa 4K meters in Inverness & Orkney.
  Seeking to test a range of technologies – LoRaWAN | NBIoT | Wize, from a number of metering manufacturers – Diehl | Elster | Itron
  Scottish Water have found differing levels of performance from AMI technologies in differing settings – Internal / External / Rural and have determined there to be no single network solution.
- Provided an update on Smart Metering - Key Insights / Discussion Points from the Diehl Metering User Group.

In assessing both progress to date of NI Water's Smart Metering trials and external knowledge obtained - NI Water's proposed Smart Metering strategy, subject to Utility Regulator approval following assessment of cost / benefit analysis, will likely be a No 'one size (technology) fits all' solution – blended strategy!!!

- AMR 'Drive-By' as base solution.
- AMI (NBIOT) – for Large Users.
- AMI (Radio Freq /LoraWan) for high density areas e.g. Belfast.

PLANNED NEXT STEPS FOR DELIVERY

NI Water is currently progressing through the final stages of the Metering Contract retender. The retender exercise will deliver competitive market pricing for critical smart metering components as referenced above. These competitive market prices will then be incorporated into a revised long-term cost benefit analysis to be submitted to the Utility Regulator in adherence to PC21 Mid Term review timetable.

NI Water will also produce a Year 1 Summary Report of key findings from the Smart Metering pilot.

PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX

It is envisaged there will be some OPEX associated with Smart Meters e.g. NBIOT SIM Card rental, LoraWan Network access charge or annual 3rd Party Portal access charges. Costs will be confirmed post completion of meter retender.

IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME

There are no capital solutions in PC21 arising from this Development Objective.

IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☐	No ☒	Comments N/A as no capital solutions exist

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE

Delay in completion of Metering Contract retender could restrict NI Waters ability to submit a revised cost / benefit analysis as NI Water may not have competitive market prices for critical Smart Metering components. There is also a risk increased component, manufacturing & energy costs could result in significantly increased costs being submitted per the tender process which could exceed current UR funding and in effect could be cost prohibitive.

WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE

The wider benefits of this Development Objective are:

- Availability of 30 minute meter consumption data (as opposed to monthly or 6 monthly meter reads)
- More frequent and higher quality consumption data to inform better decision-making
- Improved customer experience through having more granular information on their internal water usage

LINKAGE TO OTHER DEVELOPMENT OBJECTIVES

There could potentially be linkages to the following Development Outputs:

- 08 - Smart Networks – ITS Strategy
- 13 - Real Time Network Modelling

However, confirmation of any linkage can only be confirmed once the pilots for the respective development outputs have scoped, implemented, and associated outcomes are known.

The Head of Metering, Billing & Collections has joined the Smart Networks Project Team (Chaired by Head of Water) to maximise any collaborative benefit during the Boucher Road Smart Networks pilot.

Development Objective – Expenditure Summary

Table DO1 Expenditure on Development Objective (Nominal Prices)

Category	Spend to End March 2023 (£m)	Anticipated Future Spend (£m)	Anticipated Total DO Spend (£m)	Comment
Civil				
M&E				
Materials / Equipment				
NIE				
Lands				
Site Investigation				
Consultancy				
Pilot Studies	£0.076M	£1.724M (plus uplift to nominal)	£1.8M (plus uplift to nominal)	The anticipated future cost will only be confirmed following completion of the meter re-tender.
Add Others as necessary				
Totals	**£0.076M**	**£1.724M + uplift**	**£1.8M + uplift**	
PC21 Projected Spend on Development Objective			**£1.8M + uplift**	

DEVELOPMENT OBJECTIVE [DO]		
Ref	Development Objective	Sub-Programme
25	**Addressing scope uncertainty for the Mid-Term Review**	**12 & 16**

GOVERNANCE		
Directorate	**SRO**	**Project Lead**
AD	[redacted]	[redacted]

REASON DEVELOPMENT OBJECTIVE IS NECESSARY

This development output was proposed by the Utility Regulator in the PC21 Final Determination to keep the overall programme for the delivery of the scope/uncertainty schemes (131 nr) under review through regular updates.

It was included to keep a focus on delivery in time for the MTR, so that the UR could plan for the receipt and assessment of submissions based on the most up to date information.

The inclusion of the scope/uncertainty Block in AIR Table 40 and the CIM, along with the DAP/IEM information in Tables 40 and 40b should provide the regular updates needed by the UR.

NI Water will update the UR if there were further material changes to the delivery plan (similar to the engagement with the UR to defer all the LWWP schemes to Batch 4).

Project business cases to be submitted in four batches on 30 Sep 2021, 31 Mar 2022, 30 Sep 2022 and 31 Mar 2023.

DEVELOPMENT OBJECTIVE TO CONFIRM SOLUTION SPEND IN PC21 &/or PC27

PC21 only ☒	**PC27 only ☐**	**PC21 and PC27 ☐**

PROJECT SCOPE

No change to scope from FD Annex T.
Project business cases to be submitted in four batches on 30 Sep 2021, 31 Mar 2022, 30 Sep 2022 and 31 Mar 2023.

COMMENTARY ON MATERIAL CHANGES TO SCOPE

N/A

PROJECT OUTCOMES

Project business cases to be submitted in four batches on 30 Sep 2021, 31 Mar 2022, 30 Sep 2022 and 31 Mar 2023 to allow for determination on solutions.

No change to PC21 FD project outcomes.

COMMENTARY ON MATERIAL CHANGES TO PROJECT OUTCOMES

N/A

UR MONITORING EXPECTATIONS

Progress on the delivery of this objective will be monitored and reported on through the annual cost and performance report process as a minimum.

This development output has been introduced by the Utility Regulator. It has been included to ensure that the arrangements and programme for the completion and delivery of NI Water's planned scope/uncertainty submissions are kept under review and that we are appraised of any changes. We will engage with NI Water to establish the exact detail of the associated monitoring requirements, but it is expected that NI Water will be asked to submit regular updates on its plans for delivery to the UR directly and to other

stakeholders through the ORG.

Note that this links to other PC21 development objectives related to programme scope/uncertainty such as DO09 (WwPS / CSO Quality (UID) and WwPS (Capacity increase)), DO19 (LWWP Networks) and DO20 (LWWP Wastewater Treatment Works).

HOW UR MONITORING EXPECTATIONS HAVE BEEN FULFILLED

Scope Certainty batches have been submitted to the UR with the exception of a pack for LWWP - Belfast WwTW which will be submitted as a part of the Mid Term Review submission.

CIM reports have been submitted to keep the ORG stakeholders updated on a 6 monthly basis as well as monthly updates to NIEA as the main Stakeholder on a monthly basis through the Wastewater Investment Group.

Programme dates all met.

PROGRAMME

Scope Certainty Projects Submission

Batch	Date	NIAMP Outputs (Nr)	LWWP Outputs (Nr)	NIAMP Business Cases	LWWP Business Cases
1	30/09/2021	13	0	7	0
2	31/03/2022	26	0	15	0
3	30/09/2022	26	0	12	0
4	31/03/2023	21	22	29	16
Total		86	22	63	16

All milestones have been met.

See Master DO Programme v0 dated 07/07/23.

KEY MILESTONES FOR DEVELOPMENT OBJECTIVE

Description Key PC21 FD DO Milestones	FD21 Annex T Milestone Target Date	Status Vs FD21 Target	Current Milestone Target Date	Status Vs Current Target	Commentary on Material Milestone Date Changes ***AND / OR*** Reasons for any material Delay
Batch 1 Submission			30/09/21	Complete	
Batch 2 Submission			31/03/22	Complete	
Batch 3 Submission			30/09/22	Complete	
Batch 4 Submission			31/03/23	Complete	
2021/22 Q4 CIM			30/07/22	Complete	
2022/23 Q2 CIM			30/11/22	Complete	Submitted Dec 22
2022/23 Q4 CIM			30/06/23	On Target	AIR 23 submission

Ad hoc updates to UR as required			As required	On Target	

KEY MILESTONES FOR SOLUTION INVESTMENT

All milestones for Solution Investment relate back to the Wastewater element of the Capital Programme and can be tracked through the Mid Term Review submission or via the programmed dates within linked Dos and the Table 40a submission.

EXPENDITURE [state cost base for all costs e.g. FY18/19 – See Also Table DO1 below]

FD21 Annex T Estimated Total Cost of DO (2018/19 prices)	**Forecast Cost of DO (Nominal prices)**	**Commentary on Material Total Cost Changes for DO**
£0m	£0m	N/A
PC21 FD Estimated Cost of Solution (2018/19 prices)	**Forecast Cost of Solution (Nominal prices)**	**Commentary on Material Solution Cost Changes**
£0m	£0m	N/A

ACTIVITY COMPLETED TO DATE AND OUTCOMES TO DATE (MARCH 2023)

To date NI Water has completed the submission of all batches relating to Scope Certainty projects to the Utility Regulator. These were submitted in September 2021 through to March 2023 with each scheme comprising of an updated business case, updated IPAC costings and a high level analysis of the changes in scope from the original submission.

Note a number of schemes may be included within a single business case.

Scope Certainty Projects Submission

Batch	Date	NIAMP Outputs (Nr)	LWWP Outputs (Nr)	NIAMP Business Cases	LWWP Business Cases
1	30/09/2021	13	0	7	0
2	31/03/2022	26	0	15	0
3	30/09/2022	26	0	12	0
4	31/03/2023	21	22	29	16
Total		86	22	63	16

Table 1 – Batch Submission Programme

To aid in the delivery of scope certainty exercise a standard format was agreed internally for submission and a tracking of the projects expected for each batch was carried out.

Within the table 40 submission in the AIR submission a section has been added to identify and monitor progress of those projects yet to be determined on. This changed significantly following the decision to defer all LWWP projects to Batch 4 as agreed with the Utility Regulator.

Table 40b within the AIR submission details out DAP and IEM models which have relevance to PC21 Projects, including those to be determined on, and the ongoing monitoring of these is carried out through the Capital Investment Monitoring (CIM) submissions on a six monthly basis which follow the format of Table 40.

PLANNED NEXT STEPS FOR DELIVERY
Currently NI Water are preparing responses to queries on the Scope Certainty exercise to the UR and will continue to engage on an ongoing basis. A Scope Certain pack relating to Belfast WwTW shall be submitted along with the Mid Term Review submission. Meetings with ORG stakeholders have commenced following the March submission to share the findings and impact of the Scope Certainty exercise and will continue in the run up to the Mid Term Review.
PROPOSED MAINTENANCE EXPENDITURE / ADDITIONAL OPEX from CAPEX
N/A
IMPACT OF SCOPE / PROGRAMME CHANGES ON CAPITAL DELIVERY / OUTPUTS PROGRAMME
Determination of solutions will be essential for the delivery of outputs within the PC21 Programme.
IMPACTS ON CAPITAL OUTPUTS PROGRAMME LINKED TO TABLES 40, 40a & 40b

Links to Tables Completed	Yes ☒	No ☐	Comments

RISKS & ISSUES ASSOCIATED WITH THIS DEVELOPMENT OBJECTIVE
Work Complete, therefore only risk to programme remains awaiting determination before delivery of solutions.
WIDER BENEFITS OF THIS DEVELOPMENT OBJECTIVE
N/A
LINKAGE TO OTHER DEVELOPMENT OBJECTIVES
This development Objective has linkage with a number of other Development Objectives and reported data through AIR. Any slippage in the Scope Certainty determinations would directly impact on: • DO09 (WwPS / CSO Quality (UID) and WwPS (Capacity increase)) • DO19 (LWWP Networks) • DO20 (LWWP Wastewater Treatment Works). In addition to this there is a linkage between the reported Table 40b – Delivery of DAPs and Integrated Environmental Modelling and the ability to meet the key milestone dates for submission of the Scope Certainty business cases.

NORTHERN IRELAND WATER LIMITED -ANNUAL INFORMATION RETURN

TABLE 48 SOCIAL AND ENVIRONMENTAL GUIDANCE PRIORITIES FOR WATER AND SEWERAGE SERVICES (2021-27)
Progress on the delivery of priorities

Drinking Water Supply and Demand			
Policy	**DW Aim 1 - Manage drinking water quality risk in a sustainable manner from source to tap**	**Update on Delivery April 2023**	**BRAG**
DW 1A	**Maintain and review Drinking Water Safety Plans (DWSP) for all drinking water catchments**. NI Water should continue to maintain and review drinking water safety plans for all drinking water catchments and also continue to implement a prioritised investment programme to manage drinking water quality risks informed by DWSPs.	DWSPs remain in place for all our WTW supply systems. This is a Core Business activity. The risk assessment covers all stages of the water supply system from source (catchment) to customer tap in line with Regulation 30 of the Water Supply (Water Quality) Regulations (Northern Ireland) 2017. DWSPs are reviewed at least annually, or following an event or occurrence or if a new or changing risk is identified, when an interim review will be carried out. DWSPs are submitted to the Drinking Water Inspectorate (DW) on an annual basis as part of the DWI annual Information Requirement or where there has been a significant change to the risk score. DWI 2022 DWSPs Annual Return made on 28/02/2023. The DWSPs will be used to inform the future capital investment programme as appropriate.	B
DW 1B	**Put effective protection measures in place for drinking water sources.** To help deliver this policy, NI Water should review the designation of all existing (and future) drinking water sources as Drinking Water Protected Areas (DWPAs) and ensure appropriate monitoring and regulatory protection measures are put in place.	DWPAs have been assigned by NIEA for our drinking water catchments in line with WFD principles. NI Water worked with NIEA during this process. DWPA meetings are in place through NIEA, which NI Water are active members. Through this NI Water and NIEA share raw water and WFD monitoring data and review monitoring programmes to ensure that appropriate monitoring is in place. NI Water raw water monitoring is in place and ongoing. Sampling frequencies are reviewed in line with regulatory requirements and risk assessment. This is managed as BAU.	G
DW 1C	**Introduce sustainable catchment management at all drinking water sources**. NI Water should continue to introduce sustainable land management practices at all drinking water sources through collaborative partnership working, where possible, and also help to educate those with private water supplies about the importance of protecting groundwater. Specifically, NI Water should develop a programme to implement appropriate recommendations developed through the SCAMP programme in PC15.	• Catchment Management Studies - Studies have been updated and made more useable as a lookup document, and will continue to inform the remainder of the PC21 work programme. • High Mournes Management Plan - The HMMP has been agreed by the associate working group to address grazing issues, erosion control, riparian planting, invasive species control, recreation/access, wildfire requirements and other land management improvements. Grazing issues have been addressed through the development of a new Silent Valley grazing licence, denoting Silent Valley as a common grazing area. Tender for Licence advertised locally at the end of March 2023. • Invasive Species control - Ongoing annually in Silent Valley catchment. Review completed to assess effectiveness and progress of NI Water's measures. • Ballinrees, Glenhordial and Carmoney Pesticide reduction projects – Passive sampling projects ongoing to monitor acidic herbicides in Carmoney, Glenhordial and Ballinrees sub catchments. • Farm Chemical Disposal Scheme carried out in the Derg catchment collecting a disappointing 1.5 tonnes of waste chemical despite much press coverage and promotion. • Water Catchment Partnership - Ongoing engagement with partners in message and spring/summer press releases on weed control and water quality protection. • Rush Control Events/BDG attendance - CAFRE/NI Water video on best practice rush control presented at theses events with corresponding engagement work with grassland BDGs delivered to 4 groups to supplement the message on weed control. • DAERA/NI Water liaison on the future of agricultural policy and possible movement away from area-based subsidies ongoing. • National Trust UK Community Renewal Fund application - Mournes Community Renewal Through Nature project has been completed and delivered to Forever Mournes Partnership (on which NIW sit with National Trust leading). The project has provided a gap analysis of Mournes facilities for social value, natural capital, environmental value and land management and provides a springboard for future projects and business cases to improve the overall area.	G

DW 1D	**Manage water quality risks from the water distribution system**. NI Water should continue to effectively manage and operate the distribution system to maintain standards of drinking water quality, in line with current standards, and to prevent deterioration in drinking water quality including addressing iron exceedances and delivering the water mains rehabilitation programme to address water quality issues and consumer complaints.	NI Water manages water quality risks from the water distribution system as per best practice. This includes activities such as:- - Service Reservoir cleaning Programme and associated Risk-Based Service Reservoir condition Assessments - Drinking Water Safety Plans have been developed and are reviewed and updated on an annual basis. - The methodology's for prioritising watermains rehab include both Water Quality and complaints information as drivers for priority of replacements. - Following the successful completion of mains conditioning pilots it is planned to utilise this technique in the future subject to approvals and subsequent funding. - Drinking water quality targets are in place for iron and other significant parameters, designed to protect public health.	B
DW 1E	**Remove lead pipes and fittings from drinking water supply systems.** NI Water should continue implementing its strategic lead policy and lead pipe replacement programme focusing on the aim of removing all lead pipes from the public supply system and improving compliance with current lead standards. In addition, NI Water should work with stakeholders to develop and implement a strategic risk-based approach for addressing lead compliance issues associated with private supply pipes and domestic distribution systems.	NI Water is delivering its programme of lead pipe replacements as per our PC21 Plan. NI Water had completed a pilot replacing both private and public elements of lead service pipes in 2018. The Lead Service Pilot Project Report was issued to DfI for comment on the 25th April 2018. During 2020 NI Water engaged with DFI who are seeking to develop an options paper on possible routes to resolve the longer term lead pipe issues with particular focus on private lead pipes for informing senior officials.	B
DW 1F	**Manage water quality risks from defective water fittings systems.** NI Water should continue to effectively monitor and regulate compliance with the Water Supply (Water Fittings) Regulations (Northern Ireland) 2009 and reduce the risk of contamination or waste of public water supplies through defective water fittings. It should continue its work with the WRAS Point of Sale working group, to help change the behaviours of manufacturers & retailers. In addition to this, NI Water should also continue to educate and improve public awareness of the importance of compliant water fittings and using licensed plumbers (Watersafe). NI Water should be encouraged to keep abreast of changes in industry standards and developments and should maintain systems and processes necessary to ensure effective regulation of water fittings.	NI Water monitor and regulate compliance with Water Supply Regulations as a BAU item. NI Water continues to proactive and reactively inspect customer premises for compliance with the water fittings regulations. NI Water is a fully participating and contributing member of the UK's water industry organisation known as the Water Regulation United Kingdom (WRUK). WRUK acts as one voice for the water industry on a national level and also assists water companies interpret the regulations on a consistent basis. Customers complying with their obligations contained within the regulations will significantly mitigate the risk of waste, undue consumption, waste and contamination of mains water supplies. Customer compliance with the Regulation 4 in the regulations and appropriate EU and BS standards as well as the Regulators (DfI) specification, will significantly reduce the risk of waste, misuse, undue consumption, erroneous measurement and contamination of water through non-compliant water fittings. This is a statutory obligation and as such will be an ongoing activity for NI Water. This activity will not end or change unless DfI amend the current regulations. Information on the companies obligations and powers, guidance to householders and notification forms are available on the companies website. The company supports the national schemes for licensed or approved plumbers.	B
DW 1G	**Manage water quality risks from domestic distribution systems.** NI Water should continue to work with stakeholders to ensure adequate resource and guidance is in place to ensure the effective monitoring and regulation of domestic distribution systems is maintained.	NI Water is not the lead owner of this action but is happy to work with relevant stakeholders as appropriate to ensure adequate resource and guidance is in place to ensure the effective monitoring and regulation of domestic distribution systems is maintained..	A

Policy	DW Aim 2 – Meet the water demand needs of society, the economy and the environment	Update on Delivery	
DW 2A	**Provide access to efficient, safe, secure drinking water supplies.** NI Water should continue to provide financial assistance towards the initial cost of providing a water connection to encourage connections to the public supply system (reasonable cost allowance (RCA)) and also to put in place and implement improved mechanisms to ensure integration between water investment and local development plans, to help ensure that customers' water needs are efficiently met in the future. It should also take account of any future requirements to increase access to drinking water in public places.	In relation to financial assistance towards the initial cost of providing a water connection this is a core business activity under Article 76 of the Water and Sewerage Services (Northern Ireland) Order 2006. The financial contribution is set out in the current Scheme of Charges which is reviewed annually. In relation to local development plans NI Water is provides assessments on water (and wastewater) capacity. This information is then incorporated into Preferred Options Papers and in preparing Draft Plan Strategy documents. DfI is also provided with this information. NI Water also reviews and responds to Draft Plan Strategies received from Councils, emphasising issues concerning soundness / unsoundness in regard to water and wastewater capacity information used in the council LDP process.	B
DW 2B	**Water resource management and drought planning to inform long term investment needs.** NI Water must deliver the WR&SRP and review it, in accordance with the legislation, energy considerations and any associated guidance, to inform subsequent price control periods.	An updated version of the technical guidance for the Water Resource & Supply Resilience Plan was published in May 2021. This followed a review of current best practise, with NI Water working with DfI and other key stakeholders. This updated technical guidance is being used for the development of the next WR & SR Plan which is currently underway with the draft plan due to be complete by July 2023 and the final plan being published early 2024 following consultation.	B
DW 2C	**Put effective systems and processes in place to avoid over abstraction.** NI Water should continue to develop, agree and implement water abstraction monitoring and management plans with NIEA.	Ongoing work with NIEA AIL team to review abstraction licences. Managed as BAU. PC21 Abstraction flow monitoring project to be delivered through PC21. During the PC15 Period all 23 of NI Water's operational WTWs' abstraction points were surveyed to determine what additional monitoring arrangements would be needed for any revised abstraction licences. Based on the findings of these surveys NI Water and NIEA mutually agreed on a priority list of 11 WTWs and 1 Impounding reservoir which should be taken forward for flow monitoring in PC21. The proposed solution is to implement 19no. flow monitoring arrangements at identified abstraction points, with 18no. quality monitoring and actuated valve systems for 6no. prioritised WTWs. This will result in compliance with revised abstraction licences; satisfaction of other environmental obligations associated with water abstraction through compensation flow monitoring and management; opportunities for operational efficiencies; and reduced exposure to health and safety risks through remote operation of valve systems. This option also allows for future installations of further quality monitoring and actuated valve systems at remaining identified abstraction points in following investment periods (such as PC27).	B
DW 2D	**Encourage households and businesses to be water efficient.** NI Water should continue to invest in education and public awareness campaigns to promote water efficiency and to highlight the link between water efficiency and lower energy bills. NI Water should continue to invest in its education team resources, including the waterbus and targeted Corporate Social Responsibility activity such as its monthly Cares Challenge. It should also be mindful of any new initiatives in GB regarding water efficiency.	The education team have been proactive in influencing consumer behaviour through effective education and community campaigns. They have successfully increased awareness of the need for water conservation and more environmental friendly lifestyle choices. Some of these educational campaigns have promoted and prioritised NI Water's key messages such as the importance of preparing for winter, water efficiency, bag it and bin it (preventing pollution), customer care and reducing single use plastic.	B
DW 2E	**Deliver water efficient residential and commercial development.** NI Water should implement measures to reduce average water consumption through sustainable development and work with the Department and other stakeholders to develop and implement policies in respect of retro-fitting water efficiency/recycling measures in homes and businesses.	The ability to drive and implement measures to reduce average water consumption through sustainable development will be influenced by wider local government decisions. NI Water has been liaising with DfI to get a view if there are any plans to include water efficiency standards within Building Regulations similar to E&W which is key step to influence this change. In addition there have also been discussion in relation to the introduction of a mandatory water efficiency label similar to the energy efficiency label.	A

Policy	DW Aim 3 - Resource efficient drinking water treatment and supply chains	Update on Delivery	
DW 3A	**Achieve a Sustainable Economic Level of Leakage (SELL) in all supply systems.** NI Water should continue to focus on achieving and exceeding the Sustainable Economic Level of Leakage (SELL) and strive towards to SELL targets set out in the WR&SRP. NI Water should also review and update the SELL at regular intervals consistent with practice in the industry. NI Water should also work with stakeholders to develop and implement proposals to reduce private supply leakage.	A development project is on-going in PC21 to define a best practice approach and methodology for targeted mains renewal for leakage reduction purposes. The outputs of this project will inform NI Water's approach to leakage reduction and links to Water Mains Rehab.	G
DW 3B	**Improve the energy efficiency of the public drinking water supply system.** NI Water should review existing water treatment and supply systems to identify how potential energy efficiency savings might be achieved and also develop and implement a programme of energy efficiency improvements across the water and sewerage infrastructure and asset base. In addition, NI Water should develop short and long-term energy efficiency targets specifically for PC21 and beyond into PC27.	Opportunities are being progressed to increase solar generating capacity, wind generation and energy storage throughout the PC21 period. NI Water are in the process of installing a total of 1MW of energy storage in three locations: Enniskillen, Drumaroad and Limavady. A 4.1MW battery is being installed at Dunore WTW, with civil work underway and commissioning expected by the start of 2024. Our main focus in terms of energy efficiency within the Water PL continues to be on pump optimisation. Within the PC21 period to end of March, through the Energy Portfolio Board 13 pump optimisation Business Cases have been approved with 3.3m kWh/annum energy benefits forecast. The main risk being experienced to date with this work is in relation to supply chain issues and delays in pumps being delivered. We have worked with pump manufacturer and they are building up a stock profile which we require in order to reduce lead times to <25 weeks. We have continued with Phase II of Adaptive Efficiency Control (AEC) at a further 5 No WPS sites, where the cost of energy throughout a 24 hr period is taken into account, along with resilience parameters, to pump water at the lowest energy tariff where possible. This initiative has proved successful and provided a positive return on investment. Moneymore borehole went live in the summer of '22, and has provided resilience benefits along with a reduction in our energy consumption in our central supply zone. Within Wastewater we have trialled two Digital Twin/Real Time Control technologies at Omagh WwTW and North Coast WwTW during the 22/23 FY. Both of these trials has been positive to date in terms of compliance and energy benefits and further rollout is being considered. We have received approval from NIEA following our Odour Control proof of concept trial at North Coast WwTW. This proved successful with over £30k/annum energy benefits being realised and Business Cases have been approved for further rollout of this approach at Carrickfergus, Ballymena and Whitehouse WwTW's. We have also implemented WwPS pump optimisation work - to balance flows in the network arriving at the WwTW, this is being trialled at the North Coast area. The initiatives above contribute to our PC21 Energy Reduce Use target of £1.3m and after 2 years we are profiled to be ahead of target in terms of benefits realised.	G
DW 3C	**Increase the use of renewable energy in the public drinking water supply system.** NI Water should consider further opportunities to invest in renewable energy generation (e.g. solar panels & wind turbines) to reduce running costs at drinking water facilities. NI Water should also consider generating renewable electricity through innovative management of drinking supply systems (e.g. generating hydro-power from excess water mains pressure). NI Water should consider the business merits of investing to save in other innovative areas of sustainability which can be employed in its business and to strive to increase the use of renewable energy in the public water system by also exploring the purchase of renewable energy.	NI Water have taken part in discussions with Scottish Water whom already have introduced pressurised hydro power across different assets. NI Water to use information from study to develop a plan for next steps for hydro and pumped hydro.	G

DW 3D	**Reduce the amount of chemicals used in the drinking water treatment and supply systems.** NI Water should minimise the amount of chemicals used in the drinking water treatment and supply systems by improving raw water quality through natural means such SCAMP and also by improving the water supply system to minimise the amount of chemicals needed e.g. orthophosphate. Initiatives, such as weed-wiping, should be further investigated and promoted in the agricultural industry to improve raw water quality.	A wide range of sustainable projects have been undertaken by the SCAMP team with multiple benefits and objectives, including the reduction of chemical usage in the water treatment process. These projects are planned to be completed in a programme throughout the PC21 period. Four weed-wiping projects have been completed and consideration is being given to future projects. This is in addition to the extensive INTERREG Source To Tap project which is led by NI Water and also involved pesticide initiatives including weed-wiping in the Derg catchment.	G

Flood Risk Management and Drainage			
Policy	**FRMD Aim 1: Deliver Sustainable Flood Resilient Development**	**Update on Delivery**	
FRMD 1A	**To ensure land-use planning decisions are informed to help minimise flood risk.** NI Water should put appropriate resources in place to effectively fulfil its legal obligations. Separate storm sewers should not be connected to the combined sewer system, where there are viable alternative options for managing surface water. NI Water should also ensure it has an appropriate system in place to effectively implement its powers in respect of consideration and suitability of SuDS when considering wastewater connections.	NI Water has resources in place to fulfil its statutory planning obligations. Competent advice is provided relating to flood risk and other impact potential recommending caution in planning determinations where flood risk exists or potential is not properly understood . In alignment with legislative powers incorporation of SuDS within new development site adoption agreements is now 'Business as Usual'. Separated storm sewerage is default design requirement for all new management of surface water.	B
FRMD 1C	**Sustainable Drainage Systems (SuDS).** NI Water should put appropriate resources in place to ensure that: (i) Sewers for Adoption (NI) remains relevant and reflects new and emerging policies; and (ii) it continues its work with the Department and other stakeholders, including councils, to promote the use of SuDS and to establish clear working procedures for implementation.	NI Water remains available to DfI Stormwater Management Group and policy development. NI Water is currently responding to DfI's consultation on 'Flooding and Sustainable Drainage'. NI Water remains committed to examining and adopting new policy in respect of sustainable drainage.	A
FRMD 1D	**Design for drainage exceedance to be incorporated into all new drainage infrastructure.** NI Water should put appropriate procedures and resources in place to ensure 'design for exceedance' requirements in Sewers for Adoption (NI) are effectively implemented in new developments.	Design for Exceedance' is incorporated within new development adoption agreements where proposals are expected to demonstrate good design in respect of overland flow path and water egress location etc.	B
Policy	**FRMD Aim 2: Manage the Catchment to Reduce Flood Risk**	**Update on Delivery**	
FRMD 2A	**Effective regulation of reservoir construction and maintenance.** NI Water should comply with the provisions of the Reservoirs Act 1975 on a voluntary basis, in respect of its impounding and service reservoirs, until such time as the Reservoirs Act (Northern Ireland) 2015 is fully commenced.	NI Water does comply with the provisions of the Reservoirs Act 1975 on a voluntary basis, in respect of its impounding and service reservoirs and to that end has commenced regular inspections of the 44 impounding reservoirs. This is completed by a team of 12 inspection officers . (2 more are due to start in May 2023). Section 12 examinations are happening bi-annually by the Supervising Engineers (AECOM) and 10 yearly by the All Reservoir Panel Engineer. Works are ongoing at multiple reservoirs across NI Waters portfolio as a result of the previous Section 10 reports and this will continue over the next year. NI Water have commenced inspections of potential controlled service reservoirs aligned with our cleaning programme. These inspections will provide maintenance matters and matters in the interest of Safety (dictated by the all reservoir panel engineer) which will be addressed by a capital programme ensuring we retain Responsible Reservoir Manager Status. Section 12 examinations were carried out at 12 Service reservoirs. This inspections are annually with Section 10 Inspections carried out every 10 years. NI Water now has a fully accredited Supervising Engineer as a full-time member of staff.	B
FRMD 3B	**Provide Sustainable Integrated Drainage in Rural and Urban Areas.** To help deliver this policy NI Water will:- (i) work with the Department and NIEA (amongst other stakeholders) and utilise evidence from its Integrated Environmental Modelling (IEM), DAPS and SWM tools and to identify and implement stormwater separation and infiltration reduction schemes to address unsatisfactory intermittent discharge (UIDs), pollution incidents, out-of-sewer flooding, surface water flooding and providing capacity for development (ii) contribute to any future development and implementation of sewerage recommendations and policies arising from the Stormwater Management Group in relation to future sustainable drainage systems.	Integrated Environmental Modelling is incorporated within the Catchment Based Outcomes working group of Wastewater Regulation Reform. NI Water is working in close collaboration with NIEA and other stakeholders to produce evidence to recommend appropriate development of regulatory policy. NI Water's objectives within Drainage and Wastewater Management Plan aims to utilise SWM tools including sustainable drainage to alleviate flood risk and/or development constraint pressure. NI Water remains available to DfI Stormwater Management Group and policy development.	G

FRMD 3C	**Manage 'private' drainage systems to reduce the risk of flooding.** To help mitigate the impacts of PDI, NI Water will be expected to: (i) continue to work with the other drainage organisations (DfI Rivers or DfI Roads) through FIPG, and other fora, to identify PDI to ensure a complete and up to date dataset is maintained ; (ii) include funding and resources for LWWP, DAPs, IEM and FIPG purposes to address impacts to the network arising from PDI ; and (iii) contribute to any future development of policy in this area.	NI Water has provided a response to DfI consultation on 'Flooding and Sustainable Drainage' and continues to be available to DfI Stormwater Management Group and Flood Investigation Planning Group (FIPG) or similar group as determined by current DfI review, for the development and uptake of new policy. NI Water continues to work with DfI LWWP to assess opportunities for blue / green infrastructure within Stormont Estate.	G

Policy	Improve Flood Resistance and Resilience in High Flood Risk Areas	Update on Delivery	
FRMD 4A	**Develop and maintain accurate information on flood risk** NI Water must make progress towards the delivery of measures set out in the Executive's FRMPs (2021-27) and also contribute to the development of the next cycle of flood risk management planning for the 2027- 2033 period.	NI Water continues to be a member of the Floods Directive Technical Stakeholder Group (FDTSG). NI Water presented to FDTSG (31/08/21) in relation to measures (Enhanced DAPs) and provided prioritised programme to support final FRMP (13/10/21), NI Water continue to deliver to provided programme.	B
FRMD 4C	**Reduce the number of properties at risk of sewer flooding.** NI Water should continue to reduce the number of properties at risk of internal and external out-of-sewer flooding to meet the associated annual target set by the Regulator and continue to invest in its various education campaigns, including messages being delivered through online, web and social media, to ensure that the public is aware of the impact its actions have on the sewerage system.	NI Water is maintaining a register of properties at risk of internal (DG5) and external flooding. The register has developed in confidence in the intervening time with an established system of additions, investigation of root cause and removal by company action or other means now in place and informing the PC21 investment. Other corporate tools are being introduced to complement this work including sewer risk model and capacity mapping.	B
FRMD 4D	**Deliver a programme of integrated surface water drainage schemes to alleviate flooding.** (i) NI Water must broaden the scope of drainage area plans to be integrated by incorporating surface water management and integrated drainage design for exceedance in line with current UK best practice for Drainage and Wastewater Management Planning, the preliminary NI Integrated Drainage Investment Planning (IDIP) Guide and any future guidance issued by relevant bodies. Surface water management measures should be quantified and coordinated appropriately with the Integrated Environmental Modelling framework to assess the environmental impact of such measures in a drive to achieve Northern Ireland's Long-Term Water Strategy sustainability goals. To help deliver these polices NI Water must:- (ii) work with the Department, Councils and other stakeholders to develop and implement the sewerage aspects of integrated drainage schemes to manage surface water flooding in urban areas (incorporating storm drains, SuDS, sewers and watercourses); (iii) develop and implement a prioritised programme of Integrated Environmental Models (IEMs) / Drainage Area Plans (DAPs), targeting the 12 Areas of Potential Significant Flood Risk (APSFR), as appropriate, including assisting in the development of integrated drainage modelling in specific locations on a case by case basis, where this has been identified as necessary through the preliminary NI IDIP Guide; (iv) progress integrated Drainage Area Plans and associated surface water management measures identified through the FRMPs; and (v) prioritise any work identified through the Flood Investment and Planning Group (FIPG). Through the Flood Investment and Planning Group (FIPG), NI Water should:- (vi) continue to contribute to the key functions of the FIPG; (vii) help to deliver a programme of integrated surface water drainage schemes to alleviate flooding: (viii) continue to assist in the development of integrated flood modelling in specific locations on a case by case basis, where stakeholders agree that this is necessary; and (ix) consider if the budget for 'integrated' DAPs could also potentially be used to fund any NI Water works identified through the FIPG.	NI Water continues to be a member of the Floods Directive Technical Stakeholder Group (FDTSG) and Flood Investment and Planning Group (FIPG). NI Water presented to FDTSG (31/08/21) in relation to measures (Enhanced DAPs) and provided prioritised programme to support final FRMP (13/10/21), NI Water continue to deliver to provided programme. NI Water is progressing its programme of Integrated Environmental Modelling on a prioritised basis. NI Water continue, subject to funding from DfI, to develop Integrated Drainage Models for identified Living With Water Programme (LWWP) areas. NI Water is also supporting the development of a Strategic Drainage Infrastructure Plan for Derry as part of the LWWP.	B

Policy	Be prepared for extreme weather events	Update on Delivery	
FRMD 5C	**Effective flood emergency planning and delivery structures**. NI Water is a key member of the Floods Strategy Steering Group (FSSG) and Civil Contingencies Group Northern Ireland (CCGNI) and should continue to contribute to delivering the group's key functions including a coordinated response from Government during flooding incidents and effective emergency planning,	NI Water has a well-developed Major Incident Plan that provides a fully planned reactive response to all types of emergency incident including out-of-sewer flooding. An audit of NI Water's emergency planning arrangements is completed by an independent Certifier annually and an Audit Report submitted to the Department for Infrastructure's Water & Drainage Policy Division. NI Water continues to contribute to several multi-agency flooding and severe weather planning groups (along with the other main drainage agencies, DfI Roads and DfI River) including: • The Flood Strategy Steering Group (FSSG) (led by DfI Rivers); • The Flood Investigation Planning Group (FIPG) • The 'Regional Community Resilience Group' (RCRG); • Three, sub-regional, Emergency Preparedness Groups (EPGs) (North, South and Belfast); • The three EPG Flooding and Severe Weather Planning Groups and; • The EPG Communications' working group. The Company is represented on the principal strategic emergency preparedness body for the public sector in Northern Ireland, the 'Civil Contingencies Group (NI)', and continues to keep pace with wider developments through involvement with UK water industry emergency planning groups.	B

Environmental Protection and Improvement			
Policy	**EP Aim 1: Sustainable Environmental Policy and Regulation**	**Update on Delivery**	
EP 1A	**Sustainable environmental policy.** NI Water should continue to place greater emphasis on longer-term planning, to allow more time to develop and implement sustainable shared solutions and factor in climate change predictions on the future quality and quantity of raw water. This approach will help to deliver the objectives of the Northern Ireland Climate Change Adaption Programme (2019-2024). A primary platform for this is the Integrated Environmental Modelling framework, which assesses the impact of NI Water's assets on the receiving water quality.	A pilot study in the Clay Lake drinking water catchment is underway to ascertain the pollutant load and its impact on raw water intake which may be developed into further drinking water catchments which will take account of climate change predictions. This is with a view to holistic catchment benefits whereby changes to farming practices can lower drinking water treatment costs but also improve water quality across Northern Ireland.	G
Policy	**EP Aim 2: Sustainably Manage the Catchment to Improve Water Quality**	**Update on Delivery**	
EP 2B	**Sustainable catchment management to reduce pollution.** NI Water should continue to improve compliance with discharge consents regulated by NIEA and through its Integrated Environmental Modelling Programme has initiated stakeholder partnerships addressing other sources of pollution and priority pollutants, with a view to catchment-based connecting of NI Water assets that are impact and evidence based.	IEM PC21 modelling programme has been initiated and will complete all studies by 2025 in preparation for PC27 business planning. The modelling will help derive catchment based solutions targeting the key sources of pollution which impact water quality status across NI from all pollution sources including the agricultural sector. In conjunction with both internal and external stakeholders the IEM team are focused on cross departmental collaboration and several working groups have been setup to ensure information flow, strategic policies are aligned and collaboration is the fore front of decision making.	G
Policy	**EP Aim 3: Effective and Efficient Wastewater Collection and Treatment**	**Update on Delivery**	
EP 3A	**Educating consumers to prevent inappropriate items entering the sewerage network.** NI Water should continue its education programmes/campaigns and partnership working with environmental stakeholders to raise awareness of important issues. NI Water should also develop and implement new public awareness campaigns such as plastic pollution and seek to incorporate its Corporate Social Responsibility (CSR) activity when forging relationships with environmental stakeholders. In addition, NI Water should also carry out research to identify more sustainable alternatives to orthophosphate treatment and how best to reduce the amount of nutrients entering the wastewater system and alternatives to orthophosphate should be used, if they become available. Integrated Environmental Modelling may assist as part of the emerging approach.	The NI Water Educational team have during this period visited schools (Primary and Secondary) delivering talks/presentations on our key Bag it & Bin it messages such as flooding, pollution with a focus on the fats oils and grease message and what should & should not be put down the loo and sink. The team also attended and delivered community talks/events during this time. These visits were highlighted through a PR programme which issued information on the visit and relevant photographs to regional papers. We continue to communicate key Bag it and Bin it messages via an extensive PR and advertising campaign using TV/radio/print/social media.	G
EP 3B	**Efficient, effective and compliant wastewater treatment.** NI Water should continue with its catchment-based approach to wastewater treatment and conveyance, utilising its various modelling tools to inform project appraisals to deliver optimum long-term benefits. This will be done in conjunction with local councils to identify where wastewater treatment works need to be upgraded, to minimise areas where economic growth has to be restricted. NI Water should continue to explore sustainable wastewater treatment solutions to reduce treatment costs and improve compliance. NI Water should also continue planning for a new sludge disposal strategy and work closely with NIEA to develop and implement a WwTW flow metering plan.	NI Water is developing its approach to catchment based wastewater services, flow metering and overflow monitoring in collaboration with NIEA and under the oversight of Wastewater Regulation Reform. Prioritisation of wastewater treatment works upgrades including compliance risk and development constraint is delivered via NI Water business planning and liaison with Council is provided. NI Water seeks to extend its options for sustainable wastewater treatment and has recently restructured its asset management section to include dedicated research and innovation resource. NI Water has substantially developed a new sludge disposal strategy which will continue to evolve its implementation plan targeted at 2032 when current contractual practice ends. During this time NI Water will also explore business improvement opportunities in existing sludge management. NI Water continues to pursue and consider sustainable treatment technologies. A new site using willows has just been commissioned in conjunction with AFBI. Accelo-Fac and Phragmafitre technologies are being considered for several sites.	G

EP 3C	**Reduce unsatisfactory discharges from the public sewerage system.** NI Water should continue to implement a long-term investment programme to address unsatisfactory intermittent discharge (which should initially be identified through Integrated Environmental Management and drainage studies) and a programme of flow monitoring at combined sewer overflows and emergency overflows, to identify problematic overflows, on the basis of prioritising the environmental needs of the receiving water. NI Water's focus should also be on deploying sustainable treatment solutions, like SuDS, within Drainage Area Planning, wherever possible, to reduce pressures on sewerage systems before discharge into the environment.	For PC21 the intention is to focus investment on flow measurement at CSOs to understand the magnitude of the problem. No investment has been included in the plan for sustainable treatment at overflows. Monitoring programme for CSOs/EOs, which have been prioritised initially on designated bathing and shellfish waters, was taken forward within PC15. To date 279 have been completed. The second phase of this is being taken forward within the PC21 Business Plan. NI Water has installed 83 monitors in 2022/23. Major work will be taken forward within PC21 to address the maintenance, reporting to NIEA and further upgrades to the telemetry system to accommodate these new assets, which will enable other parts of NI Water to use this information.	G
EP 3D	**Sustainable and compliant private sewers and treatment systems.** NI Water should continue to collaborate with NIEA to address environmental pressures related to private sewerage infrastructure, septic tanks and misconnections between the sewerage system and stormwater drains. NI Water should also continue to work with the Department on preliminary work to identify further policy needs in this area of misconnections.	A strategy has been put in place to address the misconnections in conjunction with NIEA/DFI. NI Water is currently responding to DfI's consultation on 'Flooding and Sustainable Drainage' which also contains inquiry in relation to new powers for NI Water to effect remedial action on misconnections.	B
Policy	**EP Aim 4: Maintain sustainable levels of water in the environment**	**Update on Delivery**	
EP 4A	**Protect water resources through effective regulation and enforcement.** NI Water should work with NIEA to help it to review the effectiveness of drinking water abstraction processes and complete a review of NI Water abstraction licences.	As highlighted within DW 2C there is ongoing work with NIEA AIL team to review abstraction licences which is managed as BAU. This includes the delivery of the PC21 Abstraction flow monitoring project in PC21.	B

Water and Sewerage Services			
Policy	**WSS Aim 1: Provide efficient and affordable water and sewerage services**	**Update on Delivery**	
WSS 1B	**Manage future costs through innovative management of assets and infrastructure.** NI Water should continue to prioritise maintenance needs over enhancement; keep the Capital Appraisal Guidance under review to ensure the right sustainable solutions are delivered; improve systems and processes associated with gathering asset information to inform investment needs; continue to deliver the company's Research, Development and Innovation Strategy; and invest in new technology and systems that improve operational efficiency and performance, as well as reducing future operational or maintenance costs. Integrated Environmental Modelling should assist in this regard.	As per the PC21 submission NI Water will continue the current water and sewerage investment policy of prioritising maintenance needs over enhancement. However it should be noted the increased pressure from growth especially in relation to the Sewage network. The consequence of this is a direct limitation on the availability of sewerage services to new development. The Capital Appraisal Guidance is regularly reviewed to ensure the right sustainable solutions are delivered as BAU In relation to improved systems and processes associated with gathering asset information to inform investment needs there has been a recent restructure within Asset Management including the introduction of a new role 'Head of Asset Information' which has seen a re-focus on the importance of data which will drive improvements in PC21 and also help to inform PC27 Planning. In addition the RDI team has been expanded to two teams with one dedicated to Sewage and the other Water. This has seen improvements in a number of areas including the development of WTW Pilot Plans which are being used to establish the most robust, economical solutions for improvements at our WTWs. Integrated Environmental Modelling will have limited if any input to this action.	B
WSS 1C	**Transform water and sewerage assets and infrastructure through sustainable solutions.** NI Water should continue to deliver its long-term strategy to transform its asset base to be less energy intensive, explore opportunities to invest in and generate renewable energy, such as hydro-power and solar panels, to reduce running costs, carefully plan and manage project risks by considering trialling projects and also identify, and secure, sufficient land early in a project phase, to give the option for larger footprint solutions with lower operating costs, if appropriate. Integrated Environmental Modelling should assist in this regard.	NI Water are implementing process reviews and submetering at major waste water treatment assets to identify energy efficiencies in the configuration, control and operation of the waste water process.	G

Policy	WSS Aim 2: Provide high quality services to water and sewerage customers	Update on Delivery	
WSS 2A	**Provide high levels of service to all water and sewerage customers.** NI Water should continue to:- (i) adopt a risk-based approach to sustain current levels of drinking water quality compliance; (ii) reduce the number of properties that experience unplanned supply interruptions; (iii) resolve issues quickly and provide good communication to those customers that will be affected by both planned and unplanned supply restrictions; (iv) maintain a register of properties at risk of internal and external flooding and invest to remove all properties from this register in accordance with agreed levels of funding; (v) educate customers with important messages; (vi) achieve and maintain the sustainable economic level of leakage; (vii) maintain a register of properties at risk of receiving low pressure and invest to remove them from the register in accordance with agreed levels of funding; (viii) contribute to the development and delivery of an integrated drainage and wastewater infrastructure plan; and (ix) contribute to the development and delivery of Integrated Environmental Modelling (EMI).	(i) AS per DW 1D NI Water manages water quality risks from the water distribution system as per best practice. ; (ii) NI Water have implemented key initiatives from our Interruption to Supply (ITS) strategy, such as post Interruption reviews to establish key learnings; utilised water tankers in response to interruption to supply events and engaged extensively with internal and external stakeholders. We have reduced lost minutes per property for our customers by over 60%. We have provided emergency restoration trailers for each Field Manager area to increase our response capability e.g. the use of specialist equipment such as flexible hoses, pumps, cross-connections and mobile PRVs. We will continue to develop our processes to further reduce lost minutes per property and will be engaging with colleagues in WPL, Sitaware Team and IOC to implement new procedures into our normal ways of working. PC21 capital investment will support further reductions in supply interruptions, reducing the number of lost minutes per property, and improving the level of service to our customers. We have been investing in a SMART Network capital programme for PC21, and our aim is to maintain a CALM network, increase visibility on all our water assets and using our new digital tools and data analytics through our SMART network project to monitor and control our field operations giving us a holistic view of the network. (iii) As per WSS 3A NI Water use a number of communication channels. As well as the traditional channels we have embraced the use of Social Media and Webchat. We have also increased the scope of our text messaging offerings to provide good communication to those customers that will be affected by both planned and unplanned supply restrictions;. (iv) As per FRMD 4C NI Water is maintaining a register of properties at risk of internal (DG5) and external flooding. The register has developed in confidence in the intervening time with an established system of additions, investigation of root cause and removal by company action or other means now in place and informing the PC21 investment. Other corporate tools are being introduced to complement this work including sewer risk model and capacity mapping. (v) As per WSS 2C NI Water continues to educate the public on key campaign messages, through an extensive PR and advertising campaign. (vi) As per DW 3A Leakage targets and the leakage capital investment programme for PC21 have been agreed and are currently being implemented. (vii) As BAU NI Water maintain a DG2 register of properties at risk of receiving low pressure and invest to remove them from the register in accordance with agreed levels of PC21 funding; (viii) As per FRMD 4D continue to contribute to the development and delivery of an integrated drainage and wastewater infrastructure plan; and (ix) AS per FRMD 4D NI Water is progressing its programme of Integrated Environmental Modelling on a prioritised basis. NI Water continue, subject to funding from DfI, to develop Integrated Drainage Models for identified Living With Water Programme (LWWP) areas.	B
WSS 2B	**Maintain accurate information on water and sewerage assets, infrastructure and consumers' views**. NI Water should continue to collect accurate and reliable information on customer complaints, to provide actionable data and to take account of customers' views, which will inform future investment and to continue its research to inform investment plans and improve the accuracy, reliability security and consistency of information.	NI Water continue to collect consumer research through Voice of the Customer (VOC) surveys and an annual omnibus survey. Under our VOC programme we survey all operational customer contacts and discuss results monthly with Production Lines and Asset Performance. Our annual omnibus survey gains the opinions of the silent majority who have not contacted NI Water. The mop up work is coming to a conclusion with the small balance of any cases transferring into the Metering & Billing team. There are also new processes embedded into the function to monitor data quality and to prevent data regression.	B
WSS 2C	**Effective customer education and public awareness.** (i) NI Water should continue to assess the outputs of previous education and public awareness campaigns to enhance future proposals and develop effective partnerships with other organisations, where there are shared benefits of the campaign. (ii) NI Water should adopt a lead role in consumer engagement to promote the value of water. This should include working with stakeholders to set out a programme of work to improve consumer education and engagement, including pilots or trials to test the effectiveness of different approaches.	The NI Water education team have to date (01 April 22-31 March 2023) delivered 210 educational school visits on our key water efficiency messages to primary and secondary schools alongside 63 community visits. To complement these school talks, we delivered 171 water butts to schools and community gardens. We have also during this period organised a primary schools competition 'The importance of Peat Bogs' with a focus on how the protection and preservation of these unique habitats can not only enhance biodiversity and reduce carbon but can improve water quality and prevent flooding. The online water audit which was developed within the GetWaterFit platform is still offering customers the opportunity to discover their personal and household water consumption and associated carbon use. This tailored approach offers customers water efficiency advice and efficiency items such as four minute shower timers, toothy timers, save a flush bags and leaky loo strips delivered free directly to customers. An extensive advertising campaign including radio, outdoor and social media was also carried out during spring and summer 2022, concentrating on water efficiency in the garden and home.	B

Policy	WSS Aim 3: Provide high quality customer service and customer information	Update on Delivery	
WSS 3A	**Consistent, accessible and timely customer information.** NI Water should continue to keep customers informed with up to date information using a range of communication channels. NI Water should also investigate the benefits of new web and social media channels as an additional means of communicating with customers and should endeavour to enhance its customer self-service facility and seek to develop it to meet customers' needs and expectations and to improve their experience.	NI Water have delivered a full range of digital channels to communicate with our customers. Our Social Media and WebChat Team are available to handle customer enquiries 7 days a week from 08:00 and 23:00. We have also increased the scope of our text messaging offerings. The External Knowledge Base is continuously updated allowing customers to self-serve on a number of issues. We have also expanded the services available from our Self Service Portal with improved digital features to help our customers and employees. The Portal provides an enhanced customer experience with added functionality of simple to use and environmentally friendly processes. You can now apply online: • If you need a New Connection for water or wastewater to our network • If you are a builder and need a Sewer Adoption (Article 161) • If you are a business that needs to discharge trade effluent or a customer with an existing trade effluent consent. Customers can also Pay a Bill and Request a Septic Tank De-sludge through our Self-Service Portal.	B
WSS 3B	**Improving and measuring the customer experience.** NI Water should continue to seek to reduce the number of complaints received year on year, increase the number of contacts resolved at first point of contact by defining, measuring and using root cause analysis to improve customer experience and continue to work with stakeholders through the Consumer Measures and Satisfaction Working Group to implement agreed customer experience measures and continue to develop these measures through PC21 and consider benchmarking itself against other service providers.	NI Water have introduced 3 new customer measure in PC21: 1. Unwanted Contacts, 2. First Point of Contact Resolution, 3. Net Promoter Score (NPS). The targets against these measures have been set by the UR in the Final Determination and are reviewed and reported against on a monthly basis. Using our customer insights and data, we have developed a Customer Measures Programme to improve customer journeys, reduce contacts and ensure contacts are resolved first time wherever possible. Through membership of UKCSI, NI Water is continuing to measure its performance and benchmark against other utilities and organisations.	G
WSS 3C	**Helping vulnerable customers in the community.** NI Water should encourage equal access to its services by promoting and reviewing its Customer Care Register to support consumers in vulnerable and changing circumstances. The content and requirements of the Customer Care Register should be reviewed and updated in light of best practice emerging from the Regulator's Consumer Protection Programme and also from other utilities and service providers. NI Water should aim to achieve and sustain an appropriate number of consumer registrations on its Customer Care Register and the Regulator should set targets to increase customer awareness of NI Water's Customer Care Register and to measure the level of satisfaction of support provided to consumers in vulnerable circumstances.	NI Water continue to promote and review its customer care register. In 2022/23 our customer care register grew by 14%. We have a weekly Social Media Campaign, advertise in several relevant publications and in 22/23 commenced using paid social media adverts to further promote the register.	B
WSS 3D	**Efficient and effective processing of customers' bills.** NI Water should consider how it may best avail of new technologies to seek to improve the efficiency and accuracy of the 'meter to bill' process.	Customers who contact us by telephone are offered a Voice of the Customer survey, post contact. Where a negative score has been received we now proactively make an outbound call to the customer to better understand their reasoning for the negative scoring. We use the feedback provided to gain insight and drive improvement where required, with our colleagues across the business. Billing enquiries and written complaints are closely monitored through weekly reporting so trends / deviations are quickly identified and appropriate action taken if necessary. We are conducting a smart metering pilot with Queens University to assess the reliability of 3 different smart metering technologies which will in turn inform our smart metering strategy going forward.	G

Policy	WSS Aim 4: Provide resilient and secure water and sewerage services	Update on Delivery	
WSS 4A	**Improve the resilience of water and sewerage assets, infrastructure and systems.** NI Water should continue to assess the resilience of water and sewerage services, assets and systems to extreme weather events and other risks to inform future investment requirements. NI Water should review and continue the work already undertaken following the Regulator's Freeze Thaw and Industrial Action Reports. NI Water should also commence a programme of investment to improve and maintain the resilience of the wider water and sewerage asset base and system, prioritised as follows: (ii) water supply; (iii) prevention of internal flooding; (iv) prevention of pollution and odour management; and (v) manage surface water to protect people and property.	The PC21 plan includes a number of resilience programmes not limited to: - Resilience projects as included in the WR&SR plan which mitigate against Critical period events - New SR storage projects - Upsizing of strategic mains as informed by recent high demand events. - Surface Water projects as a result of the amended scope of the Drainage Area plan models scope being extended in PC15 - On-going programme of investment in PC15 for DG5 (Internal Flooding) & UIDs (Prevention of pollution)	B
WSS 4B	**Effective incident planning and preservation of services.** NI Water should maintain and review the effectiveness of emergency plans, systems and processes to preserve service delivery during a major incident, continue to educate and increase public awareness about the importance of insulating supply pipes to prevent bursts and leakage during freezing conditions and ensure water and sewerage assets and infrastructure are safe. It must comply with any guidance issued by the Department.	NI Water has a responsibility under Article 295 of the Water and Sewerage Services Order 2006 to meet the requirements of 'The Preservation of Services and Civil Emergency Measures (Relevant Undertaker) (Northern Ireland) Direction 2010' (PSCEMD). The Department requires NI Water to confirm that all requirements of the Direction are being met by annually submitting the following to DfI:	B
Policy	**WSS Aim 5: Utilise NI Water assets to provide wider benefits for the Environment and the Community**		
WSS 5A	**Manage the NI Water estate to promote recreation, biodiversity and cultural heritage.** To help deliver this policy NI Water should:- (i) develop and implement a long-term estate management strategy; (ii) permit access to its land/assets to facilitate recreational activities, where it is safe to do so and financial resources permit; (iii) look for opportunities to enhance or restore biodiversity within its estate; (iv) continue to develop partnerships to deliver sustainable catchment initiatives; (v) continue to implement its Biodiversity Action Plan; (vi) adopt and implement the Protocol for the Care of the Government Historic Estate; and (viii) develop a long-term plan to bring its assets, covered by this, up to a suitable standard and maintain them going forward.	• NI Water Recreation and Access implementation of policy and guidance now belongs to the Safety, Health and Environment Team. • Catchment Team continue to assist in R&A applications for public access to landholding • Catchment Team continue to work with Lands Team to develop a better digital understanding of NI Water landholding • Catchment Team continue to work with many external stakeholder groups (High Mournes Working Group, Forever Mournes Partnership, various Wildfire groups at strategic and practical level) to jointly develop catchment management measures • Catchment Team continue to work with many external stakeholder groups (High Mournes Working Group, Forever Mournes Partnership, various Wildfire groups at strategic and practical level) to jointly develop catchment management measures • Catchment Team continue to work NIW colleagues to develop corporate Biodiversity Strategy • Catchment Team continue to work developing new partnerships with eNGOs to deliver catchment initiatives.	G
WSS 5B	**Using surplus water and sewerage assets to provide recreational benefits for the community.** NI Water should progress the assessment of 'unused' reservoirs to determine the approach to disposal, develop a policy to ensure surplus water and sewerage assets with recreational value are transferred within the public sector, where appropriate, and ensure that future NI Water Estate Management Plans align to Executive policy on disposal of assets, including Community Asset Transfer.	Complete	B

Policy	Information and Security		
IS	(i) NI Water must comply with the requirements of the Networks and Information System (NIS) Directive on cyber security and the requirements of the General Data Protection Regulation (GDPR), which both came into force in May 2018; (ii) NI Water must have in place arrangements to protect its business critical assets and information. The fast pace of the risks from, and understanding of, cyber threats means that NI Water must constantly review and revise its practices against increased cyber security threats in line with advice from Defra, as the lead government department for the water sector, together with the Centre for the Protection of National Infrastructure (CPNI), the National Cyber Security Centre (NCSC) and Competent Authority while ensuring its infrastructure and assets are safe and secure; (iii) Security measures on assets must be upgraded and maintained to meet required standards as laid out in the Preservation of Services and Civil Emergency Measures Direction and associated guidance; and (iv) Agreed security and emergency standards for physical security, personnel security and cyber security must be followed. NI Water must ensure that all Critical National Infrastructure (CNI) sites continue to meet the latest security advice, and security issues identified at other sites, to bring them up to the required standard. During the PC21 period, it should continue with training staff to respond to major incidents in line with emergency guidance and protocols.	NI Water will continue to have appropriate systems and procedures in place to monitor PSCEMD compliance. Arrangements in place include the annual PSCEMD and CNI site audits. Regular liaison with CPNI, NCSC and the competent authority will ensure policies and practices are reviewed and revised as required. NI Water continue to implement technical and people and process controls driven by the Cyber Resilience Programme in order to improve security as required by the Networks and Information Systems (NIS) Regulations. These new initiatives will enhance the already established cyber defences in protecting NI Water infrastructure and assets, including CNI sites, from cyber-attacks. The Cyber Resilience Programme is a multi-year, multi-million pound investment. NI Water is also cognisant of the requirements of GDPR.	G

Annual Information Return 2023

Section 3

Level of Service Methodologies

Northern Ireland Water

Level of Service Methodology

DG2 - Pressure of Mains Water

This document has been laid out in accordance with the guidance provided by the Utility Regulator in the Annual Information Return Reporting Requirements 2018: Section 7 – Levels of Service Methodology Appendix

DG2 – Pressure of mains water

1. **Methods and procedures**
2. **Extract from DG2 register**
   - provide an extract from DG2 register
3. **Sources of information**
4. **Scope and coverage**
5. **Assumptions and exclusions**
   - including any assumptions made for surrogate for the reference level.
6. **Other issues**
   - provide any further information on issues that have arisen in the report year that impact on your methodology for reporting in the Annual Information return.

The procedure for the investigation and recommendation for removal and addition of properties to the DG2 Register is based on the 'DG2 NIWL Procedures April 2010' document produced by the Leakage Data Management Unit. The objectives of the investigation are as follows:

i. Removal/Addition of DG2 entries on the register as a result of more robust data being available (Better Information).
ii. Removal/Addition of DG2 entries resulting from 'capital interventions' and 'operational improvements' (Company Action).
iii. Investigation of customer 'Low Pressure' complaints.

1. Methods and Procedures

Investigation of customer 'Low Pressure' complaints

Where low pressure complaints have been identified through the contact centre, the process of action is as follows:

- Contact Centre informs customer of known network planned or unplanned events in the area or determines if problem may be with customer supply only
- The first responder visits the property to determine if their pressure is a legitimate complaint. If the pressure at the property is assessed as being a potential DG2 issue, the complaint is passed to the Water Modelling Team for investigation

The Water Modelling Team undertakes a DG2 Investigation (see below) and additions and removals are processed accordingly. Any amendments to the DG2 Register are now captured on NIW's ESRI Portal allowing all departments within the business to access and view the current DG2 Register in relation to any customer contacts.

DG2 Investigations

The objective of a DG2 site investigation is to acquire the necessary data to allow a more detailed assessment to be carried out. The 2 key elements of this investigation are the logging of the water pressure and the gathering of accurate height data for both the logging point and DG2 property connection point (also known as the ferrule location). In keeping with 'DG2 NIWL Procedures April 2010' the following procedures are followed:

- Logging points are identified within the network, which do not exceed 250m in distance from the DG2 stopcock
- The logging points are within the same DMA/PMA as the DG2 property
- A unique logger ID is clearly assigned to the logging point

- An accurate elevation of each logging point is provided using GPS. The logger transducer level is measured as a dip from the cover level
- Boundary polygons around the pressure logger location are created using a 250m radius to allow the associated properties to be assigned to the relevant logger
- A pressure log and elevation may be taken in adjoining DMAs. This is to assist in identifying any potential for a BV change to improve the pressure at the DG2 property or to help validate the hydraulic model for any further solution engineering
- A new ferrule elevation is produced for each property using NIW's Supply Points and Connected Properties, both of which are GIS layers. The ferrule point elevation is used to determine the pressure at the ferrule point which is calculated using the Total Head at the pressure logger location

Due to the rural nature of some DMAs it is not possible in some exceptional cases, i.e. groups of DG2 entries within individual DMAs, to undertake logging within 250m of the DG2 property as set out in the NIW methodology. In these instances a field visit is undertaken to identify suitable locations that can be logged (e.g. stopcocks) within 250m of the DG2 property. If no suitable locations are identified an alternative approach is to pressure log a number of Fire Hydrants to enable an accurate pressure profile of the DMA to be established, supported by the hydraulic models.

Updating DG2 Register

Following field testing, all data is analysed and the findings are proposed as :

1. The addition/removal of DG2 properties due to 'better information'
2. The removal of DG2 properties resulting from 'capital interventions' or 'operational improvements'

If the data collected verifies that properties that are in receipt of a pressure >15m, then the DG2 properties are recommended for removal. Properties removed are supported by a DG2 analysis including logged data.

Those properties identified as being in receipt of a pressure <15m remain on the Register as supported by a DG2 analysis including logged data.

Additional properties within logging areas determined to be in receipt of pressure <15m are recommended for inclusion on the register as supported by a DG2 analysis including logged data.

DG2 Interventions

A DG2 Investigation Report (DIR) is undertaken for all interventions to verify that the DG2 problem is satisfactorily resolved before the DG2 property can be removed from the DG2 Register. A DIR is required for both 'capital interventions' and 'operational improvements.'

The outputs of the DIR include a table showing the following information for all properties included in the analysis:

- property address
- Total Head
- ferrule elevation and calculated pressure
- property elevation and calculated pressure

The outputs also include a detailed map showing the following information:

- Pointer Property data showing UPRN reference at each property (NIW receives biannual updates from Ordnance Survey Northern Ireland)

- Water pipes, fittings i.e. SVs, Fire Hydrants (FHs), terminating nodes etc.
- DMAs and PMAs
- Background Vector maps
- Pressure logging points

The Water Modelling Team update the DG2 Register based on the outputs from the DIR reports.

2. Extracts from DG2 Register

Table 1 overleaf illustrates an extract from the latest DG2 Register, using dummy addresses. Note that the UPRN is a unique identifier for every property.

Table 1 – DG2 Extract

UPRN	Status_Date	Status	Building_Number	Primary_Thorfare	Town	Postcode	County	DMA	Pressure	Pressure Type	Reason for addition/removal	X_Coords	Y_Coords
185000001	07/09/2022	In Register	[redacted]	[redacted]	Belfast	BT00 1AB	Antrim	Central	14.61	Surrogate	Pressure below the minimum requisite	290001	437001
185000002	07/09/2022	In Register	[redacted]	[redacted]	Belfast	BT00 1AB	Antrim	Central	14.65	Surrogate	Pressure below the minimum requisite	290002	437002
185000003	07/09/2022	In Register	[redacted]	[redacted]	Belfast	BT00 1AB	Antrim	Central	14.69	Surrogate	Pressure below the minimum requisite	290003	437003

Note that actual addresses have been replaced with dummy values.

3. Sources of information

DG2 Investigation Reports (DIRs) are available for all ‘capital interventions’ and ‘operational improvements’ and these include the relevant data and reports to validate changes to the DG2 register. These reports are available for reference if required.

4. Scope and coverage

The DG2 Register was refreshed in 2020 and 2021 and the ongoing maintenance of the DG2 register will continue through the addition of properties due to ‘better information’ and the removal of properties due to ‘company action’ supported by DIR reports.

5. Assumptions and exclusions

NI Water does not currently have in place a permanent pressure monitoring network and is not able to identify exclusions arising from intermittent network incidents or infrastructure changes. A permanent pressure monitor is being installed in each Pressure Managed Area during PC21, and these may be of use in the future for identifying DG2 exclusions. Assumptions for AIR are identified in the methodologies described above. A surrogate pressure of 15m has been used to identify DG2 properties.

Northern Ireland Water

Levels of Service Methodology

DG3 Supply Interruptions

This document has been laid out as follows:

1.0 OBJECTIVE & AIM

To identify the number of properties affected by planned and unplanned supply interruptions lasting longer than 3 hours, 6 hours, 12 hours and 24 hours.

The aim of the register is to allow verification and audit of the reported information for DG3 and to enable the identification of the properties affected. It should contain information on the timing, duration and cause of each interruption and sufficient information to enable all properties affected by interruptions lasting more than three hours to be identified. Therefore, the register should include:

- properties affected (by name and location or number and street);
- date and time of interruption;
- duration of interruption and time supply restored;
- cause of interruption;
- notice given; and
- the name of person responsible for entering records in the system.

The DG3 Interruptions to Supply Register is compiled and held by C&O Services in Westland House.

2.0 REPORTING REQUIREMENTS

The information to be reported within Table 2 of the Annual Information Return (AIR) is as follows:

2.1 Line Descriptions

Line	Description
5	More than 3 hours unplanned
6	More than 6 hours unplanned
7	More than 12 hours unplanned
8	More than 24 hours unplanned
9	More than 3 hours planned and warned
10	More than 6 hours planned and warned
11	More than 12 hours planned and warned
12	More than 24 hours planned and warned
13	More than 3 hours unplanned caused by third parties
14	More than 6 hours unplanned caused by third parties
15	More than 12 hours unplanned caused by third parties
16	More than 24 hours unplanned caused by third parties
17	More than 6 hours unplanned due to overrun of planned and warned
18	More than 12 hours unplanned due to overrun of planned and warned
19	More than 24 hours unplanned due to overrun of planned and warned

Note: Interruptions should be reported under each relevant time band so that the category for interruptions exceeding:

- 3 hours also includes all interruptions lasting more than 6 hours;
- 6 hours also includes all interruptions lasting more than 12 hours; and
- 12 hours also includes all interruptions lasting more than 24 hours.

Each interruption should be classed as a single interruption event and should be recorded under only one of the four categories of: unplanned or unwarned, planned and warned, unplanned caused by third parties and, unplanned or unwarned due to overruns of planned and warned interruptions. If there are a significant number of overruns between 3 and 6 hours, the number should be reported in the commentary.

Further guidance, if required may be found in the Annual Information Return Reporting Requirements & Definitions Manual 2015, Issue 1.0 – March 2015.

3.0 DEFINITIONS

3.1 Interruption

Supply interruptions are defined as when properties are without a continuous supply of water, whether planned or unplanned, warned or unwarned. A property shall be considered as without a supply when water is lost from the first cold water tap – taken as being **operationally equivalent to ≤3m pressure at the main (adjusted for any difference in ground or property level)**. This can be inferred from local logging, network modelling or a customer contact indicating a loss of supply which was caused by the company operation and has not been demonstrably restored. Multiple-storey buildings shall be considered on a case-by-case and floor by floor basis, with properties on a particular floor being considered as receiving the same pressure.

Supplies may be affected by other factors, for example, lower pressure through the flushing of mains, or restrictions on use. These are covered under the DG2 and DG4 procedures.

3.2 Duration

Duration is defined as the length of time for which properties are without a continuous supply of water.

3.3 Start Time Determination

Start time is when water is lost from the first cold water tap at a property – taken as being **operationally equivalent to ≤3m pressure at the main (adjusted for any difference in ground or property level)**.

In the event of applicable telemetry data or logging being unavailable, the time should be determined from the earliest of:

- As advised by “no water” contact from customer (where not due to a customer side issue);
- Indications from flow or pressure monitoring to infer a change in supply; or
- Verified modelled data (calibrated, maintained, reflective of the network at the time of the incident and validated with contemporaneous flow and/or pressure data).

The company shall gain confirmation by consulting complainants (if any) and/or customers at high points on the system.

3.4 End Time Determination

End time is when water is restored to the first cold water tap at a property – taken as being **operational equivalent to >3m head of pressure at the main**.

In the event of pressure logging being unavailable, the time should be determined from the latest of:

- As advised by notification from customer;
- Indications from flow or pressure monitoring to indicate return to normal supply conditions; or
- Verified modelled data (calibrated, maintained, reflective of the network at the time of the incident and validated with contemporaneous flow and/or pressure data).

It is the responsibility of the company to demonstrate that supply conditions have been restored and available to all previously affected customers from the time determined from the above. In the absence of physical evidence, the company shall gain confirmation by consulting complainants (if any) and/or customers at high points on the system.

The company shall apply the precautionary principle, using the start and finish times and the properties affected that will give the highest supply interruption value in the event of uncorroborated or conflicting data.

Note: The time on the customer's warning card is used to determine whether or not a planned and warned interruption overruns. It is not used to determine the End Time.

3.5 Event

Event is the term used by NI Water to describe its involvement in an abnormal occurrence in its services to customers.

3.6 Planned & Warned Interruption

This is where notice of an interruption (> 3 Hours) is provided to properties affected at least 48 hours in advance of the beginning of the interruption.

- If a planned and warned interruption commences before the Planned Start Time, the interruption is re-categorised as an unplanned interruption.
- If a planned and warned interruption commences after the Planned Start Time, the time between the planned start and actual start is not included in the duration.
- If a planned and warned interruption finishes before the Planned End Time, the time between the actual end and planned end is not included in the duration.
- If a planned and warned interruption finishes after the Planned End Time, the interruption is re-categorised as an unplanned interruption (overrun of a planned interruption).

3.7 Unplanned/Unwarned Interruption

This is when an unplanned or a planned and unwarned interruption to supply occurs. Properties receiving less than 48 hours' notice of a planned interruption (> 3hrs) are to be counted as 'unplanned' and reported under this category. Any planned interruption that is started before the planned date and time contained in the warning notice, whether this occurs within a 48 hour warning period or not, is also to be re-categorised as 'unplanned'.

3.8 Overruns

When a planned and warned interruption continues beyond the end of the warned time, for whatever reason and whether or not a customer has been advised during the shutdown that an overrun is going to occur, the interruption is described as an overrun and is reported separately.

3.9 Third party interruption

A third party is defined as anyone who does not act for, or on behalf of NI Water. This category is intended to cover damage to NI Water's mains or other equipment that directly or indirectly results in an unplanned loss of supply to enable the damage to be repaired. Where a third party interruption is not caused by a third party, but repair may be delayed by a third party, for example when a gas main runs close to a water main and needs to be isolated, the whole of the duration on the interruption must be reported as an unplanned interruption. Companies can describe this event in their commentary.

3.10 Electrical Failures

Interruptions to supply caused by electricity supply failures must be reported as unplanned, unwarned interruptions, and identified in the records as caused by electrical failure to enable the details to be included in the NIAUR Return commentary.

3.11 Properties affected by more than one interruption during report year

Properties, which are affected by more than one interruption during the report year, should be reported separately for each interruption. This means, for example, that a property affected by three supply interruptions would be reported three times, once for each interruption. Where properties are affected by repeat interruptions on the same day, these should only be counted separately where there is a minimum of one hour between the interruptions for the supply to be available (e.g. to refill storage tanks). When shorter gaps occur, the duration is counted from the start of the first interruption until the last restoration of supply.

4.0 PROCEDURE

It should be established before any work is carried out on site, which function is responsible for the collection of information for the interruption record. In general, whichever function operates the valves to cut off supply at the site of an interruption is also responsible for the collection and ownership of the information.

4.1 Planned Interruptions (lasting > 3 Hours)

Planned interruptions to supply arise as a result of work being carried out by different teams within the Customer & Operations Directorate or by functions within other NI Water Directorates. These have been identified as follows:

- Planned interruptions carried out by Networks Water (Distribution and Leakage),
- Planned interruptions carried out by Capital Asset Delivery and,
- Planned interruptions carried out by Developer Services, Metering & Billing.

Regardless of the source of the interruption to supply, all planned interruptions must follow the procedures for giving the appropriate warnings. Each team/function is responsible for collecting and recording all appropriate information to be included in the DG3 Interruptions to Supply Register.

All affected properties must be notified by letter, or card drop, at least 48 hours before the shutdown, notifying them of the planned times and dates of shutdown and the restoration of supply. A minimum of 48 hours warning must be given for planned interruptions greater than 3 hours. The start of the warning occurs when the last card has been delivered or the last letter sent to the properties affected.

If for example, there is estimated to be 500 properties to be warned, the card drop operation starts at 9.00am on 2nd July and finishes at say 2.00pm, then the warning period starts at 2.00pm for 48 hours and work should not start on site on the planned interruption until 2.00pm on the 4th July.

A copy of the letter of notification or the information contained on the card used in the card drop should be sent to the following for information – Customer Relations Centre Front Desk, Work Planning Unit, Telemetry Control Centre, Functional Manager and relevant Northern Ireland Fire and Rescue Service. For contact details see Appendix A.

The number of properties affected by a planned interruption should be determined by the most accurate means available at the time of:

a) planning activity;
b) the interruption; or
c) any subsequent more detailed investigation.

At the time of the initial assessment this is likely to be by property count or an estimate based on local knowledge. For recommendation for estimating numbers of properties, see paragraph 5.3.

4.2 Planned interruptions carried out by Networks Water

Field staff on site are to record all information on a paper pro forma, known as an Interruption Record Sheet (see Appendix D). The pro forma contains the raw data associated with the interruption and is retained for audit purposes. The information is also communicated to the Work Control Centre (during normal working hours) and the Telemetry Control Centre (outside normal working hours) where staff will already have opened an event on iNform - the Company's Incident Management System (IMS) and will use the information to update/populate the remaining fields associated with the event.

During the course of an interruption, field staff will continue to provide the WCC or TCC with regular updates on progress and the IMS event details will be updated accordingly. When the interruption has ended, the IMS event record will be closed with a status of 'Closed – DG3 Record Required' and the Field Manager responsible will review the details with the Field Technician and amend the information as necessary.

The following fields of information are required to enable an IMS Planned Interruption Event to be created:

- Cause
- Warning details
- Planned start / finish
- Public narrative
- Incident location / areas affected

The following IMS fields should be updated during the course of a planned interruption event:

- Estimated restoration time / date
- Actual restoration time / date
- Water sampler contacted
- Public narrative

4.3 Planned interruptions carried out by Capital Asset Delivery or Developer Services, Metering & Billing

Capital Asset Delivery and Developer Services, Metering & Billing use a combination of a paper pro forma (Appendix D) and an MS Excel spreadsheet template, known as a Contractor Return Sheet, to record the details of interruptions as the contractors that carry out the work for these departments do not have access to IMS. Each month, an appropriate member of Capital Asset Delivery or Developer Services, Metering & Billing will sign off the information to be recorded retrospectively on IMS. Details of the spreadsheet template can currently be obtained from C&O Services in Westland House.

IMS planned interruption events relating to Capital Asset Delivery should be created by Capital Asset Delivery staff in advance of planned interruptions taking place on site. The Warning Issued Date and Time, Planned Start Date and Time, Planned Restoration Date and Time, cause of interruption and properties affected are the only details that can be input in advance. This information will be used by staff in the CRC when providing updates to customers.

During the interruption, the contractor will record the details of the interruption, including the Actual Start Date and Time and Actual Restoration Date and Time, on an Interruption Record Sheet. The contractor will also summarise the information from the Interruption Record Sheets for each month in a Contractor Return Sheet. Contractor Return Sheets will be forwarded to Capital Asset Delivery staff who will use the details to update the IMS interruption event records. This task will be completed both monthly and retrospectively. A copy of the Contractor Return Sheets is also to be forwarded to C&O Services for incorporation in the monthly DG3 Composite Report.

4.4 Procedure for Ensuring that Customers Receive Adequate Notification in the Event of Planned and Warned Interruptions

Reference: The Water Mains Rehabilitation Framework Northern Ireland Guidance Note (GN07) - DG3 Interruptions Reporting for IMS October 2016

For a planned interruption to be classed as planned and warned, customers must be provided with at least 48 hours' notice in advance of the interruption to the water supply at their property. Therefore, if it is the Company's intention to interrupt the supply at 12 Main Street from 8am to 6pm on 8th June, the warning must be communicated no later than 8am on 6th June.

Contractors have a contractual requirement to provide customers with 48 hours' notice in advance of supply interruptions.

Guidance Note *GN7* provides detailed and comprehensive guidance on the required action to be taken by contractors in relation to the notification of customers of the planned intent to interrupt the water supply. The guidance note defines the roles, responsibilities, notification periods and procedures for planned and unplanned interruptions during and after normal working hours.

Contractors should ensure familiarity and compliance with the guidance note at all times.

Formal on-site verification process to ensure customers are receiving the minimum 48 hour notification

Each month, NI Water's WMRF Clerk of Works (CoW) will attend two notification card drops for each contractor, to witness the start of the notification period, i.e. when the last card/letter has been delivered.

The CoW will provide formal confirmation to NI Water's Asset Delivery DG3 Compliance Team of when the last notification was delivered prior to the start of the planned interruption.

The monthly audits carried out by the CoW will be collated into a report to be reviewed at quarterly WMRF Project Board meetings.

Any instances of failure to provide the minimum 48 hours' written notification will result in the following:

- the interruption will be designated and reported as 'unplanned'
- the contractor concerned will receive a formal written warning and a non-conformance report (NCR) will be issued which could impact on reduced work allocation going forward
- NI Water's Executive Committee will be advised of any failures.

4.5 Unplanned Interruptions carried out by Networks Water

The event trigger for an IMS unplanned interruption event to be created is 4 'no water' complaints in a single DMA within an hour, or when the WCC/TCC is informed by the Field Technician that the water is being turned off.

As defined above, unpredicted events such as mains bursts, or interruptions that are planned but where customers are not warned at least 48 hours in advance, are classified as unplanned interruptions.

Unplanned interruptions are mainly the responsibility of Networks Water and information should be recorded using IMS.

Following receipt of a 'No water/Burst main' complaint the Field Manager will investigate as soon as possible and provide 'status updates' to the Work Control Centre on the progress of remedial works. The Field Technicians on site will record all information on a paper pro forma (Appendix D) and the pro forma will be retained for audit purposes. The Field Technicians will also provide regular timely updates on the progress of such events to the Work Controllers, Duty Managers and Telemetry Operators. Details including the cause of interruption, the time the repair is commenced, the estimated restoration time and the time the repair is complete are to be recorded on IMS.

Area Managers may be made aware of interruptions other than as a result of customer calls. In such cases, the Field Managers should ensure that relevant details are passed to the WCC for processing.

Details input to IMS are to include the Interruption Start Time, as noted by the first affected customer, the time at which the supply was restored and whether or not a third party or an electrical supply failure was the cause.

The following fields of information are required to enable an IMS Unplanned Interruption Event to be created:

- Time of first call
- Estimated restoration time
- Public narrative
- Incident location / areas affected

The following IMS fields should be updated during the course of an unplanned interruption event:

- Public narrative
- Cause
- Mains type / material
- Repair commenced date / time
- Supply restored date / time
- All properties restored date / time
- Water sampler

Note: A record should be created for every burst main, even if the properties affected are zero as there is a requirement to record all bursts on DG3.

4.6 Unplanned interruptions carried out by Capital Asset Delivery or Developer Services, Metering & Billing

IMS unplanned interruption events relating to Capital Asset Delivery are created by WCC and TCC staff in the same way that other IMS unplanned interruption events are created. Sometimes, the contractor may be unaware that an unplanned interruption has occurred, for example, if the contractor forgets to open a valve. The IMS process ensures that such interruptions are captured by the Company. In cases where the contractor is aware of having caused an unplanned interruption, for example, a burst main, the contractor will provide details of the interruption in the Contractor Return Sheet.

4.7 Number of properties affected

An estimation using practical evaluation and contouring from NIW's GIS system will be used to give a more accurate estimate of drawdown of the system.

5.0 RECORDS

Overall responsibility for DG3 records lies with the Head of Water. However, the DG3 Register is compiled and held by C&O Services in Westland House.

Interruption records relating to Networks Water (Distribution and Leakage) are recorded on IMS. Interruption records relating to Capital Asset Delivery and Developer Services, Metering & Billing are also recorded on IMS but on a retrospective basis. As Capital Asset Delivery and DMB contractors do not have access to IMS, their details are initially recorded on an MS Excel spreadsheet template before being entered onto IMS by NI Water staff.

5.1 Interruption Recording using IMS

When an event is created on IMS, the event can be one of the following:

- Unplanned Interruption
- Planned Interruption
- Flooding
- Water Quality

IMS can be used to specify whether or not:

- an Unplanned Interruption event was caused by a third party
- a warning was issued for a Planned Interruption event
- the amount of warning was sufficient for a Planned Interruption event
- a Planned interruption event occurred during the planned time

In this way, IMS can be used to report on all four regulatory categories of interruption.

When all information has been entered onto IMS, the information is then extracted in the form of a report. A number of reports are available for selection including:

- RPT1151 – Historical DG3 Event Records Report,
- RPT1152 – Historical DG3 Property Records Report,
- RPT1155 – 'Live' DG3 Unplanned Interruption Records Report,
- RPT1156 – 'Live' DG3 Planned Interruption Records Report,
- RPT1183 – 'Live' DG3 Property Records Report,
- RPT1184 – 'Live' DG3 Event Records Report.

When an IMS interruption event record has been created and closed with the status of 'Closed – DG3 Record Required', it is then the responsibility of the Field Manager to review the record and to amend the details according to the information provided by the Field Technician and information obtained through the GIS polygon process. Once the Field Manager is satisfied that all amendments have been made, the record should be approved and passed to the Area Manager for review and approval and to the DG3 Customer Services Coordinator for review and approval. If the AM or DG3 CS Coordinator find any issues with the information, they have the option to reject the record.

Most of the information required will be able to be input directly onto the input screen and will probably not be altered. Some information e.g. house numbers and addresses will be initially estimated by the Field Technicians or the Field Manager. However more investigative work may be required to give an accurate number of houses. The interruption record can then be updated when this information becomes available. For procedures for obtaining house numbers and address see paragraph 5.3 below.

Area Managers and Field Managers are to ensure that all relevant details are recorded and input to the system as soon as possible, and any paper records or notification cards are retained for general audit purposes.
On-call staff are to gather all relevant information and report to the Networks Water Area Manager as soon as possible the next working day.

The following Audit Process is aimed at ensuring the timely completion of audit tasks and approval ahead of monthly reporting on DG3 to the Board.

DG3 / IMS Reporting / Audit Process

Action No.	Action	Date
IMS Report from the Field		
1	• WC opens a New Event in IMS when an event trigger is reached. • The IMS Event is updated by WC throughout the incident with information from Field Staff. • WC saves the event when the incident is closed in the field.	
2	• DG3 CS Coordinator sends the ***MTD Rapid No Water Complaints Report*** to the FM's on a Monday, Wednesday and Friday morning.	Every Monday, Wednesday and Friday morning.
3	• The ***MTD Rapid No Water Complaints Report*** lists all NIW No Water calls. • FM filters the report for his own area, sorts by date and DMA which then group calls. • The FM opens the IMS Report ***RPT1184 – Historical Report – DG3 Interruption Records.*** o Enter Start Date. o Remove tick from Null box. o Enter End Date o View Report. o Click Export Drop Down Menu o Export to Excel o Filter Report to own area. • The call groups are then checked against an ***appropriate DG3 Interruption Record*** and the Technicians, ***Interruption to Supply – Site Record***. • From the three reports the FM then adjusts, if required, and **Save** the IMS Report. • At this stage **don't Approve** to allow the event to remain with the FM until all audit checks are completed at the end of the month.	Ongoing throughout the week/month.
4	• The above process will be completed for each week of the month. • L4 will also check the IMS Event Report throughout the Month and raise queries as appropriate.	Ongoing throughout the week/month.
DG3 Reporting and Audit Process		
5	• DG3 CS Coordinator produces Draft DG3 KIP Report, ***DG3 Reporting – 081014.*** • Two tabs; o ***Unplanned >6hr Summary*** o ***AIR & KPI Reporting***	By 1st working day of the new month.

DG3 Reporting and Audit Process		
6	• Level 4 uses the above monthly ***Unplanned >6hrs Summary*** Report to identify a number of L4 Monthly Audit checks. • L4 meets with the Field Managers to arrange the Audit Checks.	1st working day + 1 day. 1st working day + 1 day
7	• Level 5 checks the monthly ***Unplanned >6hr Summary*** report for his area against IMS Events and adjusts as necessary.	1st working day + 1 day
8	• FM reports back to Level 4. • L4 approves/saves the audited Events in the IMS system.	1st working day + 5 days
Monthly Sign Off		
9	• L4 emails DG3 CS Coordinator that Monthly Audit checks have been completed.	1st working day + 7 days
10	• DG3 CS Coordinator produces ***DG3/Rapid Comparison Checks*** report. • This Zip file contains a number of reports; o Individual FM folders with DG3 ID Event files. o Comparison Checks Summary. ▪ Red/Amber/Green against start/finish/No. props o Properties not recorded on IMS. ▪ Used to check No. of prop queries.	1st working day + 8 days
11	• L4 discusses above report with FM's. • L4/FM's report back to DG3 CS Coordinator.	1st working day + 10 days

5.2 MS Excel Spreadsheet Template – Contractor Return Sheet

Planned interruptions undertaken by Capital Asset Delivery and Developer Services, Metering & Billing will most likely be carried out by a number of contractors. The Contractor's Representative should gather all appropriate information on a paper pro forma (Appendix D) and then transfer this information to the Contractor Return Sheet. The Contractor Return Sheets should be collated at the end of each week/month and signed off by an appropriate member of Capital Asset Delivery or Developer Services, Metering & Billing staff and sent to Services for inclusion into the DG3 Register. All pro forma should be stored by Capital Asset Delivery and Developer Services, Metering & Billing for Audit purposes. Details of the Contractor Return Sheet can currently be obtained from C&O Services in Westland House.

5.3 Property numbers and Addresses

It is a requirement of NIAUR that the numbers of properties and address details of properties affected by interruptions to supply exceeding 3 hours are recorded. The numbers of properties and address details should be determined by the most accurate means available at the time. This is likely to be by one of two methods.

a. Visual Property Counts

In the case of small-scale interruptions, a Field Technician may have sufficient knowledge to determine the number of properties affected by carrying out a visual property count. Details should initially be recorded by hand on a paper pro forma including location, type and cause of interruption, and 'valve off'/'valve on' times. Each week, the Field Manager should review the Interruption Record Sheets with his Field Technicians and the details provided should be used to update the IMS records.

b. GIS Polygons

In the case of large-scale interruptions, the number of properties affected by an interruption should be determined using a GIS polygon. A Map Redline Request should be submitted using the IMS DG3 Interruption Details page. Then in CARtomap (the Company's Corporate Asset Register/GIS intranet facility), a redline polygon should be drawn around the affected area and assigned to the IMS request which should appear in the dropdown list associated with the DG3 Areas Layer of the Water workspace (see Editing Menu). Back in IMS, the Map Redline Request should be updated to retrieve the address details of the properties within the polygon and hence, the number of properties affected.

Field Managers should base the redline polygons on the details provided by the Field Technicians. In the case of interruptions where rezoning is carried out, it may be necessary to obtain address details from within more than one polygon.

5.4 Records of Interruptions

In general, all interruptions to supply should be recorded. However, there are large numbers of very short interruptions to supply associated with Leakage-related activities and Developer Services, Metering & Billing. These interruptions are routine, inconsequential and last no longer than 30 minutes. Information about these interruptions is held by managers in Networks Water (Leakage) and Developer Services, Metering & Billing and is therefore not required for the DG3 Interruptions to Supply Register. Discretion should however be used in all cases. If difficulties arise or there happens to be an exception to the type of routine interruption referred to above that gives rise to an interruption that lasts for more than 1 hour then, this interruption should be recorded. Guidance on which interruptions should be recorded is to be given by Networks Water (Leakage) and Developer Services, Metering & Billing managers.

In general: Routine interruptions lasting less than 1 hour need not be recorded as part of the DG3 Interruptions to Supply Register except at the discretion of the Field Technician or Field Manager.

All interruption records entered onto IMS are to be approved by at least the Area Manager responsible by the 1st working day + 5 days, as per the Audit Process described earlier in the document. Interruption records belonging to Capital Asset Delivery and Developer Services, Metering & Billing should be sent to C&O Services by the same date.

- When a Field Manager approves an IMS DG3 record, an e-mail reminder is automatically forwarded to the Area Manager.
- When an Area Manager approves an IMS DG3 record, an e-mail reminder is automatically forwarded to the DG3 Customer Services Coordinator.

Automatic e-mail reminders to approve the DG3 records are sent to the DG3 Customer Services Coordinator on a monthly basis.

5.5 Historical records

All associated documentation is to be kept for seven years.

5.6 Audit Trail

The maintenance of audit trails is very important. During AIR audits the Reporter would more than likely want to investigate several interruptions and the associated documentation. It is therefore imperative that all records corresponding to individual interruption records, including pro forma, are stored locally for audit purposes.

5.7 Amendments to Information

It is recognised that the details entered at the time an IMS event record is created are estimates and that it may be necessary to update the details following the GIS polygon process. The IMS Internal Narrative should be used to record the details of any amendments, over and above those that occur as a result of the normal process of updating records. All amendments to the base data contained in IMS or information changed during the course of the development of the DG3 Composite Report File, must be supported by a detailed explanation.

6.0 REPORTING

6.1 NI Water Reports

IMS can be updated on a continuous basis, as and when interruption events occur, throughout the life of an ‘Active’ event, and after an event has been closed on the system and a corresponding DG3 interruption record has been registered. Monthly reports can be generated following the completion of quality assurance checks carried out by Area Managers. These reports are used by the C&O Services function to compile a DG3 Register for each month and corresponding KPIs.

The following reports are generated by C&O Services for Management Information:

- Monthly DG3 Composite Report including monthly DG3 Register
- Monthly DG3 KPI Report
- Annual DG3 AIR Table 2 Lines 5 to 19 Report (as defined by the Annual Information Return Reporting Requirements and Definitions Manual).

6.2 Development of the DG3 Register and KPI Report

As described above, interruption data for each month is extracted from the various data sources (IMS and Contractor Return Sheets) used by the various work streams (Networks Water (Distribution and Leakage), Capital Asset Delivery and Developer Services, Metering & Billing) and copied to a DG3 Composite Report File held by C&O Services at Westland.

Copies of the original records are retained in their unaltered state. The records are then sorted according to the four regulatory categories of interruption:

- Unplanned Interruptions
- Planned and Warned Interruptions
- Unplanned Interruptions Caused by Third Parties
- Unplanned Interruptions due to Overruns of Planned and warned Interruptions

and further sorted according to the four regulatory time bands:

- More than 3 hours
- More than 6 hours
- More than 12hours
- More than 24 hours

The interruption records are subject to a series of audit checks to ensure that the details have been captured in accordance to the regulatory guidance. For further information on the development of the DG3 Register, please refer to the DG3 LoS Methodology.

6.3 Regulatory Report

The Finance & Regulation Directorate will report to Northern Ireland Authority for the Utility Regulation (NIAUR) on an annual basis.

7.0 VOID PROPERTIES

Within NI Water, Asset Information Development (AID) is primarily responsible for ensuring the databases, systems, standards and processes are in place to support the Corporate Asset Register (GIS/Ellipse). According to the definition, a void property is a type of connected property. The GIS picks up the following twelve property types, including void properties:

- Approved Built
- Approved Derelict
- Approved Under Construction
- Candidate Built
- Candidate None
- Candidate Under Construction
- Historical Built
- Historical Derelict
- Historical None
- Historical Under Construction
- Provisional Built
- Provisional Under Construction

Unless AID is specifically asked to exclude void properties when running queries, their GIS address lists will include any of the property types listed above.

There is a delay in updating the GIS with property status information.

Relevant extracts from the Pointer 2.1 Specification can be found in Appendix E at the back of this document (Pages 22 to 26 of 31).

8.0 'NO WATER/LOW PRESSURE' COMPLAINTS

Within NI Water, CRC call agents adopt a specific line of questioning with the customer to establish the cause of complaint including complaints relating to low pressure and no water.

A copy of the latest CRC call scripts for handling low pressure/no water complaints can be found in Appendix F at the back of this document (Pages 27 & 28 of 31). Provided the customer provides an accurate response to the questions asked by the call agent, the risk of wrong classification should be negated.

Appendix A – DG3 Interruption to Supply - Roles & Responsibilities

Customer Relations Centre (Normal Hours)

- Log 'no water'/ 'burst main' complaints into RapidXtra system;
- Use IMS system to provide up to date information to customers;
- Use 'Operational Announcements' functionality to share information;
- Adhere to agreed communication routes.

Bretland Work Control Centre (Normal Hours)

- Create IMS interruption event records and close with either a status of 'Closed – DG3 Record Required' or 'Closed – DG3 Record Not Required'.

Work Planning Unit

- Normal hours – create a Work Order and inform area supervisor immediately;
- Update the Ellipse System following 'status calls';
- Ensure Work Orders are closed out.

Customer & Operations Directorate - Networks Water

- The Area Managers and Field Managers are responsible for the procurement of information for DG3 within Networks Water.

Developer Services, Metering & Billing

- Developer Services, Metering & Billing is responsible for reactive meter maintenance, proactive meter exchange and the installation of new meters. An interruption to supply to the property arises during the course of the installation.

Field Technicians

- Proactively provide regular timely updates on the progress of events (bursts, repairs etc.) to Work Control / Duty Managers / Telemetry operators:
  - Nature of the problem and any relevant details
  - Time repair commenced
  - Estimated restoration time
  - Repair complete;
- Provide any additional information to Field Managers to allow completion of the corresponding DG3 record e.g.
  - Polygon details
  - Rezoned properties.

Field Managers

- Inform Customer Services and Work Planners of planned interruptions providing details of area & number of properties affected and proposed duration of interruption;
- Assess extent of unplanned interruptions and organise remedial work;
- Inform Work Planners on completion of remedial work;
- Provide supporting information on number of properties affected and reasons for interruption.
- Ensure Field staff are adhering to agreed processes and communication routes;
- Review records created by Work Controllers:
  - Ensure start / finish times are accurate
  - Ensure property data is accurate & required fields complete;
- Review corresponding DG3 record for each event;
- Draw polygons, where required, and automatically link to IMS record;

Field Managers (continued)

- Sign off DG3 records for submission for approval by Area Manager;
- Update Major Incident records.

Area Managers

- Ensure Field Managers are adhering to the agreed process / timescales;
- Check / query records signed off by Field Managers;
- Sign off DG3 records for approval by DG3 Customer Services Coordinator.

Telemetry Control Centres (Out of Hours)

- Log 'no water'/'burst main' complaints into Work Planning (Ellipse) system;
- Create IMS interruption event records;
- Inform on call supervisor immediately.

Work Controllers / Telemetry Operators

- Create and maintain event records based on the information provided by Field Staff:
  - Interruptions to Supply (planned and unplanned)
  - Water Quality;
- Create and maintain event records for planned work;
- Close records at completion of events and apply appropriate DG3 status (required or not required);
- Monitor open incidents for records requiring action;
- Provide advice and guidance, if required, to Bronze users during Major Incidents.

DG3 Customer Services Coordinator

- Processes interruption information from Networks Water (Distribution and Leakage), Capital Asset Delivery and Developer Services, Metering & Billing;
- Checks, audits and queries records signed off by Field Managers;
- Compiles DG3 Interruptions to Supply Register based on data derived from IMS;
- Signs off IMS records and DG3 Interruptions to Supply Register for approval by Head of Water;
- Produces KPI reports for Management and AIR for Regulator.

Capital Asset Delivery

- Capital Asset Delivery is responsible for the rehabilitation of existing water mains and the installation of new water mains. Interruptions to supply arise as a result of connecting properties to the refurbished and new water mains.

Capital Asset Delivery Planned Works Coordinator

- Ensure that planned works affected > x properties / lasting > x time are entered on the system in advance;
- Ensure that planned works are updated if necessary (e.g. overruns, early starts);
- Close records at completion of events and apply appropriate DG3 status (required or not required);
- Ensure that planned works affecting < x properties / lasting < x time are entered on the system retrospectively and submitted for approval.

Networks - On-call Staff

- Assess extent of unplanned interruptions, update Duty Officer (if required) and organise remedial work
- Inform Networks Water Area Manager of actions taken and interruption details

Head of Water

- Approves the DG3 reporting elements of the Annual Information Return.

Regulation & Business Performance Section

- Submit Annual Information Return to NIAUR.

Emergency Planning Team

- Declare Major Incidents on the IMS system;
- Interrogate reports to provide status updates as incidents develop;
- Complete Upwards Reports based on data provided in IMS;
- Close Major Incidents on IMS system.

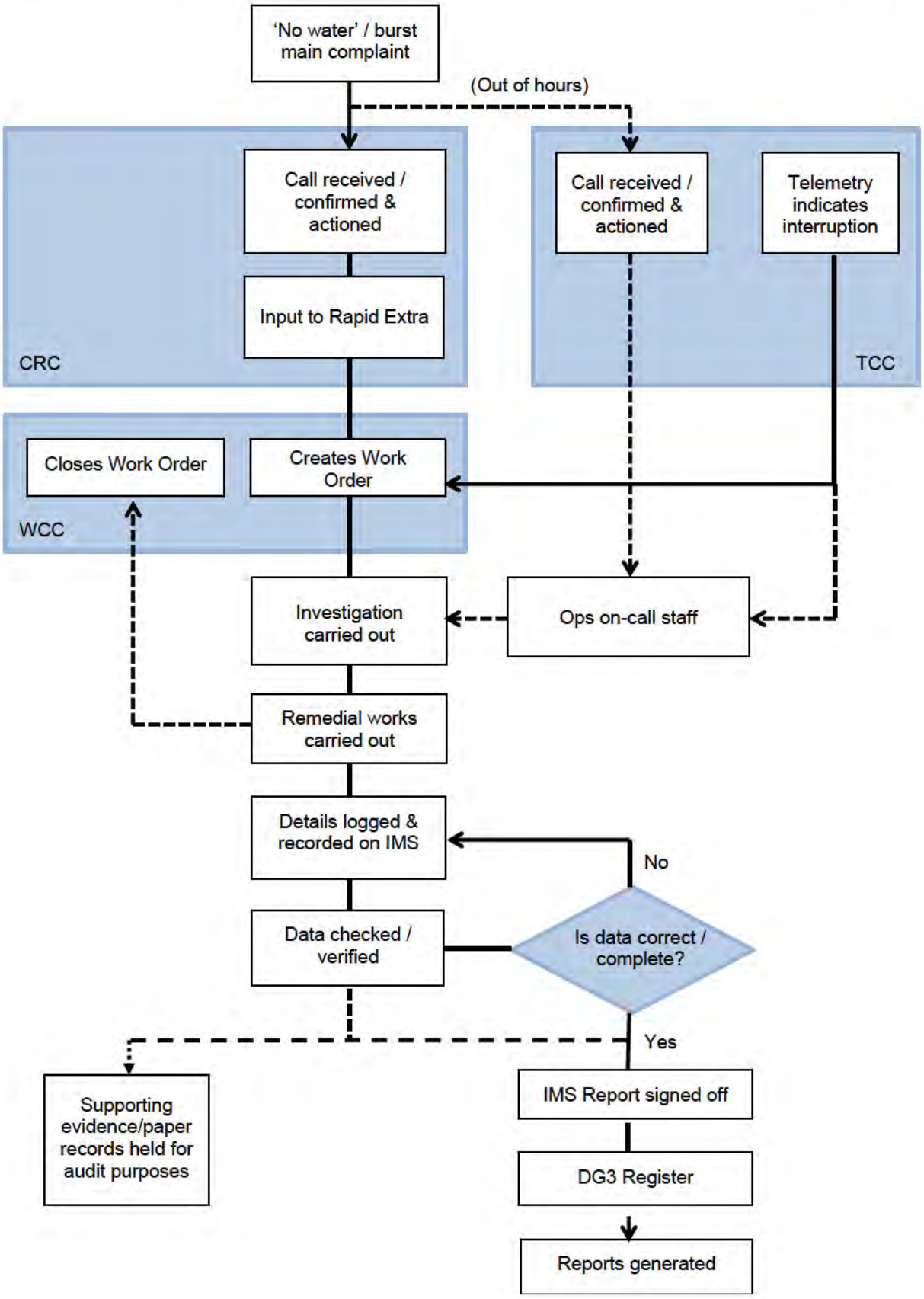
Bronze Team – MIP Only

- Create and maintain event records based on the information provided by Field Staff:
  - Interruptions to Supply (planned and unplanned)
  - Water Quality
  - Flooding;
- Close records at completion of events and apply appropriate DG3 status (required or not required);
- Monitor open incidents for records requiring action;
- Interrogate reports to provide status updates as incidents develop within their Bronze area.

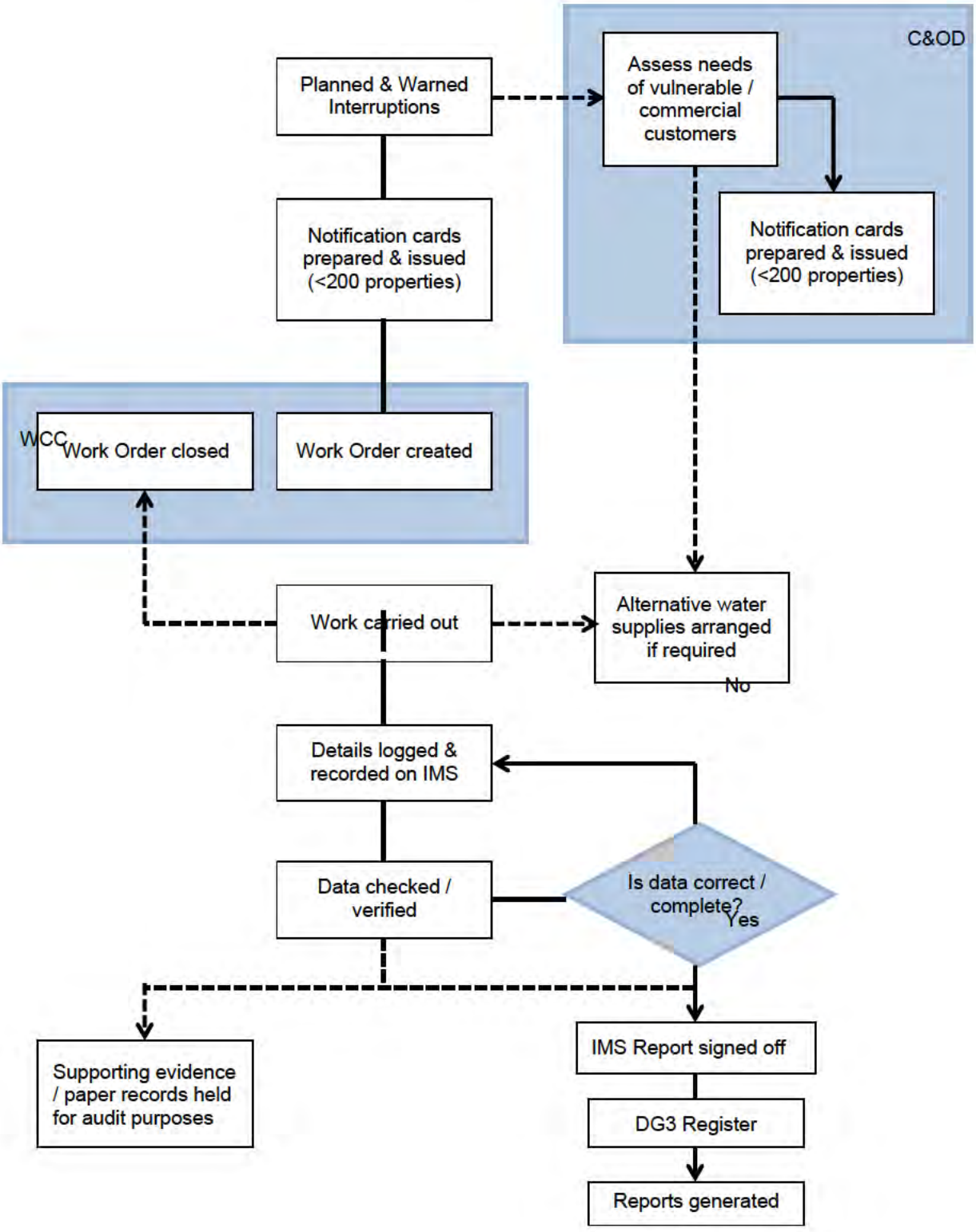
Silver Team

- Interrogate reports to provide status updates as incidents develop.

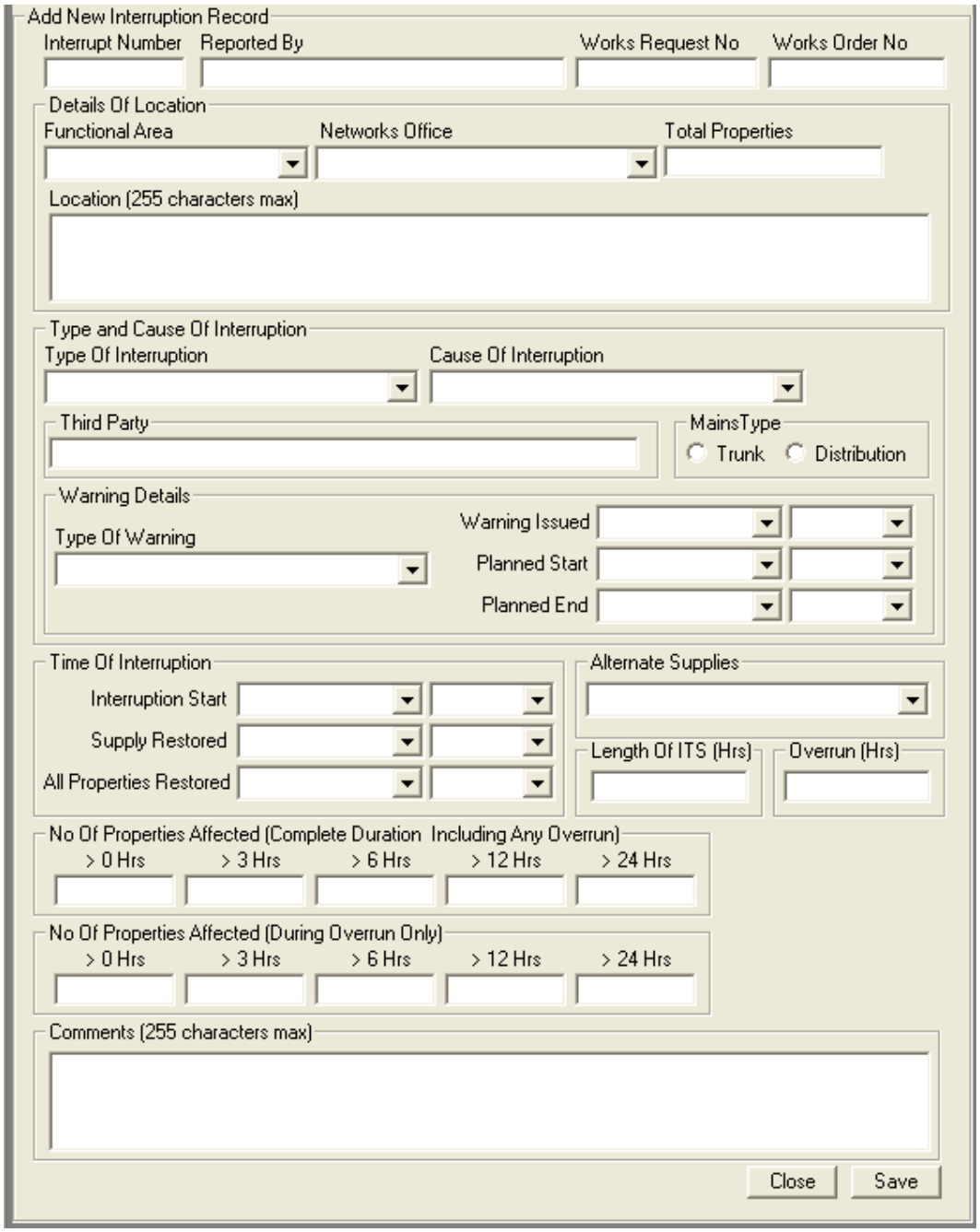
Appendix B – DG3 Process Flow Diagram – Unplanned or Unwarned Interruptions



Appendix B – DG3 Process Flow Diagram – Planned and Warned Interruptions



Appendix D – Pro forma - Interruption Record Sheet



Appendix E – Pointer 2.1 Specification Extract (Page 12)

4.21 BUILDING_STATUS

Definition
The current physical status of the building.

Constraints
Population of this field is mandatory.

Permitted PAO Status values are:

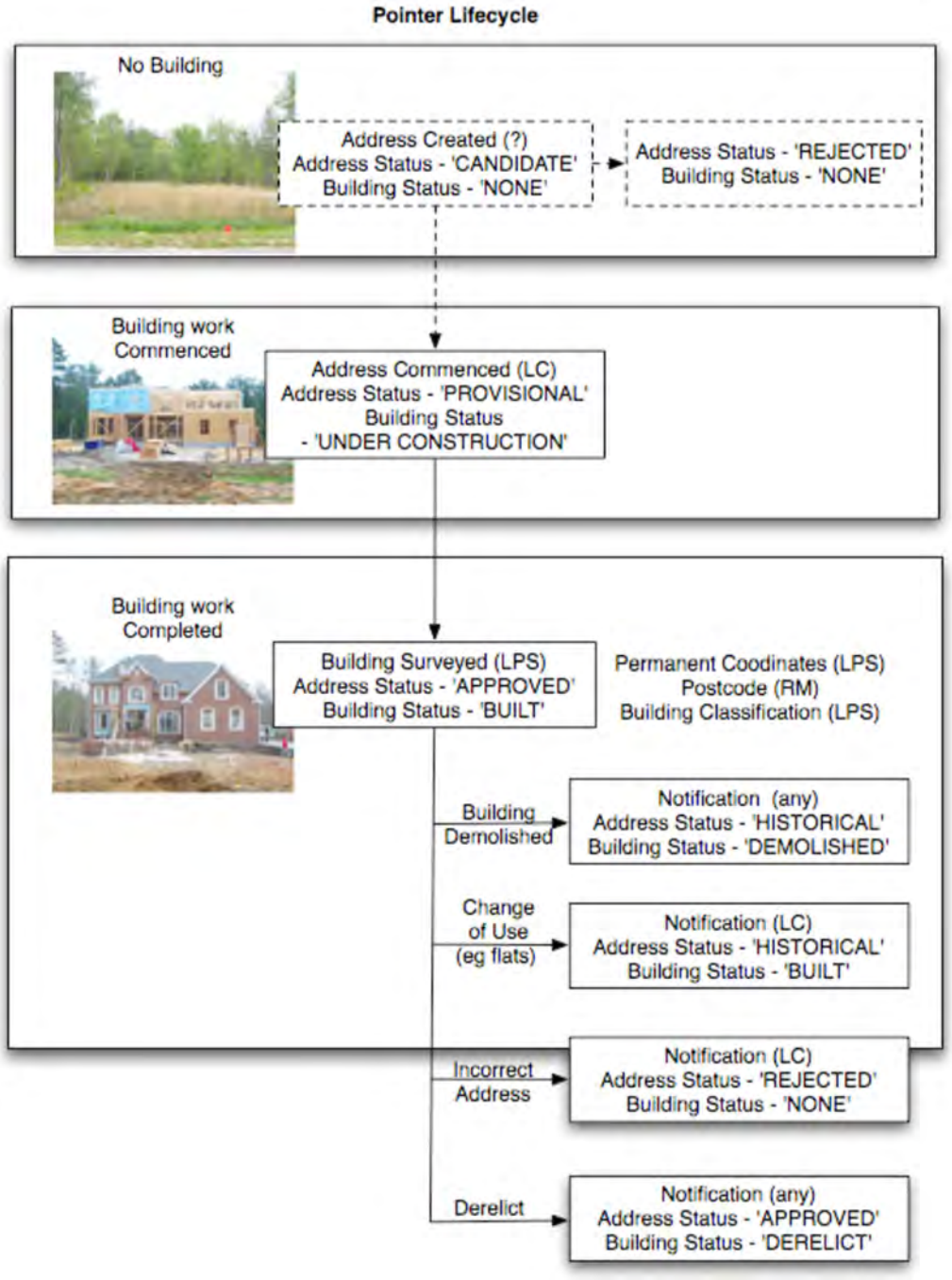
None, Under Construction, Built, Derelict and Demolished

Details
This field reflects changes to the Building_Status.

The values in this field are system generated and when a new address sent in from a council is entered in the system, the Building_Status is set to ‘None’ and the Address_Status set to ‘Candidate’. When the council sends notification that building has commenced, the Building_Status is set to ‘Under Construction’ and the Address_Status set to ‘Provisional’. After LPS field surveyors have confirmed the exact co-ordinates for the building, the Temp_Coords field is updated and the Building_Status is set to ‘Built’ and the Address_Status set to ‘Approved’. A notification from a council that a building is derelict or demolished results in the Building_Status being updated and the Address_Status set to ‘Historical’.

Please note that depending on the purpose for which the data is being used, the user may need to filter out certain categories of Building _Status. For example, addresses for ‘Demolished’ buildings would not be required where a mail shot is planned.

Appendix E – Pointer 2.1 Specification Extract (Page 13)



Appendix E – Pointer 2.1 Specification Extract (Page 14)

4.22 ADDRESS_STATUS

Definition
The current logical status of the address.

Constraints
Permitted ADDRESS_STATUS values are: (See diagram above)

- Candidate - before building starts. Planning permission has been granted but building has not commenced. Created by the Local Council before building has begun.
- Provisional – The Local Council has confirmed that the building is under construction.
- Approved – LPS add permanent co-ordinates and/or a building classification. A Postcode may also be added however this does not affect the ADDRESS_STATUS
- Historical - addresses that are no longer in use due to dereliction, demolition etc.
- Rejected – used to indicate the deletion of an incorrect address. Population of this field is mandatory, and is system generated.

Details
The values in this field are system generated and when a new address sent in from a council is entered in the system, the Building_Status is set to ‘None’ and the Address_Status set to ‘Candidate’. When the council sends notification that building has commenced, the Building_Status is set to ‘Under Construction’ and the Address_Status set to ‘Provisional’. After LPS field surveyors have confirmed the exact co-ordinates for the building, the Temp_Coords field is updated and the Building_Status is set to ‘Built’ and the Address_Status set to ‘Approved’. A notification from a council that a building is derelict or demolished results in the Building_Status being updated and the Address_Status set to ‘Historical’.

Please note that depending on the purpose for which the data is being used, the data should be filtered on the categories of Address _Status. For example, addresses set to ‘Historical’ would not be required where a mail shot is planned.

4.23 CLASSIFICATION

Definition
The current use of the building, derived from the LPS classification.

Constraints
Data in this field is system generated.

Permitted CLASSIFICATION values are shown below. These are derived from the detailed LPS list of valuation classifications.

Details
There are three main classification groups:

- NULL – Where the record has not yet been updated with an LPS classification.
- Non Domestic (formerly Commercial) – these records are prefixed with ‘ND’
- Domestic (formerly Residential) – these records are prefixed with ‘DO’. Where an individual is operating a business from a room within their home, LPS still classify this as a Residential property.

These are subdivided into a further classification as detailed above.

When the building use of an addressable object changes, the CLASSIFICATION field will be updated to reflect this change.

Appendix E – Pointer 2.1 Specification Extract (Page 15)

CODE	CLASSIFICATION DESCRIPTION
ND_agriculture	Agriculture (incl farms, market gardens)
ND_agriculture_other	Miscellaneous Agriculture
ND_comm_other	Commercial other
ND_culture	Cultural (incl museums, libraries)
ND_culture_other	Miscellaneous Culture
ND_education	Education (incl school, further ed)
ND_entertainment	Leisure and tourism(non-sporting - cinemas etc)
ND_ents_other	Miscellaneous Entertainment
ND_freight_other	Freight (canal, dock, railway undertaking)
ND_health	Health(incl hospital, care home, clinics)
ND_hospitality	Hospitality (incl hotels, b&b)
ND_indust_other	Miscellaneous Industry
ND_industry	Industry (incl factory, quarries)
ND_legal	Law and Order
ND_office	Commercial office - banks, post offices, offices
ND_religious	Religious establishment (incl places of worship)
ND_retail	Retail (shops, showrooms etc)
ND_sporting	Recreation (sports facilities)
ND_utilities	Public utilities
ND_utilities_other	Miscellaneous Utilities
DO_apart	Domestic - Apartments/flats
DO_detached	Domestic - detached
DO_semi	Domestic - Semi
DO_terrace	Domestic - Terrace
DO_other	Domestic other (incl Lock-up garages)

4.24 CREATION_DATE

Definition
The date when an address is first entered into the system by the Local Council.

Constraints
This field will only be populated for records created after the Pointer application went live in 2005. The field is automatically populated when records are entered into the database. It does not necessarily relate to the date of building, but rather when the information was provided.

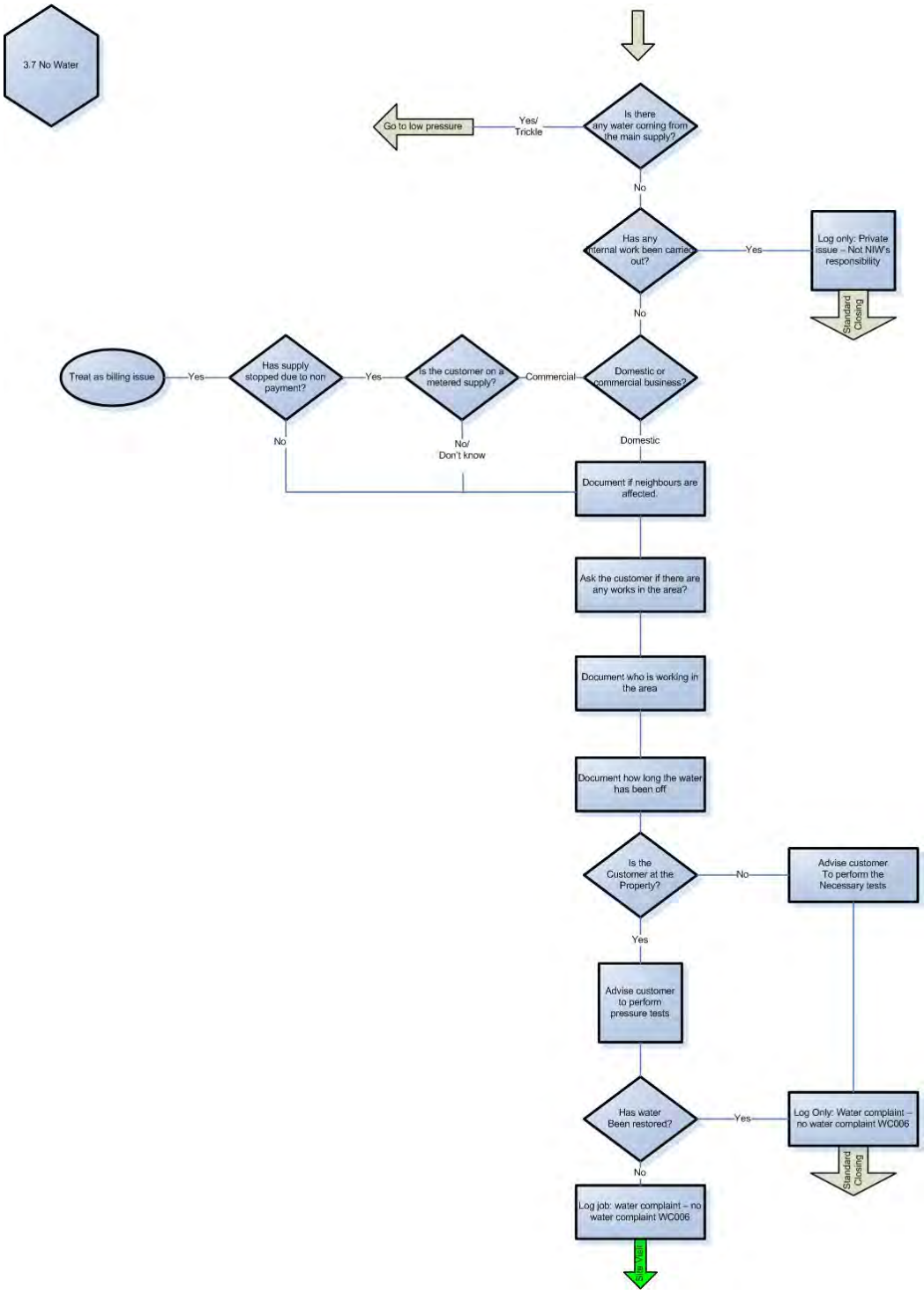
4.25 COMMENCEMENT_DATE

Definition
This is the date when construction on the property has begun.

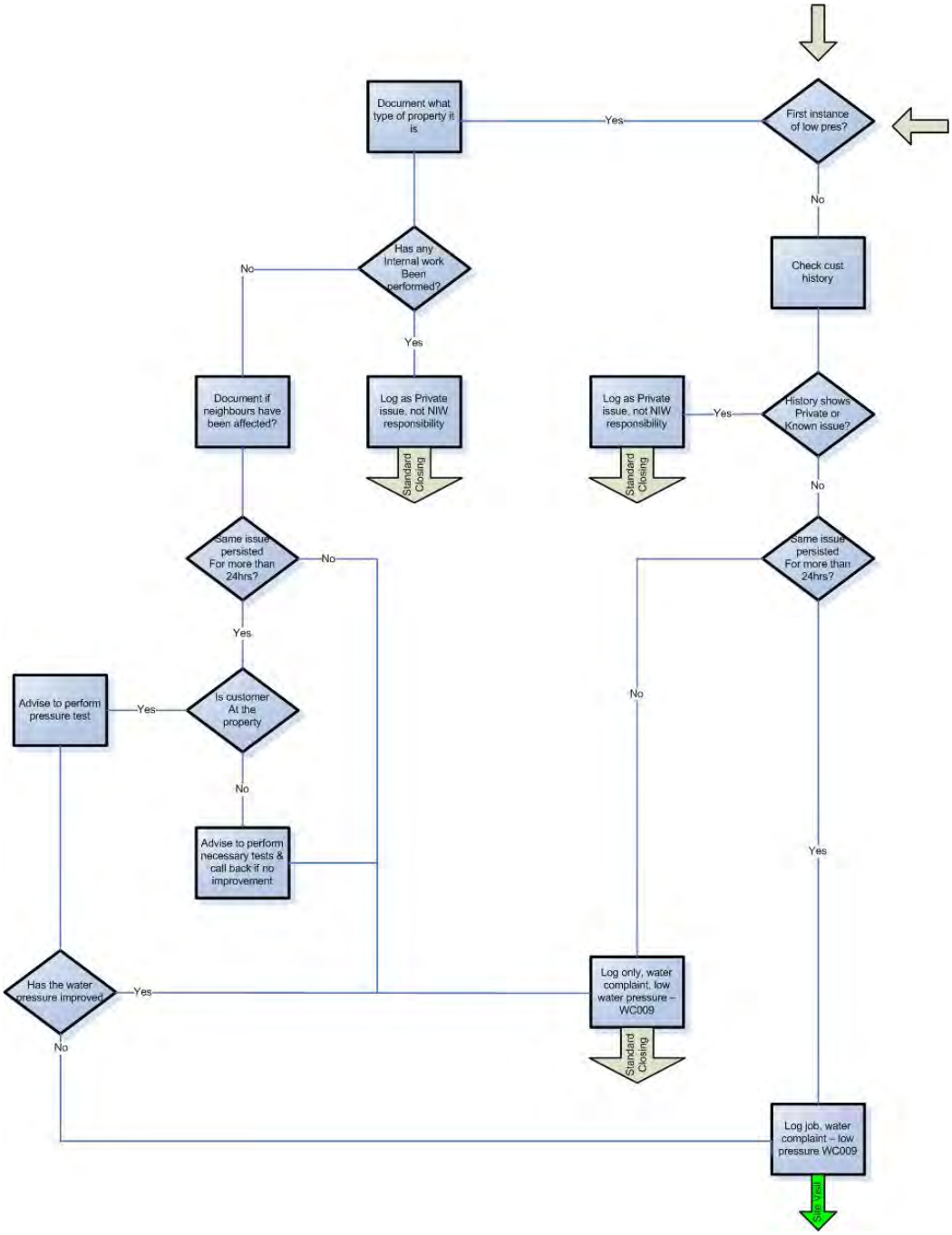
Constraints
This field will be populated for records created after the release of the new Pointer Product and when Local Council informs Pointer of the fact.

Details
This indicates when the BUILDING_STATUS changes from ‘NONE’ to ‘UNDER CONSTRUCTION’

Appendix F – CRC Call Script for 'No Water' Complaints



Appendix F – CRC Call Script for 'Low Pressure' Complaints



Appendix G – DG3 Register Extract *(Unplanned Interruption Events – IMS Report RPT1184)*

07/04/2023 10:23

Unplanned, Unwarned Interruptions

More than 3 hrs No of Properties 1,856

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description
272691	213473	Submitted to Area Manager	Networks Water	NWA1B	[redacted]	[redacted]	Unplanned Interruption		N/A			21/03/2023 14:02	21/03/2023 17:14	580	41	41	0	0	0	3 Hrs 12 Mins 0 Secs	3	12	0	(UPRN: 185299519) - [redacted] Village Green, Clough, Antrim, [redacted]	FALSE			Other
272426	213362	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			01/03/2023 09:18	01/03/2023 12:30	833	17	17	0	0	0	3 Hrs 12 Mins 0 Secs	3	12	0	(UPRN: 185296270) - [redacted] Claragh Road, Claragh, Downpatrick, Down, [redacted]	FALSE			Burst Main/Main Repair
272426	213362	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			01/03/2023 10:47	01/03/2023 14:00	833	13	13	0	0	0	3 Hrs 13 Mins 0 Secs	3	13	0	(UPRN: 185296270) - [redacted] Claragh Road, Claragh, Downpatrick, Down, [redacted]	FALSE			Burst Main/Main Repair
272775	213484	Submitted to Area Manager	Networks Water	NWA4B	[redacted]	[redacted]	Unplanned Interruption		N/A			27/03/2023 17:02	27/03/2023 20:20	789	30	30	0	0	0	3 Hrs 18 Mins 0 Secs	3	18	0	(UPRN: 185685164) - [redacted] Castleview Court, Mullaghmore, Omagh, Tyrone, [redacted]	FALSE			Burst Main/Main Repair
272526	213389	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption		N/A			06/03/2023 08:33	06/03/2023 12:00	298	11	11	0	0	0	3 Hrs 27 Mins 0 Secs	3	27	0	(UPRN: 185498990) - [redacted] Carmoney Road, Greenan, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272632	213438	Submitted to Area Manager	Networks Water	NWA3B	[redacted]	[redacted]	Unplanned Interruption		N/A			15/03/2023 07:33	15/03/2023 11:03	2580	76	76	0	0	0	3 Hrs 30 Mins 0 Secs	3	30	0	Service Reservoir - SR371 - Aughnagon - Chapel Hill Road, Edenmore, Mayobridge, Down [redacted]	FALSE			Low Service Reservoir
272534	213390	Submitted to DG3 Customer Services Coordinator	Networks Water	NWA3A	[redacted]	[redacted]	Unplanned Interruption		N/A			03/03/2023 13:48	03/03/2023 17:21	693	17	17	0	0	0	3 Hrs 33 Mins 0 Secs	3	33	0	(UPRN: 185679000) - [redacted] Lisland Avenue, Shankill, Lurgan, Armagh, [redacted]	FALSE			Burst Main/Main Repair
272553	213402	Submitted to Area Manager	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			07/03/2023 18:07	07/03/2023 21:40	177	30	30	0	0	0	3 Hrs 33 Mins 0 Secs	3	33	0	(UPRN: 185466416) - [redacted] Camlough Road, Sultan, Sixmilecross, Tyrone, [redacted]	FALSE			Water Supply Failure
272775	213484	Submitted to Area Manager	Networks Water	NWA4B	[redacted]	[redacted]	Unplanned Interruption		N/A			27/03/2023 16:43	27/03/2023 20:20	789	85	85	0	0	0	3 Hrs 37 Mins 0 Secs	3	37	0	(UPRN: 185685164) - [redacted] Castleview Court, Mullaghmore, Omagh, Tyrone, [redacted]	FALSE			Burst Main/Main Repair
272656	213449	Submitted to Area Manager	Networks Water	NWA3B	[redacted]	[redacted]	Unplanned Interruption		N/A			20/03/2023 17:55	20/03/2023 21:39	124	1	1	0	0	0	3 Hrs 44 Mins 0 Secs	3	44	0	(UPRN: 187440081) - [redacted] Ballymena Road, Stonepark, Antrim, [redacted]	FALSE			Burst Main/Main Repair
272578	213417	Submitted to DG3 Customer Services Coordinator	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			10/03/2023 07:39	10/03/2023 11:25	77	3	3	0	0	0	3 Hrs 46 Mins 0 Secs	3	46	0	(UPRN: 187425243) - [redacted] stown Road, Labby, Draperstown, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272523	213384	Submitted to Area Manager	Networks Water	NWA4B	[redacted]	[redacted]	Unplanned Interruption		N/A			05/03/2023 07:12	05/03/2023 11:00	131	34	34	0	0	0	3 Hrs 48 Mins 0 Secs	3	48	0	(UPRN: 185680530) - [redacted] Beeward Park, Ballynamullan, Omagh, Tyrone, [redacted]	FALSE			Other
272526	213389	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption		N/A			06/03/2023 09:49	06/03/2023 13:40	298	60	60	0	0	0	3 Hrs 51 Mins 0 Secs	3	51	0	(UPRN: 185498990) - [redacted] Carmoney Road, Greenan, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272578	213417	Submitted to DG3 Customer Services Coordinator	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			10/03/2023 07:29	10/03/2023 11:25	77	24	24	0	0	0	3 Hrs 56 Mins 0 Secs	3	56	0	(UPRN: 187425243) - [redacted] stown Road, Labby, Draperstown, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272640	213447	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 08:47	17/03/2023 12:43	128	21	21	0	0	0	3 Hrs 56 Mins 0 Secs	3	56	0	(UPRN: 187340306) - [redacted] Riverside Park, Brockaghboy, Garvagh, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272428	213364	Submitted to Area Manager	Networks Water	NWA2A	[redacted]	[redacted]	Unplanned Interruption		N/A			01/03/2023 14:05	01/03/2023 18:02	34	34	34	0	0	0	3 Hrs 57 Mins 0 Secs	3	57	0	(UPRN: 185871189) - [redacted] Unit 5 West Bank Drive, Low-Wood Intake, Belfast, Antrim, [redacted]	FALSE			Burst Main/Main Repair
272551	213402	Submitted to Area Manager	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			07/03/2023 17:28	07/03/2023 21:40	177	13	13	0	0	0	4 Hrs 12 Mins 0 Secs	4	12	0	(UPRN: 185466416) - [redacted] Camlough Road, Sultan, Sixmilecross, Tyrone, [redacted]	FALSE			Water Supply Failure
272521	213383	Submitted to DG3 Customer Services Coordinator	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			05/03/2023 01:26	05/03/2023 05:45	311	25	25	0	0	0	4 Hrs 19 Mins 0 Secs	4	19	0	(UPRN: 187690287) - [redacted] Carnamoe Road, Gortaneany, Moneymore, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272645	213443	Registered	Networks Water	NWA1B	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 08:30	17/03/2023 12:50	136	20	20	0	0	0	4 Hrs 20 Mins 0 Secs	4	20	0	(UPRN: 185458002) - [redacted] Layde Road, Knocknacarry, Cushendall, Antrim, [redacted]	FALSE			Burst Main/Main Repair
272498	213371	Submitted to Area Manager	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			02/03/2023 10:00	02/03/2023 14:30	31	1	1	0	0	0	4 Hrs 30 Mins 0 Secs	4	30	0	(UPRN: 187363289) - [redacted] Moyard Road, Moyard, Draperstown, Londonderry, [redacted]	FALSE			Replacement Fitting (e.g. SV, FH)
272426	213362	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			01/03/2023 08:14	01/03/2023 12:45	833	27	27	0	0	0	4 Hrs 31 Mins 0 Secs	4	31	0	(UPRN: 185296270) - [redacted] Claragh Road, Claragh, Downpatrick, Down, [redacted]	FALSE			Burst Main/Main Repair
272632	213438	Submitted to Area Manager	Networks Water	NWA3B	[redacted]	[redacted]	Unplanned Interruption		N/A			15/03/2023 06:28	15/03/2023 11:03	2580	8	8	0	0	0	4 Hrs 35 Mins 0 Secs	4	35	0	Service Reservoir - SR371 - Aughnagon - Chapel Hill Road, Edenmore, Mayobridge, Down [redacted]	FALSE			Low Service Reservoir
272543	213397	Submitted to Area Manager	Leakage Services	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			07/03/2023 07:08	07/03/2023 11:45	18	1	1	0	0	0	4 Hrs 37 Mins 0 Secs	4	37	0	(UPRN: 187435742) - [redacted] Dreaghbey Road, Laragh, Beragh, Tyrone, [redacted]	FALSE			Burst Main/Main Repair
272640	213447	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 08:05	17/03/2023 12:43	128	30	30	0	0	0	4 Hrs 38 Mins 0 Secs	4	38	0	(UPRN: 187340306) - [redacted] Riverside Park, Brockaghboy, Garvagh, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272645	213443	Registered	Networks Water	NWA1B	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 15:51	17/03/2023 20:31	136	21	21	0	0	0	4 Hrs 40 Mins 0 Secs	4	40	0	(UPRN: 185458002) - [redacted] Layde Road, Knocknacarry, Cushendall, Antrim, [redacted]	FALSE			Burst Main/Main Repair
272693	213477	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			23/03/2023 09:44	23/03/2023 14:30	100	5	5	0	0	0	4 Hrs 46 Mins 0 Secs	4	46	0	DMA - C0172 - Dromara High Level	FALSE			Other
272534	213390	Submitted to DG3 Customer Services Coordinator	Networks Water	NWA3A	[redacted]	[redacted]	Unplanned Interruption		N/A			03/03/2023 13:03	03/03/2023 17:54	693	47	47	0	0	0	4 Hrs 51 Mins 0 Secs	4	51	0	(UPRN: 185679000) - [redacted] Lisland Avenue, Shankill, Lurgan, Armagh, [redacted]	FALSE			Burst Main/Main Repair
272824	213457	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			20/03/2023 06:18	20/03/2023 11:15	43	10	10	0	0	0	4 Hrs 57 Mins 0 Secs	4	57	0	(UPRN: 185240364) - [redacted] urren Road, Ballylone Upper, Ballynahinch, Down, [redacted]	FALSE			Burst Main/Main Repair
272526	213389	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption		N/A			06/03/2023 07:29	06/03/2023 12:40	298	47	47	0	0	0	5 Hrs 11 Mins 0 Secs	5	11	0	(UPRN: 185498990) - [redacted] Carmoney Road, Greenan, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 16:18	17/03/2023 21:30	78	78	78	0	0	0	5 Hrs 12 Mins 0 Secs	5	12	0	(UPRN: 185850329) - [redacted] den Road, Brockaghboy, Garvagh, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272426	213362	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			01/03/2023 08:46	01/03/2023 14:00	833	46	46	0	0	0	5 Hrs 14 Mins 0 Secs	5	14	0	(UPRN: 185296270) - [redacted] Claragh Road, Claragh, Downpatrick, Down, [redacted]	FALSE			Burst Main/Main Repair
272548	213401	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption		N/A			07/03/2023 15:44	07/03/2023 21:00	25	25	25	0	0	0	5 Hrs 16 Mins 0 Secs	5	16	0	(UPRN: 185201069) - [redacted] Upper Nassau Street, Edenballymore, Londonderry, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272498	213371	Submitted to Area Manager	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			02/03/2023 10:00	02/03/2023 15:30	31	30	30	0	0	0	5 Hrs 30 Mins 0 Secs	5	30	0	(UPRN: 187363289) - [redacted] Moyard Road, Moyard, Draperstown, Londonderry, [redacted]	FALSE			Replacement Fitting (e.g. SV, FH)
272692	213468	Submitted to Area Manager	Networks Water	NWA2A	[redacted]	[redacted]	Unplanned Interruption		N/A			23/03/2023 14:24	23/03/2023 20:00	265	1	1	0	0	0	5 Hrs 36 Mins 0 Secs	5	36	0	(UPRN: 185005877) - [redacted] Newtownards Road, Ballymacarrett, Belfast, Down, [redacted]	FALSE			Burst Main/Main Repair
272543	213397	Submitted to Area Manager	Leakage Services	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			07/03/2023 07:08	07/03/2023 13:00	18	17	17	0	0	0	5 Hrs 52 Mins 0 Secs	5	52	0	(UPRN: 187435742) - [redacted] Dreaghbey Road, Laragh, Beragh, Tyrone, [redacted]	FALSE			Burst Main/Main Repair
272521	213383	Submitted to DG3 Customer Services Coordinator	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			05/03/2023 05:19	05/03/2023 11:39	311	13	13	13	0	0	6 Hrs 20 Mins 0 Secs	6	20	0	(UPRN: 187690287) - [redacted] Carnamoe Road, Gortaneany, Moneymore, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272645	213443	Registered	Networks Water	NWA1B	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 14:17	17/03/2023 20:45	136	11	11	11	0	0	6 Hrs 28 Mins 0 Secs	6	28	0	(UPRN: 185458002) - [redacted] Layde Road, Knocknacarry, Cushendall, Antrim, [redacted]	FALSE			Burst Main/Main Repair
272645	213443	Registered	Networks Water	NWA1B	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 14:17	17/03/2023 21:16	136	1	1	1	0	0	6 Hrs 59 Mins 0 Secs	6	59	0	(UPRN: 185458002) - [redacted] Layde Road, Knocknacarry, Cushendall, Antrim, [redacted]	FALSE			Burst Main/Main Repair
272693	213477	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			23/03/2023 09:23	23/03/2023 16:30	100	20	20	20	0	0	7 Hrs 7 Mins 0 Secs	7	7	0	DMA - C0172 - Dromara High Level	FALSE			Other
272521	213383	Submitted to DG3 Customer Services Coordinator	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			05/03/2023 01:00	05/03/2023 10:45	311	9	9	9	0	0	9 Hrs 45 Mins 0 Secs	9	45	0	(UPRN: 187690287) - [redacted] Carnamoe Road, Gortaneany, Moneymore, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272693	213477	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			23/03/2023 09:13	23/03/2023 19:00	100	11	11	11	0	0	9 Hrs 47 Mins 0 Secs	9	47	0	DMA - C0172 - Dromara High Level	FALSE			Other
272645	213443	Registered	Networks Water	NWA1B	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 08:54	17/03/2023 20:45	136	8	8	8	0	0	11 Hrs 51 Mins 0 Secs	11	51	0	(UPRN: 185458002) - [redacted] Layde Road, Knocknacarry, Cushendall, Antrim, [redacted]	FALSE			Burst Main/Main Repair

Unplanned, Unwarned Interruptions

More than 6 hrs No of Properties 232

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description
272521	213383	Submitted to DG3 Customer Services Coordinator	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			05/03/2023 05:19	05/03/2023 11:39	311	13	13	13	0	0	6 Hrs 20 Mins 0 Secs	6	20	0	(UPRN: 187690287) - [redacted] Carnamoe Road, Gortaneany, Moneymore, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272645	213443	Registered	Networks Water	NWA1B	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 14:17	17/03/2023 20:45	136	11	11	11	0	0	6 Hrs 28 Mins 0 Secs	6	28	0	(UPRN: 185458002) - [redacted] Layde Road, Knocknacarry, Cushendall, Antrim, [redacted]	FALSE			Burst Main/Main Repair
272645	213443	Registered	Networks Water	NWA1B	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 14:17	17/03/2023 21:16	136	1	1	1	0	0	6 Hrs 59 Mins 0 Secs	6	59	0	(UPRN: 185458002) - [redacted] Layde Road, Knocknacarry, Cushendall, Antrim, [redacted]	FALSE			Burst Main/Main Repair
272693	213477	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			23/03/2023 09:23	23/03/2023 16:30	100	20	20	20	0	0	7 Hrs 7 Mins 0 Secs	7	7	0	DMA - C0172 - Dromara High Level	FALSE			Other
272521	213383	Submitted to DG3 Customer Services Coordinator	Networks Water	NWA4A	[redacted]	[redacted]	Unplanned Interruption		N/A			05/03/2023 01:00	05/03/2023 10:45	311	9	9	9	0	0	9 Hrs 45 Mins 0 Secs	9	45	0	(UPRN: 187690287) - [redacted] Carnamoe Road, Gortaneany, Moneymore, Londonderry, [redacted]	FALSE			Burst Main/Main Repair
272693	213477	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			23/03/2023 09:13	23/03/2023 19:00	100	11	11	11	0	0	9 Hrs 47 Mins 0 Secs	9	47	0	DMA - C0172 - Dromara High Level	FALSE			Other
272645	213443	Registered	Networks Water	NWA1B	[redacted]	[redacted]	Unplanned Interruption		N/A			17/03/2023 08:54	17/03/2023 20:45	136	8	8	8	0	0	11 Hrs 51 Mins 0 Secs	11	51	0	(UPRN: 185458002) - [redacted] Layde Road, Knocknacarry, Cushendall, Antrim, [redacted]	FALSE			Burst Main/Main Repair

Unplanned, Unwarned Interruptions

More than 12 hrs No of Properties 0

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Unplanned, Unwarned Interruptions

More than 24 hrs No of Properties 0

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Appendix G – DG3 Register Extract *(Planned & Warned, Third Party & Overrun Events – IMS Report RPT1184)*

Planned and Warned Interruptions

More than 3 hrs No of Properties **242**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description
[illegible]	[illegible]	Submitted to Area Manager	Networks Water	[illegible]	[redacted]	[redacted]	Planned Interruption	[illegible]	Card drop	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(UPRN : [illegible]) - [redacted] [illegible] [redacted]	FALSE			Burst Main/Main Repair
[illegible]	[illegible]	Submitted to Area Manager	Networks Water	[illegible]	[redacted]	[redacted]	Planned Interruption	[illegible]	Card drop	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(UPRN : [illegible]) - [redacted] [illegible] [redacted]	FALSE			Burst Main/Main Repair
[illegible]	[illegible]	Submitted to Area Manager	Networks Water	[illegible]	[redacted]	[redacted]	Planned Interruption	[illegible]	Card drop	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(UPRN : [illegible]) - [redacted] [illegible] [redacted]	FALSE			Burst Main/Main Repair
[illegible]	[illegible]	Registered	Networks Water	[illegible]	[redacted]	[redacted]	Planned Interruption	[illegible]	Card drop	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(UPRN : [illegible]) - [redacted] [illegible] [redacted]	FALSE			New Mains Tie in
[illegible]	[illegible]	Submitted to Area Manager	Networks Water	[illegible]	[redacted]	[redacted]	Planned Interruption	[illegible]	Card drop	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(UPRN : [illegible]) - [redacted] [illegible] [redacted]	FALSE			Burst Main/Main Repair
[illegible]	[illegible]	Registered	Networks Water	[illegible]	[redacted]	[redacted]	Planned Interruption	[illegible]	Card drop	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(UPRN : [illegible]) - [redacted] [illegible] [redacted]	FALSE			Service Pipe Repair
[illegible]	[illegible]	Registered	Networks Water	[illegible]	[redacted]	[redacted]	Planned Interruption	[illegible]	Card drop	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(UPRN : [illegible]) - [redacted] [illegible] [redacted]	FALSE			Burst Main/Main Repair
[illegible]	[illegible]	Registered	Networks Water	[illegible]	[redacted]	[redacted]	Planned Interruption	[illegible]	Card drop	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(UPRN : [illegible]) - [redacted] [illegible] [redacted]	FALSE			Install New Fitting (e.g. SV, FH)
[illegible]	[illegible]	Submitted to Area Manager	Networks Water	[illegible]	[redacted]	[redacted]	Planned Interruption	[illegible]	Card drop	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	FALSE			Other
[illegible]	[illegible]	Registered	Networks Water	[illegible]	[redacted]	[redacted]	Planned Interruption	[illegible]	Card drop	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	(UPRN : [illegible]) - [redacted] [illegible] [redacted]	FALSE			Install New Fitting (e.g. SV, FH)

Planned and Warned Interruptions

More than 6 hrs No of Properties **0**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Planned and Warned Interruptions

More than 12 hrs No of Properties **0**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Planned and Warned Interruptions

More than 24 hrs No of Properties **0**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Interruptions caused by third parties

More than 3 hrs No of Properties **216**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description
272667	213455	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			21/03/2023 16:00	21/03/2023 21:00	227	5	5	0	0	0	5 Hrs 0 Mins 0 Secs	5	0	0	(UPRN : 185265066) - [redacted]pper Ballynahinch Road, Cabragh, Lisburn, Down, [redacted]	TRUE	BT		Burst Main/Main Repair
272667	213455	Submitted to Area Manager	Networks Water	NWA2B	[redacted]	[redacted]	Unplanned Interruption		N/A			21/03/2023 10:10	21/03/2023 18:00	227	44	44	44	0	0	7 Hrs 50 Mins 0 Secs	7	50	0	(UPRN : 185265066) - [redacted]pper Ballynahinch Road, Cabragh, Lisburn, Down, [redacted]	TRUE	BT		Burst Main/Main Repair

Interruptions caused by third parties

More than 6 hrs No of Properties **0**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description
272667	213455	Submitted to Area Manager	Networks Water	NWA2B	THOMA	KYLE BA	Unplanned Interruption		N/A			21/03/2023 10:10	21/03/2023 18:00	227	44	44	44	0	0	7 Hrs 50 Mins 0 Secs	7	50	0	(UPRN : 185265066) - [redacted]pper Ballynahinch Road, Cabragh, Lisburn, Down, [redacted]	TRUE	BT		Burst Main/Main Repair

Interruptions caused by third parties

More than 12 hrs No of Properties **0**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Interruptions caused by third parties

More than 24 hrs No of Properties **0**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Unplanned Interruptions (Overruns of Planned Interruptions)

More than 3 hrs No of Properties **0**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Unplanned Interruptions (Overruns of Planned Interruptions)

More than 6 hrs No of Properties **0**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Unplanned Interruptions (Overruns of Planned Interruptions)

More than 12 hrs No of Properties **0**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Unplanned Interruptions (Overruns of Planned Interruptions)

More than 24 hrs No of Properties **0**

Event Id	Interruption Id User Friendly	Interruption Status Name	Managing Function Name	Field Manager Area Name	Event Creator	DG3 Creator	Interruption Type Name	Planned Warning Date Time 1	Planned Warning Type	Planned Start Date Time 1	Planned Restoration Date Time 1	Actual Start Date Time 1	Actual Supply Restored Date Time 1	Total Affected Properties Count 1	Number of Properties Affected	Number of Properties Affected 3	Number of Properties Affected 6	Number of Properties Affected 12	Number of Properties Affected 24	Property Duration	Property Duration Hours	Property Duration Minutes	Property Duration Seconds	Location	Third Party Caused Interruption	Third Party	Other Third Party Details	Interruption Cause Description

Appendix G – DG3 Register Extract *(Unplanned Interruption Property Records – IMS Report RPT1183)*

LastRun
30/05/2023 15:09

Event Id	Interruption Id User Friendly	In erruption Status	Managing unction	Field Manager Area	vent reator	DG3 Crea or	Interrupt on Name	Planned Warning Type	Planned Warning Date/T me	Duration Hours	Duration Minutes	Duration econds	Planned Start Date/Time	Planned Restoration Date/T me	Actual Start Date/Time	Unplanned Estimated Restoration Da e/Time	Unplanned epair ommenced tart Date/Time	Actual Supply Restored Date/Time	Water Sampler Contacted Date/Time	Unplanned Est mated All Properties Restored Date/Time	UPRN	PRIMARY THORFARE	BU LDING NUMBER	BUILDING NAME	SUB BUILDING NAME	SECONDARY THORFARE	TOWN	POSTCODE	DTM HEIGHT M	Affected Area Property Count Residential	Affected Area roperty ount NonResident al	Affected Area P operty Count Unknown	otal Affected roperties ount	Location	Property DMA	Th rd Pa ty Caused Interruption	ThirdParty	Description	Interrupt on Ma ns Material	Interruption Mains Type
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	187390805	Gelv n Road	[redacted]				Garvagh	[redacted]	198.8	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	187697447	Gelv n Road	[redacted]				Garvagh	[redacted]	199 63	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185807131	Gelv n Road	[redacted]				Garvagh	[redacted]	197 91	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185807132	Gelv n Road	[redacted]				Garvagh	[redacted]	206 72	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	187623516	Gelv n Road	[redacted]				Garvagh	[redacted]	204 52	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185807133	Gelv n Road	[redacted]				Garvagh	[redacted]	188 25	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185807134	Gelv n Road	[redacted]				Garvagh	[redacted]	198 71	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	187436141	Gelv n Road	[redacted]				Garvagh	[redacted]	199 64	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185807135	Gelv n Road	[redacted]				Garvagh	[redacted]	172 36	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185807136	Gelv n Road	[redacted]				Garvagh	[redacted]	206 18	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185851602	Gelv n Road	[redacted]				Garvagh	[redacted]	170 27	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185850293	Gelv n Road	[redacted]				Garvagh	[redacted]	166 38	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185851601	Gelv n Road	[redacted]				Garvagh	[redacted]	186.2	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	186015369	Gelv n Road	[redacted]				Garvagh	[redacted]	172 36	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185851605	Gelv n Road	[redacted]				Garvagh	[redacted]	179 14	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185851604	Gelv n Road	[redacted]				Garvagh	[redacted]	180 54	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	187794615	Gelv n Road	[redacted]				Garvagh	[redacted]	177 05	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185851606	Gelv n Road	[redacted]	[redacted]	House		Garvagh	[redacted]	173 89	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
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272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185542137	Glen Road	[redacted]				Garvagh	[redacted]	142 59	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	187567125	Glen Road	[redacted]				Garvagh	[redacted]	144 16	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
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272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185542176	Glen Road	[redacted]				Garvagh	[redacted]	173.5	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185542173	Glen Road	[redacted]				Garvagh	[redacted]	168 86	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185542182	Glen Road	[redacted]				Garvagh	[redacted]	168.4	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	187420370	Glen Road	[redacted]				Garvagh	[redacted]	163 37	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	187429758	Glen Road	[redacted]				Garvagh	[redacted]	148 56	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185851611	Glen Road	[redacted]				Garvagh	[redacted]	174 85	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
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272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	186007808	Glen Road	[redacted]				Garvagh	[redacted]	141 07	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains
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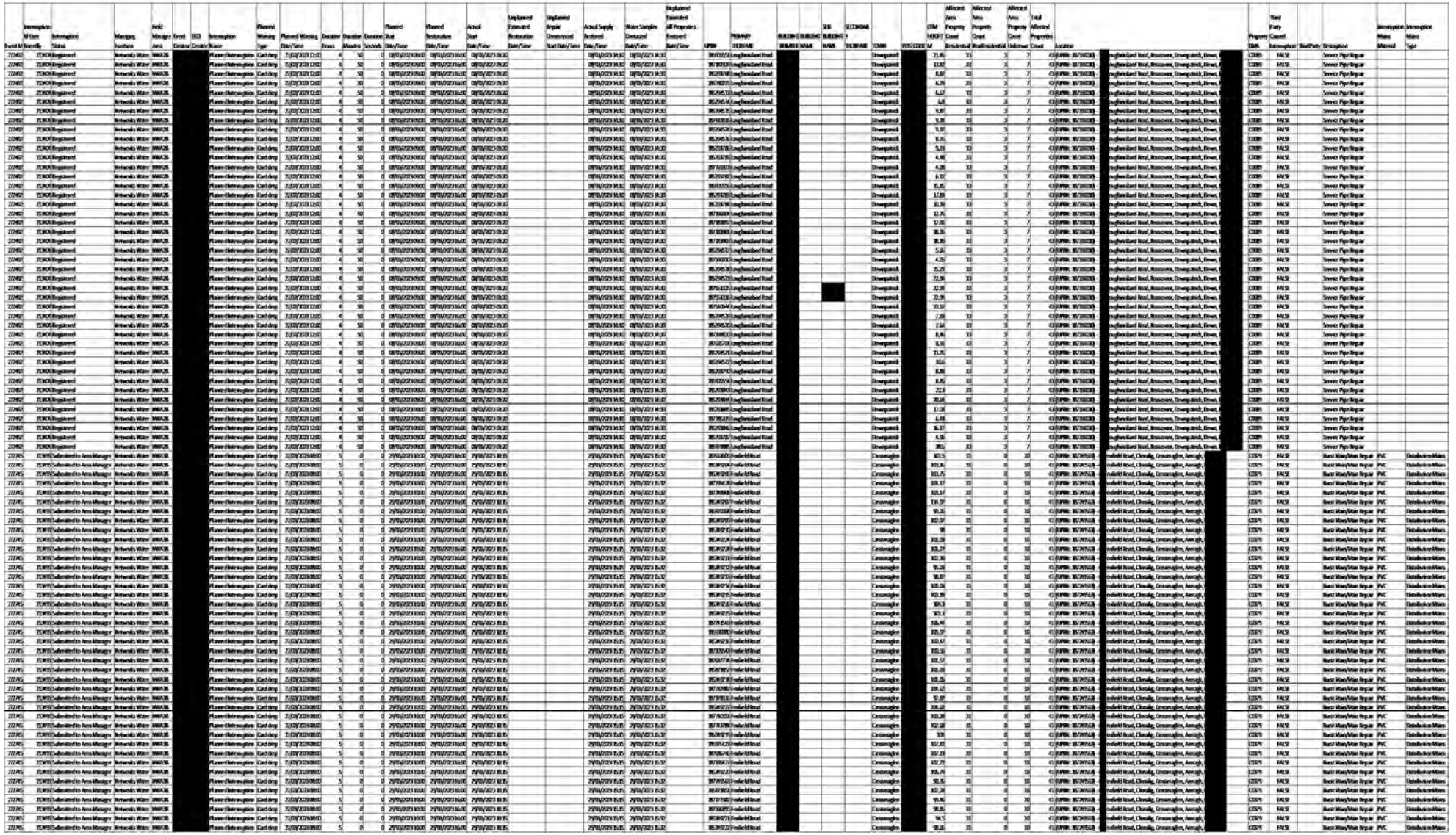
272646	213444	Submitted to Area Manager	Networks Water	NWA1A	[redacted]	[redacted]	Unplanned Interruption	N/A		5	12	0			17/03/2023 16:18	18/03/2023 06:00	17/03/2023 22:00	17/03/2023 21:30	18/03/2023 03:45	18/03/2023 04:00	185850326	Glen Road	[redacted]				Garvagh	[redacted]	141 82	63	6	9	78	(UPRN: 185850309) - [redacted] Glen Road Brockaghboy Garvagh Londonderry [redacted]	C2444	FALSE		Burst Main/Main Repa r	PVC	Distribution Mains

Appendix G – DG3 Register Extract *(Planned Interruption Property Records – IMS Report RPT1183)*



Northern Ireland Water

Level of Service Methodology

DG5 Internal Flooding

Contents

1. Introduction

Objective and Aim

NI Water must maintain verifiable records for DG5. The aim of the records is to provide an auditable method for identifying the specific, properties which are affected by flooding, or are at risk of experiencing flooding.

As part of these records companies must maintain a DG5 register which should form a database of all properties which are at risk of experiencing sewer flooding more than once in twenty years. It will enable the identification by address of individual properties which are below the reference level and should also contain information on (for example) complaints and the results of their investigation, problems which are attributable to customers apparatus and properties which experience sewer flooding but are covered by one of the allowable exclusions.

The register must clearly identify those properties below the reference level, distinguish them from those which have flooded but are not below the reference level and provide a verifiable reason for the exclusion (e.g. flooding was a result of a blockage).

The records should include:

- date of incident;
- properties affected identified by address;
- cause of flooding (including source and reason, where known);
- action taken;
- name of persons completing the records; and
- the 'Flooding' category for reporting under DG5.

Reporting Requirements

Two main outputs are required to be produced relating to internal flooding for AIR 22:

- DG5 Annual Flooding Summary – properties internally flooded as a result of overloaded sewers and other causes.
- DG5 Properties on the ‘Flooding’ register – properties at risk of flooding due to overloaded sewers, more frequently than once in twenty years and once or twice in ten years, requiring further investigation, problem status of properties on the register, annual changes to the register.

The information relating to the above is contained in Table 3 of AIR22.

2. DG5 Internal Flooding incidents – Methodology and Procedures

Internal

Data gathering and calculation is as described below.

Calculation Process - Lines 2 to 11,15a & 17

Data gathering and calculation is as described below in the Line- Specific Methodology Statements for Table 3: Lines 2 to 11,15a & 17.

Sources/Primary Process

Lines 2 – 11, 15a & 17 Properties and flooding incidents

A download of internal flooding records was obtained from the Ellipse system for the period April 2021 to March 2022 on a month by month basis.

Investigations were carried out for each reported incident and those properties found not to be flooded after investigation, using information from the Sewer Maintenance Contractor, Flood Incident Report (FIR) Forms, Field Manager reports, modelling provided by Drainage Area Plan consultant and contacting the Customers directly, are removed. The remaining properties were recorded as Flooding Incidents.

Assumption

For the purpose of AIR22, NI Water has assumed that a single incident includes recorded complaints from the same property on the same day or within three days.

'Three days' was chosen on the basis that a noticeable volume of repeat calls tends to be received within three days of an incident occurring. There is then a much longer passing of time before calls are again received from the same locality, suggesting that the original incident has passed and that the calls relate to a different incident.

An incident of internal flooding is assumed to be where a property has been flooded internally. If two adjacent properties are flooded at the same time they are classed as two properties and two incidents.

Where a single property floods internally on two separate occasions then this is recorded as one property and two incidents.

Sources/Secondary Process

1. Wastewater Business Unit (WWBU) carries out further investigations to determine the cause of every internal flooding incident.
2. WWBU assess the information held on customer report, Flood Incident Report (FIR), along with photographic evidence and closure details provided by the contractor.
3. WWBU determine if the cause of the flooding incident was hydraulic incapacity or flooding other cause, i.e. Blocked Sewer, Equipment Failure or Collapsed Sewer. This is done by a number of methods including site visits, concentric circle surveys, Customer Field Manager reports, modelling provided by Drainage Area Plan consultant, customer interviews, field manager interviews and review of existing incident information.
4. If hydraulic incapacity is confirmed a Met Office Weather report is used to determine if the incident is as a result of severe weather (Line 4).
5. These properties were then recorded on a spread sheet under the appropriate categories for lines 2, 3, 4, 4a, 5, 6, 8, 9, 10 and 11 using the information gathered from, the Sewer Maintenance Contractor, Flooding Report Forms, Field Manager reports and contacting the Customers directly. A folder of evidence was created for all confirmed cases and this was brought to the monthly DG5 panel for approval and addition to the appropriate section of the register. At the end of the reporting year this was the data used for AIR returns.
6. The figure for line 7 was obtained by having a report run in the DG5 Oracle Database which holds the information as a DG5 layer in the GIS system.
7. The required information to populate Line 17 is extracted directly from the monthly spread sheet completed by the contractor.

3. Internal Flooding Register

Internal Flooding Process

All internal flooding incidents are subjected to a robust investigation (See Appendix A – NI Water DG5 Internal Flooding Register Methodology). An expert panel (the DG5 Panel) examines the evidence for each incident and governs the addition of properties to, and the

removal of properties from, the register. Those records that do not meet the DG5 Criteria are recorded in the 'excluded' section of the Database. All new incidents of external flooding are being investigated in a similar manner as the Internal flooding incidents.

The register is held as an Oracle database within the Corporate Asset Register – specifically as a GIS layer on CARtomap.

Methodology applied to the completion of Table 3

Lines 12-15: the numbers have been extracted from the DG5 Oracle database

Line 16: the number has been extracted from the DG5 Oracle database

Lines 22-25 and 30-33: A folder is created (within the Asset Management section of the company network) for each addition, removal or transfer of a property. The lines were populated from an analysis of these folders; the analysis was cross-checked against the minutes of the monthly DG5 Panel meetings.

Lines 26 and 34: The 'Enhanced Service Levels' element of the capex cost was obtained from the CAPTRAX system for each relevant project and aggregated. This total cost was then divided by the number of properties removed.

Mitigation

Properties protected from the risk of flooding by mitigation measures, such as non-return valves have been added to the 1 in 20 Register (unless evidence existed to allow addition to the 1 in 10 or 2 in 10 register).

All such properties are currently the subject of four Engineering Procurement appraisal projects – which seek to identify permanent solutions at the locations.

Additions to the Register and Transfers within the Register

A folder of evidence was created for all confirmed DG5 flooding properties and this was brought to the monthly DG5 panel meetings for their approval and addition to the appropriate section of the register.
Similarly transfers between the register categories (**2 in 10, 1 in 10 and 1 in 20)** are brought to the attention of the DG5 Panel at the monthly meetings for approval.

Prioritisation of capital schemes

No formal prioritisation process is applied.

All capital works projects are submitted to the NI Water Capital Investment Panel for approval before implementation.

Properties which have not flooded in the last 10 years

Properties remain on the Register which have not flooded in the past 10 years (excluding severe weather).

Appendix A NI Water DG5 Internal Flooding Register - Methodology

DG5 Internal Flooding Register - Methodology

Final v1.1

08 June 2015

1 Main Contributors	2 Aspect/Section	3 Notes
[redacted]	Draft	
[redacted]	Final	

4 Bid/Project Code: 41514657	5 Document No: 0.6	Controlled Copy No: *(in COLOUR – not black)*

Revision No	Date	Description/Amendment	Checked	Reviewed	6 Authorised for Issue
0.8	26 Feb 11	Revise to include improved approach	AM	KM	
1.0	31 Mar 12	Finalised ahead of sign-off by DG5 Panel	AM	KM	MMcI
1.1	08 Jun 15	Minor revisions and new FIR form inserted	SB	DW	MMcI

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9 **CLEARLY MARK THEM AS "SUPERSEDED".**

10 Introduction

10.1 Background

This document provides guidance on how the successful management of the DG5 Internal Flooding Register, within Northern Ireland (NI) Water, should be carried out. Where possible, this document complies with Ofwat and Northern Ireland Authority for Utility Regulation (NIAUR) Guidance.

10.2 Scope and Objectives

This document is owned by NI Water and describes the end-to-end business process by which a property that has experienced internal flooding is added to, and removed from the DG5 Internal Flooding Register. It will support NI Water in the development and implementation of its DG5 reporting processes and long-term management of the Register.

The purpose of this methodology is to ensure that a fully transparent, auditable process is in place for the management and maintenance of the DG5 Internal Flooding Register for NI Water in order to report to NIAUR.

11 Definitions

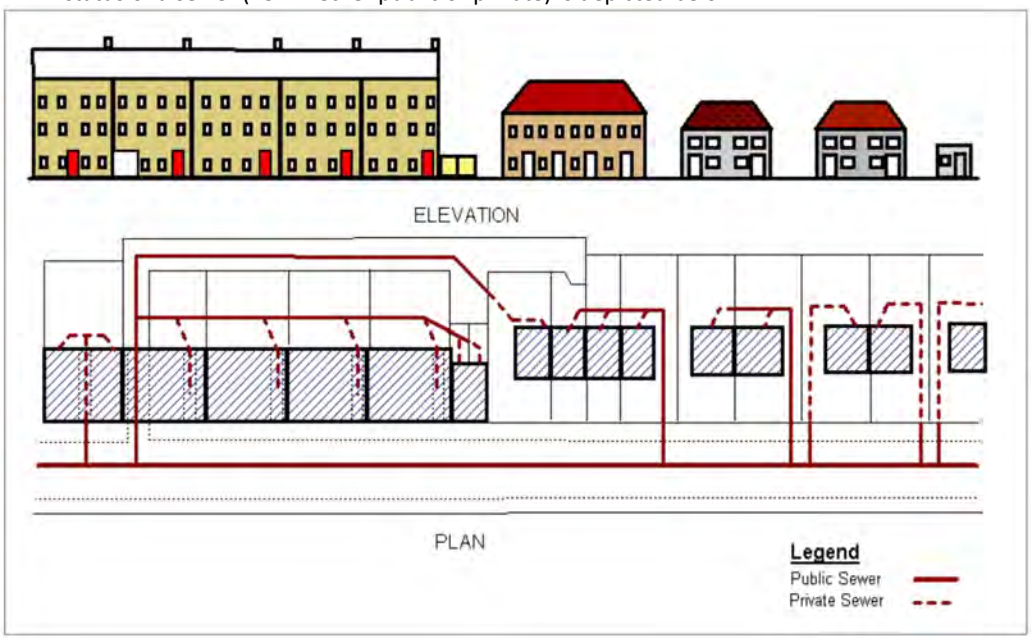
The following definitions are to be applied when recording and reporting properties and incidents held on NI Water's DG5 Internal Flooding Register.

Northern Ireland Water is only responsible for internal flooding caused by failure of the public sewerage system. This excludes private sewers, highway drainage, gullies, land drainage, and watercourses.

11.1 Legal Definitions

11.1.1 Public and Private

Northern Ireland Water is responsible for internal flooding caused by failure of the public sewerage system. The status of a sewer (i.e. whether public or private) is depicted below.



Drains; are defined as a pipe which carries waste water (sinks, baths, toilets etc.,) and trade wastes from one property to a sewer. Northern Ireland Water has responsibility for a drain up until the point of the property boundary. The length of drain within the boundary of the property lies with the property/landowner.

Public sewers; are defined as sewers serving more than a single property or, if serving a single property, sewers outside the property boundary and has been adopted, only then does responsibility lie with Northern Ireland Water.

11.1.2 Adopted and Unadopted Sewers

An adopted sewer is a sewer that is vested by NI Water and maintained at its expense. An unadopted sewer is a sewer that is either privately owned or has not yet been adopted by NI Water.

11.1.3 Third Party Responsibility

A third party incident is one where Northern Ireland Water could take action to recover costs from those responsible. Incidents due to third party attributed to hydraulic overload of the public sewerage system are significant unconsented discharges e.g. industry, leisure, domestic (swimming pool).

Where NI Water has gathered evidence that flooding of a property has occurred due to the actions of a third party, the company will attempt to recover the costs of implementing the temporary or permanent solution.

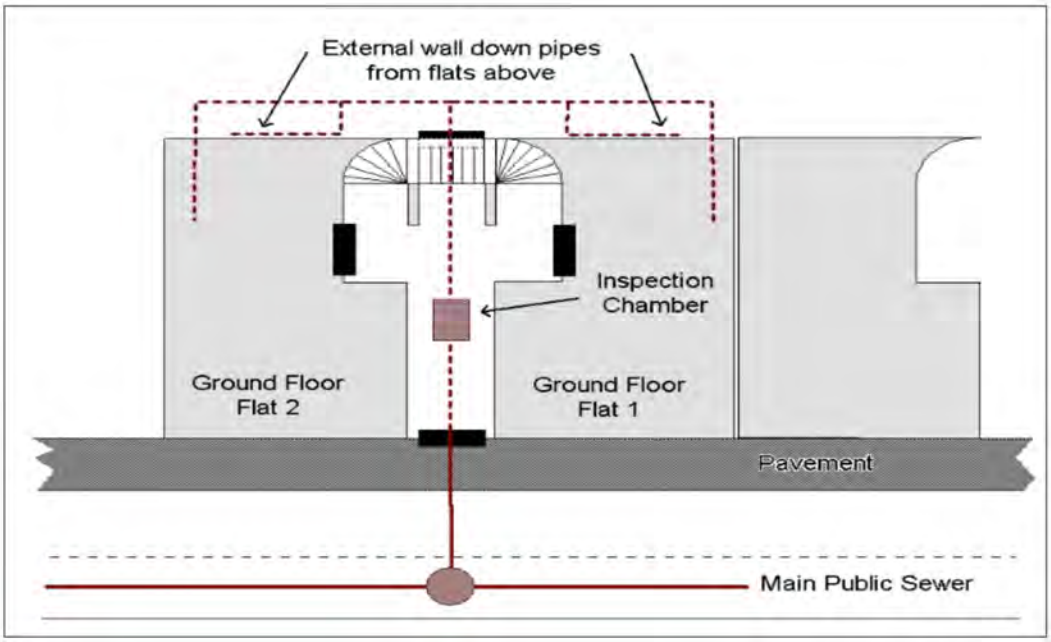
11.1.4 Basement Flooding

Customers do not have a right to connect wastewater discharges from a basement directly into the public sewerage. If a customer wishes to connect, then Northern Ireland Water will carry out investigations to confirm that by connecting the basement discharge to the public system it does not put the property at risk, because of existing conditions within the sewerage system. Written confirmation of the investigations will be given to the customer.

If a customer connects without obtaining the necessary planning permissions, then they do so at their own risk. Northern Ireland Water does not accept any responsibility for any resultant flooding incident. If basement flooding occurs due to hydraulic overload (and the customer has the right to connect) then this property will be identified as impacted by internal flooding and will be added to the appropriate register.

11.1.5 Apartment / High Rise Responsibilities

Incidents, which occur on the private drain, i.e. within the apartment block, are the responsibility of the residents. Should a flooding incident occur on the ground floor then those properties affected can be classed as internal flooding if appropriate. All other properties would be classed as external access flooding.



11.1.6 Sensitive Areas

Sensitive areas include, schools, hospitals, children play areas, nursing homes and properties of vulnerable customers. A property's sensitivity may have an impact on the prioritisation of when the solution to the internal flooding is implemented.

11.1.7 Property Classification

For reporting purposes, the following statements relate to property classification:

- Buildings that are normally occupied and used for residential, commercial, public, business or industrial purposes are included. This also includes garages that form an integral part of the property and are classed as part of the building even if the main purpose is storage.
- Buildings whose prime purpose is storage or installation of domestic appliances are not classed as occupied.
- Detached or 'linked-detached' garages i.e. those attached to a property but separated from it by an external passageway are excluded.

- A cellar forms an integral part of a building that is at least partly below ground level. Where a cellar is in regular use as part of normal living accommodation, it is termed a basement and any flooding should be reported as a normal flooding incident. Where an uninhabited cellar, i.e. one that is not used for habitation, is affected by water entering it directly (as opposed to via another part of the building) this has to be separately enumerated.

In order to ensure that the correct assessments on properties are made the following diagrams and pictures show the definitions for internal flooding against various property types;

- **Property with integral garage**
- Therefore either area flooded will be classed as internal flooding
- Flow entering the solum or living area would be classed as internal flooding and only that property recorded.

Villa – Ground Floor and 1st floor properties
Flooding to the solum of the ground floor flat will mean that only that property will be identified as suffering from internal flooding.
If the 1st floor flat is accessed via a door which enters immediately into the property and is also affected by flood water, then this will also constitute internal flooding and both will be identified as an internal flooding incident

- **Basement Property**
- A cellar that is in regular use as part of normal living accommodation is termed a basement and any flooding should be reported as a normal flooding incident.
-
-

Apartment Block
Internal Flooding would normally be contained to the ground floor flats. Individual properties affected by internal flooding will be identified and recorded. Flooding of the internal access will not be classed as internal property flooding for the remaining tenants. These will be classed as external flooding (access).

- **Semi-detached** properties with **detached** garage.
- Flooding of the garage would not be classed as internal flooding.

- **Detached** or **'linked-detached'** garages i.e. those attached to a property but separated from it by an external passageway.
- Flooding of the garage would not be classed as internal flooding.

11.1.8 Temporary and Permanent Solution

A temporary solution is defined as one which does not permanently remove the risk of flooding but reduces the risk of internal flooding happening.

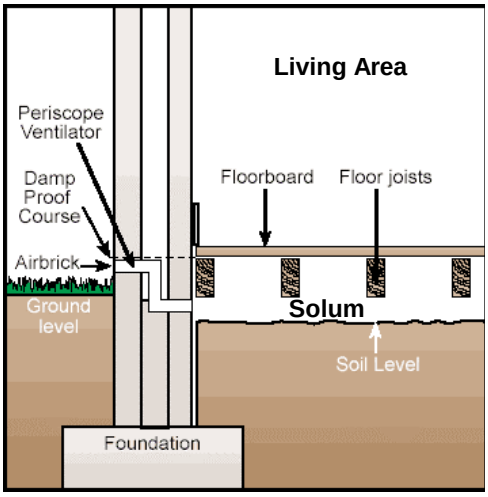
A permanent solution is defined as one that permanently addresses the cause of the hydraulic overload. Permanent works would enable a property to be removed from the DG5 Internal Flooding Register.

Examples of temporary and permanent solutions include;

Temporary Solutions	Permanent Solution
Fitting of anti-flood devices e.g. Non-Return Valve (NRV)	Land re-profiling
Air brick protection	Disconnect basement
Raising of Thresholds	Divert private drainage or public sewer
Bolt down inspection chambers	Isolate with private pumping station
Seal / bolt down manholes	Fill in hollow floors and cellars
Stop Logs	Flow attenuation
Issue of sandbags	Outfall protection e.g. flap valve
uPVC doors	Sewer Upsizing
Flood guards	'Right to purchase'

11.2 Internal Flooding Definition

A property can be deemed affected by an internal flooding incident when foul, combined or surface water escapes from the public sewerage system into a property and enters a building or passes below a suspended floor. The diagram below shows a cross section through a suspended floor.



For DG5 reporting purposes, internal flooding refers to buildings which are normally occupied and used for residential, public, commercial, business or industrial purposes. Buildings whose prime purpose is storage or installation of domestic appliances are excluded. Refer to Section 2.1.7 for Property Classification.

11.2.1 Restricted Toilet Use

Restricted Toilet Use (RTU) occurs where there is no internal flooding but where the customer us unable to flush their toilet without a risk of causing internal flooding of the property.

11.3 Flooding Cause Definition

11.3.1 Introduction

Flooding generally occurs through a combination of events and responsibility can lie with a number of different parties. Possible reasons for flooding can include:

- Blocked or overloaded drainage ditches, drains and sewers overflow across roads, gardens and into property.
- Hydraulic incapacity can on occasion cause sewers to backflow into a property.
- Rain can be so heavy that run-off flows overland down hills and slopes.
- Rain soaks into the ground causing groundwater levels to rise and flood.
- Broken or burst water mains (normally leading to basement flooding rather than property flooding above ground level).

Customers do not always distinguish between the various causes of flooding. In order to deal with an incident efficiently, it is imperative that call centre staff ascertain the cause and mechanism of the flooding. This ensures that appropriate action can be taken and the risks to the company minimised.
The cause of flooding will be determined by call centre staff asking the customer a set of pre-set questions from a call centre script.

11.3.2 Flooding due to Hydraulic Incapacity

A sewer can be classed as hydraulically incapable when the flow from a storm is unable to pass through it due to a permanent problem. Permanent problems are due to limitations in the physical characteristics of the network, generally the size of the sewer relative to flow and gradient. Properties affected by internal flooding due to hydraulic incapacity shall be placed within relevant flooding severity category unless there is evidence to prove that the flooding was due to 'Other Causes' or severe weather. Temporary problems are excluded and comprise of: Blockages, Collapses, Equipment Failure.

11.3.3 Other Causes Flooding

'Other Causes' are related to localised deficiencies and transient characteristics of the network. The main causes are:

- blockages
- collapses
- equipment or operational failure

These incidents are reported separately to NIAUR, but stored within the excluded section of DG5 Internal Flooding Register.

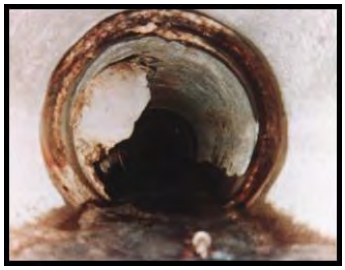
11.3.4 Blockages

A sewer blockage can be attributed to a number of factors, including siltation, fat, roots, and debris, as shown below.


For regulatory reporting, silt, fat, roots debris are all classed as a blockage. However, it is important that the actual cause of the blockage is recorded within the incident record. The response to each of these might require a different solution. For example, a persistent fat problem may require trade effluent control or persistent siltation problems may need to be added to the de-siltation programme for that area.

11.3.5 Collapsed Sewer

In the context of the indicator a collapsed sewer, is a sewer that creates a restriction or induces a blockage, e.g. fracture, deformation, intruding junction. A rising main burst is also classified as a collapse. An example of a collapse is shown below.



11.3.6 Equipment Failure

Equipment and operational failures can be attributed to power outages, inadequate maintenance regimes, a change to operating regime other than that designed for, mechanical or electrical failure.
Where a pumping station has failed then distinction must be made between network and terminal stations, as well as the criticality or size band of the station indicated.

Where a pumping station can be seen to be overrun by the incoming flows and can be shown to be operating within its design parameters then this may be an indication of severe weather or inflow from another source e.g. watercourse, tidal, ground water infiltration etc.

If the pumping station can be seen to be beaten by in coming flows in non-severe weather conditions and can be shown to be operating within its design parameters consideration should also be given to the possibility that the capacity of the pumping station has been exceeded, i.e. the sewer network now suffers hydraulic incapacity. Properties flooded internally as a result of such situations shall be classed as DG5 reportable.

Flooding caused by failure of an anti-flood device on a private connection, e.g. NRV, should be ascribed back to the underlying cause, hydraulic incapacity, and recorded as an internal flooding incident.

11.3.7 Third Party Causes

A third party incident is one where Northern Ireland Water could take action to recover costs from those responsible. These can include the discharge of material into the public system causing a blockage, or equipment failure, vandalism, network impacted by a third party e.g. a builder or other statutory utility.

It is important that causes beyond the reasonable control of the company are identified and described especially where a claim might be pursued against a third party. If permanent improvement or temporary operational works for Northern Ireland Water causes internal flooding then this must also be recorded and the reasons given as to why it happened.

The Flood Investment Planning Group is made up of Northern Ireland Water, Rivers Agency, Roads Service and Local Councils could provide a useful forum in which to establish responsibility for disputed third party flooding.

11.3.8 Increase in Demand

Increase in demand is defined by Northern Ireland Water as predicted growth, which exceeds the available headroom within the network on the trigger event.

Verified hydraulic models shall be used to identify properties at risk of flooding as a direct result of development/ growth based on the Local Area Plan. This analysis is generally an output from a Drainage Area Study (DAS). No other analysis on demand is carried out.

11.4 Flooding Class Definition

- 1 in 10; is applied to reported flooding location due to hydraulic incapacity during a rainfall event with a return period between 5 and 10 years.
- 2 in 10; is applied to reported flooding location due to hydraulic incapacity during a rainfall event with a return period of 2 in 10 years i.e. <5 years, or has actually flooded twice within a 10 year period.
- 1 in 20; is applied to reported flooding location due to hydraulic incapacity during a rainfall event with a return period between 10 and 20 years.
- Severe Weather; locations refer to a reported flooding incident with a return period greater than 20 years.
- Flooding Other Causes; is applied to reported flooding locations where the cause of flooding has been found not to be hydraulic incapacity i.e. blockages, collapses, third party or equipment failure causes.
- Removed due to Company Action; is applied to reported flooding locations where NI Water has constructed a permanent solution to remove the risk of flooding
- Removed due to Better Information; is applied to reported flooding locations where information has been obtained which proves that the cause of flooding was not due to incapacity in the sewer system.

Internal Flooding Register – Governance

11.5 General

The NI Water DG5 Internal Flooding Register contains information on internal flooding incidents caused by the hydraulic incapacity of sewers, and properties at risk of experiencing internal flooding. NI Water's Asset Management section (AMS) is the owner of the DG5 Internal Flooding Register.

The information recorded on properties affected by internal flooding or those at risk of experiencing flooding constitutes a legal register for reporting to the NIAUR. The information contained within must be verifiable and available for audit.

NIAUR requires NI Water to produce an annual DG5 Report summarising the required DG5 information. NI Water is also required to maintain a DG5 Internal Flooding Register which holds information on properties at risk of flooding, once in twenty years and once or twice in ten years due to the hydraulic incapacity of sewers. NI Water must also report on each flooding category status of each property on the register and all annual changes to the register.

The DG5 Internal Flooding Register will contain the information required to prepare Table 3, of the Annual Information Returns (AIR). This information can be accessed via the reporting function on the DG5 incident and property database.

The DG5 Internal Flooding Register has been developed from records that date back to 1990 and the increasingly robust investigation of 'live' incidents from 2008 onwards.

11.6 Governance

Maintenance of the DG5 Internal Flooding Register and AIR reporting is the responsibility of AMS and the Network Sewerage Business Unit (NSBU). Clear definition of responsibility for actions, analysis and records within the DG5 Internal Flooding Register has been entrusted to the appropriate sections within NI Water. The stakeholders and their responsibilities have been defined within this methodology.

This end-to-end DG5 business process outlined in this document, and attached in Appendix A, will ensure that responsibilities and performance measures are in place to ensure the quality of information captured and maintained is consistent at all levels through the process.

The DG5 Panel has responsibility for approval of additions to and removals from the register, while also ensuring that the reporting processes and outputs remain robust enough to meet the reporting requirements of NIAUR. Responsibilities for the internal DG5 flooding reporting process will be reviewed on an annual basis and updated accordingly.

12 Internal Flooding Register – Business Process

12.1 Notification of Internal Flooding Incident to Call Centre

All flooding incidents are recorded through a series of different source collection methods in NI Water's asset inventory management system. This happens by customers reporting flooding incidents via our Customer Call Centre. The call handlers will establish if the incident is the responsibility of NI Water and then confirm with the customer that the incident was indeed internal flooding and record it on NI Water's call management system. A Caller Log is created with the incident information then passing to NI Water's Work Control Centre staff who distributes the relevant work order to the appropriate contractor for action. This step takes no longer than one week to complete.

12.2 Initial Investigation by Network Sewerage Business Unit

The NSBU will initiate the first phase of investigations once an internal flooding incident has been reported. Evidence gathered at this initial stage is passed to Asset Performance (AP) for further investigation/verification. The process that NSBU follow is outlined below;

- Reported Internal Flooding Incidents are downloaded from the company's asset inventory management systems and interrogated, with duplicates removed.
- Information held on Customer Reports and Flooding Incident Reports are assessed along with photographic evidence and previous flooding records to ascertain if the reported incident is internal flooding.
- NSBU to carry out further investigations to determine if the cause of flooding incident was hydraulic incapacity or due to other causes, i.e. Blocked Sewer, Equipment Failure or Collapsed Sewer. This is done by a number of methods including site visits, concentric circle surveys, customer interviews and review of existing incident information. If flooding is due to other causes, the property is placed in the excluded section of the DG5 Internal Flooding Register. (Investigation methods are outlined in Section 4.2)
- If hydraulic incapacity is confirmed NSBU use a weather report to determine if the incident is as a result of severe weather. If severe weather is confirmed the property is excluded. The same weather report, along with historic records (if applicable), is used to categorise non-severe weather incidents into one of three storm return categories – 1:20, 1:10 and 2:10. In addition properties that suffer from RTU, due to hydraulic incapacity, are also recorded. (Storm Return Categories and RTU explained in Section 4.2.10 and 4.2.11).
- Once NSBU have completed the above stages a folder of evidence is compiled and forwarded to AP for further investigation/verification.

12.3 Identification of additional properties by Engineering and Procurement

In addition to the weekly flooding incident download by NSBU, Asset Delivery (AD) will forward a monthly report detailing any newly identified DG5 properties to NSBU for investigation. These potential DG5 properties will be identified from on-going Capital Works Programme (CWP) Schemes. This step is completed on a monthly basis.

12.4 Further Investigation by Asset Performance

AP receives all fully investigated and categorised DG5 Properties from NSBU on a monthly basis. AP carryout further detailed investigations to verify the investigations undertaken by NSBU. Detailed investigations can include modelling, DAS, customer questionnaires, Geographical Information System (GIS) assessments and topographical surveys.

AP carryout the following investigative process;

- Assess the history of flooding incidents at each property to confirm the NSBU flooding report. Historic assessments may include investigations of reported external incidents, extreme weather event records and incidents confirmed at adjacent properties.
- Interview the Operational Area Field Manager (FM) to confirm that the property has a history of internal flooding. AP also seeks advice from the relevant FM as to the cause of the internal flooding to aid in further investigations.
- Use GIS to assess the position of the sewer network.
- Carryout site topographical surveys of the sewer network and surrounding area.
- Interview the property owner with pre-set questions in DG5 Internal Flooding Questionnaire.

- Assess existing network model, i.e. DAS, for predicted flooding to verify if property floods under specific flooding scenarios.

Once AP has completed the above stages a report will be compiled summarising the evidence gathered including recommendations. If hydraulic incapacity is confirmed the evidence will be presented to the DG5 Panel to propose adding the property to the DG5 Register.

Note; if the cause is still unknown after the course of investigations and the internal flooding is major and frequent enough to warrant a thorough investigation, then a Project Consideration Form (PCF) will be raised to propose a feasibility study.

12.5 Approval of Additions by DG5 Panel

The DG5 Panel review the evidence brought before them and decide whether to add the property to the DG5 Internal Flooding Register. If the Panel members need more evidence, the property will be returned to AP for further investigation, and then re-submitted to the Panel for consideration. This step is completed once every month.

12.6 Update of Asset Information Records

The DG5 Panel Secretary will digitise all flooding incidents approved by the DG5 Panel onto the DG5 Layer of the company's GIS System, and update the DG5 incident and property database with the associated incident.

12.7 Initiation CWP Project by Asset Performance

The DG5 Panel forward all new additions to the DG5 Internal Flooding Register to AP to initiate the CWP process. Asset Performance cross-check existing CWP Schemes to ensure the property is not included in an on-going project. A PCF will be created to begin the CWP process.

Once the relevant section of the scheme is complete a DG5 Beneficial Use Form is sent from EP to AP, where a check against drainage area studies carried out to establish if the reported flooding has been resolved. If a resolution to the flooding is confirmed AP prepare supporting evidence to present at DG5 Panel for removal from the DG5 Internal Flooding Register

12.8 Approval of Removal by DG5 Panel

If a property is to be removed from the DG5 Internal Flooding Register due to 'Company Action', a Beneficial Use Form must be presented as evidence. If a property is to be removed due to 'Better Information' a folder of evidence must be presented outlining the reasons. This is completed once every month.

This clear and strictly controlled process will govern the movement of each property as it is investigated. Each stage described above can be seen in Appendix A.

13 Internal Flooding Register – Administration, Additions and Format

This section provides guidance on how properties at risk of flooding due to the hydraulic incapacity of sewers are categorised within the DG5 Internal Flooding Register.

13.1 Rules Governing Internal Flooding Register

The following rules govern the DG5 Internal Flooding Register and describe how a property is added and removed from the register. Property additions and transfers must follow the appropriate procedure as described below. (Property removals are discussed in section 7).

13.1.1 Additions to Internal Flooding Register

This procedure must be followed for all new flooding incidents received through the weekly NSBU download (see Section 3.2). These incidents will usually have occurred recently, although it is possible new information may cause a historic event to be reclassified.

- All properties that have been affected by internal flooding, caused by hydraulic incapacity, must be reported in the DG5 Internal Flooding Register. Properties flooded due to Other Causes (Blockage, Collapse or Equipment Failure) will be placed in the 'excluded' section of the same register and reported in Table 3 of the AIR.
- First time flooding where hydraulic Incapacity is confirmed shall be supported by weather reports and any supporting DAS data.
- A property affected by internal flooding as a result of hydraulic incapacity is categorised by the severity of the rainfall event and how often flooding has been recorded.
- All properties affected by flooding due to hydraulic incapacity will be investigated to ensure that each property or area flooded is accounted for within the appropriate category.
- For repeat incidents, supporting meteorological data will be required only if there is significant difference in the number of properties affected within the same location or if an event is deemed to be severe. An increase in frequency will affect the prioritisation and in some instances the register category of some or all properties affected.
- If the event was due to 'Severe Weather' the properties are placed in the 'excluded' section of the DG5 Internal Flooding Register.
- Where a property has flooded as a result of failure of a mitigation device, it should be reported as an equipment failure.
- Only if a basement has a 'right to connect' to the public sewerage system and has flooded can it be identified as being affected by internal flooding and categorised appropriately.
- If the flooding is shown to be outside Northern Ireland Water's responsibility (Third Party), it is excluded from the DG5 Internal Flooding Register and flagged appropriately within the exclusion register.
- Properties added due to better information are placed in the DG5 Internal Flooding Register when flooding has been identified for the first time, usually as a result of network analysis, greater local knowledge or following customer contact.

13.1.2 Sources of Information

Historic information can be used with discretion in order to support or understand the full extent of a flooding incident.

If properties are found to have historically flooded when carrying out a study within a catchment (e.g. DAS) then details should be captured and the appropriate information passed to NSBU. Supporting information would include:

- The use of verified hydraulic models.
- Site and level Information.
- Customer interviews.
- Shared information between other relevant bodies e.g. Local Authorities.

Information can also include the following:

- Flooding at a property being caused by blockages/ equipment failure rather than hydraulic incapacity. Acceptable supporting data would be date stamped CCTV, or static photographic evidence.
- Severe weather classification – data provided by weather reports
- Customer Interviews
- Flooding shown to be caused by a Third Party.

13.1.3 Investigations where Hydraulic Overload is suspected

After a flooding incident has occurred it is recorded and passed to NSBU who will carry out further investigative work to ensure that the cause, mechanism and impact of flooding is identified and analysed as soon after the event as is practicable.

This process will ensure that:

- The most appropriate action is taken.
- Where necessary a cost-effective solution proposed.
- Flooding regulatory registers are maintained with accurate and up to date information.

13.1.4 Incident Investigations

Initial site investigations will be carried out by the Contractor, co-ordinated by Networks Sewerage Section. The number of properties affected by the incident and the extent of the other external areas will be recorded regardless of the cause.

If the cause cannot be attributed to 'other causes' i.e. through CCTV, visual inspections, jetting, customer liaison or third party, then a request for further investigation will be submitted via the work order. This request will be submitted to the Contractor, by Networks Sewerage for action.

13.1.5 Network Review

This is primarily a desktop exercise to review all available information on the site and relevant assets. This will include information on the catchment through existing asset management plans, DAS, hydraulic modelling, feasibility studies, MET office data analysis, and previous cluster data if a repeat incident.

If there are known operational hot spot areas then further work on capacity checks, assessment of hydraulic model predictions and historic information will be needed. A network review will only be carried out in detail where the mechanism of flooding is unclear or where the rainfall data and impact is inconsistent with other evidence.

13.1.6 Sites Investigations

These are carried out as soon as is practicable after the incident happening. This is to ensure that the necessary evidence is gathered as close to the event as is practicable.

Site investigations may also show that there is evidence to prove that unreported flooding has occurred. Investigations are carried out using the concentric circle methodology, where investigations will start at the property affected by internal flooding and work outwards to adjacent properties in all directions. This will ensure that all affected properties are captured and recorded, allowing the full scale of the internal flooding to be realised. This approach will be repeated for every property identified for each incident.

13.1.7 Customer Questionnaires

Customers can provide useful information on the events leading up to, during and after an incident has occurred. Where appropriate a customer questionnaire should be completed.

13.1.8 Weather Reports

Weather reports will only be requested if:

- It is a first time flooding incident.
- There is low confidence in understanding the problem.
- It is a repeat incident and there is a significant disparity between the numbers of properties recorded by recurring incidents.
- Severe weather is suspected

Use of weather reports to categorise properties

- Properties will be categorised as 'excluded due to severe rainfall' if the weather report identifies the storm during which the internal flooding occurred as having a return period of greater than 1 in 20 years.
- Properties will be placed in the 1 in 20 register if the weather report identifies the storm during which the internal flooding occurred as having a return period of 1 in 20 years or less and greater than 1 in 10
- Properties will be placed in the 1 in 10 register if the weather report identifies the storm during which the internal flooding occurred as having a return period of 1 in 10 years or less and greater than 1 in 5

- Properties will be placed in the 2 in 10 register if the weather report identifies the storm during which the internal flooding occurred as having a return period of 1 in 5 years or less.

13.1.9 New Hydraulic Model Builds

If a hydraulic model does not exist and the extent of the problem cannot be determined from site investigations then a model may need to be commissioned.

Note: Prior to any major capital investment a verified hydraulic model should be used for solution development.

13.1.10 Localised Enhancements to Existing Models

Where a hydraulic model exists, then it may be necessary to carry out some localised enhancements. This process may include manhole survey, and / or dis-aggregation of the network prior to any solution development. The validity of the enhancements to the model must be checked in that area against the original verified model.

13.1.11 Conversion Factors

There are a number of situations where conversion factors must be applied when calculating the DG5 value of larger premises and buildings. Normally a single property or house is considered to constitute one DG5 property. This approach assumes the single property is of typical size, with a typical number of appliances discharging into the sewer network.

For larger premises and buildings that are likely to have more appliances a conversion factor needs to be applied for the full DG5 value of the property to be realised and prioritised accordingly. Properties that are classed as large commercial premises should have the conversion factor applied.

The DG5 value will be calculated by adding together all the loading units for all the appliances in the building and dividing this figure by 24 to produce the DG5 equivalent.

Water Fitting (See note 1)	Loading Units
WC Flushing Cistern	2
Wash Basin in a house	1.5
Wash Basin elsewhere	3
Bath (Tap nominal size 20mm)	10
Bath (Tap nominal size lager than 20mm)	22
Shower	3
Sink (Tap nominal size 15mm)	3
Sink (Tap nominal size larger than 15mm)	5
Spray Tap	0.5
Bidet	1.5
Domestic Appliance (subject to a minimum of 6 LU's per house) (See note 2)	3
Communal or commercial appliance	10
Any other water fitting or outlet (including a tap – but excluding a urinal or water softener)	3

Note 1; Reference to any fitting includes reference to any plumbing, outlet, dedicated space or planning or other provision for that fitting

Worked Example – 1 Alanbrook Road, Belfast (Thales Factory)

Water Fitting	No. per property	Loading Unit	Total
WC flushing cistern	46	2	92
Wash basin in a house	0	1.5	0
Wash basin elsewhere	0	3	0

Bath (tap nominal size 20 mm)	0	10	0
Bath (tap nominal size larger than 20 mm)	0	22	0
Shower	4	3	12
Sink (tap nominal size 15 mm)	70	3	210
Sink (tap nominal size larger than 15 mm)	0	5	0
Spray tap	0	0.5	0
Bidet	0	1.5	0
Domestic appliance	0	3	0
Communal or commercial appliance	0	10	84
Any other water fitting or outlet (including a tap – but excluding a urinal or water softener)	10	3	30
			428

DG5 Equivalent;

428 / 24 = 17.83 (rounded up to 18 units)

13.1.12 At Risk Categories

Properties are placed under one of the following three categories in the DG5 Internal Flooding Register:

1 in 10 – Frequency of flooding once in 10 years; Properties are classified here if either:

- The property has flooded once in 10 years from non-severe rainfall events
- The property has flooded from a single event shown to be less than a 10-year return period storm but more than a 5-year return period storm. (weather report required)

2 in 10 – Frequency of flooding twice in 10 years; Properties are classified here if either:

- The property has flooded more than once in 10 years from non-severe rainfall events
- The property has flooded from an event shown to be less than 5-year return period (weather report required)

1 in 20 – Frequency of flooding once in 20 years; Properties are classified here if either:

- This is the default category for all historical flooding properties coming into the register.
- The property has flooded from an event shown to be less than 20 year return period but more than 10 years. (weather report required)

Properties that have previously flooded and are included in the DG5 Internal Flooding Register but which have since not flooded in the last 10 years during a non-severe rainfall event, will be placed into the 1 in 20 category.

13.1.13 Timing Out

Properties can move between the different DG5 Internal Flooding Register categories, if they have not had a repeat flooding incident over a certain period of time.

Properties at risk of flooding internally due to hydraulic incapacity will move between the flooding register categories on a 'timing out' basis, as follows:

- If a '2 in 10' property does not suffer repeat flooding, caused by hydraulic overload, within 6 years it will be downgraded to '1 in 10'.
- If a '1 in 10' property does not suffer repeat flooding, caused by hydraulic overload, within 11 years it will be downgraded to a '1 in 20'.
-

13.1.14 Restricted Toilet Use

RTU is an NIAUR AIR reporting requirement. Properties suffering from RTU are placed in one of the three categories discussed in Section 4.1.12, and recorded in the AIR.

13.2 Format of Internal Flooding Register

13.2.1 Record Data held on each Property

The records held on each property on GIS will include at least;

- Date of Incident
- Property Address – Property Number, Street Name, Town and Postcode
- Grid Reference
- Sewer Type
- Asset causing flooding incident
- Library of Documented Evidence for addition
    - Field Manager Report, GIS Map, Incident Report, Ellipse Report, Met Office Report (if applicable) and Confirmation of CCTV
- Library of Documented Evidence for removal
    - DG5 Beneficial Use Form

13.2.2 Property and Incident Unique Identifiers

A DG5 incident number is used within the DG5 Internal Flooding Register and all related registers as a unique identifier to distinguish one incident from another.

Structure of DG5 Property and Incident Numbers

- DG5P – corporate indicator that the record is a DG5 Property
- 0000001 – unique seven figure number for each DG5 Property
- DG5I – corporate indicator that the record is a DG5 Incident
- 0000002 – unique seven figure number for each DG5 Incident

The generated seven figure number is unique for both DG5 Properties and Incidents and no two DG5 Properties or Incidents can have the same seven figure combination.

All historic and new DG5 properties will be assigned a DG5 incident number, using the above format. DG5 Property and Incident numbers will be allocated in order of date added to the register.

14 Internal Flooding Register – Periodic Maintenance

Periodically the register should be assessed to check for the following:

- Properties that have been recorded as flooding but have not had a repeat flooding after 10 years will be demoted to the 1in 20 category within the register but they are not automatically removed from the register.
- Comprehensive audits of the DG5 Internal Flooding Register must be carried-out annually (or when necessary) to ensure the information held within is accurate and reflects what has happened throughout the year.

15 Internal Flooding Register – Solutions

15.1 Permanent Solutions

A permanent solution to flooding risk is dependent on the cause. Where the problem can be isolated, a quicker and cheaper permanent solution could be implemented. However, this is not always the case and a permanent solution can take several years to construct due to the solution development, design, and tendering and construction process.

In some cases the cost involved to rectify a problem will far exceed the benefits. This means that where the solution cost exceeds a certain level per property then other action may need to be considered i.e. 'Right to purchase', 'Mitigation' or 'Do nothing' alternative.

A permanent solution will enable a property to be removed from the register.

Permanent solutions can fall into one of the following categories:

- Sewer upsizing and flow attenuation; these types of solutions require a hydraulic model and extensive data collection and analysis to understand the extent of the problem and therefore identify the appropriate cost effective solution.
- Property isolation; if a single or small number of properties are shown to be affected then where the cost of other more traditional solutions far exceeds the benefit then isolation may be seen as the most appropriate long term solution.
- Right to Purchase; it is not NI Water's normal policy to purchase a customer's property. However, where there is extreme and persistent flooding the most cost-effective solution may be seek to purchase the at risk property.

15.2 Mitigation and Contingency

Mitigation will be considered where the costs of capital schemes are high or where permanent works are not planned in the short term. Where it is appropriate to do so, mitigation measures can offer customers some degree of protection against internal flooding from the public sewerage system i.e. reduce the frequency of incidents.

Mitigation measures can be applied to either persistent internal flooding or where there is severe flooding to sensitive areas. However, mitigation measures will not enable a property to be removed from the register. Where a property has flooded as a result of failure of a mitigation device it should be reported as equipment failure.

Properties with mitigating measures installed to prevent internal flooding will be defaulted into the 1:20 category of the DG5 Internal Flooding Register and will be prioritised accordingly for solution.

15.3 Prioritisation and Cost Benefit Analysis

The company does not at present carry out cost benefit analysis on DG5 projects. However to allow prioritisation of schemes the process set out below is proposed.

- Review of existing CWP to ensure DG5 related programmes of work are captured.
- Assessment of DG5 Register to develop prioritisation methodology relative to frequency and impact.
- Receipt and analysis of feasibility studies to compliment prioritisation matrix including cost details.
- Review to ensure alignment with Regulatory Reporting on AIR and CIM returns.

16 Internal Flooding Register – Removals

A DG5 Property can be removed from the DG5 Internal Flooding Register when one of the solutions described below has been implemented. This will usually be triggered by construction of a CWP Scheme, or new information on the causes of historic events. Removal of a property from the register can only be done through a formal business process and where there is a justifiable reason, supported by sound evidence.

These properties will have supporting documentation to demonstrate that the grounds for removal have been met. This evidence will be presented to the DG5 Panel for formal removal of a property. Solutions to be considered before property removal from the register can be approved include;

- Permanent Solution; where a permanent solution has been constructed and is in beneficial use, the Capital Programme Team will present a DG5 Beneficial Use Form to the DG5 Panel as a record of confirmation of the flooding scheme completion. This will include the properties to be removed and cost of solution apportioned to flood prevention. The Beneficial Use Form will be approved by the DG5 panel members, and the identified properties removed from the DG5 Internal Flooding Register. They will in turn be re-categorised as removed due to 'company action'. The property will remain in this category of the register indefinitely or until such a time as the property floods again.
- Minor Works; where there has been evidence of asset deterioration, e.g. subsidence or through third party interference and a minor asset improvement project has been completed to rectify the flooding issues. Evidence that the flooding has been resolved will come from the appropriate FM and signed off by the DG5 Panel members.
- Better information - Severe weather; the event causing the property to be on the DG5 Internal Flooding Register is confirmed to have > 20 year return period (i.e. severe) and supported by appropriate meteorological or DAS investigation data.
- Better information - Flooding due to Third party; where investment on the sewer network would not prevent a repeat internal flooding incident and NI Water does not have responsibility for the problematic sewer the properties should be removed from the DG5 Internal Flooding Register. The details should be recorded in the AIR commentary. However, if the responsibility for the problematic sewer is shared with NI Water, then the property remains on the Register.
- Better information - Flooding is due to other causes; where it can be confirmed that flooding has occurred due blockage, collapse or equipment failure details will be recorded as 'other causes' within the excluded section of DG5 Internal Flooding Register.

Note: Mitigation will not enable a property to be removed from the register.

Finally, errors can happen;

- Error, identified by Audit or Investigation. Where an error can be clearly shown to have occurred, then the property can be removed.
- Operational improvements are an unlikely explanation for justifying removal of properties from the register. Therefore any supporting data must be robust, for example, CCTV data. In the case of permanent solution then the property would be removed.

17 Annual Information Returns

The DG5 Internal Flooding Register will contain the information required to prepare Table 3, of AIR. The information required for the AIR will be retrieved from DG5 Internal Flooding Register.

- AMS will report on internal flooding incidents due to hydraulic incapacity held in the DG5 Internal Flooding Register.
- NSBU will report on internal flooding incidents due to other causes held in the 'excluded' section of the register
- AMS and NSBU will collaborate closely when compiling the AIR for internal flooding.

Appendix 1 – **Asset Performance Customer Questionnaire**

Northern Ireland Water
Asset Performance
Asset Management
Westland House
Old Westland Road
BELFAST
BT14 6TE

Tel: 08458 770002
Fax: 028 2566 3131
Email: [redacted]
www.NI Waterater.com

Owner/Occupier

Email
Your Ref
Our Ref
Date

Dear Sir/Madam

SEWER FLOODING AT THE ABOVE ADDRESS

I refer to your complaint of sewer flooding on, and would be very grateful if you could help me with the following pieces of information:

- Was the flooding internal (e.g. in the house or attached garage) or external?
- What was the cause of the flooding?
- Has it been resolved by Northern Ireland Water or others?
- What way was it resolved (if known)?
- If it is still occurring, when did it last happen?

Could you please respond by calling me on my mobile (xxx) or emailing me. Your assistance in this matter will be much appreciated.

Yours faithfully,

[redacted]
Asset Performance

Appendix 2– **Asset Performance DG5 Determination Report**

	ASSET PERFORMANCE DG5 DETERMINATION REPORT
Name and Address (Add BT Code)	
Incident Date	
Flood Type	
Rainfall Report	
Ellipse Notes	
CEMS Notes	
Customer Comments	
F.M. Comments	
Restricted Toilet Use	
Other Information Sources e.g. Pollution Reports, WWPS alarms, Captrax, Flooding Incident Reports, CCU etc.;	
GIS Assessment	
Existing Sewer Details	
Type of sewer	
Diameter (mm)	
Material Type	
Year Laid	
Sewer Location	
CCTV Carried Out	
Sewer Desilted	
Comments	
Topographical Assessment	
Possible Number of Other Properties Involved	
Flooding Mitigation (NRV's etc. ;)	
Drainage Area Catchment	
D.A.S.is Network Model Available	
DAS is there Predicted Flooding	
Summary	
Determination	
Signed	
Date	

Appendix 3– **DG5 Flooding Incident Report**

Northern Ireland Water – Flooding Incident Report

Work Order Ref No: ___ Name: _____

Location: _____

Date: _____ Arrival time: _____

1) Internal Flooding: ☐

Main Sewer	☐	Lateral Sewer	☐
Adjacent properties flooded	☐	Attached garages flooded	☐
Basements/Cellar flooded	☐	Restricted Toilet use	☐
Kitchen	☐	Hallway	☐
Living room	☐	Dining room	☐
Shop/integral store	☐	Downstairs bathroom	☐

2) External Flooding: ☒

Main Sewer	☒	Lateral Sewer	☐
Public road/footpath	☐	Public area	☐
Agricultural land	☐	Curtilage	☒
Detached garage flooded	☐	Detached shed or store flooded	☐

3) Comments on cause of reported incident: (Select only one category below)

Blockage	☒	Collapsed sewer	☐
Defective road gulley	☐	Defective private drain	☐
M&E equipment failure	☐	Other:	

4) Clean up operations:

Not Required ☐ Further Action Required ☐ Completed ☒

5) Previous History:

Yes ☐ No ☒ Not Aware ☐

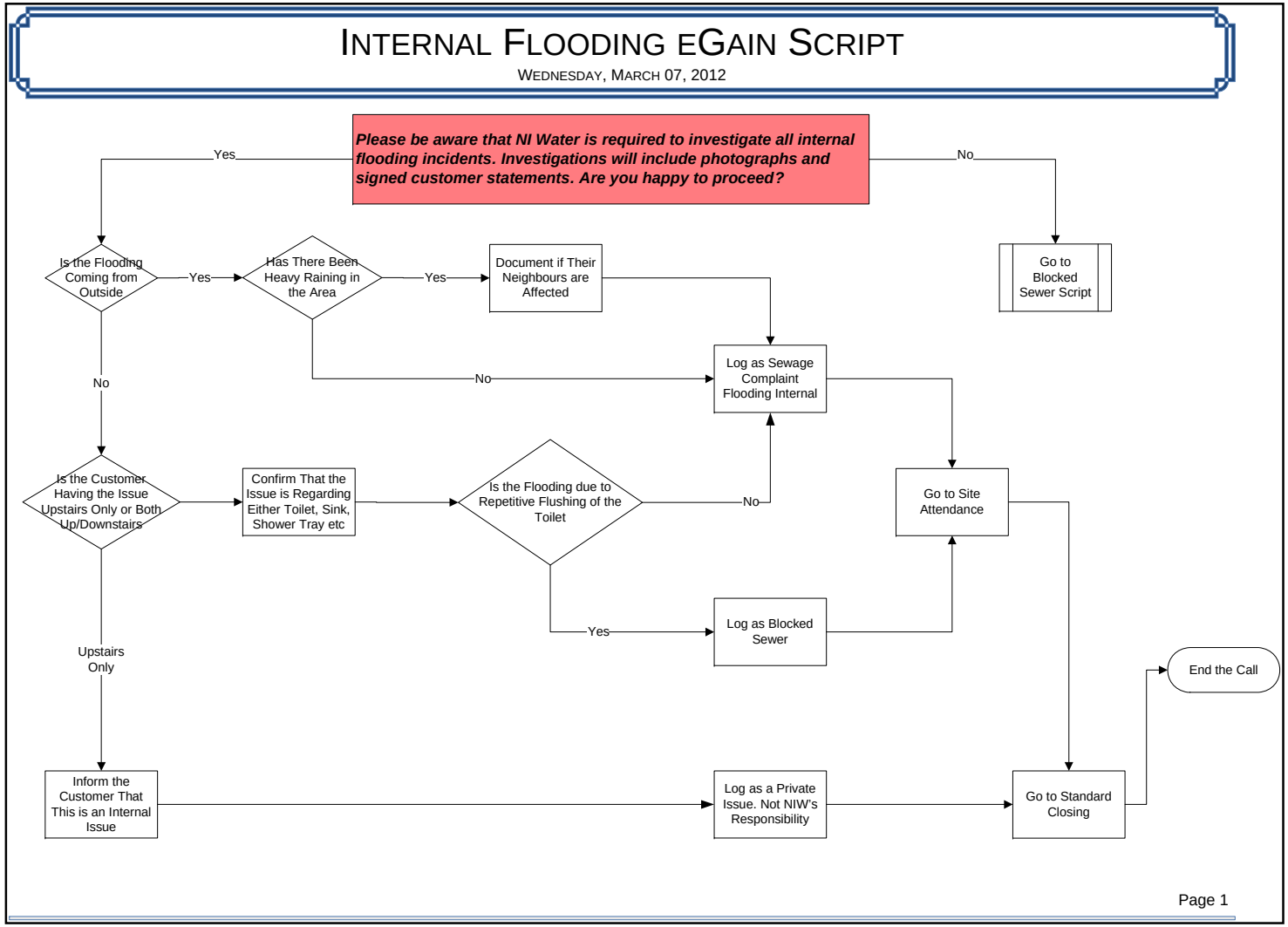
6) Weather Conditions:

Dry ☐ OR Wet ☒: Heavy ☐ Medium ☐ Light ☒

Comments: Especially for Flooded jobs or Follow on jobs

PHOTO FOR FLOODED JOBS:

Appendix 4– **Call Centre DG5 Caller Script**


INTERNAL FLOODING EGAIN SCRIPT
WEDNESDAY, MARCH 07, 2012
Please be aware that NI Water is required to investigate all internal flooding incidents. Investigations will include photographs and signed customer statements. Are you happy to proceed?
Yes
No
Is the Flooding Coming from Outside
Yes
Has There Been Heavy Raining in the Area
Yes
Document if Their Neighbours are Affected
Go to Blocked Sewer Script
No
No
Log as Sewage Complaint Flooding Internal
Is the Customer Having the Issue Upstairs Only or Both Up/Downstairs
Confirm That the Issue is Regarding Either Toilet, Sink, Shower Tray etc
Is the Flooding due to Repetitive Flushing of the Toilet
No
Go to Site Attendance
Yes
Log as Blocked Sewer
Upstairs Only
End the Call
Inform the Customer That This is an Internal Issue
Log as a Private Issue. Not NIW's Responsibility
Go to Standard Closing
Page 1

Copy of DG5 Register

Project No	Scheme Title	GIS CODE	Address	Post Code	Register	Scope of Work	Feasibility De	PC Year
KR444	Sydenham Upgrade (Interceptor Sewer)					Major Scheme regarding building a tunnel in East Belfast and also side works. Feasibilty on going.		PC21
		DG5P0002528	[redacted] Belfast	BT6 0AR	1 in 20			
		DG5P0002529	[redacted] Belfast	BT6 0AR	2 in 10			
		DG5P0003700	[redacted] Belfast	BT6 0EW	2 in 10			
		DG5P0003663	[redacted] Belfast	BT6 9FH	2 in 10			
		DG5P0003664	[redacted] Belfast	BT6 9FH	2 in 10			
		DG5P0003665	[redacted] Belfast	BT6 9FH	2 in 10			
		DG5P0002867	[redacted] Belfast	BT6 0FP	2 in 10			
		DG5P0003764	[redacted] Belfast	BT6 0FP	2 in 10			
		DG5P0003781	[redacted] Belfast	BT6 0FR	2 in 10			
		DG5P0003782	[redacted] Belfast	BT6 0FR	2 in 10			
		DG5P0003701	[redacted] Belfast	BT6 0LR	2 in 10			
		DG5P0003702	[redacted] Belfast	BT6 0LR	2 in 10			
		DG5P0003559	[redacted] Belfast	BT6 0ED	2 in 10			
		DG5P0003014	[redacted] Belfast	BT6 0ED	2 in 10			
		DG5P0003699	[redacted] Belfast	BT6 0JH	2 in 10			
		DG5P0003789	[redacted] Belfast	BT6 0EE	2 in 10			
		DG5P0003666	[redacted] Belfast	BT5 5FL	2 in 10			
		DG5P0003667	[redacted] Belfast	BT5 5FL	2 in 10			
		DG5P0000045	[redacted] Belfast	BT5 6DL	1 in 20			
		DG5P0003668	[redacted] Belfast	BT5 6AB	2 in 10			
KR444	Stand Alone Scheme.	DG5P0000131	[redacted] Belfast	BT4 2DU	1 in 20			
		DG5P0000191	[redacted] Belfast	BT4 2GJ	1 in 20			
KR442	Glenmachan Street, Belfast					Feasibility Study being carried out	29/08/2014	PC21
		DG5P0000529	[redacted] Belfast	BT9 7FJ	1 in 20			
		DG5P0000530	[redacted] Belfast	BT9 7FJ	1 in 20			
		DG5P0003763	[redacted] Belfast	BT10 0JH	2 in 10			
		DG5P0002659	[redacted] Belfast	BT9 7GH	2 in 10			
KR500	Glenmachan Greystown Ave/Upper Malone Road, Belfast					Feasibility Study being carried out	30/05/2014	PC15
		DG5P0000004	[redacted] Belfast	BT9 6UG	2 in 10			
		DG5P0000634	[redacted] Belfast	BT9 6UG	2 in 10			
		DG5P0000635	[redacted] Belfast	BT9 6UG	1 in 20			
		DG5P0003762	[redacted] Belfast	BT9 6UG	1 in 20			
		DG5P0000840	[redacted] Belfast	BT9 6UF	2 in 10			

Sheet2

Northern Ireland Water

Level of Service Methodology

DG6 Response to Billing Contacts

DG6 RESPONSE TO BILLING CONTACTS

Methodology and Procedures

Northern Ireland Water (NIW) has contracted out the provision of Customer Billing and Contacts (CBC) to Echo Managed Services (Echo). Echo is the provider of CBC services to NIW.

DG6 response to billing contacts (Process Summary):

1. Telephone Contact (go to step 4) or Documentation received (in Capital House)
2. Documentation opened by the Echo Payment Processing Team and passed to the NIW Customer Support Team
3. Scan and Index (documentation only which is archived after scanning)
4. Raise and allocate CMS contact type
5. Assess and Investigate
6. Update and compose response

All customer response letters are printed by NIW Contacts Team and dispatched locally. Exceptions to this include correspondence generated through DSTI which are bills (including recalculated bills) and automated recovery letters / correspondence. The process for printing and distribution of bills and other stationery on a daily basis is detailed below:

Items generated in Rapid:
Information received and updated by the agent, (which automatically updates the system), may trigger the system to create an item of stationery. The agent can also take a course of action (which will manually update the system) and may also trigger an item of stationery. This may include receipt of a leakage form from the customer, Data Protection Letter, Transfer of Responsibility etc. All such contacts are recorded as closed as at the date of dispatch.

The BSA team, within Echo, reconciles numbers of bills, letters and forms and sends all relevant items of stationery created the previous day through to DSTI for printing. These are signed-off, printed, enclosed and prepared for pick-up by TNT. Currently only bills, recovery notices and letters are handled this way. For DG6 reporting purposes the date of resolution of the item or date of the substantive response is used as the closure date.

Definitions

A billing contact covers any communication from a customer or their representative (on receipt of written permission from the customer as per data protection) regarding a customer account which requires a response or an action by NIW and does not constitute a written complaint. A customer's representative may be a solicitor, Citizens Advice Bureau, local MLA, or stakeholder representative, e.g. Ulster Farmers Union or CCNI.

Billing contacts can be received by telephone, in writing, by e-mail, by fax, by personal visit or written on a piece of company correspondence, for example a bill which is returned to NIW. Offensive or abusive written contacts are not included.

A billing contact not received in writing is a DG6 event. A written communication, however, may be classified as a DG6 or DG7 event. Where the content or tone of written communication indicates an element of dissatisfaction, however mildly worded or unjustified, it should be classified as a written complaint and reported under DG7.

Billing contacts include calls that are made to pay a bill as this will result in an action being taken on the customer's account.

Email / Faxes: When an e-mailed, faxed or hand delivered contact is received after 16:30 it will be scanned, logged and indexed on the next working day. The date of receipt recorded will match the actual date of receipt.

Emails and faxes, which can be sent at any time, that are received outside or normal operating hours shall record the receipt date as the date it was delivered to the company. For example, if an email is received on a Saturday this is recorded as day 0. The next working day (Monday) would be counted as day 1. If an email is received on a Sunday, then this is recorded as date of receipt – day 0 and Monday as day 1.

Exclusions

A query relating to billing for domestic customers, including the provision of meters is not a DG6 contact, as domestic customers are not billed by NIW.

For reporting purposes, other exclusions are:

- Written complaints (these are handled as DG7);
- Correspondence from banks re direct debits (clarified with NIAUR as excludable);
- Contacts logged in error;
- Freedom of Information requests;
- Calls relating to septic tanks and septic tank payments (these are non-appointed);
- Calls relating to new connections, not yet completed; and
- Copy correspondence from and to NIW personnel.
- Correspondence relating to payment processing, e.g. BACS notifications, payment giros and remittance advice notes.

Multiple Accounts

NIW received clarification from the Regulator as to how contacts from customers with multiple accounts should be logged, so as not to over or understate the DG6 position.

Therefore, for reporting purposes, a DG6 contact received; by a customer holding multiple accounts with NIW that is requesting an update to their standing account details will be recorded as 1 DG6 event on 1 account and as a non-reportable event on the remaining accounts.

End of year (contacts not dealt with at end of year)

As per NIAUR guidance, if a billing contact is not resolved by the time the year-end report is run, the contact is included in the total number of billing contacts received for the year in which it is received.

The contacts which are open at end of year are included in the reported figures for the number dealt with within 5 working days. This is based on the assumption that a holding response has been issued within 5 working days and that the reported date of closure will, at the point of final resolution, be backdated to the date on which the holding response was issued.

It was later verified that, per the assumption above, each of those contacts still open at yearend were closed in line with the aforementioned methodology with a reported closure date within 5 working days of receipt.

Further, the response time for any open billing contacts received within the reporting year is reported to be within 5 working days based on the assumption that a substantive holding response has been issued for each by working day 5. On resolution of the billing contact, these billing contacts will be closed back to the date of the holding response. A sample of 70 of the 355 open DG6 contacts were checked to see if they had a holding letter issued on or before working day 5 and 100% of the 70 sampled did.

Auditing

Internal Audits – This process falls within Echo's Quality Management system and is audited several times a year under ISO9001/2000.

Performance and the achievement of Billing enquiries are recorded as per the Contact Handling Expected Service Levels which are measured monthly in accordance with *Contract Schedule 2.2*. Detailed monthly monitoring reports of actual performance are generated by Echo within CorVu and presented in the Monthly Business Review Pack (MBRP) to NIW within 5 working days of the end of each month covering lines 1.1.1 to 1.1.9 in accordance with schedule 8.4.

Validation of DG6 figures provided by Echo are carried out monthly by NIW in accordance with *Contract Schedule 2.2* and recorded in the "NIW Response to the Monthly Business Review Pack" document which is published for comment and review. Any discrepancies on monthly DG6 performance are raised with Echo and escalated.

Echo regularly performs quality reviews against contacts received to ensure contacts are dealt with correctly. Although no documentation is made available to NIW, regular reviews are carried out by Team Managers within Echo, including:

- Weekly call listening;
- Monthly scoring based on call listening and feedback to individual agents;
- Coaching and feedback; and
- Daily monitoring of all billing contacts with team feedback when necessary.

CSD Services MI and Data Team performs a call listening exercise on a monthly basis. Each month a random selection from the total calls received is made. This selection includes both billing and operational calls. Billing calls are assessed for:

- For accuracy;
- To determine if memo contents are clear and precise;
- To ensure the conversation is accurately recorded on Rapid; and
- To ensure correct use of CMS code.

Any findings are reported back to Echo management through the Response to the MBRP.

An end to end process review is carried out by internal audit.

Sources of information

System used

The telephony system comprises of a suite of Virgin Media, Avaya products and a Cirrus ACD. The Virgin Media switch is tightly integrated with the Cirrus platform which provides CTI (Computer Telephony Integration) and ACD (Automatic Call Distribution). Calls can be automatically routed to appropriately skilled agents ensuring a quality response to the customer, at first point of contact. Cirrus is also the call logging system for attaining recorded calls.

The software comprises of Call Media Enterprise Console with an integral reporting suite which distributes calls based on skills sets and SLA's.

Written correspondence is date stamped at point of receipt by Echo (unless received after 16:30), scanned on a (Kodak i 620 scanner) and indexed. This safeguards security and minimises administration. Once correspondence is scanned it is indexed and batched with an allocated batch number. The scanned image is then available to Rapid Users.

All contacts received should be recorded on Rapid. Reports from CorVu are generated by Echo, validated by NIW, and are used to report on DG6 performance.

Actual data

Actual data is extracted from the billing system RapidXtra using CorVu. CorVu 'DG6 Received QRY (Live)' is used to calculate the total number of DG6 contacts received (table 4, line 1) and to calculate the DG6 closed performance (table 4, lines 2-5). DG6 data analysis is produced monthly and re-run for the entire reporting year, providing the necessary information essential for the Director General's reporting requirements.

Sampling

Actual data is used to report DG6 performance (table 4, lines 1-5). Sampling is only used by NIW for data quality purposes and to provide comfort around the assumption that DG6 contacts open at year end will be closed back to a holding letter issued on or before working day 5.

Reliability

All data is taken from the main billing system to ensure it is reliable and accurate.

Responses

This is defined as a response to a billing contact which may be by telephone, written correspondence or personal visit. Responses will provide the following:

An explanation of NIW's relevant policy or procedure and indicates why, in NIW's opinion, no further action on the customers billing contact is required; or

Informs the customer when action on his/her account will be taken if action cannot be taken immediately due to circumstances beyond NIW's control, for example customer needs to obtain clearance from third party, such as a landlord.

Whichever type of response is dispatched it must substantively answer all points raised by the customer and be recorded and date stamped.

Use of telephone

The telephone is the company's preferred method of responding to a billing enquiry. All DG6 related telephone calls should result in a CMS memo being raised and coded by the agent according to the individual enquiry. An audit trail of the response will be recorded on the billing system (Rapid) as a memo with a CMS type. A full record of the actual conversation and its outcomes is held on Call Media. A CMS is created on Rapid and contains information including:

- CMS type;
- Customer name;
- Customer address;
- Telephone contact;
- Query details; and
- Action required.

Use of letters

Letters are only used when it is not possible to deal with the customer by telephone, when a written reply has been requested by the customer and when it is deemed more appropriate by the agent. Telephone calls not dealt with at first point of contact are dealt with by the Echo CRC Workflow department. A CMS is created on Rapid and contains information including:

- CMS type;
- Customer name;
- Customer address;
- Telephone contact;
- Query details; and
- Action required.

Holding letters are sometimes used but are customised by the agent. They are held within Rapid and are posted directly to the customer and not through DSTI.

Use of personal visit

If a DG6 telephone contact requires a personal visit, (e.g. a meter query team site visit), the agent will raise a CMS contact. This will be transferred to the Echo CRC Workflow Team who takes ownership for resolution and closure of the contact. The Echo CRC Workflow Team agent will send a holding letter to the customer once the visit request has been raised. It is this date/time of this letter that is used for closure.

Response time

This is the number of working days between receipt of a contact by NIW up to and including the day of despatch of a response. For the purpose of this calculation, the day of receipt; provided it is a working day; is counted as day zero and the next working day as day one.

Emails and faxes, which can be sent at any time, that are received outside or normal operating hours shall record the receipt date as the date it was delivered to the company. For example, if an email is received on a Saturday this is recorded as day 0. The next working day (Monday) would be counted as day 1. If an email is received on a Sunday, then this is recorded as date of receipt – day 0 and Monday as day 1.

CCNI

Written billing contacts received via the Consumer Council for Northern Ireland (CCNI) office on a customer's behalf are included.

Holding reply

This is defined as a response to a billing contact which advises the customer that NIW will need to undertake additional research or other actions before being able to respond to the customer's contact. A holding reply is counted as a substantive response if it informs the customer what further action needs to be taken to respond to the query and includes a date by which investigations or further actions will be complete and by when the customer will receive a further communication from NIW.

A holding reply will close a contact for DG6 reporting purposes but not for NIW until all actions have been taken. NIW provides a reply within 5 working days of the customer contact and a further holding letter is sent if there is a delay in finding a resolution. The company will include the number of days in which they will contact the customer again. Enquiries and follow up questions will not be counted as a DG6 contact.

Other Issues

Please refer to DG6 Company Commentary.

Northern Ireland Water

Level of Service Methodology

DG7 Response to Written Complaints

DG7 METHODOLOGY 2022/23

Methodology and Procedures

Northern Ireland Water (NIW) has contracted out the provision of Customer Billing and Contacts (CBC) to Echo Managed Services. Echo Managed Services (Echo) are the provider of CBC services to NIW. Written complaints are dealt with in-house by the NIW Intelligent Operations function. Customer Support Agents within the Complaints & Executive Mail Team scan, log & index documentation whilst Customer Service Officers within the team case-manage and respond to the written complaints.

The following high level process steps are followed:

- Whitemail received (in Capital House);
- Whitemail opened by Payment Processing (Echo) who separate payments & non-customer documentation before scanning the remainder and creating a batch on RapidXtra, which is then indexed by Customer Support team in Westland;
- Emails printed and sifted into DG6, DG7 and non-reportable categories by Customer Support;
- documentation date stamped, scanned, logged & indexed by Customer Support;
- CMS contact raised to the NAS Account Services inbox in RapidXtra (Customer Billing & Contact Management System) and case raised in OEBPM (upgraded version of the BPM solution);
- cases allocated to Customer Service Officers;
- Customer Service Officers assess, investigate and case-manage the complaint as appropriate;
- request for information and/or action sent to relevant part of the business; then
- review information provided by business, update accounts, draft & issue response.

Allocation to DG7

Written complaints are recognised from all other correspondence by following the definition of a written complaint as set out in the Reporting Requirements and Definitions Manual. All incoming written correspondence is passed to Customer Support. It is then sifted and categorised as DG6, DG7 or non-reportable according to the Utility Regulator's definitions. Following that, it is date-stamped, scanned, logged and indexed by Customer Support.

The reported response times for all written complaints are derived from the RapidXtra database. All written complaints, with the exception of exclusion categories detailed herein, are included in this total.

Definitions

A DG7 complaint is defined as any written communication from a customer or customers' representative (e.g. Citizens' Advice Bureau, solicitor), alleging action or inaction, or service or lack of a service on the company's part or that of its agent or contractor has fallen below the expectation of the customer – even if written in mild and friendly terms. This includes any expression of annoyance or dissatisfaction by the customer, or disagreement with the company.

Written complaints include letters, e-mails and faxes.

Also included are:

- second or subsequent complaints;
- general complaints;
- complaints that may seem unfair or frivolous;
- complaints received by Consumer Council for Northern Ireland; and

- complaints written on returned Company letters or stationery (e.g. bills).

Should the Company receive a petition, it is classed as a DG7 contact and the Company will respond only to the customer who has sent in the petition. This will be classed as one complaint although the complaint and the response letter will be archived against the account of each customer that has signed the petition where practical.

Exclusions

The following are excluded from DG7:

- cheques and stubs;
- written DG6 billing queries;
- all other Company mail;
- complaints that are sent anonymously;
- complaints that are offensive or abusive;
- complaints referring to non-appointed activities;
- complaints returned alongside customer satisfaction surveys;
- complaints not about the services and functions of the Company (e.g. complaints about executive salaries, advertising campaigns);
- complaints about the activities of other utilities (for example signage around trenches);
- complaints about recreational and amenity activities not defined as duties imposed by the Water and Sewerage Order 2006; and
- Public liability claims (although any related complaint should be included as normal).

End of Year (contacts not dealt with by end of year)

As per UR guidance, if a complaint is not resolved by the time the year-end report is run, the complaint is included in the total number of complaints received for the year in which it is received.

Further, the response time for any open complaints received within the reporting year is reported to be within 10 working days based on the assumption that a substantive holding response has been issued for each by working day 10. On resolution of the complaint, these complaints will be closed back to the date of the holding response.

Auditing

Each complaint also undergoes a series of quality assurance checks. The first is carried out by the Customer Service Officer who has been allocated the case.

They check that the case has been:

- correctly categorised as DG7;
- coded using an appropriate CMS code; and
- logged to the correct account(s).

The Customer Service Officer verifies that the information received from within the business is suitable to use in response to the complaint before the reply is drafted.

Once the response has been drafted, it is subject to a self-assessed Quality Assurance check during which adherence to an agreed Letter Writing Checklist is tested.

The Complaints & Exec Mail Team Manager/Supervisor performs further monthly sampling of contact categorisation to ensure accuracy. These additional monitoring systems check:

- DG7 categorisation;
- CMS description; and

- Advice Code for closed complaints (existence of and; accuracy of).

Sources of Information

Complaints are sorted into the relevant categories, date-stamped, scanned, logged then indexed, therefore ensuring security and minimising administration.

Each complaint received is scanned using the Fujitsu FI 6670 scanner. At the end of each "batch" of correspondence scanned, a batch number is allocated. The images can then be viewed by Customer Support on their PC and indexing can begin. During indexing the following details are input:

- Property and/or Customer reference;
- Date of receipt;
- CMS group;
- CMS description; and
- Document type

The Operator ID is automatically populated based on which member of Customer Support log the correspondence. At the indexing stage the scanned items are categorised, allowing the CMS description to be applied.

Changes in system during the reporting year

There were no major changes to the key systems in 22/23.

Actual Data

Actual data is extracted from the billing system RapidXtra using CorVu. CorVu 'DG7 Received QRY (Live)' is used to calculate the total number of DG7 contacts received and to calculate the DG7 closed performance. DG7 data analysis is produced monthly and re-run for the entire reporting year, providing the necessary information essential for the reporting requirements.

Sampling

Sampling is not used in compiling received data for DG7. Sampling is only used by NIW for data quality purposes.

Reliability

All data is taken from the main billing system to ensure that it is reliable and accurate.

Responses

Upon receipt of a complaint, we ensure that relevant action is undertaken, provide a substantive response and ensure the contact is closed on the Customer Contact Management System (RapidXtra).

NIW replies to all written complaints, regardless of the sensitivity of the issue or subject raised by the customer.

Our responses do one or more of the following:

- provide an explanation of our policy or procedure and indicate why no further action is required;
- inform the customer that action to resolve the complaint has been taken and identifies when this action occurred;
- informs the customer when the action to resolve their complaint will be taken if it cannot be done immediately e.g. capital works programme scheduled for completion in the future;

- answer all issues or questions raised by the customer.

Use of Telephone

Where appropriate, telephone calls are used to respond to written complaints. Telephone calls are also used to update customers as the progress of complaints under investigation. The customer account on RapidXtra is annotated with details of the call in these cases.

Use of Standard Letters

Standard letters are not used to respond to complaints - all responses are personalised and customised.

Use of Personal Visit

When a personal visit is used to respond to a written complaint, a letter confirming the content of the visit is provided to the customer. The date of the visit is used as the date of response.

NI Direct

Complaints received through NI Direct are not reported.

Telephone Complaints

Complaints received via telephone are reported as DG9 telephone complaints, not DG7. Billing telephone complaints are reported as DG6.

Date of Receipt

Written complaints are date-stamped per the date of receipt.

Date of Dispatch

The date of dispatch refers to the date on which a response is sent to the customer. The date of dispatch is recorded as the date closed.

Response Time

This is the number of working days between receipt of a contact by NIW up to and including the day of dispatch of a response. For the purpose of this calculation, the day of receipt (provided it is a working day) is counted as day zero and the next working day as day one.

When an email or fax is received after 16:00 it will be logged using the actual date of receipt, not the date on which it is scanned.

The reported date of receipt for emails/faxes received outside of normal operating hours is the actual date on which the complaint was delivered to the company. For example, if an email is received on a Saturday, this is recorded as day zero. The next working day (normally the Monday) would be counted as day one. If an email is received on a Sunday then this is recorded as date of receipt (day zero) and (normally) Monday as day one.

Substantive Holding Reply

This is defined as a response to a written complaint which advises the customer that NIW needs to undertake additional investigation or other actions before being able to provide a full response. A holding response is considered substantive if it advises the customer what further action needs to be taken in order to fully respond, when this will be done and when they will receive a further communication from NIW.

Items remain open until all actions have been completed but will be closed back to the date of the holding response for reporting purposes when said actions have been completed.

When a date by which investigations or further actions will be complete cannot be given, we will give the date by which we will update the customer.

Holding responses can be issued in writing or provided by telephone.

Repeat Contact

Where a complaint has been responded to and results in a period of correspondence each written contact is treated as, and reported as, a separate complaint.

This is done even if NIW consider the complaint has been dealt with as far as we are able.

Consumer Council for Northern Ireland (CCNI)

Complaints received in writing via CCNI will be logged as complaints and recorded in DG7 figures. All complaints from CCNI are received in writing.

CCNI enquiries and follow-up questions are not recorded as complaints.

Complaints to or about Contractors

Complaints made directly to contractors about work carried out on our behalf are recorded following notification to NIW through agreed process. Such complaints will be recorded even they are handled directly by the contractor.

Complaints about contractors received directly by NIW are reported even if they are referred to the contractor to deal with.

Holding Response & Frequency

Monitoring systems have been in place throughout the reporting period to support recording on the number holding responses issued throughout 22/23.

System-based report data was used to derive the number of holding responses issued between 01/04/22 and 31/03/23.

In cases where the investigations were on going by the expiry date of the initial holding response, a further holding response will have been issued.

Based on the recorded data, we can say that one (or more) holding response was sent in relation to 166 DG7 contacts received in 22/23. Therefore, it can be concluded that one or more holding response was issued in relation to 9.16% of the DG7 contacts received during 22/23.

Other Issues

Please refer to the DG7 Company Commentary.

Northern Ireland Water

Level of Service Methodology

DG8 Bills for Metered Customers

DG8 - BILLS FOR METERED CUSTOMERS

Definitions

Every time a metered account is billed a reading type is updated onto the Rapid billing system (Rapid) to identify the type of reading.

The reading types and estimated indicator are used to distinguish the meter reading status of each metered account, which is subsequently analysed in Rapid to create the 'DG8 Meter Summary Analysis' report.

DG8 Reporting

The Rapid 'DG8 Meter Summary Analysis' report ensures we correctly identify each of the reporting requirements in the sequence shown.

The reading indicators are extracted from Rapid RPU005 meter consumption update screen. The 'DG8 Meter Summary Analysis' report extracts this information and compiles this in line with the requirements.

The report is run annually at the end of the financial year, covering the period 1 April to 31 March and includes all categories requested by the Director General for the June Return reporting.

A bill is only counted as issued if it is sent to the customer within the reporting year. Any bills that are sent after this date will be included in the following reporting year's figures.

Total Metered Accounts

The report confirms the number of active accounts with either water or water and sewerage consumption which are metered.

Company Reading and Billed

If a Company reading has been taken during the within the defined annual cycle period, and a bill created against that reading, it will be included under the 'Meters read by Company' indicator. The exception to this is those meters that are billed outside of Rapid (trade effluent meters).

Company readings are recorded by the Meter Reader (MR) via a PDA. Each day the MR will upload those accounts that have had a reading and or an abnormal reading from the PDA to Temetra, for transfer to Rapid.

No Bills Received During Reporting Year

Bill status is scanned for no bills issued during the reporting year and is reported under the 'Not Billed this year' indicator.

Meters included in this category are identified as having a reading entered but the 'bill sent' flag set to 'No'

Customer Readings

Reading types are scanned for not receiving a bill based on a Company Reading but at least one bill based on a 'Customer Reading' and will be included in the 'Meters read by Customers' indicator.

'Meters Read By Customer' represents the number and percentage of the meters read by the customer within the DG reporting year.

The Company encourages our customers to take readings themselves so that they are aware of their usage. Customer reads can be registered for billing purposes by using the On-line facility available on our website or by calling our billing line.

Customer readings are recorded via a correspondence management system. A team member will then update the account and issue a revised bill. A customer reading type indicator will be displayed on the system. The estimated read will also be visible on the system

Estimated Only

Any meters that have not satisfied any of the preceding indicators will be recorded under the 'Meters Estimated Only' indicator.

'Meters Estimated Only' represents the number and percentage of meters only estimated within the DG reporting year. The following read types are identified as estimates: Estimate Exchange Final, System Estimate, and Manual Estimate.

Unread for Two Years

If no Company reading exists during a two year period, it will be reported under the 'No Company Reading for 2 Years' indicator.

Specifically two years back from the end date of the DG report.

Exclusions

The following are excluded from the indicators:

- Charged on another basis (not metered consumption)
- Test meters
- Trade-effluent meters
- DRD or NIW meters
- Fire supplies
- Properties occupied continuously for less than six months
- Complex accounts – Including combination meters i.e. the 'low-flow' element is excluded.
- Void properties

Reading and Billing Frequency

Frequency of reading:

- Non-household properties are scheduled to be read twice a year. The reading schedule for each read is completed over a six month period, the 1st read cycle is April to September and the 2nd read is October to March.
- Non-household – large volume users are read and billed monthly.
- There are a number of meters that have been assigned a reading frequency of Annual Read within the Rapid system. However, these meters are either DRD Supply or Test Meters which fall under the permitted exclusions and will only be read to assist business requirements, as neither category generates a customer bill.

Frequency of Bill Issue:

- Household properties – the Company do not currently bill domestic properties
- Non-household – the Company aim to read at twice a year and bill twice yearly.
- Large non-household users – the Company aim to read and bill monthly.

Method of Meter Reading

Before the start of each reading period, whether monthly or six monthly, details of metered accounts scheduled for reading were transferred from Rapid to the Temetra system on the last working day prior to the commencement of the reading period.

The accounts are then downloaded on to an electronic data storage unit (PDA) to facilitate the actual reading of the accounts by a MR in the field.

The meter reading information obtained by the MR is then transferred back to Rapid from Temetra, which is subsequently updated upon the meter being read.

The data transfer from Temetra to Rapid is not solely automatic and currently requires manual assistance by the MAM team.

Abnormal Readings

An abnormal reading can be identified by one of two factors:

- A meter reading that gives a usage that does not fall in line with previous usage patterns, identified by the MR, billing system or customer.
- A meter reading that does not correlate with previous readings taken.

The PDA unit automatically calculates the usage between a new reading and the previous reading. The MR checks the usage against the previous readings that are displayed on the PDA. If the usage appears to be abnormal the MR will enter a report onto the PDA and or use a pre-set indicator to explain why (trouble codes).

A daily ‘Rejected Readings’ report is produced through the Rapid billing system that also identifies any abnormal usage that require further investigation. Each account on the report is checked and if accepted the reading will be utilised and a bill issued. If the rejected read cannot be added, a site visit request is raised to instruct a Meter Query Technician (MQT) to investigate and provide further information.

Previous Misreads

Accounts that are identified as having previously been misread are subject to re-calculation based on the most recent meter reading.

Access Denied / Meter Reading Unobtainable

In such instances that the Company is unable to gain access to the meter, a skip code is entered which identifies that access was denied. If the customer does not provide a reading before the billing run a system estimate is used.

Faulty Meters

Where a faulty meter is identified and a MR or MQT replaces the meter it is recorded on an MRD (Meter Replacement Docket). This is captured electronically on the Temetra reading system and the replacement actioned by MAM, or in a VR response with the replacement actioned by the contact agent managing the response.

Where NIW staff complete replacement projects such as installation of AMR meters on the Ards peninsula, these replacements are completed out of cycle and captured in paper form before being scanned and forwarded to MAM, who complete the replacement on Rapid. NIW are currently reviewing this process and developing an electronic replacement process to remove the need for physical paper MRDs.

If a MR or MQT cannot replace the meter, a MMR (Meter Maintenance Request) is completed which their FM signs off and sends to the Meter Maintenance (MM) team, MM then forwards the MMR to the Contactor. When the meter has been replaced, the Contractor advises MM of the replacement details. The old and new details will then be returned by MM on a MRD to MAM for updating on the billing system.

Updating, Post Bill Issue

If the Company has any disputed readings, the account will be suspended while further investigations are being made. Once the investigations are finalised, a revised bill will be issued if necessary.

Assumptions

Those accounts excluded from the analysis are categorised using the definitions provided by the reporting requirements, as noted above.

Additional Information

Echo, on behalf of Northern Ireland Water, are responsible for the billing activity.

Some meters are billed on a sundry schedule rather than the normal billing schedule within Rapid. These are Trade Effluent bills. Trade Effluent bills are excluded from DG8.

Northern Ireland Water

Level of Service Methodology

DG9 Telephone Contact

Definitions:

Principle Advertised Customer Contact (PACC) Points

For the purposes of the indicator, Principal means the main contact point(s) which customers are encouraged or directed to phone. Advertised refers to Customer Contact Points which are available in telephone directories, newspaper advertisements, Northern Ireland Water (NIW) website and NIW literature. It does not include temporary contact points which have been established to handle a specific topic.

NIW PACC points include:

- **Billing Enquiries:** 0345 877 0030
- **Debtline:** 0345 8770 050
- **Waterline:** 0345 744 0088
- **Leakline:** 0800 028 2011
- **Text Relay (for customers with hearing difficulties):** Registered users are provided with a prefix for any NIW number they wish to ring.

An MLA/ER Hotline (0345 300 6461) was initiated on 21st August 2007 to provide a direct means of contact for elected representatives and council members telephoning to enquire about specific issues in their constituencies.

In addition, the following dedicated campaign lines are in operation for certain sections of the community to aid NIW's response:

- Developers Line: 0345 877 0003
- Emergency Services: 0345 877 0008
- Telecare Quick Check: 0345 877 0080
- Closed Communities: 0345 877 0007

Telephone Contact

The indicator is intended to monitor incoming telephone traffic which can be regarded as originating from NIW's customer base. All calls received to telephone lines other than principle advertised customer contact points are excluded for reporting purposes (i.e. all other business lines).

Company Agent

NIW has contracted out the provision of Customer Billing and Contacts (CBC) to a 3rd party provider known as Echo Managed Services (Echo). Echo is the provider of CBC services and is based in Capital House, Belfast.

A company agent is defined as an employee of Echo (operating from a principal customer contact point), who operate the contact on behalf of NIW. All calls are answered directly by Customer Service Advisors who are direct employees of Echo.

Office Hours

The indicator covers office hours only. Office hours are defined as the hours which NIW's PACC points are open. These are detailed below:

- **Billing Enquiries & Debtline:** Monday to Friday - 08.00 to 20.00
  Saturday - 08.00 to 18.00
  Sunday - 12.00 to 18.00
- **Waterline:** 24 hours a day, 7 days a week, 365 days a year

- **Leakline:** 24 hours a day, 7 days a week, 365 days a year
- **MLA and dedicated lines:** 24 hours a day, 7 days a week, 365 days a year

Telephone Complaints

Calls received about the following water service issues are expected by NIAUR to be included as a complaint:

- no water;
- lack of pressure;
- leaks;
- taste and odour;
- discolouration; and
- hard water (except for simple enquiries, e.g., dishwasher settings).

In addition, calls received about the following wastewater service issues are also expected to be included as a complaint:

- sewer flooding other than those received through NI Direct; blockages; collapsed sewers / manholes;
- smells from sewage treatment works / pumping stations; and flies from sewage treatment works.

NIW have created a series of CMS logging codes, within the RapidXtra system, to cover these issues. All telephone contacts logged by the agent using one of these codes will be included in the reported volume of telephone complaints. In addition, where a customer expresses dissatisfaction during their call, the agent has the ability to select the complaint flag which will identify the log for inclusion in the reported figures.

NIW excludes from the reported figures, those telephone complaints which are:

- Anonymous;
- About the activities of other utilities;
- Received through NI Direct Incident Line; and
- Received on telephone lines other than principle advertised customer contact points (i.e. all other business lines).

Complaints to/about contractors

Telephone complaints to contractors or other agents about work being undertaken on behalf of NIW are reported only where NIW are informed. Complaints about contractors or other agents are also reported, even if the complaint is referred to the contractor to resolve.

Telephony Structure:

Telephone Providers Network

The supplier during the reporting year transferred from BT to Virgin. From 1st April 2022 to the 31st August 2022all calls were directed through the Cirrus platform before hitting the relevant location for Warm Voice contacts, HVCH or IVR. From the 1st September 2022 to date NIW transferred over to the Avaya platform which is NIW's corporate telephony platform. The data for the first six months was recorded by Cirrus and used for the contacts reporting. Since the changeover to Avaya calls are now recorded on this platform and used for reporting.

High Volume Call Handling (HVCH) System

The HVCH system is aimed at ensuring NIW can handle large volume of calls during periods where calls can increase very quickly e.g. Major Incidents, heavy rainfall incidents, etc. This ensures that all calls are logged and customers given specific information resulting in higher levels of customer satisfaction during service interruptions. The HVCH system will recognise customers using the telephone number we hold on their customer record or it can use Voice Recognition to allow customers to speak their Post Code.

Calls will be delivered to HVCH direct from the Avaya platform menu structure when a caller selects option '4'. Calls delivered to this campaign will be offered to agents first in Avaya CMS which is the replacement to Call Media on the Avaya Platform, however if an agent is not available the call will automatically divert to the HVCH Platform. The divert is controlled by the Virgin intelligent network, calls will divert on busy tone, route failure and no reply.

Since September 2020, 'No Water' calls have been handled on an 'HVCH First' basis, meaning any customer who calls in regarding a No Water issue will be directed to the HVCH service rather that a CRC agent, with the exception of customers on the Customer Care Register (CCR). All other calls options are set to 'Agent First' mode.

As each caller hangs up in the HVCH application, a Call Data Record (CDR) is created which details the caller's activity during the call. A portion of the CDR is passed to NIW in the customer contact file for the creation of work requests through Rapid to Ellipse.

IVR Cirrus

The IVR platform is not set to Agent first which means all calls will hit the Virgin switch first and then be directed to the IVR platform. If completed successfully on the IVR, the call will never hit the Avaya switch and will not be reported in Avaya CMS. However, the Billing & Debt line and Septic Tank IVR are linked to the Billing Enquiry and Waterline PACC lines and will be reported using the CIRRUS Voice platform.

IVR is a technology that automates and simplifies interactions with incoming customer calls. In doing this, IVR provides a conversation, which can be either pre-recorded or generated audio that assists, directs, and/or guides customers automatically without the need to talk to an agent. Within these interactions customers are able to communicate by using either the dial pad or speech recognition.

This system was also used to report total calls figure when agents were advised to work from home.

Avaya CMS

During 2022/23 with the transfer over to the Avaya Platform, Call Media was also replaced with Avaya CMS. This was a like for like replacement system. Calls received on all other PACC lines and the majority of calls received on Waterline are delivered to the Avaya CMS system for allocation to an appropriately skilled agent. If there is more than one Customer Service Agent available, the system allocates the call to the one who has been available the longest period of time.

If no skilled agent is available immediately then the call will be queued until a skilled agent becomes available. The Avaya CMS telephony system provides an internal queuing system where callers will hear a ring tone and then a comfort message and music on hold.

The use of Avaya CMSs skill based routing ensures that incoming calls are distributed in a

way that will ensure a quality response to the customer.

Call Recording

All calls received in the call centre via Avaya CMS are recorded via Verint WFO call recording software. This replaces the NICE call recording software. This software records the time of the call and the telephone number that called the centre if available.

Call Handling:

Practices and Procedures

All calls received are managed by either HVCH call routing system or Avaya CMS and routed directly to an appropriately skilled agent based on the first available call handler.

Wherever possible, an agent will deal and action a customer's enquiry at point of contact. Where this is not possible, a message will be raised on the system for further investigation or where appropriate the customer will be transferred.

All enquires are logged on RapidXtra automatically by HVCH or manually via an agent, covering the reason for the contact (contact type) and the advice given or action taken. This is the case whether or not further work is required ensuring all calls are recorded, even if they remain open for further action.

Calls which require further action are logged on RapidXtra and work flowed to teams or individuals as required or passed to Ellipse for issue to mobile work management operational teams. This includes instances where further actions or NIW investigation is required in order to provide a full response to the customer.

Transfers between PACC Points

Agents are multi-skilled, so transfers are not generally made. Transferred calls are reported as one call.

Direct Measurement/Interpolation/Extrapolation

NIW measures statistics for all telephone calls received on PACC points which are delivered directly to the Avaya CMS telephony system and to the HVCH system. Sampling, interpolation or extrapolation is not used in compiling totals.

Messaging:

Use and activation of IVRs (Interactive Voice Response)

During business as usual an introductory message is set up and assigned to each queue, e.g. Billing Enquires Line. The message greets the customer and thanks them for calling the relevant number. It explains that an agent with be with them shortly and to note that calls are recorded to help provide quality assurance and training.

If a customer telephones out of hours, the customer will receive an out of hour's message. In the event of disaster recovery and building evacuation, a recorded message is activated which explains to customers that calls cannot be answered at the moment, please call back later.

As noted above, the Virgin network IVR tool is now being utilised on Waterline to direct

customers calling in relation to Trouble Calls, Septic Tank requests and other operational issues. This allows NIW to transfer Trouble Calls to the HVCH system in situations where calls exceed the volume of agents available in the CRC.

As noted above, the CIRRUS Voice IVR Platform is now being utilised to automate and simplify interactions with particular call types from incoming customer calls. The IVR provides a conversation, which can be either pre-recorded or generated audio that assists, directs, and/or guides customers automatically without the need to talk to an agent.

Use and activation of message manager systems

No message manager systems were used during the reporting year.

Use and activation of answering machines

Answering machines were not used during the reporting year.

Company Systems:

Telephony

Systems comprise of a suite of Avaya products and Avaya CMS. The Avaya switch is tightly integrated with the Avaya CMS which provides Computer Telephony Integration (CTI), ACD and outbound dialler functionality through three main components:

- Avaya S8710 providing core telephony switching
- Avaya CMS software providing ACD, CTI and dialler functionality
- Call Recording through Verint WFO; and
- High Volume Call Answering (HVCH), hosted service provided by Twenty First Century Communications.

Calls that arrive at the Avaya switch are routed by the Avaya CMS to appropriately skilled agents via softphones.

Location

All systems are facilitated by two servers, one located in Westland and one in BT Belfast. There is currently a 240 line capacity dedicated inbound calls from NIW customers, 30 dedicated lines for outbound calls and 30 dedicated lines ring-fenced for priority lines e.g. ER Hotline, Emergency Services, etc.). The scale of the current capacity was implemented in preparation for domestic billing which was deferred in April 2007.

Software

Software comprises of Avaya CMS, the integral reporting suite supplied with Verint WFO call recoding.

Other Issues:

Text Relay Service and Text Phone

NIW has provided for a Text Relay and Textphone service to support customers with hearing difficulties.

Text Relay Service is a third-party service whereby the customer rings a Text Relay operator, who in turn contacts the Customer Relations Centre via the normal customer line (Waterline/Leakline/Billing, etc.) on behalf of the customer. This is recorded as a call

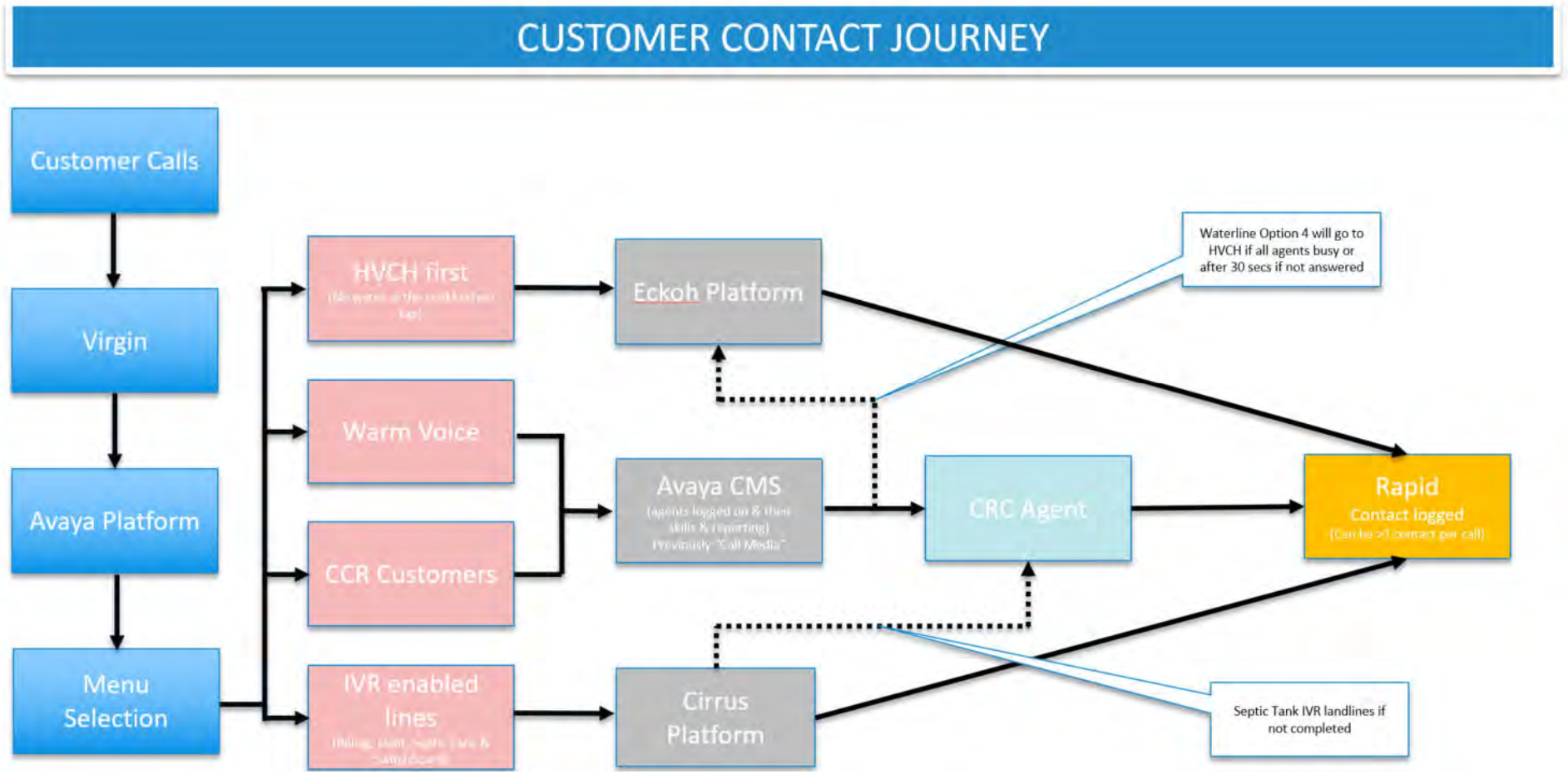
received on the appropriate line.

Rejected Calls

During the reported year calls currently rejected for any of the following reasons are not included in total calls received:

- The time being out of working hours
- The queue is too full and cannot accept any more tasks. Each queue holds 500 calls at any one time.
- The task queued for the ‘Max Queue Time’ and was returned to the connector.

Appendix 1


CUSTOMER CONTACT JOURNEY
Customer Calls
Virgin
Avaya Platform
Menu Selection
HVCH first
Warm Voice
CCR Customers
IVR enabled lines
Eckoh Platform
Avaya CMS
Cirrus Platform
CRC Agent
Rapid
Contact logged
Waterline Option 4 will go to HVCH if all agents busy or after 30 secs if not answered
Septic Tank IVR landlines if not completed

Annual Information Return 2023

Section 4

Customer Research Appendix

Annual Information Return 2023

Customer Research Appendix

Customer Satisfaction

One of the fundamental measures concerning the level of service received by customers is their level of customer satisfaction. NI Water measures customer satisfaction through different surveys:

- Voice of the Customer (VoC)
- Omnibus Survey - Question 1 & Question 2.

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

Intelligent Operations (IO) are continuously working on providing an improved customer experience. Under the auspices of the Customer Engagement Oversight Group (CEOG) and the Customer Measures/Satisfaction (CM/SAT), IO have been actively engaging with NIAUR, CCNI and DfI to develop a range of new quantitative and qualitative customer measures which are most relevant to us and our customers. These have been reflected in the new customer measures as agreed in the PC21 Final Determination.

These measures include the development of targets and methodologies more meaningful and timely customer satisfaction feedback to highlight, as close to real time as possible, those areas and activities which cause dissatisfaction for customers.

For regulatory reporting purposes in 2022/23, scores from the Voice of the Customer and the Omnibus Survey are used/reported in Table 5.

E	CUSTOMER SATISFACTION MEASURES
23	Customer advocacy measure
24	Omnibus survey question 1
25	Omnibus survey question 2

In 2018/19 NI Water introduced Voice of the Customer (VoC) in which surveys are conducted by Watermelon, an independent Customer Experience and Insight specialist.

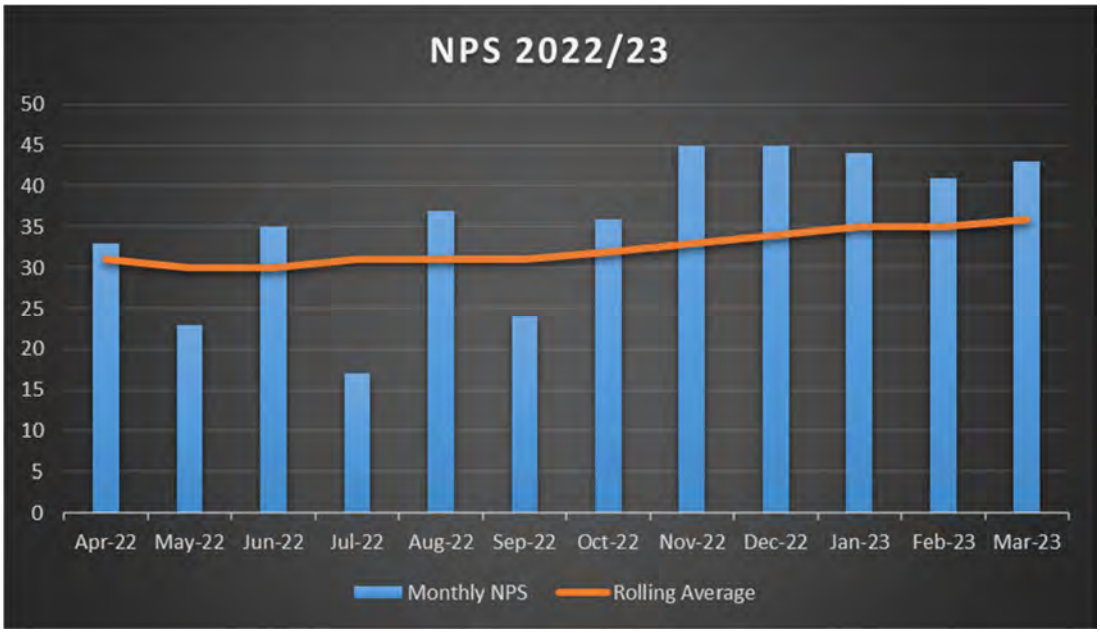
These are near real time surveys conducted daily, with each customer being asked to complete a survey after interacting with NI Water. This provides a much greater sample size over the course of an entire year (approximately 600 surveys per month).

The objective of the surveys is to capture the views of those customers who have had dealings with the company, not only through the main contact centre but other parts of the business. On top of surveying customers who have engaged with our contact centre, an automated report has been set up to look at any operational work completed the day before via Ellipse. Once the Work Order is closed within Ellipse the data is linked to the initial contact(s) logged in Rapid to obtain the details of the customer who had the issue. This data is then passed to Watermelon who then survey that customer.

Customers are asked "*Based on your recent experience with us, how likely are you to recommend NI Water? Please respond 0 for very unlikely up to 10 for very likely*".

The score is calculated using Net Promoter Score methodology based on results from the previous question. The survey is based on resolved contacts only in relation to all areas of the business.
NI Water achieved an overall score of 36 for the reporting year 2022/23.

Customer Advocacy Measure Monthly Score 2022/23



Omnibus Survey

The Omnibus survey is different from VoC, in that it also includes customers who have not contacted us during the year – known as the Silent Majority. Our records show that on average 80% of our customers do not contact/need to contact us. Yet it is important to seek and understand their views regarding the level of service they are receiving from NI Water, to determine if there is any correlation between their views and those customers that do contact us.

Ipsos MORI conducted quantitative research on behalf of NI Water, between 13th February to 3rd March 2023, with the standard Questions 1 & 2 included in a series of questions being asked of domestic and non-domestic customers.

- 1600 residential customers adults aged 16+ were engaged via Ipsos MORI's online KnowledgePanel. We received a higher response than last year with 985 responses (885 in 2021/22) received via the KnowledgePanel. As with previous years scores are weighted to be representative of the NI population in terms of age, gender, social class and geographical location.
- 502 business customers were surveyed by means of Computer Assisted Telephone Interviewing (CATI), conducted by telephone from the Ipsos MORI Telephone Research Centre. As with previous years quotas are controlled by location, industry sector and size. For consistency with previous research, non-domestic customers were categorised as services or manufacturing.

A summary of the key findings is as follows:

- Findings from the research suggest strong levels of endorsement of water services in Northern Ireland, with
    - 72% (81% in 2021/22) of domestic customers and 77% (76% in 2021/22) non-domestic customers indicating that they are satisfied with the services they receive from NI Water.
    - Of the domestic customers, significantly more of those aged 25-34 (78%) agree with the statement. "I am happy with the service I receive from NI Water."

  - Of the non-domestic/business customers, more than three quarters (77%) agree with the statement "I am satisfied with the service I receive from NI Water". Significantly more businesses with >26 employees (83%) strongly agree with this statement.
- Overall, the average level of satisfaction, weighted over both customer bases, is 73.7, as follows:

	Sample Size	Score	Total
Domestic	985	72	70,920
Non-domestic	502	77	38,654
Total	**1487**		**109,574**
Average			**73.7**

- In terms of Advocacy:
  - 62% of domestic customers rated NI Water with a score of 7 or more out of 10 in terms of likelihood to recommend. The average score across the sample was 7.43. Those in urban areas and Protestants were more likely to recommend NI Water.
  - 68% of non-domestic customers rated NI Water with a score of 7 or more out on 10 in terms of likelihood to recommend. The average score across the sample was 7.55, which is slightly higher than domestic advocacy.

Service Incentive Mechanism (SIM)

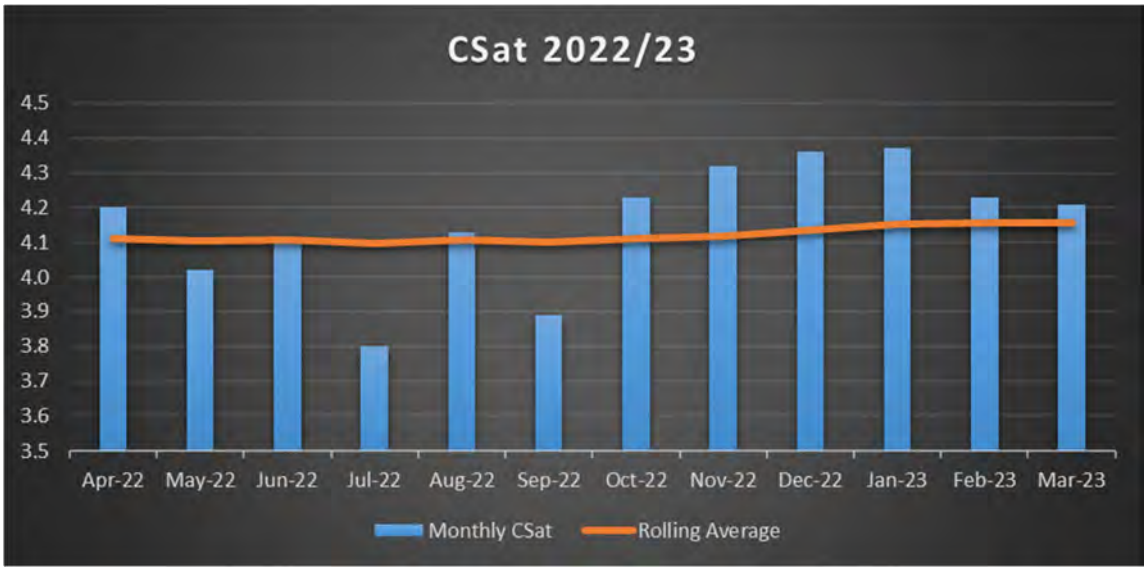
SIM is divided 50% quantitative and 50% qualitative penalties. Since 2019/20 the Voice of the Customer service provided by the third party, Watermelon has been used to facilitate the Qualitative element. All customers which have interacted with NI Water in any capacity are asked to complete a survey which provided a much greater sample size of close to 600 surveys per month. This larger, ongoing sample allowed for a more reliable reflection of NI Water's customer metrics, while also allowing NI Water to monitor ongoing trends.

As part of the survey, customers are asked "*taking everything into account, how satisfied were you with the way NI Water handled this matter? Remember, that 0 is very dissatisfied through to 10 for very satisfied*"

NI Water supplies contact details (telephone number, date of initial contact, CMS code detailing the type of contact) to Watermelon each day via Secure File Transfer Protocol, with Watermelon returning any completed surveys the same way as soon as they are completed. This information is then stored in NI Water's encrypted data warehouse.

The scores given in the aforementioned question are normalised to a 5 point scale and are used to drive the qualitative, overall satisfaction component of the SIM Score.

Customer Satisfaction Monthly Score 2022/23



PC21 Customer Research

In preparation for the PC21 business plan, NI Water appointed Ipsos MORI as it strategic customer research partner to undertake all research surveys over the next 5 years (from January 2019 to March 2024). This covers the PC21 main and interim customer research, Omnibus surveys and further annual support.

Ipsos MORI completed the PC21 Customer Research under the guidance and monitoring of CEOG – Consumer Engagement Oversight Group – incorporating representatives from CCNI, DfI, NI Water and NIAUR.

The final PC21 Customer Research was completed in Winter 2019/20 and findings included in the PC21 Business Plan.