

Annex T - PC21 Development Outputs

Information from Appendix 4.3 of NI Water's Business Plan															UR Monitoring Expectations		
Ref	Development Objective	Sub-Prog	Reason Development Objective is Necessary	Project Scope	Proposed Project Outcomes	Estimated Spend on Development Objective	Estimated Capital Investment on Solution	Key Milestones for Development Objective	Target	Status	Key Milestones for Solution Investment	Target	Status				
01	Consumer Engagement	N/A		Strategic We have entered a long-term strategic partnership with engagement experts (pos 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; - and undertake a consumer research and engagement review/appraisal at the mid-point of PC21. At the mid-point of PC21, we will commence tender 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.										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 CMSAT 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. We 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 our annual cost and performance report process. It is anticipated that work will need to be undertaken by the PC21 Mid-term Review or earlier.			
02	Consumer Protection / Customer Care Register	N/A		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.										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. We 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 our annual cost and performance report process.			
03	NI Water Alpha Ltd - WTWs Treatability Improvements	04a	This Project is currently at appraisal stage and sufficient detail is not available at present to fully assess requirements.	NI Water Alpha Ltd operate and maintain four WTWs (Dunone Point, Castor Bay, Ballinrees and Moyda) 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.	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.	£0.00m	£7.41m	Completion of appraisal and update PC21 business case Completion of regulatory Change Control process	Jan-21	On Target	NI Water A1 options and business case complete NI Water cost & programme understood and construction start Beneficial use	Apr-22	On Target	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 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).			
04	DWD Recast & Emerging Issues Study	04z	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.	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.	Allow assessment of potential future funding need.	£0.293m	TBC	Unable to quantify milestones until such times that the DWD Recast is adopted into UK legislation (or otherwise)			Unable to quantify milestones until such times that the DWD Recast is adopted into UK legislation (or otherwise)			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 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.			
05	Refresh of DG2 Register	08z	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.	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 re-zoning the low pressure properties onto a higher pressure supply or increasing the outlet settings of PRV/WPS. Capex solutions will include upgrading water mains or re/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: 1953 - Studies to Inform Water Inty (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) SP00 Capex Salaries; 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)	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	£0.76m	£10.1m	Develop a desktop GIS layer of 'at risk' low pressure areas Initial logging exercise to verify highest priority locations for DG2 removal schemes Develop new dedicated DG2 team Complete refresh of DG2 Register	Jun-20	On Target	Issue first batch DG2 removal schemes to contractors Develop further packages of DG2 removal schemes during remainder of PC21	Mar-21		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 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.			

06	Targeted Mains Renewals in High Leakage Areas	08z	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 £82.99m, 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.	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 UKWIP'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 WMM and an estimated £30k of this will be apportioned to developing an approach and methodology for Targeted Mains Renewals in High Leakage Areas. The 'Solidion Investment' costs estimates are a £10m portion of the overall water mains rehabilitation costs within 2296 – Watermains Rehabilitation (total of £92.9m Business Plan).	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 DGI interruptions to Supply figures	£0.03m	£10m	Develop the best practice approach and methodology to target mains renewal to counter the NRR and leakage in targeted DMAs Application of methodology as part of the overall update of WMM, to develop work packages of water mains rehabilitation schemes for construction	Jun-20	On Target	Issue first batch of 'Targeted Mains Renewals in High Leakage Areas' schemes (as part of update to WMM) ready for issue to contractors	Mar-21	On Target	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 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.
07	Leakage Innovation	09z	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 trialing new techniques such as satellite imagery, use of encapsulation repair fittings and Tied 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 Mld by the end of PC21.	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)	Assist with locating leaks Help to achieve the leakage reduction targets More efficient leakage detection Improve H&S of leakage operatives	£3.43m	£0m	Output report on current satellite imagery trial Purchase of acoustic and transient loggers Investigate and undertake trials on other satellite imagery technologies, with a report on output Purchase of other equipment (thermal cameras, drones, Ground Penetrating Radar and private gas detectors) with trials and periodic reports on outputs	Mar-21	On Target				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.
08	Smart Networks – ITS Strategy	09z	The needs for Smart Networks was 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 DGI figures.	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).	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 DGI figures Provides better facilities for alternative supplies during major interruptions Minimises customer impact by improving the location and operability of valves	£0.3m (TBC during development)	£7.0m	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 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-21	On Target	Complete first batch of pilots and testing of Smart Networks technologies, with periodic reviews and output reports	Mar-23		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.
09	WwPS / CSO Quality (UID) and WwPS (Capacity increase)	12b & 12c	This development output is required as the models used to define the solutions for the PC21 Business Plan have not yet been developed to Statement of Need status.	Combined Sewer Overflows, Wastewater Pumping Station CSOs 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	94No 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.	£14m	£148.04m	Fully developed solution (NW Stage A1) An estimated 60% prior to the PC21 mid-point review	Mar-24	On Target	Delivery of solution investment within the PC21 business period	Mar-27	On Target	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 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/un certainty.

10	Event Duration Monitors WwPSCSOs	12b	The Event Duration Monitoring (EDM) WwPSCSO 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.	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 Shetflin Waters. 2. Designated Bathing Waters. 3. Special Areas of Conservation (SACs). 4. Marine Conservation Zones (MCZs). 5. Water Framework Directive (WFD) classifications meeting a less than good status. 6. Designated as sensitive under Urban Waste Water Treatment Directive	To provide overflow data to inform NIEA of spills to the environment To alert CSOs of maintenance required at network CSOs	£2.6m	£23.96m	NW Stage A0 A1 Options and Business case complete	Mar-23	On Target	Delivery of first 41 sites	Apr-21	On Target	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.
					Prevent premature spillages						Completion of EDM Programme	Mar-27	On Target	
11	Cranfield Catchment, Kilkeel Storm Separation	12g	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.	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.	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 WwRS and WwTW Sustainable Development – increased capacity in the sewers allowing for future developments to be granted connections	£0.2m	£1.99m	Estimated Data for DAP Needs and Options Completion (Cranfield DAP complete) Estimated NW Stage A1 Options and Business case complete	Jun-21	On Target	Commencement of construction	Aug-23	On Target	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 DGS targets if required.
12	Storm Water Separation	12g	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.	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, Prestland Road – Bushmills, York Street – Belfast, Belleek, Foye Street Londonderry and Cranfield). (Cranfield IPAC 1931 and Foye 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.	Ecological and Environmental Impact – reduction in UR 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 WwRS 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	£0.57m	£14.3m	The development of the storm separation programme is ongoing throughout PC21 (individual named projects have development milestones, please refer to the Storm separation business case 1790 et al)	Mar-27	On Target	Completion of the investment to achieve the target of 218.72Ha	Mar-27	On Target	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.
13	Real Time Network Modelling	12i	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 NW with operational maintenance and targeted intervention, providing efficiency through targeted maintenance investment.	Undertake trial studies to ascertain the benefits and mechanisms to allow NI Water to transition toward real time network modelling in specific networks.	Maximise the capacity of the sewerage network Reduction in out of sewer flooding, pollution and blockages Assist NW with operational maintenance and targeted intervention, providing efficiency through targeted maintenance investment	£96k	£0.71m	Estimated NW Stage A1 Options and Business case complete	Mar-23	On Target	Completion of the investment to provide pilot projects within the sewerage network	Mar-27	On Target	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.
14	Urban Drainage Modelling - Live Models for IOC	20g	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.	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 optimise network operation and allow better informed decisions before and during incidents.	This will 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 before and during incidents.	£0.6m	TBC	Batch 1 – Two catchments Batch 2 – Three Catchments	2023	On Target	Real Time Network Modelling	TBC	N/A	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.
15	Innovation Initiatives	20g	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.	1. 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. 2. Innovation initiatives in the areas of: Capital Efficiencies; Operational Efficiencies; and Future Innovation. 3. Pilot studies and trials of new technologies to assess their benefits and potential integration into business as usual. The funding will not be used for full scale integration.	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.	£2.22m	TBC	Innovation strategy workshop to review key business areas and identify opportunities to be progressed during PC21 Obtain Board approval for innovation "focus areas" Develop Innovation Programme for 2021 – 2023 comprising list of specific innovation trials and pilots to cover first two years of PC 21 Prepare individual pilot and trial project business cases Tender of approved pilot and trial projects. (As dictated by detailed programme) On-site trials and evaluation of results and benefits (Within two months of trial completion) Annual review of outputs from programme of pilots / trials by the Asset Delivery Director. (In December of each year)	Feb/March 2020	On Target	Roll-out of successful pilot projects. (As dictated by detailed programme).	TBC	N/A	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.
									April/May 2020	On Target				
									September/October 2020	On Target				
									TBC	N/A				
									TBC	N/A				
									TBC	N/A				
									TBC	N/A				

	Urban Drainage Modelling - Studies to Inform PC27 - Top 271 Priority Drainage Areas	20g	This is required as NI Water's hydraulic models are key assets used to inform strategic studies, the Capital Works Programme and infrastructure planning and over 50% of NI Water's model stock is around 15 years old and has not been maintained.	Develop the scope and specification for the network models for the Top 271 Priority Drainage Areas including the extent of modelling and verification required.	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	£7.77m	TBC	Model Builds – Batch 1, 2 and 3	2021/22	On Target	Capital Interventions	PC27	On Target	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.	
								Model Builds – Batch 4, 5 and 6	2022/23	On Target					
								Model Builds – Batch 7 and 8	2023/24	On Target					
								Model Maintenance	2021 - 2027	On Target					
17	Raw Water Trunk Main Rehabilitation	2023c	A prioritised list of Raw Water Trunk Mains for rehabilitation is still to be established through pro-active condition assessments.	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. However a given the risk of supply interruptions if a Raw Water asset was to fail a budget has been identified for 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 – Water Asset Performance Modelling'. The rehabilitation project will be carried out under '2285 – Raw Water Trunk Main Rehabilitation'.	Reduction risk of Interruptions to Supply	£0.4m proportioned from the £3.35m IPAC 2576 project to this development objective	£1.00m	Establish preliminary prioritised list of Raw Water Trunk Mains for potential rehabilitation	Apr-21	On Target	Complete delivery of prioritised rehabilitation programme	Mar-27	On Target	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.	
								Completion of pro-active Condition Assessments of prioritised Raw Water Trunk Mains	Apr-23	On Target					
								Confirm prioritised list of Raw Water Trunk Mains for rehabilitation	Apr-24	On Target					
18	Culmore DA KL554 - Skeoghe Link Road	24a	Under the Derry Area Plan 2011, approximately 230 ha of land was zoned for development in the Glengallagh 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.	Provision of a solution to convey flows from Skeoghe Link Road development area (230 ha of land, estimated 8,000 properties) to the works at Culmore.	Comply with requirement to serve new development in Glengallagh area with sewerage infrastructure facilitating growth and development within the area for approximately 8,000 new properties, plus existing properties north of AS15 and industrial areas. Reduce network capacity issues to Penryn 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	£98k	£0.71m	Culmore DAP Options & Needs est. complete	Dec-20	On Target	Construction commencement onsite	Jul-24	On Target	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 DGS targets if required.	
								Estimated land purchase cost & programme understood	Jun-23	On Target	Construction completion	Jul-26	On Target		
								A1 Options and Business case complete	Dec-24	On Target					
19	LWWP Networks	12b and 12d	This Project is currently at appraisal stage and sufficient detail is not available at present to fully assess requirements.	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 DR. The aim of LWWP is to develop a Strategic Drainage Infrastructure Plan (SDIP) for the six WWTW 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 DR, 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 UID and DGS issues will require completion of modelling, including IEM, and site based investigations to identify the optimum solutions.	Protect against flooding and comply with the EU Floods Directive (water quantity). Resolve internal DGS 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	~£11.5m (LWWP Appraisals (WWTW, DAS, EM, SDIP) PC15 / PC21)	~£377m (PC21 & PC27)	Procurement Strategy for LWWP	Q2 2020	On Target	DAS and / or IEM appraisal studies (number of, on a rolling prog.)	Q4 2022	On Target	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 DR, NIEA and other stakeholder on needs, priorities and the programme for delivery. - Submit 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 if required.	
								Outcome (Needs Stage) of Drainage Area Plans	Q1 2021	On Target	Preparation of business cases for developed solutions on a rolling programme	From Q4 2022	On Target	Note that this links to other PC21 development objectives related to programme scope/capacity.	
								Outcome (Needs Stage) of Integrated Environmental Modelling	Q4 2021	On Target	Beneficial use	From Q4 2022	On Target		
20	LWWP Wastewater Treatment Works	16b	These projects are currently at appraisal stage and sufficient detail is not available at present to fully assess requirements.	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 DR. 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 DR, 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 issues will require completion of modelling, including IEM, and site based investigations to identify the optimum solutions.	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	~£11.5m (LWWP Appraisals (WWTW, DAS, EM, SDIP) PC15 / PC21)	~£580m (incl. outfalls) -£320m (excl. outfalls)	Procurement Strategy for LWWP	Q2 2020	On Target	WWTW appraisal studies (number of, on a rolling programme)	Up to Q4 2022	On Target	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 DR, NIEA and other stakeholder on needs, priorities and the programme for delivery. - Submit 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 if required.	
								Outcome (Needs Stage) of Drainage Area Plans	Q1 2021	On Target	Preparation of business cases for each WWTW on a rolling programme	Up to Q4 2022	On Target	Note that this links to other PC21 development objectives related to programme scope/capacity.	
								Outcome (Needs Stage) of Integrated Environmental Modelling	Q4 2021	On Target	Beneficial use of WWTW excl. outfalls (number of on a rolling programme)	Q1 2028	On Target		
21	AD - Asset Strategy Wastewater Asset Performance Modelling	20g	We need to develop risk based asset performance modelling tools and assessments for wastewater assets to inform detailed intervention during PC21.	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	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 to facilitate confident decision making and increased efficiencies during the implementation of the base maintenance programmes	£0.55m	TBC	Appointment of consultants	Jun-21	On Target	Outputs utilised to generate and inform detailed intervention Projects for delivery by NI Water during PC21	2021-2027	On Target	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.	
								Development of Tool	12 months	On Target					

22	AD - Asset Strategy - Water Asset Performance Modelling	20g	We need to develop risk based asset modelling tools and assessments for water assets to inform detailed interventions during PC21.	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 SVI/AV inspections 7. Water quality sampling strategic network	1. Plan work packages to deliver schemes efficiently and effectively for the Watermain 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	£3.35m	TBC	Strategic Trunk Main Condition Assessments Raw Water Aqueducts & structures investigations External specialist support to Verify and Package Rehab Schemes SR Condition Assessments PPRA Development of Strategic SVI/AV inspections Water Quality Sampling Strategic Network	2021-2027 2021-2027 2021-2027 2021-2027 2021-2027 2022-2025 2022-2025	On Target On Target On Target On Target On Target On Target On Target	Outputs utilised to generate and inform detailed intervention Projects for delivery by NI Water during PC21	2021-2027	On Target	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.
23	Facilities H&S Compliance	20e	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 the 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 operators / plant managers (and consequent lack of knowledge) in regulatory requirements for management of premises, such as OSEAR, 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.	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 ensures it complies with its legal obligations.	Health and safety legal compliance and minimising risk to: employees and contractors; potential for prosecution; regulatory fines; increasing insurance costs, and reputational damage.	£10.0m	TBC	Initial H&S Surveys	2021-27	On Target	Facilities Upgrades	2021-27	On Target	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.
24	Smart Meters	19												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.
25	Addressing scope uncertainty for the Mid-term Review	12 & 16												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.