SUMMARY OF AUDIT FINDINGS

Table 2 – DG2 Properties receiving pressure/flow below the reference level. Lines 1-4

PREPARED BY	X
DATE	01-18 June 2020

Rating	Meaning
	No material exceptions and compliant with requirement
	Content with the reported data but supporting information needs to be complete and/or improvement identified for AIR20, or other noteworthy comment
	Minor exceptions
	Material exceptions
N/A	Not applicable to report

1. Key Findings

AIR20 Table Criteria	RAG	Assessment
Independent review of performance against PC15 target (where relevant)		NI Water has met its target for the number of DG2 properties removed by company action. The Auditor notes that target for the total number of properties on the DG2 register has not been met.
Methodology – consistency with the reporting process with clear control points		The methodology for Lines 1-4b are consistent and in line with the PC15 requirements, with clear controls. However, the methodology for Line 4c does not explain how the project costs associated with the removal of DG2 are derived. Post-audit NI Water demonstrated the Company's approach for cost allocations associated with the removal of properties from the DG2 register.
Assumptions – reasonableness and applicability		It is unclear for Line 4c what assumptions are used in calculation of the costs associated with the removal of the properties from the DG2-linked projects.
Source data – completeness		Source data is complete, however there is no comprehensive line methodology for Line 4c.
Clarity of audit trails – evidence of appropriate audit trail		NI Water do not have a clear audit trail for the data reported in Line 4c. Post-audit NI Water were able to demonstrate the audit trail for the reported figures in Line 4c, but we identified that the system of planning and internal control (governance) for DG2 and Line 4c reporting needs to be reinforced. To this end, we suggest that an auditable, version and date-controlled, summary spreadsheet be produced that shows the flow of data from the project codes (and the highlighted project schemes) to the properties removed from the register by these schemes, including the proportional allocation of costs, as per the UR guidance.
Confidence grades – documentation of appropriateness and rationale		The confidence grades used are appropriate for the lines in this table.
Governance – evidence of quality assurance and of final sign-off		The SharePoint workflow process is in place for document checks and approvals. **But see our observation of audit trail, assumptions and methodology above.**

2. Audit Scope

An audit was carried out on the 1st June 2020 and consisted of a remote interview with the owner and approver of the DG2 register to discuss the methodology and data used to generate Table 2, Lines 1-4 for AIR20.

As required by Reporter scope and UR guidance, we reviewed the Company's approach and progress in relation to work being undertaken to validate and refresh the DG2 register.

3. Performance and Significant Events

The property figure this year (Line 1) has increased to a reported figure of 883.4 (in thousands). The increase has been attributed to several reasons, the main one being new connections. NI Water stated that they are continuing to develop a Power BI tool that will enable them to improve their reportability of the changes during the year for the various property categories.

DG2 Properties receiving pressure/flow below the reference level

Line	Definition	Reported figure
2	Properties below reference level at start of year	719
3	Properties below reference level at end of year	626
4	Properties receiving low pressure but excluded from DG2	0
4a	DG2 Properties with pressure below a surrogate level of 7.5m at end of year	129
4b	DG2 Properties at risk of low pressure removed from the risk register by company action	115

The reductions in the total number of properties at the end of the year are made up of the 115 DG2 properties removed through Company action (Line 4b), 10 properties removed due to better information and 32 properties added to the register. The number of properties removed from the register due to Company action (Line 4b) has reduced when compared to the last year's reported figure of 176.

The Company continues to report zero for the number of properties receiving low pressure but excluded from DG2 (Line 4), because the associated Access database is not live and therefore is unable to capture this type of data.

Company's approach and progress in relation to work being undertaken to validate and refresh the DG2 register

Work has continued on NI Water's pressure logging exercise to increase number of loggers that are used in the field to enhance the recording of pressures across the network. This logger exercise also contributes to the work being undertaken to produce a pressure map layer in GIS (pressure mapper).

The pressure mapper, which will enable logger pressure to be mapped in a peak week onto the GIS modelled pressures at a location will enable a GIS check for the properties that should be on the register. By linking pressures at the PMA inlets with properties and water mains, static pressures can be taken into account, in the determination of the properties to be removed from the register.

Through the audits, we were shown outputs of a pilot study that has been undertaken as part of the Company's [X] modelling. The study highlights the properties that are/should be on the DG2 register with a good correlation between the properties currently on the register. It also shows that there is some work to be done to fine tune the modelling outputs. We note that the approach does enable the Company to see areas where there is a need for additional pressure logging. This will facilitate actions to refresh and validate the register, moving forward.

Once the GIS work is complete, the new DG2 register will be on GIS and will be automatically refreshed for reporting purposes.

Good progress has been made in relation to work being undertaken to validate and refresh the DG2 register.

4. Summary of Audit Checks

Line 1

NI Water stated that the figure comes from the billing system RAPID and is reported through SEQUEL to a Diamond report (an Excel spreadsheet). A number of checks were performed during the audit to ensure that the reported figure has been correctly collated.

A check of the Diamond report figures for March against the SEQUEL and RAPID billing data was undertaken. The figure in Table 2 Line 1 was checked against the March diamond report to ensure the correct number is reported for the categories; the figure summed to 883,423 (the same as the reported data for Line 1 of Table 2).

We also carried out a check of the raw data (the SEQUEL report against the Diamond report categories) to ensure that they match up. We checked both the unmeasured household properties and the non-household unmeasured; 741,224 properties and 14,003 properties respectively. We can confirm that the raw data figures are the same.

During the audit a check of the customer reference number in SEQUEL against the RAPID billing system was performed to ensure that the records being pulled out are correctly categorised and are valid customers. We note that the data was correct for the checked property numbers. A check of the property reference was also undertaken for voids in the billing system, the data is also pulled through correctly.

DG2 Properties receiving pressure/flow below the reference level

Line 2-4a

The Access database is updated based on the submission reports. These are appended in an ad-hoc fashion depending on when the data is available - i.e. as soon as the submission report has been received and the data has been checked. The Access database is updated with any new information that is available for the new pressure. The Access database has a query that can be run to show the history of its pressures, for a particular property. During the audit, we checked figures against numbers in the Access database - all figures are correct.

Line 4b

A check was performed for the dates and property number for the projects that removed DG2 properties from the register: Dungonnelll 3 properties removed - 31/12/2019, Tardree 31/12/2019 5, Tully 31/12/2019 7, South/South east 31/12.2019 2, Divernagh 31/03/2020 6, Ballyholme South Portstewart 31/01/2020 50, and Crosshill Raloo/Portavoe Dunaghaldee 31/03/2020 42. These were all reported correctly.

Crosshill Raloo/Portavoe Dunaghaldee: We carried out a sample check of the removals against the analysis performed and the submissions report for the project. The submission report states 43 properties to be removed but 42 have been removed from the register (the removal of these properties has been linked to 3 schemes) unable to establish the exact action that was undertaken. The summary report for the submission of the removal of properties is sent to the team and then they substantiate the removal of properties using the ArcGIS system and logger height data to check the pressure at these properties. We ran through a check that is undertaken for a property that has been removed in this submission. Check on ArcGIS of the pointer data for a check of the height of the property - if this is not available the Digital

Terrain Model (DTM) layer is used. Then a check of the logger reference to check the minimum pressure as the minimum is the submission. Ferrule pressure is taken on site and a check is undertaken for the calculated property pressure if these pressures are close, then the property is removed from the register. All the figures were correct as per the submission and the raw ArcGIS data.

Line 4c

At the time of audit, we were unable to check the cost management system (CMS) to check the values that were taken from each of the projects that removed the DG2 properties. There are screenshots from the system for the proposed costs and the outturn costs for the projects; however, there is no clear audit trail from these CMS costs to the figures reported in Table 2 of the line methodology, which is used to report the average property cost.

5. Confidence Grades

Line 1

The confidence grade for this line is A2. We agree with the confidence grade assigned, as the figure is directly reported from a single system. The property base is so large and can be associated with a margin of error of about 5%.

DG2 Properties receiving pressure/flow below the reference level

Lines 2 -4b

The confidence grade for these lines is unchanged from AIR19 as B3. We agree with this assessment and discussed that if the work undertaken to validate and refresh information for the register proves successful, then the grade can be upgraded to reflect the anticipated reduction in the margin of error.

Line 4c

The confidence grade associated with the Line 4c data is B3.

6. Challenges to the Company, Recommendations & Suggested Actions

DG2 Properties receiving pressure/flow below the reference level

As required by the UR guidance, through the audit, we reviewed the Company's approach and progress in relation to work being undertaken to validate and refresh the DG2 register. **The Auditor suggests that, moving forward, this work should be added to the commentary to explain the progression of the work associated with the refreshment of the DG2 register.**

Line 4c

During the audit we discussed the need to provide calculations that show the costs used from the projects to inform the reported figure as the *"average Capex cost of permanent solutions to DG2 problems"*. **We suggest that the methodology is expanded, or a calculation spreadsheet provided to show how the costs from a project is proportionally allocated in the determination of the average Capex cost of permanent solutions to DG2 problems.**

At audit, we were unable to confirm that the figures reported in the table are correct as we had difficulties in following the figures through from the cost management system (CMS) to those reported. The assumptions used to apportion the costs from the project to the removal of properties from the register lacks clarity.

Post-audit, and in response to our audit challenge, NI Water were able to demonstrate how the costs from schemes (with the projects) were allocated to the removal of DG2 properties. NI Water showed Excel spreadsheets run from the CMS and the scheme lines that were used for the cost of removal from the

register. They showed examples of the commentary that could be written for the projects that make up the total cost of removal. We identified that the system of planning and internal control (governance) for DG2 and Line 4c reporting needs to be reinforced.

We therefore recommend that an auditable, version and date-controlled, summary spreadsheet be produced that shows the flow of data from the project codes (and the highlighted project schemes) to the properties removed from the register by these schemes, including the proportional allocation of costs, as per the UR guidance.

Further to this we also recommend that the commentary includes the same level of detail as those examples sent through to the Auditor, post - audit.

SUMMARY OF AUDIT FINDINGS

Table 2 – DG3 Properties affected by supply interruptions. Lines 5-19

PREPARED BY	X
DATE	01 June 2020

Rating	Meaning
	No material exceptions and compliant with requirement
	Content with the reported data but supporting information needs to be complete and/or improvement identified for AIR20, or other noteworthy comment
	Minor exceptions
	Material exceptions
N/A	Not applicable to report

1. Key Findings

AIR20 Table Criteria	RAG	Assessment
Independent review of performance against PC15 target (where relevant)		NI Water met all of its targets for PC15.
Methodology – consistency with the reporting process with clear control points		The methodology is consistent and in line with the UR requirements. There are clear controls within the process for collecting data.
Assumptions – reasonableness and applicability		Assumptions are clearly defined in the commentary
Source data – completeness		Source data complete, with comprehensive line methodology and Company commentary.
Clarity of audit trails – evidence of appropriate audit trail		Clear evidence provided during audit to demonstrate compliance.
Confidence grades – documentation of appropriateness and rationale		No change to confidence grade from AIR19.
Governance – evidence of quality assurance and of final sign-off		The SharePoint workflow process is in place for document checks and approvals.

2. Audit Scope

An audit was carried out on 1st June 2020 and consisted of a remote interview with the owner and approver of the DG3 information to discuss the methodology and data used to generate Table 2, Lines 5-19 for AIR20. As part of the audit, in line with the Utility Regulator (UR)'s requirements, a review of the Company's approach and progress in relation to work being undertaken under the Company's new Interruption to Supply (ITS) strategy was carried out.

3. Performance and Significant Events

Unplanned interruptions (Lines 5 - 8)

Line 5

The AIR20 number of properties affected by unplanned interruptions that lasted more than 3 hours is the lowest reported since AIR14. The reported figure has reduced significantly in the past three years (AIR18: 108,386; AIR 19: 58,816 and AIR20: 49,181). The figure continues to reduce as NI Water continues to review all interruptions that last less than 6 hours to ensure that the times are correctly logged.

Line 6

The reported figure for AIR20 for Line 6, unplanned interruptions greater than 6 hours has increased from last year's reported figure - 3,509 properties in AIR19 compared to 6,157 properties in AIR20. This increase

is due to two large interruption events that occurred in May 2019. One in particular, Craigstown affected 626 properties.

Line 7

751 properties were reported to have experienced an unplanned interruption to supply which lasted more than 12 hours. This represents an increase from last years' reported figure of 308, which again is attributed to the major events that occurred in May 2019.

Line 8

23 properties experienced an unplanned interruption that lasted more than 24 hours. This is an increase from the previous three years where NI Water reported a figure of zero properties.

Planned and warned interruptions (Lines 9 - 12)

Line 9

28,245 properties were reported to have been affected by planned and warned interruptions that lasted more than 3 hours, this is a reduction compared to last year's figure of 38,289. 55% of these planned interruptions were related to the Water Mains Rehabilitation Programme (WMRP).

Line 10

11,463 properties were reported to have been affected by planned and warned interruptions that lasted more than 6 hours, which is an increase on last years reported figure of 7,313. 72% of these were associated with the WMRP.

Line 11

No properties experienced a planned and warned interruption of more than 12 hours. This report is consistent with the reported nil numbers reported since the start of the PC15 period.

Line 12

No properties experienced a planned and warned interruption of more than 24 hours. This report is consistent with the reported nil numbers reported since the start of the PC15 period.

Interruptions caused by third parties (Lines 13 - 16)

Line 13

2,712 properties were reported to have experienced an unplanned interruption caused by third parties lasting for more than 3 hours.

For AIR19, 12,089 properties were reported, there has been a large reduction in the number of properties affected by supply interruptions caused by the action of a third party.

The AIR20 figures are attributed to 31 events, the largest of which was due to a single event caused by an electricity company where over 900 properties were affected.

Line 14

166 properties were reported to have experienced an unplanned interruption caused by third parties lasting more than 6 hours, which is a big reduction from the AIR19 reported figure of 2,780. Three events were reported to have lasted more than 6 hours.

Line 15

No properties experienced an unplanned interruption caused by a third party than lasted more than 12 hours, consistent with the reported nil numbers reported since the start of the PC15 period.

Line 16

No properties experienced an unplanned interruption caused by a third party than lasted more than 24 hours, consistent with the reported nil numbers reported since the start of the PC15 period.

Unplanned interruptions (overruns of planned interruptions) (Lines 17 - 19)

Line 17

222 properties were reported to have experienced an overrun of planned and warned interruptions that lasted more than 6 hours. This is a slight increase from last year's figure of 159, which was the lowest reported figure since regulatory reporting began.

Line 18

No properties experienced an overrun of a planned and warned interruption that lasted more than 12 hours.

Line 19

No properties experienced an overrun of a planned and warned interruption that lasted more than 24 hours.

4. Summary of Audit Checks

DG3 propertied affected by supply interruptions

NI Water uses its Incident Management System (IMS) to capture live events, capturing information on: location, number of properties, details of the interruption and date, start time and end time along with start of repair time if unplanned. IMS record history also include any changes to the data throughout the life of an event. The cause of the interruption and service failure analysis can also be included in the IMS system. The job information is listed alongside other information such as customer complaints and related jobs. When an event is closed, NI Water closes them as a DG3 record required or not required. Those that are not required would be those that do not have a customer compliant within 1 hour and /or the issue is on the customer's side.

Once a week the interruption jobs are looked at with the work leads who were in charge of the interruption and their managers to add the information to the records and are able to close out the interruptions that should be uploaded to the DG3 register.

The data is extracted from IMS and is cleansed to assign the categories for the interruption type for those where the planned interruptions spilled over into an unplanned interruption (manual calculations are used to determine which category and over runs etc.).

The data is then moved into new tabs in the categories by interruption type. These are then ordered by time and moved into a new tab where they are split by time bands. This is done on a monthly basis to check the data and to refine the start and finish times, based on the evidence provided. The property count is also refined as a bigger array is normally held about planned interruptions than the number that will actually be affected by the work. The field manager will then need to refine the number of properties based on the work that they carried out on site – i.e. the roads/streets that were actually affected.

A tab for the annual reporting is used to summarise the monthly reporting figures and to then sum to the annual figure.

We checked the **March 2020** figures against the numbers extracted from IMS. We can confirm that the numbers have been copied across correctly. Data from the capitals team is sent across and populated into a separate tab and then added to the total figure (from the mains rehabilitation team). The template is the same as the IMS fields so that the same level of data stream is captured. The 288 interruptions in March were planned and warned interruptions.

A check was performed on the **October 2019** data for all the interruptions. For unplanned supply interruptions greater than 3 hours, we followed the data through from the total number 3,489 (excluding the capital number) and splitting for the third party and unplanned, the figures were 236 and 3253 respectively. From our checks, we found that numbers tally.

A check of the weekly reports from the CAD team was undertaken against the reported figures (emails are collated by month on outlook). We found that the figures are copied across correctly and are reported correctly. These emails contribute to the planned interruptions. An additional check of the planned interruptions from the IMS download shows that the total property count is 892 networks water, and no overruns. We found that 208 was added from the (Capital Asset Delivery) (CAD) against email record and the numbers tally. The CAD numbers included one overrun.

Our audit also included a further check for the **May 2019** figures, where there were two burst events of a trunk mains that lasted days. We found that these two events used modelled numbers in the reported figure. Modelled numbers are less than the IMS figure: 629 vs 753 (17% reduction) - modelled figures are thought to be more accurate i.e. rezoning and tankering and the pressure differentials can be more accurately modelled.

We found that properties affected by unplanned supply interruptions of greater than 3 hours were 7,373 (excluding CAD; no CAD figures in May greater than 3 hours). This also does not include for the modelled data change for Craigstown burst. The unplanned supply interruptions including the modelled data for the Craigstown event is 7,113 unplanned unwarned, and third-party interruptions of 136.

A check of the number of properties reported for unplanned interruption of greater than 6 hours is 2,703 (without the modelled data for Craigstown) and 2,576 with the change for Craigstown modelled data. The May figures for planned interruptions greater than 3 hours is 1,728 on the IMS, which is made up of 1,668 and 60 overruns and CAD figure of 2,535 properties. We can confirm that all the figures for May and October were correctly reported into the annual summary excel spreadsheet.

Company's approach and progress in relation to work being undertaken under the Company's new ITS strategy

NI Water explained that there are five key areas that are being focused on including: measurement of lost minutes, CALM training of operations and fire service staff - teaches them how the system can be affected by the use of fire hydrants and other system parts which could cause a supply interruption and the installation of automated control valves on service reservoirs for better flow control.

We note that a review of major events is undertaken to provide lessons learnt that can be used in other events. NI Water explained how they are now analysing the greater than 3 hours events data and taking learning from these. The Company is also using the slogan of "every minute counts" for bursts.

We looked at a lessons learnt meeting that was undertaken after one of the big events of the year - the Tullywhisker ITS event in May. The creation of a central repository for the event information on the IMS was the main lesson that resulted from the event. NI Water then showed how they had used this central repository for another event - the Boomers Hill event. The central repository helped with the response for this event and the post-event reporting.

An additional lesson from the Tullywhisker event was to upgrade the IMP incident response guidelines. These upgrades have now been carried out and training will be undertaken. It will introduce a formal checking procedure of alarms and systems to reconcile alarm sounding for bursts vs management of an interruption event occurring in the vicinity.

The Company explained how they are beginning to use pressure loggers on the network during an event to get a greater view of the number of properties affected. It was explained that the use of pressure loggers was a recommendation that was made following an event and implemented.

It is clear that good progress has been made by NI Water in relation to work being undertaken under the Company's new Interruption to Supply (ITS) strategy.

5. Confidence Grades

There has been no change in the confidence grade of A3 in the past four reporting years.

6. Challenges to the Company, Recommendations & Suggested Actions

There were no material challenges during the audit. In addition, there are no suggestions or recommendations developed from the audit process.

SUMMARY OF AUDIT FINDINGS

Table 5 – Lines 19-20, 22-25: Customer Satisfaction Measures

PREPARED BY	X
DATE	10 June 2020

Rating	Meaning
	No material exceptions and compliant with requirement
	Content with the reported data but supporting information needs to be complete and/or improvement identified for AIR20, or other noteworthy comment
	Minor exceptions
	Material exceptions
N/A	Not applicable to report

1. Key Findings

AIR20 Table Criteria	RAG	Assessment
Independent review of performance against PC15 target (where relevant)	N/A	N/A
Methodology – consistency with the reporting process with clear control points		The methodology for multiple lines has changed since AIR18 and is now finalised. NI Water confirmed that changes have been agreed with the Utility Regulator (UR) and reporting is following the new methodologies.
Assumptions – reasonableness and applicability		Processing assumptions are reasonable and applied as agreed with the Utility Regulator.
Source data – completeness		Data for Lines 19, 20, 22 are sourced from the system and collated by NI Water through clear processes and reports. Data for Lines 23, 24, 25 are generated by NI Water through reports clearly identified and handled by independent research companies, which follow specified methods of data sampling, collection and reporting.
Clarity of audit trails – evidence of appropriate audit trail		At audit, NI Water provided evidence of audit trails for the reported numbers.
Confidence grades – documentation of appropriateness and rationale		Confidence grade appropriate and rationale clearly documented.
Governance – evidence of quality assurance and of final sign-off		Responsibilities for integrity of data and commentary clearly defined, data and commentary approvals governed through SharePoint tasks. Final sign-off confirmed.

2. Audit Scope

The scope of this audit was the Customer Satisfaction Measures which comprises Table 5 Lines 19-20 and 22-25. Line 21 is no longer used and excluded from the AIR19 Table set [Table 5] submitted by NI Water to the UR.

3. Performance and Significant Events

Total contacts and unwanted contacts

Lines 19-20

The definition of 'contact' and 'unwanted contact' were updated in AIR19 and remained unchanged in AIR20. The new meanings were agreed by the Customer Measures / Satisfaction Working Group (CM/SAT-WG) who report to the Consumer Engagement Oversight Group (CEOG) and endorsed by the UR.

According to the new definitions introduced in AIR19, three categories of contacts (requests for information, run of water and switchboard contacts) are no longer considered as 'unwanted' as these events do not cause customers unnecessary aggravation. This explains why the number of unwanted contacts has dropped significantly in AIR20 and AIR19 compared to AIR17 and AIR18 as shown in the table below.

Table Line No & Description	AIR17	AIR18	AIR19	AIR20
Line 19 - Total contacts	257,866	250,753	252,844	190,729
Line 20 - Unwanted contacts	110,197	105,964	75,569	67,013

The total contacts (Line 19) are reported as 190,729 in AIR20, which is significantly lower than in the previous three reporting years (25% drop since AIR19). The unwanted contacts (Line 20) reported in AIR20 were significantly lower than in AIR19, with 11% drop of over 8,500 unwanted contacts. Line 21 (unwanted contacts) is defined as a percentage (%) of total contacts, which for AIR 20 was 35.1% and for AIR19 was 29.9%. Since AIR18, this line is no longer reported in Table 5. We note that this line is excluded from Table 5 of the Company's AIR20 submissions.

As in previous reporting years, the total number of contacts and unwanted contacts are obtained monthly from the All Received CorVu report, which NI Water receives from Eco, the external service provider contracted to run the service. The estimate of unwanted contacts is then calculated using the CMS categories of contacts logged within Rapid.

The Company explained that the opening of new communication channels including on social media and their website has been the main factor contributing to the drop in telephone contacts. For example, contacts regarding septic tanks were a large proportion of total contacts and now customers mostly use online forms instead of calling the Company. Another factor is the introduction since September 2019 of a new 'IVR' platform with an automated voice recognition response system, whereby calls are recorded but not logged into the system with a CMS code on Rapid. These calls do not form part of Line 19 figure as the issue is not dealt with by an agent (e.g. customers making a payment through the automated system).

We note that the process for obtaining Line 19 figure is described in a different way in the AIR20's Line Methodology compared with the AIR19's Line Methodology. NI Water confirmed that the reports use the same format and the methodology remains unchanged. At audit the Company demonstrated the process of identifying outbound, internal and closure CMS codes and other written contacts, and how these are excluded from the total count, to obtain the telephone contact figure. We confirm that the figure of total contacts from the underlying report matches the figure in the Data table.

NI Water keep monitoring monthly performance against target values for unwanted contacts. The targets were generally met. It reported that 38% and 50% of the total unwanted contacts related to Sewerage Services and Water Services respectively. The remaining 12% is associated with other services such as metering and billing. The top complaints under both services related to blocked sewers and lack of water. This is in line with the previous years.

The Company explained that the algorithm for deriving Unwanted Contacts has been refined since AIR19. They recognise that the absence of a 'chase' calls count may lead to an undercount of Unwanted Contacts, but in their opinion, this is more than compensated by the overcount of other categories such as network issues, which often are domestic issues and not NI Water's service failures. The Company is convinced that this is the most practical and realistic algorithm they could develop through their current system.

NI Water believes that an accuracy band 2 of +/-5% is most appropriate and that this is justified by uncertainties associated with manual handling and logging of data for the CMS category, which seems sensible to us. The A reliability band attributed to Line 19 and Line 20 seems reasonable. We are satisfied

with the processes and templates demonstrated during the audit and the clarity of results presented. The resulting A2 confidence grade remains in line with AIR19.

As in the previous reporting years NI Water listen each month to a sample of both 50 wanted and 50 unwanted contacts to ensure they are logged and processed correctly by Eco. In AIR20 reporting period only 4 anomalies were found. The Company then provides feedback to Eco on the outcomes of its monthly check including any required corrective measures.

First Point of Contact Resolved (FPOCR)

Line 22

The definition of First Point of Contact Resolved provided by NI Water is consistent with the Company's AIR19 definition, i.e. 'when a contact requires an action and the action is completed and there has been no prior contact from the same property on the same issue within a 90-day period then it shall be counted as FPOCR'.

The definition provided by the Regulator[1] is as follows: 'A contact is deemed to be dealt with at first point if there is no repeat contact from the same property on the same issue in the time-period applying. The First Point of Contact Resolved measure is calculated as follows: (FPOCR / Contacts) x 100 by time periods.'

The main difference is that NI Water calculate the value reported in Line 22 as the number of FPOCR divided by the total number of events, where event is defined as the same issue reported by the same property one or more times, not by the total number of contacts, as was done previously in AIR19. At audit, the Company advised that this methodology has been agreed with the Regulator.

NI Water explained that, as in AIR19, the figure for FPOCR is based on the following criteria:

1. A 90-day historic window – a report run on 31 May for the month of May would look back to 31 January to check whether there was a repeated call in that time window. NI Water explained that for future AIRs, they will consider expanding the time window to a 90-day backward period and 90-day forward period in agreement with the Regulator.

2. Same CMS category – a contact that has been made regarding the same issue in the given historic window (as more than one contact may have been made by the same customer about different issues). 77 CMS codes are captured in the analysis representing most of the dominant contacts received by the Company.

   At audit, NI Water explained that all CMS codes could be included in the analysis, resulting in an increased FPOCR because the remaining CMS categories are typically solved at first contact. The Company opted to include only 77 CMS dominant codes.

3. Same property – a contact that has been made with reference to same property (as customers may have multiple properties in a given area).

The contacts which are resolved on the first point of contact are an average of the monthly scores across the full financial year. The number reported in the Data Table was 90.4% in AIR20, 90% in AIR19, based on the new methodology. The number reported in AIR18, based on the old methodology, was 65.8%. At audit, NI Water demonstrated the process and dashboards used to the generation of FPOCR numbers. We consider that a confidence grade of A2 is appropriate Line 22 for the reasons stated for the numbers in Lines 19 and 20. This is also in line with AIR19.

[1] Annual information return reporting requirements and definitions manual 2020, Version 1.0 – March 2020, Chapter 5 Key outputs Customer service - 2

Customer Advocacy measure

Line 23

A Customer Experience and Insight Specialist, Watermelon, has been appointed to undertake independent 'Voice of the Customer' surveys. The new methodology for conducting the survey can be summarised as follows:

- whilst in previous reporting years the survey was conducted on 800 customers (4 waves per year of 200 customers), in AIR20 all customers interacting with NI Water are requested to complete the survey;
- the survey targets customers' interactions with any part of the business, not only billing and operational areas (Water and Wastewater) as was done in previous reporting years.

As in previous years the survey was conducted on all resolved contacts only (from telephone and written channels). NI Water need to align the closed date and actual closed date fields in the report to ensure the contact is effectively resolved. A list of resolved contacts is provided daily by NI Water to Watermelon, which conduct surveys via text message or similar.

Last reporting year respondents were in the range of 169 to 185 for each wave of survey (4 waves per year of 200 customers), while this year the number of respondents was significantly higher (7,458). The daily feedbacks it receives from Watermelon have contributed to a continuous monitoring of the Company's performance.

The customer advocacy measure is represented by Net Promoter Score, calculated as the percentage of customers responding to the question

"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"

…….with grades 9 and 10 (promoters), minus the percentage of those responding with grades 0 to 6 (detractors). Percentages of detractors and promoters are calculated over the total number of respondents to the survey, which is the sum of detractors, promoters and 'passive' customers (i.e. respondents with grades 7 and 8). Those responding 'Don't know' do not form part of the calculation.

This methodology is clearly outlined in the 'NPS Calculation' document attached to the commentary. The difference from last year is that 0 has been included as the lower level score for detractors.

The value reported for Line 23 can fall between -100 (worst score) to +100 (best score). The calculated value in AIR 20 is 42, which is an improvement from 32 in AIR19. This continues to show an upward trend from AIR18 (31) and AIR17 (27).

Omnibus survey question 1 and 2

Lines 24-25

Ipsos MORI is the new firm contracted by NI Water for AIR20 to carry out the annual Omnibus survey. For AIR19 and AIR18 the firm in charge of the survey was X (X).[2]

As part of the AIR20 survey, 1009 domestic and 500 non-domestic customers selected from the Company's customers database, who may or may not have contacted NI Water, were asked whether they are happy

[2] In the Annual Information Return 2020 document by the Utility Regulator, Lines 19 – 25: Customer Satisfaction Measures, it is stated that NISRA is the company conducting the Omnibus survey. At audit NI Water confirmed that the correct company is Ipsos Mori as identified in the draft 'Annual Information Return' (Commentaries).

with service received from NI Water (Question 24) and whether they would recommend NI Water (Question 25).

The size of the sample of domestic customers is similar to that of AIR19 (1,035), while it is significantly higher for non-domestic customers (200 in AIR19). In AIR20, more sampling points were selected across Northern Ireland (70 vs 60 in AIR19), representing 285 electoral wards (vs 110 in AIR19).

Question 24 changed slightly (from ‘‘I am satisfied with the services provided by NI Water” in AIR19 to “I am happy with the service I receive from NI Water” in AIR20) but has essentially the same meaning.

Line 24 is the combined, weighted percentage of domestic and non-domestic customers responding 1 (strongly agree) and 2 (tend to agree) on a 1 to 6 scale. We report in the table below the calculation used to check the figure in the Data Table for Line 24.

	Respondents (Nr)	**Score (% satisfaction)**	**Weight***	**Weighted score****
Domestic	1009	70	0.67	46.81
Non-domestic	500	75	0.33	24.85
Total	**1509**			**71.66**

*The Weight is calculated as Nr. Respondents / total Nr. Respondents; ** The Weighted score is the Score (% satisfaction) multiplied by the Weight; *** The total Weighted score is the sum of the domestic and non-domestic Weighted score.

From the numbers stated in the commentary, overall satisfaction has reduced to 70% for domestic customers (down from 80% in AIR19 and 93% in AIR18) and to 75% for non-domestic customers (down from 90% in AIR19 and AIR18). The combined score of 71.66 indicates that overall satisfaction has decreased by 12% since last year (81.6% in AIR19, 92.4% in AIR18, 80.3% in AIR17).

Line 25 shows the AIR20 mean score for likelihood to recommend of 7.63 (with 1- not likely at all and 10- extremely likely). This is derived as the weighted average of domestic (7.65) and non-domestic respondents (7.58) scores (both calculated as weighted scores across the sample). Both scores are lower than in AIR19 (8.23 for domestic respondents and 8.54 for non-domestic respondents). The total score for likelihood to recommend in AIR20 is 8% lower than in AIR19.

4. Summary of Audit Checks

Our audit was attended by the NI Water team responsible for the derivation of numbers for Table 5, Lines 19-20 and 22-25. The team confirmed the new definitions and changes in methodology for data collation adopted since AIR19 and responded to the questions on the draft Table 5 commentary provided pre-audit.

We checked that the reported numbers for Lines 19-20 and 22-25 against those generated by the underlying reports and found the numbers to be consistent. We also checked that results for this report year are broadly consistent with the AIR17, AIR18 and AIR19 numbers.

5. Confidence Grades

In Section 3 we have provided commentary on the reliability and accuracy of data for each audited line. We generally agree with the rationale for the confidence grades stated as: A2 for Line 19, 20 and 22 and A1 for Line 23-25.

We note that entries in Lines 23-25 are given the highest confidence grade because scores are generated by specialised and independent service providers. For Line 24-25, the service provider ensures that the samples used for the surveys are randomly selected, of adequate size and are representative of the population from which they are drawn. For Line 23 the service provider surveyed all customers with resolved contacts, generating a significantly larger sample (7,458) compared to AIR19, where smaller samples of 200 resolved contacts were taken quarterly for a total sample size of 800. The increased sample size should have further increased the level of accuracy.

Typical sources of errors such as in sampling design, data analysis and processing should be minimal as data collection and management is carried out following clear procedures by experienced professionals specialising in this type of service. This suggests that data is reliable and that the true population parameter (satisfaction and likeliness of recommending NI Water) should be within +/-1% of the sample estimate.

6. Challenges to the Company, Recommendations & Suggested Actions

a) In response to our AIR19 recommendation that a description of the calculation of scores should be included as part of the audit trail, for AIR20, the Net Promoter Score Algorithm and calculations to derive Line 23 were provided for audit by NI Water.

b) NI Water's description of Unwanted Contacts Algorithm (Line 20) and the First Point of Contact Resolution Algorithm (Line 22) provided additional descriptions of the underlying assumptions.

We suggest that the methodology for calculating Line 24, should be made more explicit in future report commentaries. Future commentaries should also strengthen the link between the Omnibus survey report and the numbers used to derive Line 25.

c) Another recommendation for future AIRs and related aspects of PC21 is to provide context of any change in methodologies/definitions, agreed with the Regulator, with justifications of why figures shown in the Data Table sometimes differ significantly from figures in previous reporting periods (e.g. Line 19 in AIR20 differs significantly from previous reporting years) **i.e. statement of context for movement between numbers across report years e.g. from AIR19 to AIR20 would be beneficial.**

SUMMARY OF AUDIT FINDINGS

Table 11 – Water Service. Activities only not the asset balance Lines 2-11 & 13-28

PREPARED BY	X
DATE	12 May 2020

Rating	Meaning
	No material exceptions and compliant with requirement
	Content with the reported data but supporting information needs to be complete and/or improvement identified for AIR20, or other noteworthy comment
	Minor exceptions
	Material exceptions
N/A	Not applicable to report

1. Key Findings

AIR20 Table Criteria	RAG	Assessment
Independent review of performance against PC15 target (where relevant)		Good performance overall however some non-material findings are noted below. Line 8d Lead communication pipes replaced under the proactive lead replacement programme: NIW replaced 1,781 lead pipes through its proactive lead replacement programme (sub-programme 23). This performance falls short of the PC15 FD target for the year of 1,844 lead pipes by 63 pipes. However, the cumulative Year-5 PC15 target (9,220) is exceeded by 187 pipes, cumulative total in PC15 since performance is 9,407 (1,922, 1,867, 1,767, 2,070 and 1,781 in AIR16-20 respectively). As the cumulative total exceeds the PC15 target this is not considered a material issue.
Methodology – consistency with the reporting process with clear control points		Methodologies were found to be consistent with current processes.
Assumptions – reasonableness and applicability		Assumptions reasonable and applied appropriately.
Source data – completeness		Data sources clearly identified with no material concern and appear to have been well managed. Improvements could be made to Line 4, Mains Cleaned, where the flushing factor has increased from 0.316km per flush in AIR19 to 0.329km per flush in AIR20. The factor was derived based on a sample of mains flushing events, but NIW has not provided information about the sample size used in AIR19 or AIR20.
Clarity of audit trails – evidence of appropriate audit trail		Content with reported information but some audit trails and explanation of year-on-year changes appear limited. Lack of version/change control mechanism in place for Line 25 and change controls for Lines 22 and 23 are not detailed sufficiently in the commentary. Line 25: Number of catchment Plans. A total of 15 catchment plans have been completed (including 2 Interreg catchments). The target for PC15 was originally agreed to be 36 catchment plans however 21 plans have been excluded as they are out-of-service and not required. NIW demonstrated evidence that this was discussed with UR at ORG and CMPs and the change was later reflected by the Utility Regulator in the Cost and Performance Report [2018-19] – our audit evidence. On this basis the PC15 target has been met. Line 11: Calculations for line 11 draw on a number of information sources and are hard to follow. To improve the audit trail it is recommended to create a summary spreadsheet which clearly provide references and assumptions for each information source.

AIR20 Table Criteria	RAG	Assessment
		Line 28 – There is no formal sign off process for projects, the reported figures are based on conversations with the project managers. Recommended to improve audit trail by introduction of a formal project sign off form.
Confidence grades – documentation of appropriateness and rationale		Confidence grades appear to have been appropriately assigned.
Governance – evidence of quality assurance and of final sign-off		The SharePoint workflow process is in place for document checks and approvals. **But see our observation of audit trail, assumptions and methodology above.**

2. Audit Scope

Six separate audits were carried out with the key NI Water system holders. The audits were held on; 27th May, 28th May, and 4th June. Due to COVID-19 travel restrictions audits were carried out remotely using Microsoft Teams.

Through the audit period, we conducted a review of written documentation and data, as it was made available. These cover an in-depth challenge of the methodologies for the lines in Table 11 and the Utility Regulator (UR)'s requirements, and an audit of the individual numbers, schemes and/or calculations to confirm the appropriateness of the data being reported.

In accordance with the UR guidance, audits were completed for Table 11 lines with the exception of the asset balance lines 1 and 12:

3. Performance and Significant Events

3.1. Performance against PC15 Target

The following 13 measures have PC15 targets associated with them. NI Water (or NIW)'s performance against these targets in 2019/20 may be summarised as follows.

Length of new, renewed or relined mains delivered under the watermain rehabilitation programme (Line 6b).

a) Year-5 performance. NIW is ahead of target for the PC15 FD forecast of 147km in Year-5 for achieving 149.33km in 2019/20. The Year-5 report is made up of 130.43 km and 18.90km of renewed and new mains respectively. Relining was not used as a watermains rehabilitation method in 2019/20.

b) Cumulative by the end of Year-5 of PC15 performance. The cumulative length delivered by NIW over the five-year period in PC15 is 731.04km (116.92km, 172.27km, 126km, 166.52km and 149.33 in AIR16-20 respectively). The reported value is 14.04km more than the cumulative PC15 FD target for the same period of 717km (130km, 144km, 129km, 167km and 147km in AIR16-20 respectively).

c) Remaining performance in PC15. Having exceeded the Year-5 target, NIW state in the Commentary (CC_Table11_Line2-10_13-17-_28) that the remaining length to be delivered to meet the PC15 target of 814km in AIR21 is only 82.96km (814km – 731.04 = 82.96km).

Lead communication pipes replaced under the proactive lead replacement programme (Line 8d)

a) Year-5 performance. NIW replaced 1,781 lead pipes through its proactive lead replacement programme (sub-programme 23). This performance falls short of the PC15 FD target for the year of 1,844 lead pipes by 63 pipes.

b) Cumulative by the end of Year-5 of PC15 performance. A total of 9,407 lead pipes have been replaced in PC15 since 2015/16 (1,922, 1,867, 1,767, 2,070 and 1,781 in AIR16-20 respectively),

which exceeded the 5-year FD target of 9,220 lead pipes (based on annual average of 1,844 lead pipes) by 187.

c) Remaining performance in PC15. Having exceeded the Cumulative Year-5 target, NIW has to proactively replace only 1,657 of lead pipes to meet the baseline target of 1,844 in the next year.

Percentage of overall compliance with drinking water regulations (Line 18)

a) Year-5 performance. NIW achieved an overall compliance of 99.90%, which exceeded the baseline target for the year (99.79%) by 0.11%.

b) Cumulative by the end of Year-5 of PC15 performance. Not applicable.

c) Remaining performance in PC15. NIW aims to meet the annual baseline target of 99.79% in the next year.

Percentage compliance at consumers tap (Line 19)

a) Year-5 performance. NIW achieved 99.84% compliance at consumers tap, which exceeded the baseline target for the year (99.69%) by 0.15%.

b) Cumulative by the end of Year-5 of PC15 performance. Not applicable.

c) Remaining performance in PC15. NIW aims to meet the annual baseline target of 99.69% in the next year.

Percentage iron compliance at consumers tap (Line 20)

a) Year-5 performance. NIW achieved 98.89% of iron compliance at consumers tap, which exceeded the baseline target for the year (97.10%) by 1.79%.

b) Cumulative by the end of Year-5 of PC15 performance. Not applicable.

c) Remaining performance in PC15. NIW aims to meet the annual baseline target of 97.10% in the next year.

Percentage of service reservoirs with coliforms in >5% samples (Line 21)

a) Year-5 performance. No service reservoir sites had more than three failures during the year, as profiled in the baseline forecast.

b) Cumulative by the end of Year-5 of PC15 performance. Not applicable.

c) Remaining performance in PC15. NIW aims to meet the annual baseline target of 0% outcome in the final year.

Completion of nominated trunk main schemes (Line 22)

a) Year-5 performance. No nominated truck main schemes reached beneficial use in AIR20 this is consistent with the target of zero this 2019-20 (AIR20).

b) Cumulative by the end of Year-5 of PC15 performance. NIW has delivered 3 nominated trunk schemes in PC15 against the baseline target of 3 schemes since 2015/16. One of the completed schemes, the Carland to Cookstown Trunkmain project was originally planned for PC13 but delivered in 2015/16. So, NIW has delivered only two PC15 schemes to date. They are the Castor Bay to Belfast TM which was delivered as planned in 2015/16 and the Carland to Cookstown Trunkmain which was delivered in 2016/17 having been brought forward from 2020/21.

c) Remaining performance in PC15. NIW had aimed to complete the Carmoney to Strabane Strategic Link Watermain scheme by 2020/21 to meet the stated baseline target for PC15

however, a change control was agreed to swap this project for Carmoney WTW Resilience. The Carmoney WTW Resilience scheme is due to be completed in 2020/21. Carmoney to Strabane Strategic Link Watermain scheme will be completed in PC21. Change control PC15 CCP07 was provided as evidence of this change.

Completion of nominated water treatment works schemes (Line 23)

a) Year-5 performance. Rathin Borehole reached beneficial use in 2019-20. The original target was for completion of Caugh Hill, a Change Control has been agreed with the Utility Regulator to swap Caugh Hill for three other WTW sites with enforcement orders. This Change Control emerged from NIW's discussions with the UR and Drinking Water Inspectorate (DWI) on the THM /DOC water quality driver and the fact that the works is passing the THM regulatory standard. The Caugh Hill WTW project has been substituted out of the PC15 delivery programme and several WTW sites with enforcement orders for pesticides and a bromide water quality related issue have been brought into PC15. Change control PC15 CCP08 was provided as evidence of this change.

b) Cumulative by the end of Year-5 of PC15 performance. NIW has delivered two outputs in PC15; the Glenhordial WTW was delivered in 2015/16 and Rathin Borehole was delivered in 2019/20.

c) Remaining performance in PC15. NIW will have to deliver Derg WTW; Ballinrees WTW outputs in 2020/21 to meet the overall baseline target outputs in PC15.

Completion of nominated improvements to increase the capacity of service reservoirs and clear water tanks (Line 24)

a) Year-5 performance. Lough Fea CWB achieved Beneficial Use in 2019/20

b) Cumulative by the end of Year-5 of PC15 performance. NIW has delivered two outputs since 2015/16, meeting the cumulative baseline target.

c) Remaining performance in PC15. The overall baseline target for PC15 is 3 outputs, but NIW plans to deliver an additional output in AIR21. One PC15 FD nominated output is to be delivered as planned, with Drumaroad WTW clear water tank in 2020/21. The new additional output, Killyhelvin clear water tank is to be delivered in 2020/21.

Number of Catchment Management Plans (Line 25)

a) Year-5 performance. Two outputs were delivered in AIR20 against the baseline target of 7 for the year. The two EU's INTEREGG funded catchment studies for Killyhevlin and Belleek were completed in AIR20.

b) Cumulative by the end of Year-5 of PC15 performance. NIW completed a total of 15 catchment plans in PC15 (3 in AIR16, 7 in AIR17, 3 in AIR18, 0 in AIR19 and 2 in AIR20) against the baseline total of 33 (6 in AIR16, 7 in AIR17, 7 in AIR18, 6 in AIR19 and 7 in AIR20).

NIW advised that, all the required 'live' catchment management plans have been completed. The remaining outputs against the baseline target involve out of service (either abandoned or closed) catchments. NIW demonstrated evidence that this was discussed with Utility Regulator at ORG and CMPs and the change was later reflected by the Utility Regulator in the Cost and Performance Report 2018-19. On this basis the PC15 target has been met.

c) Remaining performance in PC15. No more catchment management plans are planned to be carried out in the next year. The total baseline target is 40 catchment studies in PC15, but NIW has submitted a change control to have it revised to 36. This is because a review by NIW shows that the number of abandoned/closed catchments should be revised from 23 in PC15 FD plan to 21 as Knockbracken and Ballintemple sites have subsequently been sold.

Number of school visits (Line 26)

a) Year-5 performance. 229 school visits were carried out against the baseline target of 176 visits for the year.

b) Cumulative by the end of Year-5 of PC15 performance. NIW continues to outperform the annual baseline target of 176 visits since 2015/16. NIW has carried out a total 1228 school visits (277, 257, 219, 246 and 229 visits in AIR16-AIR20 respectively) against the cumulative baseline target of 880 visits, an outperformance of 176 visits over the five-year period.

c) Remaining performance in PC15. NIW plans to continue to outperform the annual baseline target over the next year.

Number of other educational visits (Line 27)

a) Year-5 performance. 143 education visits were carried out against the baseline target of 57 visits for the year.

b) Cumulative by the end of Year-5 of PC15 performance. NIW continues to outperform the annual baseline target of 57 visits since 2015/16. NIW carried out a total 400 educational visits (65, 64, 62, 66 and 143 visits in AIR16-AIR20 respectively) against the cumulative baseline target of 287 visits, an outperformance of 113 visits over the five-year period.

c) Remaining performance in PC15. NIW plans to continue to outperform the annual baseline target over the next year.

Percentage service reservoirs where sample taps have been assessed and are to required standard (Line 28)

a) Year-5 performance. NIW achieved 100% against the baseline target of 100% for the year.

b) Cumulative by the end of Year-5 of PC15 performance. A total of 291 sample taps were installed out of 291 to be addressed.

c) Remaining performance in PC15. NIW has full delivery 100% service reservoir sample taps at the end of Year-5.

3.2 Performance Against AIR19

A summary of the reported values for the measures in Table 11 from AIR16 to AIR20, and the movements from AIR18 to AIR19 and AIR19 to AIR20 are shown in Table TC_T11_1 below.

Table TC_T11_1: Summary of Performance against AIR19.

	DESCRIPTION	UNITS	DP	REPORTING YEAR 2016-17	CG	REPORTING YEAR 2017-18	CG	REPORTING YEAR 2018-19	CG	REPORTING YEAR 2019-20	CG	Change from AIR18 to AIR19 (Value)	(%)	Change from AIR19 to AIR20 (Value)	(%)
B	**CHANGES DURING REPORT YEAR**														
2	Mains renewed	km	2	161.29	A2	120.55	A2	154.66	A2	133.94	A2	34.11	28.30%	- 20.72	-13.40%
3	Mains relined	km	2	0.00	A1	0.00	A1	0.00	A1	0.00	A1	0.00	0.00%	-	0.00%
4	Mains cleaned (total)	km	2	1,665.69	B3	2,008.61	B3	2,257.19	B3	2390.31	B3	248.58	12.38%	133.12	5.90%
6	New mains	km	2	75.22	B2	92.43	B2	83.91	B2	81.68	B2	-8.52	-9.22%	- 2.23	-2.66%
6a	Total length of new, renewed or relined mains	km	2	236.51	A2	212.98	A2	238.57	A2	215.62	A2	25.59	12.02%	- 22.95	-9.62%
6b	Length of new, renewed or relined mains delivered under the watermain rehabilitation programme	km	2	172.27	A2	126.00	A2	166.52	A2	149.33	A2	40.52	32.16%	- 17.19	-10.32%
7	Mains abandoned and other changes	km	2	167.55	A2	124.24	A2	158.49	A2	135.13	A2	34.25	27.57%	- 23.36	-14.74%
8a	Lead communication pipes replaced as a consequence of water quality sample failures	nr	0	44	B2	43	B2	35	B2	18	B2	-8	-18.60%	- 17.00	-48.57%
8b	Lead communication pipes replaced as a consequence of customers notifying NI Water that they are replacing their lead supply pipe	nr	0	599	B2	574	B2	562	B2	455	B2	-12	-2.09%	- 107.00	-19.04%
8c	Opportunistic lead communication pipes replacement undertaken under the watermain rehabilitation programme or during burst service pipe repairs	nr	0	1801	A2	76	B3	75	B3	41	B3	-1	-1.32%	- 34.00	-45.33%
8d	Lead communication pipes replaced under the proactive lead replacement programme	nr	0	1,867	A2	1,767	A2	2,070	A2	1781	A2	303	17.15%	- 289.00	-13.96%
9	Total lead communication pipes replaced	nr	0	4,311	A2	2,460	A2	2,742	A2	2295	A2	282	11.46%	- 447.00	-16.30%
10	Communication pipes replaced - other	nr	0	5,608	B2	3,769	B2	4,232	B2	5664	A2	463	12.28%	1,432.00	33.84%
11	Mains bursts per 1000km	nr	0	80	B3	91	B3	92	B3	82	B3	1	1.10%	- 10.00	-10.87%
D	**DISTRIBUTION STUDIES**														
13	Cumulative number of distribution zone studies completed	nr	0	71	A1	71	A1	71	A1	71	A1	0	0.00%	0	0.00%
14	Distribution zone studies ongoing	nr	0	0	A1	0	A1	0	A1	0	A1	0	0.00%	0	0.00%
15	Total distribution zones identified for study	nr	0	71	A1	71	A1	71	A1	71	A1	0	0.00%	0	0.00%
16	Cumulative % distribution zone studies completed	%	1	100.0	A1	100.0	A1	100.0	A1	100.0	A1	0.0	0.00%	0.00	0.00%
17	Percentage population/properties - completed studies	%	1	100.0	A1	100.0	A1	100.0	A1	100.0	A1	0.0	0.00%	0.00	0.00%
E	**WATER QUALITY COMPLIANCE MEASURES**														
18	% overall compliance with drinking water regulations	%	2	99.86	A2	99.88	A2	99.90	A2	99.90	A2	0.02	0.02%	0.00	0.00%
19	% compliance at consumers tap	%	2	99.77	A2	99.81	A2	99.83	A2	99.84	A2	0.02	0.02%	0.01	0.01%
20	% iron compliance at consumers tap	%	2	98.66	A2	98.85	A2	98.94	A2	98.89	A2	0.09	0.09%	- 0.05	-0.05%
21	% Service Reservoirs with coliforms in >5% samples	%	2	0.00	A1	0.00	A2	0.00	A1	0.00	A1	0.00	0.00%	0.00	0.00%
F	**NOMINATED WATER SERVICE OUTPUTS**														
22	Completion of nominated trunk main schemes	nr	0	1	A1	0	A1	0	A1	0	A1	0	0.00%	0.00	0.00%
23	Completion of nominated water treatment works schemes	nr	0	0	A1	0	A1	0	A1	1	A1	0	0.00%	1.00	0.00%
24	Completion of nominated improvements to increase the capacity of service reservoirs and clear water tanks	nr	0	0	A1	1	A1	0	A1	1	A1	-1	-100.00%	1.00	0.00%
G	**ADDITIONAL WATER SERVICE OUTPUT MEASURES**														
25	Number of Catchment Management Plans	nr	0	7	A1	3	A1	0	A1	2	A	-3	-100.00%	2.00	100.00%
26	Number of school visits	nr	0	257	A1	219	A1	246	A1	229	A1	27	12.33%	- 17.00	-6.91%
27	Number of other education events	nr	0	64	A1	62	A1	66	A1	143	A1	4	6.45%	77.00	116.67%
28	% Service Reservoirs where sample taps have been assessed and are to required standard	%	1	0.0	A1	72.9	A2	98.3	A1	100.0	A1	25.4	34.84%	1.70	1.73%

It is clear from Table TC_T11_1 that NIW's performance for the reporting year is in line with its AIR19 reports for most measures, notably the distribution studies and water quality compliance measures. Other water activities have registered minor changes and these changes include the following.

- The length of mains renewed (Line 2) has decreased by 20.72km between AIR19 and AIR20, the AIR20 figure is comparable to AIR18.
- There has been a significant reduction in lead communication pipes (Line 8a) replaced as a consequence of water quality sample failures of 48.57% between AIR19 and AIR20. This was explained during the audit to be variable with the samples taken and out with NIW control.
- There has been an increase of 33.84% in the communication pipes replaced (of materials other than Lead) (Line 10).
- There has been a significant increase in the number of other education events attended (Line 27). During the audit it was explained to be directly related to the number of events that they are asked to attend.
- In AIR20 100% of sample taps were installed at service reservoirs (Line 28), no further sample taps are to be installed in AIR21.

4. Summary of Audit Checks

Changes During the Report Year (Lines 2 to 11)

The overall methodologies and commentary structures for these lines have not changed significantly compared to last year. The commentary features the inputs from CSD Networks Water Operations (CSD)

and Asset Delivery (AD) teams for Lines 2 to 10. Trunk main lengths are included in the totals, with details of trunk mains included in the commentary as required by the UR reporting requirements.

Line 2: Mains renewed.

NIW renewed 20.72km less mains than last year. The AD team renewed 130.43km of watermains, 1.88 km of distribution mains rehabilitation schemes, 0.93km of trunk mains installed under the Dungiven to Drumahoe scheme and 0.61 km of Trunk mains relined under Railway crossings, while the CSD team delivered 0.09km of smaller schemes involving social housing redevelopments and minor mains diversions or realignments. The total mains renewed in AIR20 is therefore reported as 133.94km.

Line 3: Mains relined.

NIW has not carried out any spray lining of mains activity in AIR20 as the Company has assessed that this technique is approximately equivalent in cost to replacement of mains. Spray lining is expected to have a life span of 25 years and replacement of mains has a life span of 100 years. NIW therefore do not considered this a cost-effective approach. NIW provided minutes of meeting for the WIIM 2 –Watermains Relining Strategy and Lead Strategy Discussion completed on the 6th June 2016 as evidence of the discussion on spray lining. Other structural lining methods such as standard slip-lining techniques to replace existing mains are included in Line 2 as defined by the UR reporting requirements.

Line 4: Mains cleaned (total).

Mains cleaning is performed largely by the CSD team however Asset Delivery undertook a pilot project to trial an intelligent, unidirectional flushing programme which recorded 70.86 km of mains cleaned. The results from this pilot are not yet received and work will continue in 2020/21.

The total length of mains cleaned in AIR20 (2,390.31km) is 133.02km more than in AIR19 (2,257.19km), which corresponds with the increase in the number of flushing performed from 7,143 (AIR19) to 7,050 (AIR20) flushings.

The flushing factor used to convert from number of mains flushings to length of mains flushed has increased from 0.316km per flush in AIR19 to 0.329km per flush in AIR20. The factor was derived based on a sample of mains flushing events, but NIW has not provided information about the sample size used in AIR19 or AIR20.

NIW advised that there remains a potential for some double counting in relation to the reactive flushing jobs. To provide assurance, data is checked for errors and duplication to filter out repeat flushings at the same location. NIW also advised that these occurrences are minimal, and the Company is continually improving the quality of data collated for this line.

Although the number of mains flushings has increased year on year in PC15, the number of burst mains is less than last year's report. So, the increase in reactive flushings may not be associated with burst main repair activities in 2018/19.

The flushing programme was suspended in the last week of March 2020 as a result of COVID-19, this has had a negligible impact on AIR20 reported figures however it is noted that the impact on AIR21 figures maybe significantly larger.

Line 6: New mains.

NIW installed 2.23 km less new mains in AIR20 (81.68 km) than in AIR19 (83.91km), the AIR20 number is still lower than in AIR18 (92.43 km) but higher than those reported in AIR16 (76.51km) and AIR17 (75.22km). The CSD team delivered 62.78km of new mains with the remaining 18.90km delivered by the AD team in AIR20, in contrast to 60.79km and 23.12km respectively in AIR19. So, more new mains were laid in new housing developments by the CSD team and less new mains for replacement upsizing were

delivered by the AD team in AIR20. No new truck mains were delivered this year which has resulted in the reduction in the reported figure.

The AIR19 Audit report identified the following action Lines 6, 6a, 6b: enhance the Company's commentary document by providing information on the lengths and proportions of mains relined, renewed or new mains laid for quality and non-quality reasons. This has been addressed in the AIR20 submission through inclusion of the Summary of Mains Activity Figures for PC15 in CC_Table11_Lines2-10_13-17_28.

Line 6a: Total length of new, renewed and relined mains.
This is a calculated line as the sum of Lines 2, 3 and 6, which is 215.62km in AIR20, a decrease of 22.95 km on last year (238.57km). At audit, the sum was checked and confirmed to be correct and consistent with the line definition of the AIR20 Reporting Requirements and Definitions Manual.

Line 6b: Length of new, renewed or relined mains delivered under the watermain rehabilitation programme.
The reported length for this line has decreased from 166.52km in AIR19 to 149.33km in AIR20, however this is still significantly higher than the figure reported in AIR18 (126 km). NIW is ahead of target for the PC15 FD forecast of 147km in Year-5 achieving 149.33km in 2019/20. The reported figure was checked during the audit.

Line 7: Mains abandoned and other changes.
NIW reported 23.36km fewer abandoned mains in AIR20 (135.13km) than in AIR19 (158.49km) . The majority of the AIR20 number was reported by the AD team under the mains rehabilitation programme (133.49km) while the remaining (1.64km) was reported by the CSD team for smaller schemes involving social housing redevelopments and minor mains diversions.

The reported length includes both wholly abandoned mains and those replaced by renewals as per definition for this line in the UR's Reporting Requirements and Definitions Manual.

Line 8a: Lead communication pipes replaced as a consequence of water quality sample failures.
This activity is carried out solely by the CSD team. A total of 18 lead communication pipes were replaced as a consequence of water quality failure in AIR20, in comparison to 35 in AIR19. The significant decrease (nearly 50%) from the previous year also sees the AIR20 number to be the lowest reported annual value in PC15 (37 in AIR16, 44 in AIR17, 43 in AIR18 and 35 in AIR19).

Line 8b: Lead communication pipes replaced as consequence of customers notifying NI Water that they are replacing their lead supply pipes.

This activity is also carried out solely by the CSD team. The reported value in AIR20 is 455 which is 107 less than the previous year's report of 562. It is also the lowest reported annual number in PC15 to date, where there is a decreasing trend from 703 (AIR16) to 599 (AIR17), 574 (AIR18), 562 (AIR19) and 455 (AIR20).

Line 8c: Opportunistic lead communication pipes replacement undertaken under the watermain rehabilitation programme or during burst service pipe repairs.
There has been a great variability in the value reported for this line in the previous years: 2,747 (AIR15), 660 (AIR16), 1801 (AIR17), 76 (AIR18) and 75 (AIR19). The reported value for AIR20 (41) is 45% lower than the previous year and significantly lower than other previously reported figures.

Line 8d: Lead communication pipes replaced under the proactive lead replacement programme.
Unlike other lead communication pipes replacement activities, this activity is delivered solely by the AD team and is related to the outcomes of sub-programme 23 in PC15 Year-5. The reported AIR20 number

(1,781) is 289 lower than the previous year (2,070), and comparable to 1,867 in AIR17 and (1,922) in AIR16.

COVID-19 has not significantly impacted on the AIR20 reported figure however, it is noted that there has been 2 months of lost work in April and May 2020 which is expected to impact on the AIR21 reported figure.

Line 9: Total lead communication pipes replaced.
The reported value for AIR20 (2,295) is a summation of Lines 8a, 8b, 8c and 8d as per the UR's Regulatory Reporting and Definitions Manual definition for this line. This year's value is significantly lower (447 or 16.3%) than the previous year (2,742) and much lower than the values reported in AIR16 (3,322) and AIR17 (4,311).

Line 10: Communication pipes replaced - other.
The number of non-lead communication pipes replaced in a year reflects both the length of mains replaced and the rural/urban mix. Urban mix will have a greater density of communication pipes per km of mains. In AIR20, NIW replaced 5,664 non-lead communication pipes, which is consistent with the range over the PC15 years of 4,232 (AIR19), 3,769 (AIR18), 5,608 (AIR17) and 3,915 (AIR16).

The AIR20 number is built up from 4,102 from the AD team (2714, 2,336, 4,419 and 2,736 in AIR19, AIR18, AIR17 and AIR16 respectively) and 1,562 from the CSD team (1,518, 1,415, 1,189 and 1,179 in AIR19, AIR18, AIR17 and AIR16 respectively). The AD and CSD numbers for AIR20 are 51% and 3% higher than in AIR19, and 34% higher than the overall number in AIR19.

Line 11: Mains bursts per 1000km.
The reported AIR20 number (82 bursts per 1000km) is 10 less than AIR19 (92 bursts per 1000km) and comparable to reported figures for the rest of the PC15 period AIR18 (91 bursts per 1000km), AIR 17 (80 bursts per 1000km) and AIR16 (74 bursts per 1000km).

We note that the reported number is derived from the total number of recorded burst events (minus those attributable to third party damage) divided by the total length of mains. The number of bursts is calculated directly from monthly reports from the Mobile Work Management or MWM system compiled by the Water Business Unit. The reports summarises job split between those generated through proactive and non-proactive detection methods.

The Water Business Unit also collates information relating to the number of mains repairs attributable to third party damage, so that the number could be deducted from the total year end number. The Field Managers from the CSD Networks Water team and NIW's contractor are consulted to review the collated information. Cross checks are carried out against reports repair flags on CAR2Map database and reported samples collected for burst repairs. The outputs are also used for DG3 entries for the assessment of interruption to supplies relating to bursts, and the resolution of NIW's contractor's requests for clarification or confirmation of burst repair works.

We note that the reported AIR20 number is comprised of 1,186 reported burst mains (non-proactive) repairs by CSD Networks Water team and 1,051 proactive repairs by the active leakage control team minus 26 bursts due to third party damage.

The number of bursts detected through pro-active actions has decrease by 5% since AIR19. The number of non-proactive detection bursts has decreased by nearly 20%. There has also been a significant decrease of 72% in the number of bursts due to third party in AIR20, this is the lowest for PC15. The total number of reported bursts has decreased by 10% from AIR19 (2467) but is comparable to AIR17 (2135) (see Table TC_T11_2).

Table TC_T11_2: Components of burst data from AIR14 to AIR20 and the changes over the last two years.

Burst Numbers Summary Table	AIR15	AIR16	AIR17	AIR18	AIR19	AIR20	Percentage Changes	
							AIR18 to AIR19	AIR19 to AIR 20
CSD Networks Water (non-proactive detection)	1352	1127	1313	1394	1451	1186	4.1%	-18.3%
CSD Networks Water (pro-active detection)	996	924	883	1116	1111	1051	-0.4%	-5.4%
Third Party Damage	82	79	61	66	95	26	43.9%	-72.6%
Total	2266	1972	2135	2444	2467	2211	0.9%	-10.4%
Burst Rate per 1000km	84.8	73.8	79.7	91.1	91.5	81.9	0.4%	-10.5%

The AIR19 audit report recommended the following action: *To provide a better historic context for inter-AIR report comparisons, we suggest that NIW prepares a summary of mains bursts information, with a confirmation of the split between proactive, non-proactive and third-party repairs. The summary should include the estimated number of burst rates per 1000km.* During the audit the commentary was reviewed to check completion of this action. Table TC_T22_2 included in the commentary is considered to have fully addressed this action

Distribution Studies (Lines 13 to 17)

Line 13: Cumulative number of distribution zone studies completed.

We identified that the Company's report of the cumulative number of distribution zone studies completed has remained constant since 2012-13.

Line 14: Distribution zone studies ongoing.

Nil value reported. NIW has upgraded its previous zonal study methodology with the Water Mains Infrastructure Investment Model (WIIM) methodology. In the reporting year, NIW completed three hydraulic model rebuilds including Dunore East, Killylane CWB North and Killyland CWB South. The Company is in the process of rebuilding the 9 hydraulic models shown in Table TC_T11_3. The Company completed WIIM 3 data analysis in autumn 2018 to inform the next phases of WIIM 3 schemes to be delivered over the coming years.

Table TC_T11_3: Hydraulic models rebuilding in AIR20 (Source: NIW Commentary document for AIR20).

S/No	Hydraulic Models Rebuilds in Progress 2019-2020	Status	Year To Be Completed	Numbers of Properties
1	X	Ongoing	2020	10,932
2	X	Ongoing	2020	4,652
3	X	Ongoing	2020	34,448
4	X	Ongoing	2020	2,122
5	X	Ongoing	2020	14,615
6	X	Ongoing	2020	16,508
7	X	Ongoing	2020	5,693
8	X	Ongoing	2021	11,947
9	X	Ongoing	2021	6,053

Line 15: Total distribution zones identified for study.

NIW has identified 71 distribution zones. The Company advised that these zones have been combined into 54 model areas that reflect the current configuration of water resource zones.

Line 16: Cumulative % distribution zone studies completed.
NIW has completed all the planned distribution zone studies and has reported 100%. This is consistent with AIR19.

Line 17: Percentage population/properties – completed studies.
NIW has covered 100% of the population or properties associated with the completed distribution zone studies and has reported 100%. This is consistent with AIR19.

Water Quality Compliance Measures (Lines 18 to 21)

All targets for water quality compliance measures were achieved in AIR20. There has been minimal impact on sampling as a result from COVID-19 for AIR20, however, there is expected to be a significant impact on AIR21 reporting. It is currently not possible to sample customer taps as a result samples are being taken from reservoirs instead. It is therefore not possible to test for taste, odour or lead. This change to sampling has been agreed with DWI. As part of the agreement there will be an attempt to catch up on sampling numbers when a safe way to sample has been agreed however it is expected there will still be a shortfall.

Line 18: % overall compliance with drinking water regulations.
The reported AIR20 value (99.90%) is the same as the previous year value of 99.90%. This year's figure also exceeds the NIW's target of 99.79% and the joint highest compliance achieved in PC15 to date, with improving trend since AIR16.

Line 19: % compliance at consumers tap.
The reported AIR20 value (99.84%) is similar to the previous year's value of 99.83%. This year's figure also exceeds the NIW's target of 99.69% and the highest compliance achieved in PC15 to date, with improving trend since AIR16.

Line 20: % iron compliance at consumers tap.
The reported AIR19 value (98.89%) is similar to the previous year's value of 98.94%. This year's figure also exceeds the target of 97.10%.

Line 21: % service reservoirs with coliforms in >5% samples.
No service reservoir sites have had more than 3 failures during the year. NIW advised us that it has an ongoing service reservoir cleaning programme to maintain this.

There were 13 failures during AIR20 however, no sites were subject to a second failure and all sites achieved 95% compliance.

Nominated Water Service Outputs (Lines 22 to 24)

Through our audits, we established that DWI have full visibility of the programme and sign off of individual outputs to confirm delivery of outputs reported in Lines 22-24. We have checked the number of nominated outputs in these lines against the corresponding schemes in Tables 40 and 40a and found these to be consistent.

Line 22: Completion of nominated trunk main schemes.
Nil reported. NIW has not delivered any nominated trunk main schemes against the baseline forecast of a single output in AIR20.

Line 23: Completion of nominated water treatment works schemes.

Agreement was reached between NIW and the Utility Regulator to substitute out Caugh Hill WTW Project from the PC15 delivery programme, several WTW sites with enforcement orders were brought into PC15. Rathin Borehole is one of the projects agreed through change control progress. Rathin Borehole achieved Beneficial use in Year 5.

Line 24: Completion of nominated improvements to increase the capacity of service reservoirs and clear water tanks.
Lough Fea CWT achieved Beneficial Use in 2019/20.

Additional Water Service Output Measures (Lines 25 to 28)

Line 25: Number of Catchment Management Plans.
Two catchment management plans have been completed in AIR20 and NIW has completed 15 'live' catchment management plans so far in PC15. The two EU's INTERREG funded catchment studies for Killyhevlin and Belleek were completed in March 2020. This was delayed from the original target completion date of Q1 2019/20 due to competing priorities within the project. These caused delays in agreeing format and content to ensure catchment management study consistency and suitability.

The number of abandoned/closed catchments has been revised from 23 as stated in PC15 FD plan to 21 as Knockbracken and Ballintemple sites have subsequently been sold. NIW has submitted a change control to revise the total number of catchment management plans in the baseline plan from 40 to 36.

Line 26: Number of School Visits.
A total of 229 school visits were carried out in AIR20 against the annual baseline target of 176. NIW has consistently outperformed its annual baseline target in PC15 since AIR16. The accumulative output targets up to year five of PC15 is 880, the current actual output up to year five is 1,2287. The total number school visits reported were checked against the spreadsheet tracker and found to be consistent.

Line 27: Number of Other Educational Events.
A total of 143 events took place in AIR20 which is significantly higher than previous years in PC15 (65, 64, 62 and 66 events in AIR16-19 respectively). NIW has consistently outperformed its annual baseline target of 57 events in PC15 since AIR16. The accumulative output target up to year five of PC15 is 287, the actual output is 400. The total number of other educational event reported were checked against the spreadsheet tracker and found to be consistent.

Line 28: Percentage Service Reservoir Sample Taps.
NIW installed 291 sample taps in AIR20, an increase of 5 sample taps from AIR19 (286 sample taps). With no remaining service reservoir taps to be addressed, the reported AIR20 number represents 100% of the total number of taps. It is a 1.73% increase from 98.3% in AIR19. Through our audits, we note that NIW underperformed during AIR19 against the annual baseline target of 100% and have now completed this target in AIR20.

5. Confidence Grades

As shown in Table TC_T11_1, the confidence grades used have remained the same as last year. The rationale and appropriateness of the assigned confidence grades were discussed at audit and found to be reasonable.

6. Challenges to the Company, Recommendations & Suggested Actions

This section summarises the key challenges made to the company, recommendations and suggested actions.

Outstanding AIR19 Audit Actions

The following AIR19 Audit Actions have not been addressed in the AIR20 submission. All other AIR19 audit actions are considered to have been addressed:

- Table 11 data collation and reporting methodology. Consider use of a change log to record changes made to the Table methodologies and processes so that version control can be tracked, and to facilitate easy identification of year-on-year changes for audit and assurance purposes.

AIR20 Key Challenges / Findings / Recommendations

The following key challenges, findings and recommendations made through the AIR20:

- All Lines: In many cases targets are not clearly stated in the Commentary. It is recommended for AIR21 to include a table in all Commentary documents detailing the targets and achieved levels for each year in PC15. This table should also include where there has been changes to the targets as a result of change controls or other agreements with UR and DWI.

- Line 4: Flushing factor used to convert from number of mains flushings to length of mains flushed has increased from 0.316km per flush in AIR19 to 0.329km per flush in AIR20. The factor was derived based on a sample of mains flushing events. It is recommended that NIW provide information about the sample size used to derive the flushing factor in the Line 4 methodology.

- **Line 4, 8d, 18-21: AIR21 reported figures are expected to be impacted by COVID-19 restrictions on works. It is recommended that the likely impacts are flagged up by NIW to UR as part of AIR20 reporting.**

- Line 8c: Lead communication pipes replacement is not recorded in CPR system, there is therefore a risk that the reported figure is lower than the achieved figure. It is recommended that changes are made to the CPR system to record all reported parameters.

- Line 11: Calculations for line 11 draw on a number of information sources and are hard to follow. To improve the audit trail it is recommended that a summary spreadsheet is created, which clearly provides references and assumptions for each information source.

- Line 13: Consideration to be given to PC21 reporting method for zonal studies, the reported figures to not reflect the ongoing work completed by NIW to maintain and update hydraulic models.

- Line 22, 23: Content with reported information but some audit trails and explanation of year-on-year changes appear limited. Change controls for Lines 22 and 23 are not detailed sufficiently in the commentary, suggest attaching change controls to the commentary.

SUMMARY OF AUDIT FINDINGS

Table 16 – Sewerage Service. Activities only not the asset balance Lines 3-13c & 16a-33

PREPARED BY	X
DATE	03 June 2020

Rating	Meaning
	No material exceptions and compliant with requirement
	Content with the reported data but supporting information needs to be complete and/or improvement identified for AIR20, or other noteworthy comment
	Minor exceptions
	Material exceptions
N/A	Not applicable to report

1. Key Findings

AIR20 Table Criteria	RAG	Assessment
Independent review of performance against PC15 target (where relevant)		Performance is good. Most targets have been met. The Auditor notes that three targets have not been met: % of WwTWs discharges compliant with numeric consents, % of total p.e served by WwTWs compliant with numeric consents and number of 'sustainable solution' WwTW serving a PE <250.
Methodology – consistency with the reporting process with clear control points		The reporting process is well managed. There are clear check points for reporting. Weaknesses are understood. The methodology is consistent with the reporting process.
Assumptions – reasonableness and applicability		Assumptions are reasonable and appropriately applied
Source data – completeness		Source data is clearly identified, weaknesses are understood and are complete without material concern.
Clarity of audit trails – evidence of appropriate audit trail		NI Water has made improvements to their collection and sorting of supporting evidence. There is sufficient evidence for the figures reported.
Confidence grades – documentation of appropriateness and rationale		Confidence grades are appropriate and the rationale for them is clearly documented.
Governance – evidence of quality assurance and of final sign-off		Evidence of engagement and final sign-off has been seen for the lines in this table. Minor exception: **entries for Line 16a (134) and Line 16b (253) numbers interchanged in the Table record for AIR20.**

- NI Water has met most of its target in AIR20. The Auditor notes that the Company did not meet its annual target for two PCs: percentage of WwTWs discharges compliant with numeric consents and percentage of total PE served by WwTWs compliant with numeric consents.
- Errors found through the audit, with respect to the reporting of the percentage compliance and the project code for a site used in reporting the number WwTWs beneficial use, were discussed and corrected.
- Through audit discussions, we made suggestions to facilitate correct reporting of Table numbers.
- We noted that NI Water has made improvements in the collection and storing of the audit trail associated with the reported figures.

2. Audit Scope

Audits were carried out over three days, on the 2nd, 3rd and 4th June 2020. The audits consisted of remote interviews with the owners and approvers of the sewerage service information to discuss the methodology and data used to generate Table 16, Lines 3-13c and 16a-33 for AIR20.

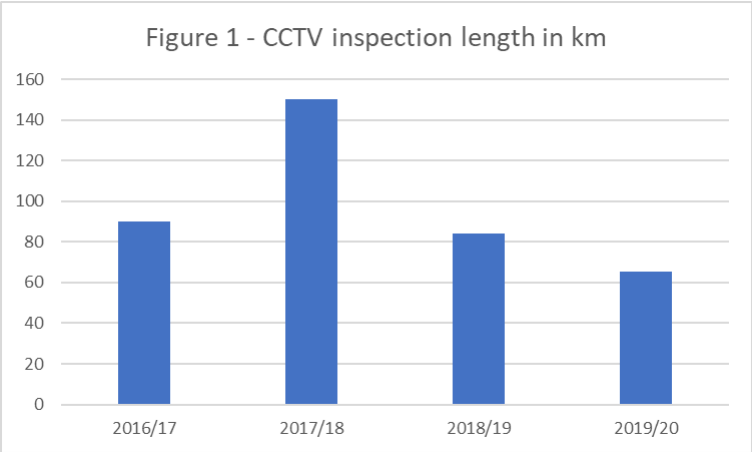
As part of the audit, in line with the Utility Regulator (UR) requirements, we carried out a review of the Company's delivery of nominated outputs and BU dates on a sample basis. The audits did not cover the asset balance (out of scope) and no comment was required for the change control and budget changes associated with the Table entries.

3. Performance and Significant Events

Changes During Report Year

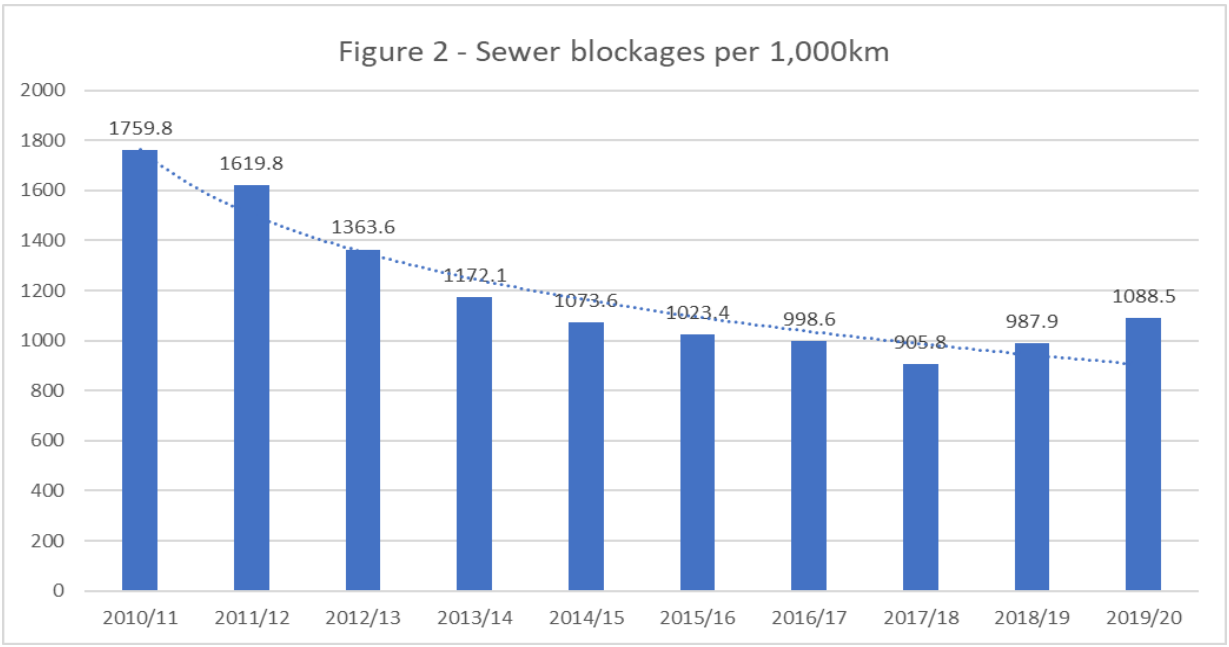
Lines 3-13c

The length of CCTV surveys (Line 4) has continued to decrease compared to the previous year's levels – as shown in Figure 1 below. The reduction is consistent with the end of the rehabilitation work undertaken.



In AIR20, NI Water has reported 77.3 collapses per 1,000km (Line 12) and 1088.5 blockages per 1,000km (Line 13). The total number of blockages and collapses used to calculate the measures in Lines 12 and 13, are based on verified and paid contractor invoices for the numbers of blockages and collapses resolved. The number of collapses per 1,000km reported year-on-year has remained relatively stable since AIR16.

Although there has been a historic improvement in the sewer blockages per 1,000km there has been another increase in the number of blockages as shown in Figure 2 below. This could be the start of the stabilisation of blockages. Reductions in this number may only be seen with greater focus on cleaning pipelines before a blockage occurs. This increase for AIR20 is attributed to the change in contractor mid-year in September which has brought with it some teething problems.



Intermittent Discharges
Lines 16a-17b

NI Water does not allow overflows to be upgraded without approval from NIEA (Northern Ireland Environment Agency), therefore the reported numbers should be consistent with the NIEA's expectations. The number of UIDs excluding CSOs reported this year were 253, which is the same as last year's figure and 134 CSOs (AIR19-137 CSOs), a reduction of 3 CSOs since AIR19. **We queried the entries for Line 16a (134) and Line 16b (253) which appears to be interchanged in the Table record for AIR20.**

The Asset Performance Team continues to work to improve its GIS database for the number of CSOs and intermittent discharges; the full extent of the cleansing work will not be seen in the figures until PC21. NI Water advised that these changes are uploaded into batches and the GIS team are currently working through a large batch of changes required. The Company has reported 784 CSOs (Line 17b) and a total of intermittent discharges excluding CSOs of 1,776 (Line 17a). In AIR20 42 assets were removed from the GIS database - this is due to duplication of lines.

Drainage Area Plans
Lines 18-22

We note that since the change in NI Water's process last year, DAP models have continued to be maintained and updated with changes as they occur, thus keeping the plans up-to-date. As such, plans are reviewed on a five-year cycle and, if deemed necessary, to commission updates of the plans. No plans have been completed in the reporting year with 48 in progress (Line 19).

We observed that there are a large number of studies in progress at the end of the report year. This is in part due to the length of time it has taken to complete some of the studies – which can take up to two years to complete, and the over-running of a number of studies that were due to finish in the report year. We note that the percentage population covered by the completed DAPs (Line 22) has increased from the last year's reported number of 82.1% to 85.2%. This is due to the use of updated population equivalent (PE) data that has been used to calculate the percentage values.

Sewage Treatment Compliance Measures
Lines 23-25

We note that Line 23 to 24a are reported on by NIEA and are based on reported samples by NI Water to the NIEA. The Water Order Consents (WOC) specifies the number of samples to be taken per year and the parameters which must be determined. A WwTW may fail if the required numbers of samples are not taken or the full range of parameter's are not determined. At the end of the calendar year (for AIR reporting), the number of WwTW's which have passed their numeric WOC was calculated as a percentage of the total number of works to determine the compliance with the target. It is noted that PPP works are excluded from the reported figures.

In AIR20 NI Water has reported 94.7% and 94.0% for the percentage of WwTW discharges compliant with numeric consents and the percentage of total PE served by WwTW's complaint with numeric consents respectively [Line 23 and Line 24]. NI Water has met its compliance for the percentage of WwTWs discharges compliant with numeric consents PC15 target of 94.5%. It has however, not met its PC15 target of 99.16% for the percentage of total PE. served by WwTWs compliant with numeric consent for the year.

All sites to be upgraded under NI Water's Rural Wastewater Improvement (RWI) projects are agreed with the NIEA. The starting position for compliance projections throughout PC15 was based on NIEA's assessment of works as passing or failing in calendar year 2013. Compliance was projected to improve year on year through delivery of works agreed with NIEA for upgrade via the RWI project. In AIR20 NIEA assessed the small WwTW compliance as 89.29 (Line 25); this is an increase from last year's compliance of 86.64% (AIR19). NI Water has not met the target of 94.46% for AIR20.

Nominated Sewerage Service Outputs
Lines 26-28

Through our audits we were able to confirm the total number of nominated unsatisfactory intermittent discharges (UIDs), WwTW and small WwTW improvements delivered during the year using data from Tables 40 and Table 41 (Table 41 is out of the Reporter's scope of work for AIR20), the (Capital Programme Monitoring and Reporting) (CPMR) system, and a selection of the samples that are used to verify the compliance.

For AIR20, NI Water has delivered 3 nominated UID outputs against a PC15 target for Year 5 of zero outputs. Four UIDs were profiled for delivery in 2019/20, however one, Carnalea Golf Club, is now planned for delivery in 2020/21. There are now 17 PC15 nominated UIDs outputs outstanding for delivery over the final year of PC15, which, based on rate of delivery may be difficult for NI Water to meet.

Two WwTW nominated outputs were delivered in 2019/20 (Ballintoy and Dungannon). None of these outputs were projected to be delivered in 2019/20. NI Water advised us that these treatment works have been deemed to have achieved beneficial use. Sampling of the works were taken to show that they can meet the required standards. NI Water now anticipate completing the remaining 6 WwTW improvements in the last year of PC15.

A total of nine small WwTWs achieved beneficial use during 2019/20, against a forecast delivery profile for Year 5 of PC15 of 7 outputs. All of the outputs were forecast for delivery in 2019/20. These outputs are achieved when beneficial use can be claimed – i.e. when the samples shown for the site meet the standards required. It is noted that Mayboy was claimed last year but was rejected as having achieved beneficial use, as the sites failed during the testing/handover phase. It has now passed beneficial use so has been claimed for the 2019/20 report year. We note that NIEA have full visibility of the programme and the sign-off of individual outputs confirming the delivery of the outputs that are reported in Lines 26-28.

Additional Sewerage Service Output Measures
Lines 29-33

We note that there have been 37 EDM (event duration monitor) installations in AIR20, this is a decrease from the previous year of 115. NI Water has now achieved a total of 152 monitors during PC15. The targets for the monitoring have not been met and there are 195 monitors left to install in the remaining year of PC15. NI Water stated that a large number of monitors have been installed and not claimed as there are delays with the installation of electricity for the sites.

We also note that there are a number of qualifying works reported for WwTW upgrades to comply with PPC regulations. In AIR20, 7 works were upgraded and signed off by NIEA. A further 7 treatment works are due for completion by the end of PC15.

NI Water has reported that the impermeable surface water collection area that has been removed from the combined sewerage is 59,586m^2 which is above the Company's target of 30,000m^2 for the year. The target was achieved by the completion of 3 schemes; of particular note were KR417 Ormeau Avenue, which contributed to the largest surface are removed and KR479 Main Street, which was the biggest piece of work that included the closure of main roads and has enabled development restrictions to be lifted.

We confirm that no sustainable WwTW solutions were delivered during the reporting year for both works with a PE greater and less than 250. It is noted that there are continued difficulties in meeting land requirements for the solution for the delivery of sustainable solutions at WwTWs of PE < 250.

4. Summary of Audit Checks

Changes During Report Year
Lines 3-13c

The data for lines 3, and 5-11a are calculated from three sources: asset delivery (AD), developer services (DS), and operations (CSD).

The AD numbers are sourced from the NI Water system CPRM. A report is generated from CPMR listing all the capital schemes. Calculations are performed on the data pulled by the report to separate the length of pipes into new, renovated and replaced, non-critical and critical. This method produces all AD data for lines 3 to 11 and we confirmed that the reported lengths are the same as the lengths produced by the calculations sheet.

The reported DS numbers are consistent with the lengths quoted in the Quarterly Sewerage Adoption sign-off sheets and we confirmed that the split between critical and non-critical is consistent with the stated methodology. We could not confirm that the reported lengths of renovated sewers by CSD are consistent with the source data as the complier of the reporting measure is sent the numbers by a colleague who obtains them from CMS.

For line 4, the CCTV survey data comes from three sources; AD data for CCTV surveys, which comes from the same CPMR report as described above, an in-house Excel spreadsheet (a manual calculation is carried out to determine the length for critical sewers – 25%), and asset performance data. The length reported was reviewed in the calculation sheet and we can confirm that it is the same as the reported number.

Intermittent Discharges
Lines 16a-17b

NI Water has a master spreadsheet of overflows and UIDs for solutions delivery. These solutions are agreed with NIEA. It is a locally held list which then forms the basis of the reported numbers for UIDs and overflows. We confirmed that the reported numbers are consistent with the source data.

Drainage Area Plans
Lines 18-22

Through our audit, we discussed the cumulative number of completed drainage area plans and the implication of combining a number of the DAPs into larger DAPs. This would reduce the number of completed DAPs from 82 to 71. NI Water advised that the number in the pre-audit Table will be updated, identifying which DAPs are combined for reporting purposes. We can confirm that the Table was amended post-audit, with the reported number being 71, with a commentary which noted the agglomeration.

Sewage Treatment Compliance Measures
Lines 23-25

At the start of the audit the Auditee explained that whilst populating Table 46 they noticed an error in the number of compliant works, which was out by one. This then affected the percentage of compliance figure reported in Table 16. We made a calculation check recommendation in Section 6 to prevent this type of error happening in the future.

Nominated Sewerage Service Outputs
Lines 26-28

We confirmed that the dates in the reported tables (table 40 and 40a) are the same. We checked sampling data for the sites (Mayboy, Gortaclady, Ballee Road, Dundrod, Mullyroddan, Mossvale Terrace, Broagh, Tartaraghan, and Beagh) to confirm that their discharges complied with the required beneficial use.

We checked that the beneficial use dates in the table were the same as those on CPMR, and confirm they are. During the audit the project code used for Dungannon is incorrect in the commentary; we noted that this should be KF350 and should be updated in the commentary [We can confirm that the code was updated in the final Table commentary]. We also noted that for Dungannon, we were unable to see on

CPMR the beneficial use date as the project has been updated for phase two work on the project this has removed the phase one data. The audit trail has been lost to someone who logs in to check - it is still there of the system but cannot be got to unless you are in IT. **We suggest that NI Water created different contract lines for each of the phases.**

Mayboy was claimed last year but was rejected during the year, because at its testing and hand over phase it failed so was rejected. It has now passed beneficial use so can again be claimed; the 2018/19 report figure has been reduced from 10 to 9 to account of the rejection of Mayboy.

NI Water explained there has been a change in process for claiming the beneficial use for the small WwTWs. They now have to use sampling results to show the beneficial use; because of this change the first half of 2019/20 (the end of 2019) the dates in CPMR are incorrect for the actual claimed beneficial use. The beneficial use dates is sent by project managers once the sampling has been approved. We checked the beneficial use dates on the emails from the project managers. We confirm the dates in the emails are correct.

Additional Sewerage Service Output Measures
Lines 29-33

We checked the 37 CSO monitoring equipment reported against the raw data and we can confirm that the reported figure this is correct.

Line 31, impermeable area, three schemes are listed in CPRM for surface water removed and these are sourced from CPMR using a query report. The contractor fills in the figure and the project manager checks the value and the values are added onto CPRM. A check of the projects on the CPMR show that these values are correct.

5. Confidence Grades

The Company has assigned a confidence grades for the table lines as per below:

Table Line(s)	Grade	Reason
Line 3	C3	No change from the previous year. Based on mixed data sources. The grading is subjective but reasonable.
Line 4	C4	Based on mixed data sources. The grading is subjective but reasonable because amount of manual adjustment required.
Lines 5 - 7, 9 - 11a	B2	Based on stable and reliable sources with small errors.
Line 8	C3	No change from the previous year. Based on mixed data sources. The grading is subjective but reasonable.
Lines 12 - 13	B3	The data is derived from checked and paid invoices and relies on the total length of mains from the GIS team that has a lower confidence grade.
Lines 13a - 13c	**B3**	**This is a change from last years' grade of A1 because of the issues with work flows, and with the change-over of contractor.**
Lines 16a - 17b	C2	The measure relies on 3rd party data for the assigning of the measures.
Lines 18 -22	B2	Some data is taken as-is while other data requires calculation to obtain the reported numbers.
Lines 23 - 25	A1	The sampling data is reported and agreed by the NIEA.
Lines 26 – 27	A1	The reporting measures are based on sound, time specific data captured relevant to each individual UID and requires regulatory sign-off.
Line 28	A2	The data is taken from CPMR but requires manual intervention and is checked and signed off by the regulatory team and project managers.
Line 29	B2	Data collected from several sources and there is potential for error.

Table Line(s)	Grade	Reason
Line 30	A1	The reporting measure is based on samples reported to and agreed upon by NIEA.
Line 31	B2	The reporting measure is based on several data sources and has a small margin of error.
Lines 32 -33	N/A	Zero is being reported

6. Challenges to the Company, Recommendations & Suggested Actions

a) A check of the raw data from CPMR and the summary spreadsheet for numbers used in Lines 3 to 11a; shows that the pre-audit numbers are correct.

b) At the start of the audit the auditee explained that whilst populating Table 46 they noticed an error in the number of compliant works, which was out by one. This then affected the percentage compliance figure reported in Table 16. **We suggest that in the calculation spreadsheet a check be added to check that the complaint and non-compliant percentages add to 100. This check should ensure that such errors will be picked up during data compilation for annual reporting.**

c) During the audit, we found that the project code used for Dungannon is incorrect in the commentary. We noted that this should be KF350. **We recommend that this should be corrected in the Company's Table commentary, post-audit.**

d) We also noted that for Dungannon, we were unable to see on CPMR the beneficial use date as the project had been updated for phase two work on the system, with the phase one data removed. We identified that the audit trail has been lost to someone who logged in to check. Auditees believe that the lost data is still on the system but cannot be retrieved by non-IT staff. **We suggest that NI Water creates different contract lines for each of the phases in the data recording system.**

SUMMARY OF AUDIT FINDINGS

Table 40 – Capital Investment Monitoring (CIM) Lines 1-72

PREPARED BY	X
DATE	26 May 2020

Rating	Meaning
	No material exceptions and compliant with requirement
	Content with the reported data but supporting information needs to be complete and/or improvement identified for AIR20, or other noteworthy comment
	Minor exceptions
	Material exceptions
N/A	Not applicable to report

1. Key Findings

AIR20 Table Criteria	RAG	Assessment
Independent review of performance against PC15 target (where relevant)		Varied performance on progress on the schemes audited, however reporting process is mature and well managed.
Methodology – consistency with the reporting process with clear control points		A switch from GAAP to IFRS accounting is the only material change noted in AIR20 improving financial accuracy. At audit, the overall methodology was demonstrated and is consistent with current reporting process. **The Line Methodology for Table 40 provided is still in draft form (v1.5), and instructional in written style; an improved and approved final version should be produced.**
Assumptions – reasonableness and applicability		Reasonable and appropriate assumptions applied.
Source data – completeness		Source data is taken directly from the Capital Programme Monitoring and Reporting (CPMR) system, with good reconciliation with Oracle data, and Business Case information. Programme changes and output dates are captured within CPMR. Outputs are subject to NI Water's on-going quarterly reviews.
Clarity of audit trails – evidence of appropriate audit trail		Audit processes and evidence of approvals were seen throughout our audit.
Confidence grades – documentation of appropriateness and rationale		N/A. But we note that project information in CPMR reconciles well with the more accurate financial information from Oracle and are subject to NI Water's ongoing quarterly reviews.
Governance – evidence of quality assurance and of final sign-off		Through our audits, we have seen evidence of good governance covering both financial and project output information.

- Northern Ireland Water's method for proportional allocation of expenditure is applied consistently across the capital programme areas as set out in the Company's Capital Investment Driver Allocation (CIDA) manual. The rules set out are reasonable and are followed in the sample checks audited, no material concerns were identified in this respect.
- We note from Table 40 that the overall expenditure in 2019-20 of £160.37 (excluding IFRS and INTERREG adjustment lines) when adjusted to 2012-13 prices using OBR RPI inflation is equal to £135m. This is £3.33m below the baseline FD of £138.33 and in line with the adjusted budget funding received by Northern Ireland Water. For the final year of PC15 expenditure is forecast at £140.156m

against a baseline of £156.525m, this would represent an underspend of £16.369m against the FD baseline forecast. These values are consistent across Table 40 and the relevant commentaries.

- NI Water's overall commentary on PC15 performance is that water service has been met, **however sewerage service has been underdelivered.** Variances have been identified due to the acceleration of Clean Water Tank schemes (in sub programme 06), £0.9m overspend on Phase 1 of Queens Bridge Syphons, additional sewer rehabilitation works, £4.5m of higher costs for DG5 and UID programmes (all of sub programme 12), underspend in sub programme 8 to accommodate the capital programme, reduction of early investment in sub programmes 1 and 2, and finally underspend in sub programme 16 due to delays on major schemes.

2. Audit Scope

The audit was carried out on Tuesday 26th May 2020 against the principles and requirements of the UR guidance. This audit focused on Northern Ireland Water's data table, Table 40 'Capital Investment Monitoring', and associated commentary. It is noted no line methodology documentation was produced in support of this table.

We sampled projects in Table 40 across scheme types to examine the proportional allocation of expenditure, the appropriateness and consistency of interpretation and application of the company's CIDA guidance. The sampled schemes include those from the sub-programmes highlighted in the UR's guidance for AIR20 reporting, a range of PC nominated and non PC nominated schemes, these are:

Sub-Programme	Scheme Audited
Base maintenance sewerage (02)	X
Water treatment works (04)	X
Water mains rehabilitation (08)	X
Leakage sub-programme (09)	X
Sewerage programme – Unsatisfactory intermittent discharges (12)	X
Wastewater treatment works (16)	X
Wastewater small treatment works (17)	X

3. Performance and Significant Events

Performance against PC15 targets

We reviewed and checked schemes from the audit sample which form the PC15 nominated outputs in Table 40a 'Nominated Outputs Delivered by PC15 Capital Projects and Programmes of Work' against the information given in Table 40 'Capital Investment Monitoring' and the associated commentary given in Table 30.

The outputs were found to be consistent across these reports. Our commentary from the audit of these schemes with PC15 nominated outputs are summarised as follows:

- Sewerage programme (12) – *X*

This scheme forms part of the nominated outputs for PC15 which commenced in PC13. Beneficial use was achieved in October 2019, the end of the maintenance period was reached in February 2020 bringing a close to this scheme within the 2019-20 financial year.

No baseline information is presented in Table 40. However Line 5 of Table 40a suggests a FD BU date of March 2019 was originally set. On that basis this scheme has achieved beneficial use 5 months behind schedule.

- Wastewater treatment works (16) – *X*

  This scheme, comprised of multiple sites, forms part of the nominated outputs for PC15 which commenced in PC13. Baseline beneficial use was set for the end of December 2019. However no progress has been made on the scheme to date, no current actual milestones have been reported. During the audit known issues around land purchases required to deliver the scheme were identified by Northern Ireland Water, which are currently holding up progress to deliver this PC15 nominated output. Substantial further expenditure has been forecast through to 2022-23 in order to deliver this output, it is not anticipated this scheme will be completed within the PC15 period.

Expenditure projections

We reviewed the scheme expenditures to date against baseline information and considered the suitability of future projected spend to deliver their outputs. The following table presents this information for the schemes selected for audit, based on Northern Ireland Water's Table 40 submission.

Sub Prog	Scheme name	Pre-PC15 spend (£m)	PC15 actual and forecast spend (£m)						BU date	Reporter agreement (✓/X)
			15-16	16-17	17-18	18-19	19-20	20-21		
02	X	-	0.002	1.801	0.659	0.09	-	-	Not detailed	✓
04	X	-	-	-	-	0.195	0.916	0.052	Achieved Nov 2019	✓
08	X	3.152	0.021	-	-	0.017	0.002	-	Achieved July 2015	✓
	X	3.203	0.045	0.051	0.083	0.032	-	0.056	Achieved Jul 2013	✓
09	X	1.079	0.564	0.514	0.484	0.470	0.491	-	Not detailed	✓
	X	0.458	0.309	0.309	0.309	0.309	0.309	-	Not detailed	✓
12	X	0.113	0.066	0.002	0.013	0.912	1.322	-	Achieved Oct 2019	✓
16	X	0.174	0.011	0.012	0.063	0.849	0.054	6.385*	Not detailed	✓
17	X	0.030	0.126	2.025	1.44	3.018	2.957	2.290	Not detailed	✓

Red values indicate negative spend. * X has further spend forecast of 7.772 and 1.929 for 2021-22 and 2022-23 respectively.

- Base maintenance sewerage (02) – *X*

  Covering the east region, this scheme delivered all planned expenditure for PC15 by 2018-19, no future expenditure is planned in PC15. Missing baseline information was challenged during the

audit. We identified that parent codes 'WwTW base maintenance (prioritised programme)' (SP005) and 'WwPS base maintenance (prioritised programme)' (SP006) are the source for almost all expenditure across the schemes in this subprogramme including this one. This approach is considered appropriate due to the base maintenance nature of the subprogramme.

- Water treatment works (04) – *X*

  This scheme has developed from the feasibility study stage into a full scheme. The scheme was not originally included in the plan for PC15. However its inclusion was made to, in part, replace a DO benefits which could not be achieved on the X scheme, following discussions with the DWI. For this reason, no baseline information is presented which is considered acceptable. A total of £1.111m has been spent to date on this scheme, with construction and beneficial use achieved in 2019. A minimal £52k expenditure is forecast in 2020-21 to allow for completion of the maintenance period and full closure of the scheme. This is in line with expectations for this scheme type.

- Water mains rehabilitation (08) – *X*

  This scheme is split into work packages. It achieved beneficial use in 2015 with the majority of expenditure taking place before the PC15 period. When challenged on the mid-PC15 gap in expenditure and modest expenditure since then, Northern Ireland Water identified prolonged land cost agreements and resolution of compensation events as the reasons. This had no impact on project delivery. No further expenditure is identified in the coming year. The overall spend profile for this scheme is therefore considered in line with expectations.

- Water mains rehabilitation (08) – X

  This scheme achieved beneficial use in 2013 with the majority of expenditure taking place before the PC15 period. Expenditure in PC15 and projected spend were identified during the audit as project management costs, contract closures and in the case of the negative value in 2017-18, adjustments based on these factors. The overall spend profile for this scheme is considered in line with expectations.

- Leakage sub-programme (09) – *X*

  This scheme funds leakage detection consistently across the reporting years. It is based on an annual split of known contracts within the scheme. No baseline information or forecast expenditure is presented in Table 40 due to the ongoing nature of this area of capital investment and variability in budget received from the Department for Infrastructure. Sufficient funding remains to support this scheme to the end of PC15.

- Leakage sub-programme (09) – *X*

  This scheme funds leakage repair consistently across the reporting years. It is based on an annual split of known contracts within the scheme. No baseline information or forecast expenditure is presented in Table 40 due to the ongoing nature of this area of capital investment and variability in budget received from the Department for Infrastructure. Sufficient funding remains to support this scheme to the end of PC15.

- Sewerage programme - Unsatisfactory intermittent discharges (12) – *X*

  This recently completed scheme achieved beneficial use in October 2019 and completed the maintenance period in February 2020, there are no baseline milestones presented at the scheme level for comparison, however baseline expenditure was planned between 2017-19. With actual expenditure at £2.428m used to complete the scheme, this represents an overspend against the

baseline of £1.87m. During the audit the reasoning behind this overspend was discussed, the use of a run rate to develop the costs for Unsatisfactory Intermittent Discharge scheme types is identified as the cause. This is identified as a consistent rationale for overspend across this scheme type.

- Wastewater treatment works (16) – *X*

  This scheme, comprised of multiple sites, has been delayed due to a lack of progress on land purchases required to be able to deliver the scheme. The overall expenditure for the scheme has increased significantly from £10.9m in baseline to £17.23m. During the audit two reasons for the planned overspend were identified, significant additional scope (additional pumping and sludge treatment added to the project scope) and the use of a run rate to develop the scheme costs. The delay to programme means the bulk of expenditure (£16m) is now forecast to be spent between 2020-23 to deliver this PC15 nominated output. The baseline beneficial use date of December 2019 has not been met.

- Wastewater small treatment works (17) – *X*

  This scheme delivers the capital investment programme for small rural WwTW in PC15. No baseline milestone information exists at the scheme level, it is noted that the scheme commenced in April 2017 and is ongoing with an intended completion date of March 2021. Baseline and current/actual expenditure profiles are consistent in terms of timeframe and value. A minor overspend is anticipated, £11.2m was identified in the baseline, with £11.9m the current forecast. The overspend was identified as part of Northern Ireland Water's drive to enable PC21 schemes starting early. Progress on programme delivery was described as on track, with work at some sites still to be delivered.

Proportional Allocation

We reviewed the service cost allocation and purpose allocations Northern Ireland Water have applied to the schemes audited.

Sub Prog	Scheme Name	Service Cost Allocation (%)				Purpose Allocation (%)				Reporter Agreement (✓/X)
		W: Infra	W: Non Infra	S: Infra	S: Non Infra	Q	B	E	G	
02	X	-	-	0	100	0	100	0	0	✓
04	X	0	100	-	-	0	14	86	0	✓
08	X	97	3	-	-	36	58	2	4	✓
	X	93	7	-	-	38	35	6	21	✓
09	X	92	8	-	-	0	57	0	43	✓
	X	100	0	-	-	0	100	0	0	✓
12	X	-	-	0	100	28	58	0	14	✓
16	X	-	-	17	83	85	5	0	10	✓
17	X	-	-	0	100	10	40	0	50	✓

Purpose allocation definitions are as follows: Q = Quality. B = Base service provision (BSP). E= Enhancement comprised of Quality Enhancement (QE) and Enhanced Service Levels (ESL). SBD= maintaining/improving Supply Demand Balance comprised of G = Growth, new development, security of supply and free meters.

Current/Actual or projected allocations are presented, where these differ from baseline this is discussed in the proceeding text.

Baseline service and purpose allocations are not presented in Table 40 for the majority of the schemes (KS974, JC390, JS227, JR439, KN098 and LN101104).

The purpose allocation for the X scheme (KR504) has changed since baseline, from 55% Quality and 45% Base to a wider, altering the primary purpose to Base and introducing a minor component of Growth as shown in the table above.

The service cost allocation for the X scheme (KS113) has changed since baseline, from 56% sewerage infra and 44% sewerage non-infra, altering the primary service cost allocation towards sewerage non-infra as shown in the table above. The purpose allocation has also changed, from 80% Quality and 20% Growth, introducing a very minor Base component as shown in the table above.

The purpose allocation for the X scheme (KI556) has been reversed since baseline, despite maintaining the same proportional percentages, originally Quality then Growth were the two primary components. Purpose allocations for the audited schemes were cross checked between Table 40, the Captrax CPMR system and Business Cases, all except one of the audited schemes were consistent. Growth and quality purpose allocations differed between Table 40 and the CPMR on the X scheme (JR439).

4. Summary of Audit Checks

Methodology

The method used by Northern Ireland Water to produce Table 40 is documented in the Line Methodology (v1.5 draft) document which has not yet been published. The steps involved were partially demonstrated during the audit and it can be confirmed that they are broadly consistent with the processes described. Data tables and supporting commentary documents produced by Northern Ireland Water for Tables 30, 40 and 40a inform and demonstrate consistency with Table 40. The data tables and commentaries are in line with the requirements of the UR guidance documents for these tables respectively, in order to deliver Table 40.

It is noted that the accounting system used by Northern Ireland Water has been changed from GAAP to IFRS, improving the accuracy of financial reporting.

Control points added since AIR19 to ensure allocations do not exceed 100% have been successfully implemented and no discrepancies were found during this audit.

Further focus on reconciliation checks by Northern Ireland Water has been noted leading to improved accuracy of the information in Table 40.

Source data

The two primary sources of data for Table 40 are the Captrax CPMR (Capital Programme Monitoring and Reporting) and Oracle systems. They provide project governance and financial management information respectively.

It is worth noting that Oracle data which records financial information to the nearest penny is more accurate than the CPMR system which records only to the nearest thousand pounds.

It is noted that Northern Ireland Water put additional focus into end of year reconciliation checks of CPMR with Oracle data during the year.

Clarity of audit trails and governance

The governance process was explained by Northern Ireland Water with gated sign off processes evidently followed on all schemes audited through the CPMR and Oracle systems both in terms of approvals to proceed and authority on scheme expenditure. It is the opinion of the auditor that a robust audit trail and governance process has been followed.

5. Confidence Grades

Confidence grades are not applicable to Table 40 entries.

6. Challenges to the Company, Recommendations & Suggested Actions

- Baseline service cost and purpose allocations are absent across a large proportion of the schemes presented Table 40. Parent schemes were identified as a primary reason for this. For traceability and ease of use when reading Table 40 it would be useful if parent allocations could be mirrored down to the scheme level or parent identified in these cells.

- Review schemes of an ongoing nature to ensure expenditure is allocated across all years of the PC period.

- Outdated scheme feasibility level information was presented within the CPMR record for the X scheme (JC390). It was unclear to the auditor if progress on this scheme represented delivery against the feasibility tasks or extended into full delivery of the scheme, as was the case. Identify if a process improvement can be put in place to ensure clarity on this issue can be achieved, i.e. scrutiny at internal approvals, clear rules on how to transition between feasibility and scheme delivery aspects are to be handled in terms of scheme codes.

- **Finalise the draft of the Table 40 Line Methodology document, as per AIR19 audit recommendation. It remains as a draft, as per AIR19 and is presented in an instructional format rather than a statement of methodology.**

SUMMARY OF AUDIT FINDINGS

Table 42 – PPP reporting. Lines 1-52

PREPARED BY	X
DATE	12 June 2020

Rating	Meaning
	No material exceptions and compliant with requirement
	Content with the reported data but supporting information needs to be complete and/or improvement identified for AIR20, or other noteworthy comment
	Minor exceptions
	Material exceptions
N/A	Not applicable to report

1. Key Findings

AIR20 Table Criteria	RAG	Assessment
Independent review of performance against PC15 target (where relevant)		Overall good performance, reporting process well managed, no change from AIR19.
Methodology – consistency with the reporting process with clear control points		The methodologies are coherent and consistent with the reporting process. No changes to AIR19 methodologies.
Assumptions – reasonableness and applicability		Through our audits we have seen evidence of reasonable assumptions.
Source data – completeness		The data table required amendments related to the Block G's reconciliation of Sludge Treatment and Disposal Data. The Auditor can confirm that these amendments have been addressed within the post-audit data table.
Clarity of audit trails – evidence of appropriate audit trail		There were a few non-material discrepancies between NI Water commentaries; also, several text/ formatting issues were identified. These have all been addressed within the post-audit documents and with the Auditors observation notes in this commentary. However, in general clear evidence was provided during audit to demonstrate compliance with the UR guidance documents.
Confidence grades – documentation of appropriateness and rationale		No change from the AIR19 confidence grades. Our reviews and audits support the reported confidence grades.
Governance – evidence of quality assurance and of final sign-off		Through our audits, we have seen evidence of good governance with responsibilities for integrity of data and commentary clearly defined.

2. Audit Scope

Audits of Table 42 data were carried out on the 28th May, 4th June and 5th June against the principles and requirements of the UR guidance for reporting. Our audits consisted of a series of Teams conference calls with NI Water's staff responsible for the preparation of the AIR20 data and the PPP contracts team.

Through the audits we reviewed methodologies, commentaries, data tables and a selection of additional supporting documents.

3. Performance and Significant Events

NI Water's methodologies for reporting the AIR20 Table 42 numbers are unchanged from AIR19.

Block A – Project description

Line 1-6 is the Project Description (static and factual data relating to the PPP contracts).

No changes from the AIR19 reports.

Block B – Payment to the PPP concessionaire

Line 7 is the Unitary charge for capacity charges and only applies to the Alpha sites, which are paid monthly to the concessionaire on invoice.

Since AIR19 costs have increased by an inflationary amount. During the audit it was noted that not all the unitary charge for capacity is subject to inflation which is why the percentage increase (0.987%) is lower than inflation. The values in this line are consistent with the supporting Income Statement Charge Test spreadsheet.

Line 8 is the Unitary Charge for variable charges and applied to all PPP concession sites, which are paid monthly to the concessionaire on invoice.

Compared with the AIR19 report the total variable charge for Alpha site have decreased; whereas, Omega and Kinnegar have increased. The 4.8% reduction for Alpha was a result of a 7.3% decrease in distribution input (DI) combined with an increase from inflation. Omega variable costs have increased by 10.4% due to a 16.1% increase in waste water flows and a 0.9% increase in sludge volume. The variable charge for Kinnegar also increased, NI Water stated during the audit that this was a result of inflation and a slight increase in load due to higher levels of rainfall during the report year.

The DI movements from AIR19 for Alpha and Omega, and the higher levels of rainfall are consistent with the supporting data sets captured within the *"Alpha volumes and WW volumes"* spreadsheets.

Line 9 is the Unitary Charge for deductions, these are applicable to all PPP concession sites. However, for the 2019/20 report year the only recognised (undisputed) deductions were for Alpha sites. No deductions are included in Line 9 for the Omega or Kinnegar sites.

Through prior agreement with NI Water the Alpha contractor submit invoices which include the recognised deductions for failure events. For 2019/20 report year a total of X performance deductions were made, this is a smaller deduction than in AIR19 (X). Through our audits, we established that sufficient information was provided to justify the deductions, and the values were consistent with the *"Income Statement Charge Test and AIR20 Alpha Perf Deds"* spreadsheets.

The Auditor notes that the Alpha, Omega and Kinnegar sites obtained disputed performance deductions during the report year which have not been credited; therefore, these are not included within Line 9. The pre-audit commentary did not include the Alpha disputed deductions in the end of year accounts summary table. The Auditor can confirm subsequent to the audit challenge, this was amended in the post-audit commentary.

Furthermore, the pre-audit commentary incorrectly stated there was a reduced payment (approximately X) to the Kinnegar Contractor and stated an incorrect value of the Alpha water quality deductions. The auditor can confirm that these have been addressed within the post-audit documents.

Line 10 is the cost of atypical expenditure incurred by the concessionaire.

All three concessionaires incurred atypical expenditure in 2019/20. This included any payments or credits agreed in monthly invoices between the parties beyond the Unitary Charge payments due and includes provisions for claims.

The reported AIR20 atypical expenditure for the water service (X) has had a X negative movement since AIR19 (X). For the sewerage service contracts the reported AIR20 value (X) has had a X negative movement since AIR19 (X). The values in this line are consistent with the supporting *"Income Statement Charge Test"* spreadsheet.

Line 11 is the Efficiency Gains at the PPP contract level.

Some changes for cost reductions have resulted in efficiency gains in the report year against the baseline contract at award. During AIR20, efficiency gains of X and X have been achieved by the Alpha and Omega schemes respectively, an increase of approximately 2.2% and 3.7% respectively since AIR19.

The Alpha efficiencies related to reorganisation costs credit (X) and quality monitoring change (X). But, the Omega efficiencies were due to the North Down Disinfection Change (X), a change in wastewater flow management performance requirement (X) and a change in weighbridge calibration frequency (X). There are no new efficiency measures since AIR19.

During audit it was noted there was a formatting difference between the AIR19 submitted data table and the pre-audit AIR20 table. The Auditor can confirm that the post-audit table has grey cells for the individual schemes, consistent with the expected format.

Line 12 is the Total PPP payments and is the sum of Lines 7-10.

This line is also the source data for Table 43 line 4, the Auditor can confirm that the values are consistent with Table 43. The total PPP payments have decreased for Alpha (-0.35%) and Kinnegar (-18%) and increased for Omega (9.6%) since AIR19. The values in this line are consistent with the *"Income Statement Charge Test"* spreadsheet.

Line 13 is the Capital Repayment line. It relates to paying off finance lease liability.

The reported numbers are consistent with the extracts of the Company's financial accounts for Alpha and Omega provided in the commentary and the *"Finance Lease Repayment"* spreadsheet. This report line applies to all PPP contract areas and has increased for all contracts since AIR19.

Line 14 is the Maintenance line.

This line is allocated based on a straight-line assumption over the life of the contract following a change implemented in 2013/14. This reflects the assumption that the unitary charge does not fluctuate with changes in the capital maintenance spend in any year. The straight-line amount has been allocated to the sites on the basis of the total amounts included in the original contract's financial models. The line commentary explains the allocation by site and is sufficiently detailed and supported by the Finance Lease Repayment spreadsheet.

Line 15 has been deleted and is no longer used.

Line 16 is the Atypical Payments Capitalised i.e. the PPP capital payments/ receipts arising from exceptional events outside standard contract payment terms and conditions.

The Company has provided a nil return for this line for all three PPP contracts, resulting in no change from AIR19.

Line 17 is the Total Capital Capitalised and calculated by the summation of lines 13 to 16.

The Auditor can confirm that the line has been correctly calculated. The total capital capitalised has increased for all contracts since AIR19 and we identify that this is as a result of the increase in capital repayment within Line 13.

Line 18 is the Total PPP Expensed and is the summation of line 12 (Total PPP Payments) minus line 17 (Total Capital Capitalised).

This line calculates the total charge to the Profit & Loss (P&L) account throughout the reporting year arising from payment of PPP contracts. The AIR20 charge to the P&L account has gone down for Alpha (-2.3%) and Kinnegar (-33.3%) and up for Omega since AIR19 (9.3%).

Line 19 is the Interest.

This applied to all PPP contracts, the entries to this line represent the notional interest on the finance lease. As expected, the interest for all PPP contracts have gone down since AIR19. The values in this line are consistent with the *"Finance Lease Repayment"* spreadsheet.

Line 20 is the Total PPP Opex and is calculated by subtracting Line 19 (Interest) from Line 18 (Total PPP Expensed). The Auditor can confirm that his line has been calculated correctly.

Block C – Water Distribution Data

Line 21 is the Distribution Input (DI).

The reported data is only relevant for the Alpha PPP Contract. The line is expected to be linked to Table 10 Line 26 but as it is excluded from the Reporter's Audit Scope the Auditor is unable to comment any further. The total across Alpha sites is 258.58Ml/d [AIR20] which is a decrease of 7.9% from the reported AIR19 value (280.88Ml/d).

The confidence grade is stated as B2 which is appropriate for the reported data.

Line 21a is the Water Treatment Capacity.

This data is specified in the contract arrangements for each site in the Alpha contract. The reporting guidance refers to this as 'Q_{minreq}' for each site and in line with the Alpha Contract requirements. There has been no change to the minimum required capacity in the report year. The Auditor found that the confidence grade for the line is appropriate at A1.

Line 22 is the Length of Mains.

This data is specified in the Alpha contract. This is the length of the DBFO link main from Castor Bay to Forked Bridge, that the Alpha Ops Contractor manages. This length of main was derived from "as-built" record drawings and is used in Table 11 Line 12. There has been no change in the 16.42km length of main and confidence grading of A2 between AIR19 and AIR20.

Block D – Water Resource and Treatment Data

Lines 23 & 24 reports the Turbidity 95%ile greater or equal to 0.5NTU and Turbidity 95%ile less than 0.5NTU respectively. These lines only apply to the Alpha sites which are Moyola, Ballinress, Castor Bay, Dunore Point and Forked Bridge.

The Auditor notes that Serco take the samples which are then analysed in-house at the NI Water laboratory. Data is fed back into NI Water's Laboratory Information Management System, LIMS, from which compliant information can be extracted. Samples are scheduled daily at each site as per the Drinking Water Inspectorate standards and regulations. Therefore 365 yearly samples should be extracted from LIMS. In some cases, not all sites will have 365 days of sample data for various reasons including site shutdowns for maintenance. These are excluded from the count. The LIMS compliance manager extracts the raw sample data via a programme query applied to the database. We consider that the confidence grade of A2 applied to these lines are appropriate in view of the analytical data variables present in the data sets.

Through our audits, we identified a non-material corrective action on a summary table in the Company's commentary to update the labelling for factual accuracy. "95%ile > 0.5" was changed to "95%ile >= 0.5"; and, "No of Samples > 0.5 NTU" was changed to "No of Samples >= 0.5 NTU". The Company confirmed there were no samples equal to 0.5 NTU; therefore, this labelling correction did not affect any values. The Auditor can confirm that the amendment has been implemented in the post-audit commentary.

Line 25 is the Source Type.

The source type is only applicable to the Alpha PPP sites. There is no change to this line from AIR19. The reported value is consistent with the numbers in Table 12 (Block A). Note that Table 12 is excluded from the Reporter's Audit scope and the commentary and methodology have not been reviewed. The confidence grade for the line is appropriate at A1.

A formatting issue was identified for the Ballymoney and Limavady inputs in the pre-audit data table, cells stated 'N/A' rather than being greyed out. The Auditor can confirm that the inputs for Ballymoney and Limavady have now been updated to grey cells in the post-audit table.

Line 26 is the Treatment Type.

The treatment type is only applicable to the Alpha PPP contract. There is no change to this line from AIR19. The reported value is consistent with the values in Table 12 (Block B). Note that Table 12 is excluded from the Reporter's Audit scope and the commentary and methodology have not been reviewed. Balinrees, Castor Bay, Dunore Point, and Moyola are all reported as a W4 category, this is the category intended to capture processes with very high operating costs. The confidence grade for the line is appropriate at A1.

A formatting issue was identified for Ballymoney and Limavady inputs in the pre-audit data table, cells stated 'N/A' rather than being greyed out. The Auditor can confirm that the inputs for Ballymoney and Limavady have now been updated to grey cells in the post-audit table.

Line 27 is the Average Pumping Head (APH).

For the AIR20 submission the reported APH values with the AIR19 values compared are as follows:

	Report Year	Balinrees	Castor Bay	Dunore Point	Moyola	Total
APH (m.hd)	AIR20	127.4	138.0	173.0	146.5	152.1
	AIR19	144.8	145.8	173.0	146.5	156.7

The derivation of the APH values is part of Table 12 methodology and commentary which are outside the scope of the Reporter's Audits.

The reported value is consistent with the data in Table 12 Line 5. Note that Table 12 is excluded from the Reporter's Audit scope and the commentary and methodology have not been reviewed.

A formatting issue was identified for the Ballymoney and Limavady inputs in the pre-audit data table, cells stated 'N/A' rather than being greyed out; also, there was an issue with populating cell AD25. The pre-audit commentary did not define 'B2 average flow' and 'Moys' sufficiently. The Auditor can confirm these issues have been addressed and amended in the post-audit documents.

Block E – Sewerage Data

Lines 28 & 29 are the Total length of sewer & Total length of critical sewer respectively. These two lines apply to two sites in the Omega Contract: Ballynacor and North Down.

The Auditor notes that the lengths have been derived from "as-built" sewer records and have not changed from previous years (21.13km). In the line methodology it is stated that Ballyrickard, Richhill and Armagh

sites also have pipelines. During the audit it was established that these pipelines are small in length and therefore do not appear in Line 28 which has the units of kilometres. The confidence grades for these lines are appropriate at B2.

Block F – Sewage Treatment and Disposal Data

Line 30 is the Population equivalent of total load received.

The data is provided by the Omega & Kinnegar Ops Contractors. This line is derived from measured total load highlighted in Line 31, using standard industry value of 60g BOD per person per day in the calculation. The reported value and confidence grade, B3, is consistent with data in Table 15 Line 6. Note that Table 15 is excluded from the Reporter's Audit Scope and the commentary and methodology have not been reviewed.

Although the distribution of loading at individual Omega sites has varied since AIR19 the total population equivalent load received from all Omega sites has remained the same by coincidence. But, the loading at Kinnegar has increase by approximately 21.7% since AIR19. The values in this line are consistent with the *"p.e. comparison"* spreadsheet.

Line 31 Load received by STW's.

The data is provided by the Omega & Kinnegar Ops contractors. The total load is based on analytical data derived from samples taken from the inlet of all the PPP wastewater treatment works. The reported total load value and confidence grade, B3, is consistent with data in Table 17d Line 7. Note that Table 17d is excluded from the Reporter's Audit Scope and the commentary and methodology have not been reviewed. The values in this line are consistent with the *"p.e. comparison"* spreadsheet.

Lines 32-36 STW Consents Data.

These lines are related to the consents data namely: Suspended Solids, BOD, COD, Ammonia and Phosphates for the associated works. The consents data are derived from the Water Order Consent held by the Contractor for each of the sites which have been provided by the Northern Ireland Environment Agency. The Water Order Consents are set on lower and upper tier limits with pass/ fail being based on look up tables, a breach of the upper tier limits being classed as a failure. NI Water advised the Auditor that there has been no material change to the Water Order Consents since AIR19. The applied confidence grades of A1 are deemed appropriate for these lines.

Line 37 is the Classification of Treatment Works.

There has been no change to the treatment facility classifications since AIR19. The reported classifications are consistent with the numbers in Table 17c Line 7. The expectation is that the classification should be consistent with Tables 17c and 17f; these tables are outside of the Reporter's Audit Scope so no further comment can be made. The applied confidence grade of A1 is appropriate.

Line 38 is the Size band of sewage treatment works.

This is related to the size band based on BOD loading for each site (applied to Omega and Kinnegar sites). The reported size bands are consistent with Table 17c Lines 1-6. Note that Table 17c is outside of the Reporter's Audit Scope and the methodology and commentary have not been reviewed. The Auditor notes that since AIR19 Richhill WwTW has been re-classified as a Band 4 size works (from Band 3).

We consider that the confidence grade of B3 is appropriate.

Block G Sludge Treatment and Disposal Data

Line 39 is the Total sludge imported from NI Water.

This is the amount of sludge imported from the NI Waters operated sites (non-PPP sites) in the report year expressed in thousands of tonnes of dry solids (TTDS). The NI Water sludge is received at two sludge treatment sites, Ballynacor Sludge Disposal Facility and Duncrue St Sludge Facility. The sludge is measured by weigh bridges or slogger meters on receipt of the sludge at these sites and not on dispatch. The total sludge measured for AIR20 is 35.387 TTDS.

Figure 1 overleaf shows an extract from the sludge reconciliation spreadsheet which illustrates the distribution and volumes of sludge. Line 39 is calculated from this spreadsheet and is consistent with the 'Total NIW' value shown in yellow in Figure 1. The Auditor notes that the calculation of this value includes the sludge from Kinnegar. The Auditor suggests that this is made clear in the methodology and commentary in future report years. To provide clarity of data flows in future reporting years the Auditor suggested that the Kinnegar sludge is removed from columns 'AC' (Total Omega) and 'AE' (Total Sewerage Service) in Line 39. Subsequently, column 'AB' (Total Kinnegar) would be updated to show all of Kinnegar's sludge disposal routes in Lines 44-52. **An example of this suggested improvement is shown by the yellow cells of Table 1.**

Table 1: - Example of suggested improvement for future years' reporting

Line	Omega Sludge Service (column Z)		Total Kinnegar (column AB)	Total Omega (column AC)	Total Sewerage Service (column AE)
39	35.387		0.000	34.688	34.688
40	6.148		0.729	6.148	6.877
41	6.006		0.699	6.006	6.705
42-45	0.000		0.000	0.000	0.000
46	1.547		0.000	1.547	1.547
47	39.388		0.699	38.689	39.388
48	0.141		0.030	0.141	0.171
49	0.000		0.000	0.000	0.000
50	0.460		0.000	0.460	0.460
51	0.000		0.000	0.000	0.000
52	41.536		0.729	40.837	41.566

The reported value is consistent with the number in Table 15 Line 16. The UR guidance states this line should also be consistent with Table 17g. Note that Table 15 and 17g are excluded from the Reporter's Audit Scope, therefore, no further comment can be made. We consider that the confidence grade of B2 is appropriate. The pre-audit commentary incorrectly stated the total imported sludge from NI Water, the Auditor can confirm this has been corrected in the post-audit commentary.

Line 40 is the Sludge produced by the PPP facility.

This is the amount of sewage sludge resulting from the treatment of sewage on the PPP facility in the report year expressed in thousands of tonnes of dry solids (TTDS) of sludge produced. All sludge from the Kinnegar site is transferred to the incineration plant at Duncrue Street. A back calculation is used to establish the indigenous sludge at Ballynacor by subtracting the import slogger data (which records both inputs from NI Water and PPP facilities at North Down Ards, Ballyrickard, Richhill and Armagh) from the exported cake transferred to Duncrue Street.

The pre-audit version of Line 40 did not include the grit and screenings element of the sludge; the Auditor challenged NI Water on this, and it was agreed that grit and screenings should be included. The Auditor can confirm that in the post-audit version of Table 42 this change had been implemented. The total value reported for AIR20 is 6.877 TTDS, which show an increase of 4.5% from AIR19 total sludge (including grit and screenings), 6.582 TTDS.

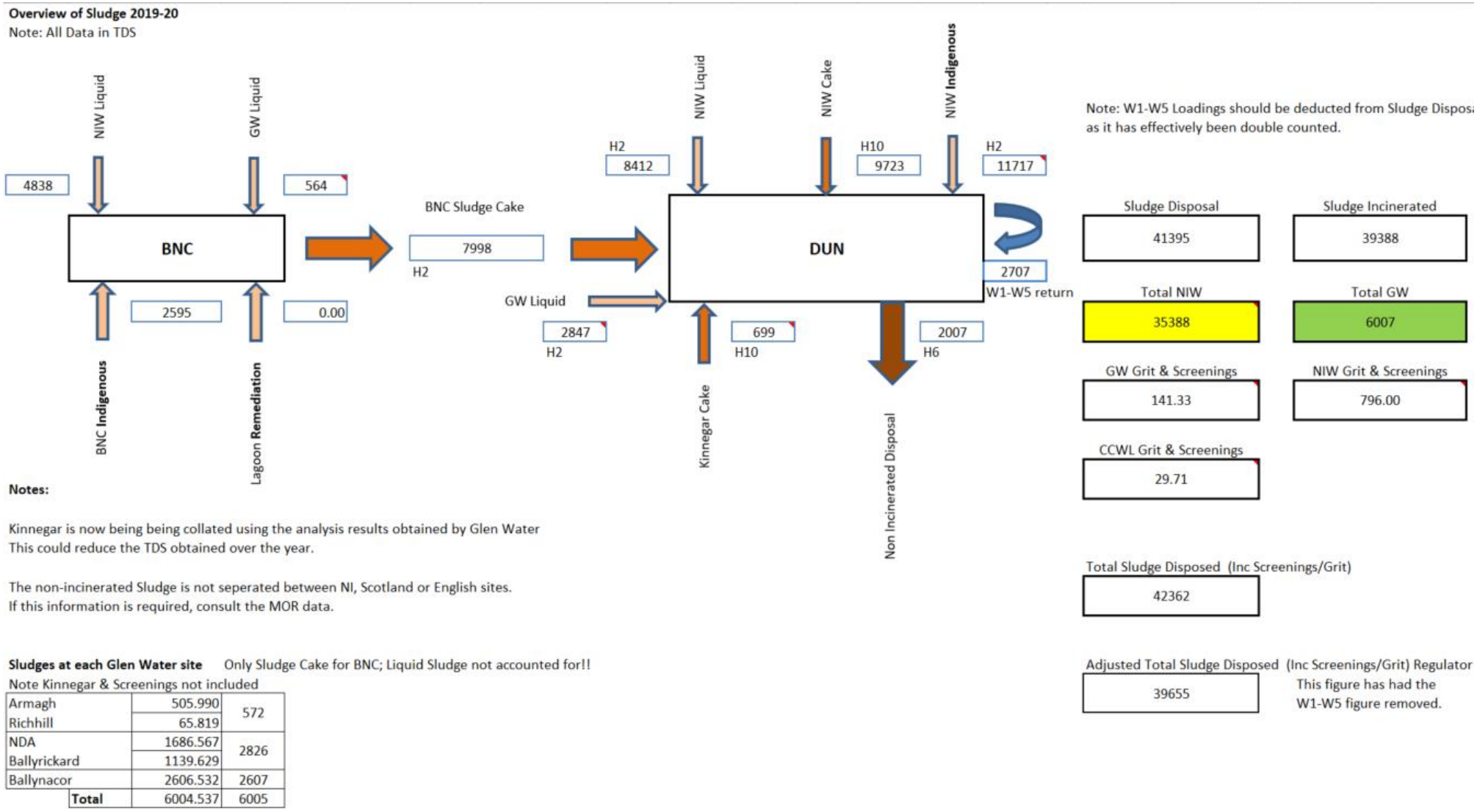


Figure 1: Sludge flow diagram taken from *"Table 42 Sludge Reconcil 201920 Reporter Copy"* spreadsheet provided by NI Water

The applied confidence grade at B2, based on metered and weighed sludge data, is appropriate.

During audit the Company mentioned that the sludge (not including grit and screenings) from Kinnegar is included in column AE 'total sewerage service' for both Lines 39 (total sludge imported from NI Water) and 40 (sludge produced by the PPP facility). To provide clarity of the data flows to the Omega sludge service the Auditor suggested the values in column 'Z' (Omega sludge service) of block G should be updated to provide the totals of the Omega sites for all lines. The Auditor can confirm this amendment was made in the post-audit documents.

During the audit the Company confirmed that Kinnegar sludge (not including grit and screenings) is represented in Lines 39 and 40. The Auditor suggests that the improvement highlighted in Table 1 of this report could be undertaken in future report years to provide clarity of data in the total columns.

Figure 1 shows the value of sludge (excluding grit and screenings) from each PPP site. In Figure 1 the values on the summary table (which are the same as used within Line 40) vary from the values labelled on the flow diagram. The values for the combined sludge from Armagh and Richill vary by 8 TDS, for North Down and Ballyrickard by 21 TDS and Ballynacor by 12 TDS.

The pre-audit NI Water commentary and methodology had minor inconsistencies/ formats. The Auditor can confirm these changes had been made in the post-audit documents.

Line 41 is the Sludge exported to Duncrue Incinerator.

This is the amount of sewage sludge exported from the PPP facility to the PPP facility at Duncrue Street in the report year expressed in thousands of tonnes of dry solids of sludge produced. All sludge is delivered to Duncrue Street Sludge Treatment Facility, including all Company and PPP sludge, for either incineration or for disposal through other alternative routes. Grit and screenings are excluded from this volume, as these will always end up at landfill sites.

We note that it is very difficult to ascertain the exact volume of PPP sludge that is incinerated at Duncrue Street, as the sludge is mixed with NI Water's sludge. Therefore, this line only reports the volume of PPP sites sludge to Duncrue Street as these are measured. All NI Water's sludges are not included in this line but are captured in Table 42 Line 39. At Duncrue Street the sludge is either incinerated or disposed of by alternative disposal routes.

The Auditor notes that a confidence grade of B2 is applied to Line 41 data – no change from the AIR19 report.

The value in column 'Z' (Omega Sludge Service) for Line 41 was updated to provide clarity of the flows to the Omega sludge service. The Auditor can confirm this amendment was made in the post-audit document.

Line 42 is the Sludge Exported to Other PPP Facilities.

To avoid double counting with Line 41 this line does not include exports to sites where the sludge only passes through en-route to Duncrue. Reported as N/A in the pre-audit version of the table. The Auditor can confirm that the N/A entries were replaced by zero entries in the post-audit version of the AIR20 Table 42.

Line 43 is the Sludge exported to NI Water.

Reported as N/A in the pre-audit version of the table. The Auditor can confirm that the N/A entries were replaced by zero entries in the post-audit version of the AIR20 Table 42.

Line 44 is the Sludge disposed of from site to - Farmland Untreated.

Reported as N/A in the pre-audit version of the table. The Auditor can confirm that the N/A entries were replaced by zero entries in the post-audit version of the AIR20 Table 42.

Line 45 is the Sludge disposed of from site to - Farmland Conventional.

Reported as N/A in the pre-audit version of the table. The Auditor can confirm that the N/A entries were replaced by zero entries in the post-audit version of the AIR20 Table 42.

Line 46 is the Sludge disposed of from site to - Farmland Advanced.

The PPP Contractor disposed of 1.547 TTDS of sludge in the report year [AIR19: 0.898 TTDS]. This increase is due to the PPP Contractor's choice of alternative compliant disposal routes. The applied confidence grade of B3 is appropriate.

Line 47 is the Sludge disposed of from site to Incineration.

This is the amount of sewage sludge disposed of, to incineration from the PPP facility in the report year expressed in thousands of tonnes of dry solids of sludge produced. This value is calculated as the total sludge received at Duncrue minus total sludge disposed off-site i.e. to landfill and farmland.

The AIR20 reported value is 39.388 TTDS being incinerated as the PPP contractor's preferred method of disposal, a 1.9% decrease since AIR19 [AIR19: 40.142 TTDS]. The Auditor considers that the applied confidence grade of B2 is appropriate.

The pre-audit commentary stated, 'smaller amount' rather than 'larger amount', the Auditor can confirm this had been amended to 'larger amount', consistent with the reported data, in the post-audit commentary.

Line 48 is the Sludge disposed of from site to – Landfill.

This is the amount of sewage sludge disposed of to landfill from the PPP facility in the report year expressed in thousands of tonnes of dry solids of sludge produced. The disposal route to landfill is mainly for grit and screenings. The Kinnegar Contractor disposed of some 0.030 TTDS of Screenings (no grit produced) while the Omega Contractor disposed of 0.141 TTDS of Screenings and Grit. The total disposed to landfill from Kinnegar and Omega during the report year was 0.171 TTDS which is a decrease since AIR19 (0.252 TTDS). The applied confidence grade of B3 is appropriate.

The value in column 'Z' (Omega Sludge Service) for Line 41 was updated to provide clarity of the flows to the Omega sludge service. The Auditor can confirm this amendment was made in the post-audit document.

Line 49 is the Sludge disposed of from site to – Compost.

Reported as N/A in the pre-audit version of the table. The Auditor can confirm that the N/A entries were replaced by zero entries in the post-audit version of the AIR20 Table 42.

Line 50 is the Sludge disposed of from site to - Land Reclamation.

This is the amount of raw cake that was delivered to industrial sites during the report year. The PPP Contractor disposed of 0.460 TTDS via this disposal route during AIR20. This is an increase from AIR19 that had no sludge disposal via this method.

Some inputs were reported as N/A in the pre-audit version of the table. The Auditor can confirm that the N/A entries were replaced by zero entries in the post-audit version of the AIR20 Table 42.

Line 51 is the Sludge disposed of from site to - Other (Willow Coppice).

Reported as N/A in the pre-audit version of the table. The Auditor can confirm that the N/A entries were replaced by zero entries in the post-audit version of the AIR20 Table 42.

Line 52 is the Sludge disposed of from site – Total.

This is the total amount of sewage sludge disposed through all discharge routes by the PPP concessionaire for the report year expressed in thousands of tonnes of dry solids of sludge produced, excluding any sludge returned to NI Water for further treatment or disposal. The line is calculated from the sums of Lines 44 to 51. The applied confidence grade of B2 is appropriate

Most of the sludge from the individual PPP sites is exported to Duncrue to be disposed of. The disposal of this exported sludge is recorded in the Omega sludge service and totals columns, rather than split over the individual sites. Therefore, the calculation rule stated in the UR guidance is only applicable to the Omega sludge service (column Z) and totals columns (columns AB, AC and AE).

The value in column 'Z' (Omega Sludge Service) for Line 41 was updated to provide clarity of the flows to the Omega sludge service. The Auditor can confirm this amendment was made in the post-audit document.

It was noted in the Audit that the sum of Lines 39 and 40 do not equal the sum of Line 52. The Company stated the reason for this is because the Kinnegar sludge (excluding grit and screenings) are represented in both Lines 39 and 40. The Auditor suggests the amendment in Table 1 of this commentary could be undertaken in future report years to provide clarity of data in the total columns.

4. Summary of Audit Checks

Through our audits, we checked NI Water's Excel spreadsheet calculations associated with the population of the Table 42 data entries. We can confirm that the Company's calculations are correct.

There were a few discrepancies between the different commentaries; also, several text and formatting issues were identified in the pre-audit documents. However, the Auditor can confirm that these have since been rectified in the post-audit documents and within the Auditor observation notes in this commentary. The pre-audit data table also required amendments related to Block G (Sludge Treatment and Disposal Data), these amendments have been addressed in the post-audit Table 42.

5. Confidence Grades

No changes from the confidence grades used for AIR19 reporting.

6. Challenges to the Company, Recommendations & Suggested Actions

Refinement to Reporting of Sludge Treatment and Disposal Data.

The Auditor suggests that the Kinnegar sludge is removed from the Table 42'a columns 'AC' (Total Omega) and 'AE' (Total Sewerage Service) in Line 39. Subsequently, column 'AB' (Total Kinnegar) would be updated to highlight all the Kinnegar's sludge disposal routes in Lines 44-52.

Scope of PPP Table 42 audit.

At Audit, the Auditees highlighted the fact that Table 42 is largely a collation of information from other tables. They suggested that in future report years instead of limiting the Reporter's audit to Table 42 it would be more effective for individual and separate audits of the tables that form the basis of Table 42 to be carried out. The Auditor agrees.

Appendix: Minor Observations

- Through our audits of aspects of the Table 42 data entries, line methodologies and commentaries, we identified a few non-material shortcomings as follows:

Pre-audit document	Affected lines	NI Water Changes post-audit	Post-audit corrective action taken
DT_Table42_L23-24 [xlsx]	L23&24	Change the inputs in column 'H' to 'na'	Yes
CC_Table42_Lines23-24 [docx]	L23&24	Change table column titles to '95%ile >=0.5' and 'No of Samples >= 0.5 NTU'	Yes
CC_Table42_Lines7-20 [docx]	L9/ Additional Information	Add the disputed Alpha deduction of X stated in Line 9 of 'LM_Table42_Lines7-20' in the additional information accruals table	Yes
DT_Table42_L7-20 [xlsx]	L10-11	Greyed out cells rather than yellow highlight with a value of zero	Yes
DT_Table42_L7-20 [xlsx]	L19	Ensure Kinnegar and Omega are included in this line	Yes
CC_Table42_Lines21-22_25-52 [docx]	n/a	Alpha Performance Deductions: Reconcile the Alpha performance deductions with Table 42 Line 9	Yes
CC_Table42_Lines21-22_25-52 [docx]	n/a	Contractual Deduction made: Remove the Kinnegar deduction from Sept 2018 to Mar 2019, as this how now been released	Yes
CC_Table42_Lines21-22_25-52 [docx]	n/a	Changes to the descriptive reports on the PPP contracts: change sentence to state changes have been made	Yes
PPP Alpha Report – V6 May 2019 [doc]	n/a	Update this document so it includes contract changes: Reduction in frequency of water quality monitoring & temporary reduction in Water Quality Performance Measures	Yes
Kinnegar Report – V5 May 2019 [doc]	n/a	Update this document so it includes contract changes: Kinnegar Financial Model Storage Arrangements & Early debt repayment change	Yes
CC_Table42_Lines21-22_25-52 [docx]	L21	Check AIR19 values	Yes
DT_Table42_L21-22_25-52 [xlsx]	L25-27	Ballymoney and Limavady should have greyed out cells rather than 'N/A', highlight issue of populating cell AD25 (Line 27)	Yes
CC_Table42_Lines21-22_25-52 [docx]	L27	Check AIR19 values, define 'B2 average flow' & 'Moys'	Yes
DT_Table42_L21-22_25-52 [xlsx]	Block G	Change 'N/A' inputs to '0'	Yes
CC_Table42_Lines21-22_25-52 [docx]	L39	Updated AIR20 values to match DT for factual accuracy	Yes

Pre-audit document	Affected lines	NI Water Changes post-audit	Post-audit corrective action taken
DT_Table42_L21-22_25-52 [xlsx]	L40	Update Line 40 column 'Z' to 6.148 to show consistency with column 'AC'	Yes
LM_Table42_Lines21-22_25-52 [docx]	L40	Change 'AIR19' to 'AIR20' and '7th year' to '8th year'	Yes
DT_Table42_L21-22_25-52 [xlsx]	L40	Include grit and screening values in the Totals columns for Kinnegar, Omega and Sewerage Service [6.876ttds not 6.705ttds]	Yes
CC_Table42_Lines21-22_25-52 [docx]	L40	Add units to the y-axis of 'Sludge Production Figures AIR20-AIR13' Graph	Yes
DT_Table42_L21-22_25-52 [xlsx]	L41	Update Line 41 column 'Z' to 6.006	Yes
CC_Table42_Lines21-22_25-52 [docx]	L47	Should say 'smaller amount' rather than 'larger amount'	Yes
DT_Table42_L21-22_25-52 [xlsx]	L48	Update Line 48 column 'Z' to 0.141	Yes
LM_Table42_Lines21-22_25-52 [docx]	L44-51	Change to 'AIR20' rather than 'AIR19'	Yes
DT_Table42_L21-22_25-52 [xlsx]	L52	Update Line 52 column 'Z' to 41.536	Yes

SUMMARY OF AUDIT FINDINGS

Table 43 – PPP Reporting. Operational Costs. Lines 5-15

PREPARED BY	X
DATE	08 June 2020

Rating	Meaning
	No material exceptions and compliant with requirement
	Content with the reported data but supporting information needs to be complete and/or improvement identified for AIR20, or other noteworthy comment
	Minor exceptions
	Material exceptions
N/A	Not applicable to report

1. Key Findings

AIR20 Table Criteria	RAG	Assessment
Independent review of performance against PC15 target (where relevant)	N/A	
Methodology – consistency with the reporting process with clear control points		The methodology is consistent with the reporting process and remains unchanged from AIR19.
Assumptions – reasonableness and applicability		Assumptions are reasonable. This applies particularly to a small number of figures where costs cannot be split down to the site level.
Source data – completeness		Source data has been provided to a high level of detail
Clarity of audit trails – evidence of appropriate audit trail		Clear evidence provided at audit to demonstrate compliance against the UR guidance documents for Table 43
Confidence grades – documentation of appropriateness and rationale	N/A	
Governance – evidence of quality assurance and of final sign-off		Responsibilities for data quality and commentary well-defined. Clear process for check and final sign-off evident.

2. Audit Scope

This audit covers the Operational Costs associated with Public–Private Partnership (PPP) reporting, recorded in Lines 5-15 of Table 43. A series of interviews were conducted with X, X and X - NI Water staff responsible for contract and financial management of the Alpha, Omega and Kinnegar sites.

During the audit, methodologies and commentaries were reviewed, and a range of supporting spreadsheets were audited to verify the provenance of figures in the data table sheets and ensure alignment with the Utility Regulator (UR)'s guidance notes. We also compared the AIR20 reporting methodology and figures against AIR19 to understand any changes to methodology or material variance.

3. Performance and Significant Events

Line 5 - Payment by Concessionaire to Operating Company.

This line records the payments made against each site by the concessionaire to the operating company per site. This includes operating costs and profit. In the case of Omega and Kinnegar, the data is provided by the PPP Ops contractor. Since Alpha sites were brought back in-house, the data is provided by internal transfer. We confirmed during the audit that figures reported in Line 5 are consistent with Table 21, Line

22a and Table 22, Line 21a which reflect the same payment costs. Capital maintenance and other capital/financial charges are not included as part of this payment cost.

Our audit reviewed the rationale behind data gaps in the table. These are summarised as:

- Scheme [Table 43, Column 5] is not a site - a decision was taken to build a link main under the DBF&O contract. As the scheme is a pipeline from Castor Bay Water Treatment site, the Operational Costs are built-into Scheme [Column 2].
- Schemes [Table 43, Columns 6 & 7] were delivered under a Design, Build, Finance & Handover contract, and while there are ongoing Capital payments, there are no recurring operational costs.
- Scheme [Table 43, Column 14] - Ballynacor Lagoons were an existing asset and the scheme included an obligation on the concessionaire to remediate as part of the scope. The work was carried out, and no further operational costs apply.
- Scheme [Table 43, Column 15] Ballynacor – the Contractor is unable to break out the sludge costs between Columns 15 and 16, so both are captured against Scheme entry in Column 16.

We confirmed that the reporting methodology is unchanged from AIR19, and the figures are comparable with no material variance.

Line 6 – Power Costs

Power data for each site is taken from the Oracle database, which is populated from meter readings and invoices for each of the relevant meter reference points numbers (MPRN). For most sites, there is a single MPRN, but in the case of Ballinrees, the figure is derived from two meters. For Kinnegar, power costs are remunerated as part of the Concessionaires payment to the Operating Company. NI Water is therefore unable to split out the power costs to populate this line.

For Alpha sites, the AIR20 power costs have reduced by 16% compared to AIR19 [2018-19]. This is believed to be due primarily to a decrease in Distribution Inputs compared to 2018, and the fact that pumping costs in summer 2018 were abnormally high due to dry weather and high demand.

At Omega sites, AIR20 costs are more consistent with AIR19 figures, with a smaller decrease of 3% overall. However, behind this figure, wastewater treatment costs decreased, while network costs increased due to greater levels of rainfall during the AIR20 report year. Duncrue Street has only one electricity meter which includes both the Belfast WwTW, operated by NI Water, and the Sludge Incinerator site, operated under PPP. Therefore, NI Water applies a standard methodology for calculating the split between power consumption at the Incinerator and Treatment sites. This method attributes 51.7% of the metered costs to the incinerators and 48.3% to the Belfast WwTW, a marginal change from AIR19 (50.9% Incinerator site, 49.1% WwTW).

We can confirm that totals for Water and Sewerage (columns 20 and 21) are consistent with line 2 totals in the PPP only section of Tables 21 and 22.

Line 7 – Other Direct costs

This line reflects costs associated with abstraction licences only. Therefore, costs only apply to Alpha sites. NI Water's methodology for calculating the licence charge remains unchanged from AIR19, as does the categorisation of Water Treatment Works against the abstraction licence criteria. Therefore, the increase from X (AIR19) to X (AIR20) is purely an inflationary one. There are no other direct costs for Kinnegar or Omega.

Line 8 – Sum of Lines 6 & 7

Line 9 - General and Support expenditure.

This line records the management and general administration costs of managing the PPP contracts, with data derived from the project cost centre codes. The figures also include procurement of consultancy services where applicable. For Alpha and Omega, total cost is captured for each contract and allocated equally to derive the site costs. Reduction in expenditure between AIR19 and AIR20 is largely attributable to the difference in consultancy fees as consultancy costs were approx. X higher in AIR19.

Line 10 – Sum of Lines 8 & 9

Line 11 – Scientific Services

This line records scientific and laboratory costs associated with the monitoring of quality parameters. Values are zero for Alpha sites as the costs are paid directly as part of the Unitary Charge. Costs are calculated from the Scientific Services spreadsheet where the total proportion of samples at PPP sites is used to derive the total proportion of NI Water's sampling costs incurred at PPP sites. Circa 32,000 samples were taken in the AIR20 period, approximately 5,000 of which were at PPP sites, therefore 17.1% of the overall sampling budget of X has been allocated to PPP sites. This has been allocated across all relevant sites based on the proportion of samples taken at each, e.g. 60.7% of the samples were taken at the Duncrue Incinerator site, so 60.7% of the cost has been allocated. This methodology remains unchanged from AIR19.

Line 12 – Rates

Rates for Alpha sites are based on Water Distribution Input (DI) values – i.e. the volume of water supplied to the network from each PPP site. For AIR20, PPP sites provided 43.9% of DI. For AIR20 the reported value is X which represents a marginal decrease from AIR19 (X).

For Kinnegar and all Omega PPP sites, rates are calculated directly from the rates bill for each site with source data provided by NI Water accounts. An overall increase of approximately 2% was applied to rates between AIR19 and AIR20.

For the Incinerator site at Duncrue, the method applied remains unchanged from AIR19, where 15% of the rates are applied to the PPP on the basis that the Incinerator area is 15% of the Belfast WwTW site area. A similar principle is used to split the costs for the Wastewater and Sludge elements at Ballynacor, with 65% of costs applied to Wastewater and 35% to Sludge.

Line 13 – Estimated terminal pumping costs

As with the power costs in Line 6, costs for terminal pumping are derived from Meter Point Reference Numbers (MPRN) and associated data in the Oracle system for each site. Only two Omega PPP sites have Terminal pumping stations (TPS); North Down and Ballynacor WwTWs.

Total power costs for TPS at AIR20 is X, an increase from X in AIR19, which reflects the higher levels of rainfall in AIR20 and the associated increase in network pumping required over the previous year.

Line 14 – Estimated sludge costs

This line records the costs associated with the Omega PPP sludge sites at Duncrue Street and Ballynacor. The methodology used by the Company to estimate the sludge costs remains consistent with AIR19, and reported cost for AIR20 is X, a slight decrease from X at AIR19.

Line 15 – Sum of Lines 5, 10, 11 & 12

This line provides a sum of section totals to calculate the total operating expenditure associated with PPP assets. This includes Operator costs and profit for each site (concessionaire payment) and associated costs

incurred by NI Water. This is auto calculated from the sum of Lines 5, 10, 11 and 12, by each PPP contract site and totals for each contract area.

Note, that the estimated sludge costs in line 14 are not included to avoid double counting.

4. Summary of Audit Checks

We have reviewed the Word and Excel files provided by NI Water during and following the audit, including review of workbooks containing source information and the calculations underpinning the figures reported in Table 43.

5. Confidence Grades

There are no requirements to record confidence grades for Table 43, Lines 5-15.

6. Challenges to the Company, Recommendations & Suggested Actions

No actions or recommendations were identified.

SUMMARY OF AUDIT FINDINGS

Table 46 – Serviceability. Customer contacts (Discoloured water only) Lines 13.

PREPARED BY	X
DATE	29 May 2020

Rating	Meaning
	No material exceptions and compliant with requirement
	Content with the reported data but supporting information needs to be complete and/or improvement identified for AIR20, or other noteworthy comment
	Minor exceptions
	Material exceptions
N/A	Not applicable to report

1. Key Findings

AIR20 Table Criteria	RAG	Assessment
Independent review of performance against PC15 target (where relevant)	N/A	
Methodology – consistency with the reporting process with clear control points		The methodology remains unchanged and consistent with that used in AIR19
Assumptions – reasonableness and applicability		Reporting assumptions are reasonable
Source data – completeness		Data sets underpinning Line 13 figures are complete and made accessible for audit purposes
Clarity of audit trails – evidence of appropriate audit trail		Clear evidence presented to demonstrate compliance with the UR requirements
Confidence grades – documentation of appropriateness and rationale	N/A	
Governance – evidence of quality assurance and of final sign-off		Process for checking and sign-off demonstrated

2. Audit Scope

The scope for the audit covers Line 13 of Table 46 (Serviceability) - Customer contacts (Discoloured water). An interview was carried out via video conference on 29th May, against the principles and requirements of the UR guidance for reporting. The interview was led by X and attended by X and X (Northern Ireland Water).

The audit included review of methodology documents submitted by NI Water, an explanation of data capture and reporting processes, and comparison between 2019-20 (AIR20) performance and previous years (AIR19)' figures.

3. Performance and Significant Events

It should be noted that reporting for Line 13 is on a calendar year basis, as required by the Drinking Water Inspectorate for Northern Ireland. Consistency of figures between source data and both AIR20 and DWI reporting was checked during the audit.

Block A – Water Infrastructure

Line 13

Customer contacts (Discoloured water). The source data for this line is generated by NI Water's customer services team and recorded on their customer correspondence database, RAPID. Customer services agents

record the details of issues reported by customers against a structured template which, in the case of discoloured water, ensures the correct information is obtained to allow accurate categorisation of discoloured water complaints. The following categories are used, as required by DWI, and figures in bold show contacts reported in 2019 against each:

- Appearance - Discolouration - Blue/Green. **49** Reported (47 Reported in AIR19)
- Appearance - Discolouration - Black/Brown/Orange. **2207** Reported (3396 Reported in AIR19)
- Appearance - Discolouration - Others. **1** Reported (4 Reported in AIR19)

Total reported for AIR20 is **2257** customer contacts.

This figure represents a marked decrease in the overall number of contacts from AIR19, where 3447 contacts were received. This is largely due to a 35% reduction in contacts categorised as Blue/Brown/Orange – down from 3396 in AIR19 to 2207 in AIR20. However, 2018-19 contacts were approximately 24% higher than 2017, which NI Water attribute largely to the effects of both a sustained dry period in the summer months and heavy rainfall during December 2018. Therefore, the total reported figure of 2257 customer contacts for AIR20 is more consistent with the AIR18 figure of 2632.

During the audit, we saw evidence of how the customer contacts data is used by NI Water to inform the prioritisation of investment, influencing the decisions around programmes of work for mains rehab/replacement and proactive mains flushing. Auditees described how data is used to generate a GIS overlay for customer contacts, where the location and categorisation of customer contacts contribute to the build-up of risk scores.

4. Summary of Audit Checks

During our audit, we checked NI Water's calculation in deriving the figures for population of Table 46 Line 13 and found them to be correct.

5. Confidence Grades

N/A

6. Challenges to the Company, Recommendations & Suggested Actions

No actions identified