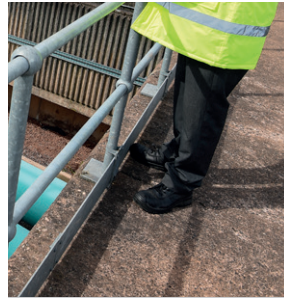




Cambridge Water



South Staffs Water



Annual performance report 2022/23

Supplementary Information Appendix

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Leakage and PCC backcasting

For 2022/23 reporting we have restated leakage and PCC in the SST region. This is due to a methodology update and improving our household night use models to control for seasonality across the reporting year. In our household night use model, we have incorporated a “seasonality” element within it that more robustly accounts for seasonal variations. These changes improve the accuracy of the model on a day-to-day basis compared to the previous model.

The update to the method is, we believe, in line with changes being made by other companies and is compliant with the sector’s common methodology. Our auditors have reviewed and assured this updated approach and agree with our recommendations that these changes are in line with both best practice and compliant with the requirements guidelines for leakage reporting. We attach our auditor’s opinion on the next page.

The change is material, at 2.7% for 2022/23, and so restatement of prior year values back to 2017/18, and therefore the restatement of the PR19 leakage baseline, is appropriate. This restatement has also been reviewed and assured by external auditors and they support the reporting of the updated leakage values. As a methodology change, we feel it is appropriate to abate the additional ODI reward that results from this change. This means that we abate this year’s outperformance reward in full (value as shown in table 3A, abated in the in-period adjustment model), and we also do not claim any restated outperformance reward from previous years. We believe this is the fairest approach for our customers, but ask Ofwat to consider this level of potential available outperformance in the round when reviewing our PR24 PCC evidence base.

Leakage and PCC are interrelated through the water balance. The change in leakage method therefore has a marginal impact on PCC. This results in a slight increase to nominal penalty; however, this has been deferred to end of period due to the impact of Covid on consumption, and as Ofwat is aware, we will be putting forward our evidence for Covid impact in our PR24 business plan. This means there is no adjustment to make to in-period incentives for PCC as a result of the restatement this year. The pre- and post- restatement values are shown below for leakage and PCC, as annual values.

Value	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Leakage SST – methodology as at APR22 (without seasonality)	75.6	73.4	68.3	68.8	67.4	67.1
Leakage SST – methodology as at APR23 (with seasonality)	75.0	73.2	69.8	65.9	66.6	65.3
PCC SST – with leakage methodology as at APR22	127.4	131.5	126.9	150.0	148.8	142.5
PCC SST – with leakage methodology as at APR23	127.5	131.6	126.5	150.9	149.0	142.9

For the CAM region, in 2022/23 reporting there has been no update to the household night use models used in CAM and therefore no restatement has been made for either Leakage or PCC. A seasonality model update was considered and reviewed within our household night use, however due to the data demands the new approach requires we were unable to produce a functioning model back to 2017/18. Our aim is to shadow report within SSC using seasonality in preparation for its use in AMP8.

South Staffs updated household night use methodology

Date:	29 June 2023	Jacobs U.K. Limited
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Project no:	B2433000	38 Colmore Circus, Queensway
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We received a request from South Staffs Water for Jacobs Auditors to provide an opinion on the new leakage methodology.

Our response

We have reviewed the leakage methodology for APR23 as part of the APR23 end-of-year Process and Data Assurance Audit.

Whilst we have not undertaken a deep dive (Methodology Review) into all components used to report leakage, we support the change to the estimation of household night use.

We recommend that a detailed methodology statement is prepared which reflects the changes implemented for 2023/24.

We also note that there remain other areas where further improvements are recognised by the team as being necessary, including a new household consumption monitor for APR24, a potential non-household consumption monitor and updates to meter under-registration. Should these improvements be implemented a further restatement for APR24 is likely to be required.

Household night use methodology

SSC showed that their current methodology does not reflect changes in HHNU across the year particularly during [Summer](#), Winter and Ramadan.

SSC commissioned Artesia to update their HHNU model specifically to develop a seasonally adjusted HHNU model.

In addition to the new seasonal model, Artesia also added additional data quality checks to improve the robustness of the modelling

During Audit, the team were able to answer all of our challenges related to the new approach either with some additional analysis or with in-depth audit discussion (e.g. Artesia discussion).

We consider the seasonal adjusted HHNU model developed by Artesia to be robust.

The move to incorporate seasonality into their NU estimates is in line with other water companies aiming to better understand and account for customer consumption in leakage estimation.

This update to HHNU is a reasonable step to better incorporate seasonal and exceptional variations in HHNU through the year.

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Confirmation of common methodology compliance

The table below confirms RAG status against common methodologies for the relevant PCs.

Performance commitment	RAG status
Leakage SST	Green – fully compliant
Leakage CAM	Green – compliant in all areas except for data availability
Per capita consumption SST	Green – fully compliant
Per capita consumption CAM	Green – fully compliant
Unplanned outage	Green – fully compliant
Supply interruptions	Green – fully compliant
Mains repairs	Green – fully compliant

The one area of non-compliance in CAM region leakage was for the availability of data. In 2022/23 we were significantly impacted by the measures we took to airgap our critical systems when we became aware of the cyber attack. 36 DMAs were impacted from the 2nd August 2022 until the 31st March 2023 (242 days). This is because data from these flow meters routes into our reporting systems via our telemetry network, which is a business critical system that was airgapped in order to protect our operational systems from any attack risk. This meter data could still be viewed live in our Control Room - for leakage targeting - but was not transferrable to our other business reporting systems. Our Waternet software that ingests the data has infilled this missing data as it normally does for reporting. The impact of this was a reduction to our data availability in CAM to 75%, falling below the threshold required by the guidance. Without the attack our data availability would have been approximately 96% DMA availability and therefore would have been compliant. As we have infilled the missing data in Waternet and validated it against expectations, the issue is not material to the final water balance figures.

Table 6B – Components of total leakage

Table 6B requires additional information this year, splitting out the components of leakage for each of our regions and at a combined level. Our leakage methodology for SST region does not separate DMA leakage from distribution main losses, and so we can only report a combined number for these two components, which cannot be entered into the table. Therefore we have left these lines in table 6B blank and provided the data here in this appendix, as follows:

Components of total leakage (post MLE) - company level			
Leakage upstream of DMA	MI/day	52.46	6B.58
Distribution main losses	MI/day		6B.59
Customer supply pipe losses – measured households excluding void properties	MI/day	10.53	6B.60
Customer supply pipe losses – unmeasured households excluding void properties	MI/day	13.08	6B.61
Customer supply pipe losses – measured non-households excluding void properties	MI/day	1.04	6B.62
Customer supply pipe losses – unmeasured non-households excluding void properties	MI/day	0.12	6B.63
Customer supply pipe losses – void measured households	MI/day	0.45	6B.64
Customer supply pipe losses – void unmeasured households	MI/day	0.90	6B.65
Customer supply pipe losses – void measured non-households	MI/day	0.11	6B.66
Customer supply pipe losses – void unmeasured non-households	MI/day	0.04	6B.67
Components of total leakage (post MLE) – region 1 – SST			
Leakage upstream of DMA	MI/day	43.24	6B.68
Distribution main losses	MI/day		6B.69
Customer supply pipe losses – measured households excluding void properties	MI/day	7.72	6B.70
Customer supply pipe losses – unmeasured households excluding void properties	MI/day	12.05	6B.71
Customer supply pipe losses – measured non-households excluding void properties	MI/day	0.84	6B.72
Customer supply pipe losses – unmeasured non-households excluding void properties	MI/day	0.11	6B.73
Customer supply pipe losses – void measured households	MI/day	0.40	6B.74
Customer supply pipe losses – void unmeasured households	MI/day	0.80	6B.75
Customer supply pipe losses – void measured non-households	MI/day	0.10	6B.76
Customer supply pipe losses – void unmeasured non-households	MI/day	0.04	6B.77
Components of total leakage (post MLE) – region 2 – CAM			
Leakage upstream of DMA	MI/day	7.69	6B.78
Distribution main losses	MI/day	1.53	6B.79
Customer supply pipe losses – measured households excluding void properties	MI/day	2.81	6B.80
Customer supply pipe losses – unmeasured households excluding void properties	MI/day	1.03	6B.81
Customer supply pipe losses – measured non-households excluding void properties	MI/day	0.20	6B.82
Customer supply pipe losses – unmeasured non-households excluding void properties	MI/day	0.01	6B.83
Customer supply pipe losses – void measured households	MI/day	0.05	6B.84
Customer supply pipe losses – void unmeasured households	MI/day	0.10	6B.85
Customer supply pipe losses – void measured non-households	MI/day	0.01	6B.86
Customer supply pipe losses – void unmeasured non-households	MI/day	0.00	6B.87

Water treatment works delivery programme – assurance report for completion of Seedy Mill scheme

We asked Jacobs to visit site and assure the completion of our Seedy Mill upgrade scheme, as required by the performance commitment definition. This report follows. We have addressed the outstanding action mentioned in the report, the KPIs are all on track.

We were also pleased to recently host Ofwat cost assessment team colleagues to the site so they could see the delivery of our long term plan in person.



Assurance report - Seedy Mill scheme completion

Version: 1

South Staffordshire Water Limited

AMP 7 Independent Assurance

26 April 2023





Assurance report- Seedy Mill scheme completion

Client name: South Staffordshire Water Limited

Project name: AMP 7 Independent Assurance

Project no: B2443000

Project manager: Zac Alexander

Version: 1

Prepared by: Stephen Brown

Date: 26 April 2023

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1. Introduction

This report contains the third-party assurance requested by Ofwat into the water treatment works delivery programme as defined in the PR19 Final Determination (FD) document section 1.2.11. This assurance seeks to confirm that the installation of second stage filtration has been delivered in line with the scope of the works set out in the South Staffordshire Water business plan. The works assured in this report form part of the South Staffordshire long term plan to continue to supply customers with high-quality and reliable water supplies.

The auditors involved in this assurance include Stephen Brown, a Senior Associate Director and Savannah Doherty a graduate consultant with an MEng in Chemical Engineering.

2. Methodology

The definition of completion according to Ofwat's Final Determination is "*full completion of the respective milestones when the measures are in operation and providing clear benefit to customers and in line with the scope of the works set out in the company business plan*".

The Company Business Plan (CBP) documents the scope in section 5.4 *Providing high-quality water supplies – upgrading our water treatment works*.

The CBP states

- "We need to add an extra filtration stage to enhance the quality of water produced and improve the level of resilience inherent within these two substantial assets by 'dual streaming' the works. This means modifying the process flows to ensure that the failure of a single piece of equipment results in the loss of only half of the output from the treatment works."
- "Adding a filtration stage will enhance the ability of both treatment works to remove manganese, iron and aluminium. Over a period of time, these create deposits on the internal surfaces of our network and are often the root cause of discolouration experienced by customers. The filtration stage will also enhance the removal of organic materials which potentially lead to the formation of disinfection by-products that are often the root cause of 'taste and odour' related contacts. The benefit to customers of this investment will be an improvement in the acceptability of water we supply to them, which will be measured by a tangible reduction in the number of contacts we receive."

Our approach taken to confirm the completion of the works at Seedy Mill included a site visit, conversations and interviews with South Staffs and contractor staff and review of design, construction and commissioning documentation.

We note that the CBP also states "To ensure customers receive the benefits of this investment as soon as possible, we will also carry out a mains cleaning programme to remove minute historic deposits from the internal surfaces of our network. This will involve cleaning around 100 km of strategic trunk mains that are supplied by water leaving both treatment works." This activity is **not** included within the scope of this review and report.

3. Findings

#	Project component	Demonstration of deliverable	Evidence reviewed	Does the evidence provided adequately demonstrate that the defined deliverable has been completed?	Qualification
1	Pumping Capacity	Proof that the system is capable of delivering 120M l/d to the filter inlet channel	RGFs are fed by an intermediate pumping station with six independent pumps. HMI/SCADA trend demonstrates each pump running at 30 MI/d .	Yes	N/A
2	Filter Capacity	Proof that individual filters can achieve design flow max of 15MI/d	HMI/SCADA trends showing each individual filter running at 15 MI/d .	Yes	N/A
3	RGF Process Block	Proof that the RGF process block as an entirety can match the site flow requirement	Review of the 'before' and 'after' construction ProcessFlow Diagram (PFD), Functional Design Specification (SPC)and overall schematics. SCADA screens showing each individual RGF cell with throughput of 15 MI/d .	Yes	N/A
4	Water quality	Proof that suitable water quality is achieved	Water sampling records for period pre-, during and post-commissioning reviewed; trend of differential pressure on the downstream GAC filters over the period of introducing the RGFs into supply	Yes—although it is noted from the water quality results that a number of the parameters did not achieve the KPI level during commissioning (22nd Feb-3rd April) and the South Staffs process scientist identified a number of exceptions and lab errors	Query has been raised about whether further sampling and analysis has been completed

Assurance report- Seedy Mill scheme completion

In addition the evidence included:

1. The Seedy Mill Master schematiwith the 'before' and 'after' site layout and demonstrating that at least half of treatment works output should be maintainable in the event of failure of a single piece of equipment.
2. Signed and dated training records indicating that South Staffs staff had completed training in February 2023.
3. Galliford Try letter requesting 'plant in use' certificate and signatures by South Staffs Water staff accepting the plant, dated 21st & 22nd March 2023.
4. Signed and dated site acceptance test (SAT)results, signed by both contractor and a South Staffs representative; Galliford Try completed SAT test sheets
5. Defect and outstanding works list showing 323 snags/defects raised, 253 closed and 70 remaining. Of the outstanding defects none were process critical.
6. Galliford Try subcontract document for the works separations to provide an air gap between raw water and filtered water pipework.

4. Conclusions

The visual inspection, conversations held and evidence provided during the site visit supports South Staffs claim that the Seedy Mill WTW additional filtration stage has been completed in line with the required date of 31st March 2023.

The company have designed, built and commissioned an extra filtration stage that will enhance the quality of the water produced and improve the level of resilience for the works. The process flows have been modified to ensure that the failure of any single piece of equipment will not result in the loss of greater than 50% of the treatment works output.

The company has added an extra filtration stage in the form of a ten cell rapid gravity filter unit which should enhance the quality of water produced and improve the level of resilience inherent within the Seedy Mill WTW.

Table 4R – AMI capable meters

Table 4R requires companies to report customer numbers split across different meter types – basic, AMR, AMI capable and AMI active. The change to this table came in for APR22, and the previous version of table 4R used in APR21 split between basic and smart with no differentiation between AMR, AMI capable, and AMI active in the smart category.

In the 2021/22 APR we reported zero AMI capable meters. This was because we were reading the meters as AMR, we did not separately identify AMI meters as we were not using that functionality.

We have revisited this approach for APR23 based on new information about the types of meters we have been installing. Since approximately November 2020 we have been installing Diehl meters which we are using as AMR but which are also AMI capable. These new meter types would have applied to new connections, meter optants and replacements, for both residential and business, since November 2020. We have therefore updated our approach to table 4R to estimate that as at year end, 31 March 2023, over 30,000 AMI capable meters for residential and over 2,000 AMI capable meters for business have been installed. We have adjusted the estimates of AMR and basic meters accordingly, so the figures will look different to those reported in APR22. Figures in 4R are also consistent with those reported in 6D.

At the moment our customer database does not capture direct data on the type of meter, we record the manufacturer, serial number and date of installation, and we therefore estimate the type of meter from this information. We need to do further data analysis work this year to improve the accuracy of the split between different types of meter. In the future, as we adopt AMI as a live technology, we will be able to report directly from our customer database on the number of meters that are live with this technology.

Visible Leak Repair Time

When defining our business plan our customers told us we should repair bursts quicker, to do our bit to minimise the wastage of water from our network. We agreed and set ourselves targets to significantly improve our performance in this area. During the business plan process we realised that the definition of the measure had been taken to include reinstatement time, which was not intended. We attempted to correct this with Ofwat post draft determination and post final determination. In a letter post final determination, Ofwat acknowledged that the definition should be amended however asked us to report the measure both with and without reinstatement time for the duration of the price control.

We have reported the value without reinstatement time, as originally intended, in table 3A. This is 90% of visible leaks repaired within 4 days, which meets our performance commitment. Including reinstatement, 90% of jobs are completed within 9 days.

Carbon emissions performance commitment

Performance commitment PR19SSC_C8, Carbon Emissions, is reported as kilograms of emissions per connected property. It is a PR19 bespoke performance commitment with no financial incentives attached. The emissions figures are calculated using the Carbon Accounting Workbook, version 13, published on 8 May 2019. During our work to provide the historic GHG emissions for the additional data request, we have identified an error in our calculations of the performance commitment emissions for the 2021/22 reporting year, as a result of not including natural gas consumption in the workbook. We have also revisited 2020/21 to check data for this year and found very minor discrepancies. Therefore we are restating 2020/21 and 2021/22 figures for this performance commitment alongside our 2022/23 value for APR23, all in a consistent completion using CAW v13. We have still surpassed our target in all years with the revised numbers, which are shown below:

	2020/21	2021/22	2022/23
Originally reported value	26.4	17.4	
Revised values for 2020/21 and 2021/22, alongside 2022/23's reported value	27.0	30.1	28.5

Carbon Accounting

Concerns over normalisation of carbon emissions (line 11A.46)

We have queried the definition of this line with Ofwat on 30 June and received a response on 7 July. We are concerned that normalising the total carbon emissions by distribution input misrepresents the extent of bulk exports in our case, because of the large volume export to Severn Trent from our Hampton Loade Treatment Works. Carbon emissions are included in full, representing the full extent of water that we abstract, treat and supply. However our DI figure excludes the Severn Trent export, as does our reported power costs and other shared opex in cost reporting tables.

This creates a material difference in the normalised value:

	2022/23
Total emissions for line 11A.46, which includes gross supply of water, i.e including Severn Trent's share of Hampton Loade (kgCO ₂ e)	60946184
Distribution input value which excludes exports (MI/d)	412.15
Total volume of water supplied which is gross of exports, and which aligns to the emissions value we report (MI/d)	452.39
Emissions per MI of water if using our DI value (kgCO ₂ e/MI)	405.13
Emissions per MI of water if using our gross volume (kgCO ₂ e/MI)	369.10

There appears to be a mix of approaches to dealing with effectively 'gross' or 'net' (of imports/exports) across different tables and data sets. In our case, the Hampton Loade export is very significant and so has a material impact on whether numbers are calculated on a gross or net basis.

We feel that across all reporting tables a consistent set of rules should be established, as it is not currently clear. For example if costs are reported net of Severn Trent's contribution to Hampton Loade, and DI is reported net of this export, then should all other tables which could be influenced by this also be reported net of Severn Trent's share? What about other companies who may have material imports/exports, how are these accounted for? We would need to change a number of reporting processes to be able to strip out a

share of Hampton Loade for Severn Trent across all types of reporting, so this would need to be planned carefully. For example, it would also apply to our calculation of total wholesale energy use in lines 5A.24, 6A.7, 6A.35, and 6B.23, which is currently reported as our gross total energy use, not deducting a proportion of Hampton Loade that Severn Trent contributes to.

We also advise caution on benchmarking using line 11A.46 because it does not take into account topography, which is also a material scaling factor in energy use and therefore also carbon emissions.

Historical data request for carbon emissions

2018-2019 Operational Emissions:

We are unable to locate the carbon accounting workbook for the 2018/19 so our historical restatement in CAW17 can only be completed for 2019/20 onwards.

2019 – 2020 Operational Emissions:

Burning of fossil fuels (location-based)	Only fuels recorded this year were gas oils (Red Diesel), Natural Gas (admin) and Kerosene. Natural gas engine had not been commissioned yet, hence the extreme low emission levels.
Process and fugitive emissions	As burning fossil fuels emissions were low, the process and fugitive emissions were in the low levels as well.
Purchased electricity (location-based)	Admin Electricity levels remained extremely low as there were hardly any activities in the offices due to the lockdown, but high levels of grid electricity were used for water treatment purposes (especially with water demand having increased due to the lockdown).
Purchased heat	There is no purchased heat at this time, as heating is sourced using Kerosene, part of fossil fuels being burned (Scope 1, location based).
Electric vehicles	There is no record of any EV in the business. The Organisation got its first set of EV's in the FY22/23.
Purchased fuels	Extraction, production, transmission and distribution: This the total emissions of the Well-to-tank fuels used for water treatment operations, administration and transportation.
Business Travel	There were no records of 'Business travel' at that time. The capture of this data started in the FY22/23.
Outsourced activities	No records of this in any of the existing CAW's, this will be included from FY23/24.
Disposal of Waste	The value of 996.004 TCO _{2e} , represents the emissions given off during the transportation of 'sludge' from the site to 'other land'.
Chemicals in Scope 3	The emission levels of chemical usage can be located in cell 'G103' on the 'Summary tab' of the CAW 17.

2020 – 2021 Operational Emissions:

Burning of fossil fuels (location-based)	Gas turbine started performance in June of 2020, hence the rise in emission levels. Just 9 - 10 months of the natural gas engine utilisation led to this emission level.
Process and fugitive emissions	Increased burning of fossil fuel leads to higher levels of process and fugitive emissions.
Purchased electricity (location-based)	Decrease in Electricity emissions as Natural Gas Engine is responsible for a significant amount of Power for treatment.
Purchased heat	There is no purchased heat at this time, as heating is sourced using Kerosene, part of fossil fuels being burned (Scope 1, location based).

Electric vehicles	There is no record of any EV in the business. The Organisation got its first set of EV's during the FY22/23.
Purchased fuels	Extraction, production, transmission and distribution: This is the total emissions of the Well-to-tank fuels used for water treatment operations, administration and transportation.
Business Travel	There were no records of 'Business travel' at that time. The capture of this data started during FY22/23.
Outsourced activities	No records of this in any of the existing CAW's, this will be included from FY23/24.
Disposal of Waste	This would only include sludge that is moved on 'other' land. If disposed on 'own land', the emissions would be zero (indicating that no transportation emission were given off, while disposing on owned land).
Chemicals in Scope 3	The emission levels of chemical usage can be located in cell 'G103' on the 'Summary tab' of the CAW 17.

2021 – 2022 Operational Emissions:

Burning of fossil fuels (location-based)	A full financial year shows the estimated emissions levels, majorly stemming from the natural gas engine at HL.
Process and fugitive emissions	Increased burning of fossil fuel leads to higher levels of process and fugitive emissions.
Purchased electricity (location-based)	Having used the newly deployed gas engine for a full Fiscal year has led to a further reduction of power usage from the grid.
Purchased heat	There is no purchased heat at this time, as heating is sourced using Kerosene, part of fossil fuels being burned (Scope 1, location based).
Electric vehicles	There is no record of any EV in the business. The Organisation got its first set of EV's in the FY22/23.
Purchased fuels	Extraction, production, transmission and distribution: This the total emissions of the Well-to-tank fuels used for water treatment operations, administration and transportation.
Business Travel	There were no records of 'Business travel' at that time. The capture of this data started in the FY22/23.
Outsourced activities	No records of this in any of the existing CAW's, this will be included from FY23/24.
Disposal of Waste	Just as in the previous year, all the sludge produced was moved on to 'own land', therefore emission value is zero.
Chemicals in Scope 3	The emission levels of chemical usage are in cell 'G103' on the 'Summary tab' of the CAW 17.

Additional notes: It should be noted that the Gross and Net operational (Location based) emissions on the historical APR table 11a, will differ from the CAW sheets. Additional calculations and data for 'purchased fuels, extraction, production, transmission and distribution', 'chemicals' and 'disposal of waste' in the 'Ofwat report' section in the 'Summary tab', were included.

Table 11A 2022/23

<p>Outsourced Activities</p>	<p>One of four priority actions in 2023 / 2024 is the ‘Scope 3 supply chain / outsourced activity working group’ including the Energy / carbon and procurement teams. This will focus on purchased items including outsourced activities, and framework agreements. In terms of outsourced activities, a considerable proportion is already captured as many of our framework partners operate from our sites and facilities. We have commenced the process to understand those outsourced activities which either need to be ‘separated;’ or captured in terms of allocation of emissions. This will also include recent changes such as activities outsourced during the current reporting year. The working group identify methodology and implement processes for prioritising and capturing scope 3 emissions relating to our supply chain. This has commenced, with the first reporting APR24. The process will include benchmarking good practice within our supplier base and collaborating with them to inform the best approaches, before replication across the wider supply base. A significant lesson learnt in 2022/2023 is much earlier engagement with stakeholders on the ‘why’ not just the ‘what’. We need to focus more on what is available and how to close the gaps rather than chasing after ‘we do not collect that data’.</p>
<p>Business Travel</p>	<p>Business travel included in our CAW entries for the first time. However, further work needs to be done in 2023 / 2024 to better inform stakeholders on requirements and target actions against gaps / extrapolated data.</p>
<p>Electric Vehicles</p>	<p>Newly acquired EV’s consumption levels included this year. First EVs were received in October 2022. Another set of 11 arrived in May 23, and 16 more are due in the Summer of 2023 onwards.</p>
<p>Burning of Fossil Fuel (location-based)</p>	<p>As a result of the major overhaul activity of the gas engine at Hampton Loade between August and September, the engine was out of commission for about 4 weeks, resulting to a decrease in gas usage, ultimately leading to an emission level reduction in comparison to the last Fiscal year.</p> <p>An increase of petrol (not for transport) was also observed, reason being that across most sites of the water business, we have procured more petrol-powered ground maintenance machinery than ever before. Most of the Borehole stations and reservoirs including the Chelmarsh reservoir (which is 100 acres and takes 7 miles/4km to walk around) are now mowed using petrol powered mowers and the same would go for grass trimmers and edge cutters. At Seedy Mill alone, it has been determined that around 100 liters of petrol is used up per week during the summer.</p>
<p>Scope 3 Emissions</p>	<p>The scope 3 data entries on the APR table will vary from the one on CAW 17. Reason for this is because CAW 17 only accounts for business travel and purchased electricity (Transmission and Distribution), while the APR table requires calculations to be added in the ‘Purchased electricity; extraction, production, transmission and distribution (location-based)’, ‘chemicals’ and ‘waste disposal’ sections.</p>

Capital Project (Cradle to Gate)	We have added two carbon value models in the Copperleaf system that allow us to capture the tonnes of carbon that an investment will create or save on operational emissions, and capture forecast embodied Carbon emissions. The data we have so far accounts for around 1/3 of the investments in the business plan. It is early days in the process for capturing the data for AMP 8 readiness, but we have an opportunity in 2023/2024 to test and validate against current data.
Purchased Goods and Services	This will not be reported this year. Just as mentioned in the 'Capital Projects' cells, a major priority action in 2023/2024 will be the focus of capturing emission from purchased goods and services. The working group has acknowledged how vital this is and has in response commenced the process of understanding how emissions from purchased goods and services are captured. A methodology is being identified and will be used to capture emission levels from 'Purchased goods and services' in the 2023/2024 reporting year.

SWOT commentary

Strengths:

- Strong focus and commitment to Sustainability (fleet electrification, energy efficiency, NZ & renewables strategy)
- Increasing engagement with customers in both regions e.g., Net Zero Citizens Jury Net Zero (cambridge-water.co.uk) : aligning NZ inc. in-setting with existing nature-based solutions
- Cross sector collaboration & engagement e.g., UKWIR / Water UK - Net Zero Technical Working Group, Energy Managers Forum
- Portfolio size (detailed internal knowledge of all MPANs)

Weaknesses:

- Recent Increases to demand (COVID impact).
- IT systems require enhancing to export newly required data (for example SCOPE 3 / embedded emissions)
- Scope 1 emissions high compared to sector, due to gas engine at our HLTW site
- WOC versus WASC – less opportunities for energy regeneration / re-use
- Systems not yet stabilised or mature enough to enable robust reporting of scope 3 / embedded emissions

Opportunities:

- Re-using currently wasted heat energy at Hampton Loade for space heating
- Reducing consumption through targeted customer communication, engagement & awareness Save water, save energy | South Staffs Water (south-staffs-water.co.uk)
- Further investment in efficiency schemes such as PEP (Pump Efficiency Program) and buildings (BMS, lighting, replacing fossil fuel boilers with heat pumps etc.)
- Exploration and revisiting of latest technologies such as micro wind, battery / fuel cells / Hydroelectric
- SSW NZ renewables strategy (whole estate assessment phase 1 completed June 23)

- Further reduction of fossil fuel usage in standby generators e.g., conversion to Hydro-treated Vegetable Oil (HVO / biofuels)
- Targeted use of untreated water e.g., sports grounds where potable water quality not required – saving chemicals and energy
- As part of NZ transition: in-setting and off-setting through expansion and evolution of existing programs such as PEBBLE <https://www.south-staffs-water.co.uk/environment/biodiversity/pebble-case-studies> Biodiversity | South Staffs Water ([south-staffs-water.co.uk](https://www.south-staffs-water.co.uk)), PEBBLE Fund ([cambridge-water.co.uk](https://www.cambridge-water.co.uk))
- New energy contract inc. Corporate Power Purchase Agreements (from Apr 2025)
- Development of systems to support scope 3 / embedded carbon data collection and reporting; which will then focus skills development within the wider water company (immediate priority energy, carbon, and regulatory teams)
- Awareness and engagement sessions for all stakeholders including process / data owners on the 'Why' not just 'What'

Threats:

- Climate Change and Global Warming effects, e.g., droughts, water scarcity, unpredictable customer, and environmental supply demand/habits.
- Competing, conflicting & uncertain regulatory landscape e.g. The affluent and the effluent: cleaning up failures in water and sewage regulation
- Increasing energy costs and exposure to volatile global energy markets.
- Maintaining water quality while reducing use of chemicals; alternative water treatment potentially increasing energy demand.
- Decarbonisation will result in a net increase of power consumption.
- Regulation change or amendments.

Narrative:

The focus over the last 12 months has been stabilising roles, responsibilities, and existing systems, then aligning actions to the circa 26 new / amended requirements, including historical GHG emissions, for 2022 / 2023. This has been further challenged with the various containment and workaround processes, across the business and stakeholders; following the cyber-attack in summer 2022.

We have continued to embrace collaboration/ benchmarking across the sector including UKWIR, Water UK and various focused working groups e.g., Net Zero Technical Working Group, Water Only Energy Managers Forum, CAW17 working group, etc.

We now have a solid foundation (RACI – Roles, Accountable, Consulted, Informed) not only for the remaining AMP but also in preparation for AMP8/PR24.

We have made significant process in capturing and validating scope 3 emissions data including business travel and chemicals. This has highlighted some shortcomings in data availability and completeness but this will be addressed in 2023/2024. The data we have reported for chemicals is robust and within accuracy of < 5%, and interim business travel data capture and assessment, despite some level of extrapolation, gives high confidence for a robust finalised process in 2023/2024.

In terms of outsourced activities, a considerable proportion is already captured as many of our framework partners operate from our sites and facilities. We have commenced the process to understand those outsourced activities which either need to be 'separated;' or captured in terms of allocation of emissions. This will also include recent changes such as activities outsourced during the current reporting year.

A working group will be set up, led by the energy and carbon team, and supported by procurement colleagues to identify methodology and implement processes for prioritising and capturing scope 3 emissions relating to our supply chain. This has commenced, with the first reporting APR24. The process will include benchmarking good practice within our supplier base and collaborating with them to inform our process before replication across the wider supply base.

We have added two carbon value models in the Copperleaf system that allow us to capture the tonnes of carbon that an investment will create or save on operational emissions, and capture forecast embodied Carbon emissions. The data we have so far accounts for around 1/3 of the investments in the business plan. It is early days in the process for capturing the data for AMP 8 readiness, but we have an opportunity in 2023/2024 to test and validate against current data.