Cambridge Water

South Staffs Water

Annual performance report 2023/24

Supplementary Information Appendix

Contents

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

Our data availability in our Cambridge region was 74%. This was due to the cyber-attack that South Staffordshire PLC had in 2022/23. Due to the attack the telemetry system was locked and therefore data that would normally flow into Waternet for reporting did not (36 DMA impacted). This did not impact targeting because our analysts could still view telemetry data and therefore daily targeting and reactive work continued. 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. We estimated that without the cyber impact the data availability would have been around 93%. We reviewed these DMAs with the auditors and they were satisfied with this analysis.

Table 6B - components of total leakage

Table 6B requires additional information, 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	Ml/day	51.00	6B.58
Distribution main losses	Ml/day		6B.59
Customer supply pipe losses – measured households excluding void properties	Ml/day	10.18	6B.60
Customer supply pipe losses – unmeasured households excluding void properties	Ml/day	12.47	6B.61
Customer supply pipe losses – measured non-households excluding void properties	Ml/day	1.00	6B.62
Customer supply pipe losses – unmeasured non-households excluding void properties	Ml/day	0.12	6B.63
Customer supply pipe losses – void measured households	Ml/day	1.22	6B.64
Customer supply pipe losses – void unmeasured households	Ml/day	0.21	6B.65
Customer supply pipe losses – void measured non-households	Ml/day	0.08	6B.66
Customer supply pipe losses – void unmeasured non-households	Ml/day	0.07	6B.67
Components of total leakage (post MLE) – region 1 – SST			
Leakage upstream of DMA	Ml/day	42.58	6B.68
Distribution main losses	Ml/day		6B.69
Customer supply pipe losses – measured households excluding void properties	Ml/day	7.59	6B.70
Customer supply pipe losses – unmeasured households excluding void properties	Ml/day	11.56	6B.71
Customer supply pipe losses – measured non-households excluding void properties	Ml/day	0.81	6B.72
Customer supply pipe losses – unmeasured non-households excluding void properties	Ml/day	0.11	6B.73
Customer supply pipe losses – void measured households	Ml/day	1.08	6B.74
Customer supply pipe losses – void unmeasured households	Ml/day	0.19	6B.75
Customer supply pipe losses – void measured non-households	Ml/day	0.07	6B.76
Customer supply pipe losses – void unmeasured non-households	Ml/day	0.07	6B.77
Components of total leakage (post MLE) – region 2 – CAM			
Leakage upstream of DMA	Ml/day	1.73	6B.78
Distribution main losses	Ml/day	6.69	6B.79
Customer supply pipe losses – measured households excluding void properties	Ml/day	2.59	6B.80
Customer supply pipe losses – unmeasured households excluding void properties	Ml/day	0.91	6B.81
Customer supply pipe losses – measured non-households excluding void properties	Ml/day	0.18	6B.82
Customer supply pipe losses – unmeasured non-households excluding void properties	Ml/day	0.01	6B.83
Customer supply pipe losses – void measured households	Ml/day	0.14	6B.84
Customer supply pipe losses – void unmeasured households	Ml/day	0.02	6B.85
Customer supply pipe losses – void measured non-households	Ml/day	0.01	6B.86
Customer supply pipe losses – void unmeasured non-households	Ml/day	0.00	6B.87

Table 4R - unbilled properties

Our migration to a new billing system (Aptumo) in February 2023 has enabled us to undertake further examination and validation of the property records over the course of the 2023/24 year.

In previous years we have not used the unbilled connections category of property. However this year we examined the process journey from house building developments through to customer registration on our billing system and we found that we do have connected properties (properties which have been built and are connected to the water system) but which are awaiting a meter and/or plot sale and so are as yet unbilled. We have included these properties in this category and this improves our compliance with the line definition. The number of properties falling into this category is less than 0.5% of the property base.

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.

As reported last year, during our work to provide the historic GHG emissions for the additional data request, we 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 also revisited 2020/21 to check data for this year and found very minor discrepancies. Therefore we restated 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.

Unfortunately we have had a number of staff changes in carbon reporting in quick succession since last year. Recognising this, we did a complete bottom up review of the suite of reporting from CAW13, CAW18 for 2023/24, the process for compiling the performance commitment, and the process of compiling table 11A.

From this process we have identified that we need to retract our restated values from last year and restate the entire data set again, as we found that the incorrect value was being taken from CAW13 for this performance commitment. We looked at this in conjunction with our auditors, Jacobs, following a full process review in March 2024, and we confirmed the corrected values in our end of year audits in May 2024. The incorrect value being taken from CAW13 was the gross emissions normalised by per capita population, rather than net emissions normalised by connected properties, which does not appear directly in CAW13 and has to be calculated, hence why the error occurred, as it was assumed that CAW13 should have presented the number for the performance commitment. We apologise for this error.

The restated data is as follows. For transparency the table shows the net emissions being used each year deriving from CAW13, the number of connected properties to normalise by, and the final kg per connected property value.

	2020/21	**2021/22**	**2022/23**	**2023/24**
Net emissions in tonnes CO2e	26520	35004	30601	35995
Connected properties normaliser	746683	750041	755041	759458
kg/connected property PC value	35.52	46.67	40.53	47.40

We remain ahead of target for this PC. The variance across years is largely due to variation in utilisation of our gas engine generation plant at Hampton Loade, first operational in 2020, which utilises natural gas for electricity generation and so is high in scope 1 emissions.

Carbon accounting - note on normalisation of emissions

Last year we explained that we had queried the definition of line 11A.46 with Ofwat. We remain 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	**2023/24**
Total emissions for line 11A.46, which includes gross supply of water, i.e including Severn Trent's share of Hampton Loade (kgCO2e)	60946184	62831684
Distribution input value which excludes exports (Ml/d)	412.15	406.64
Total volume of water supplied which is gross of exports, and which aligns to the emissions value we report (Ml/d)	452.39	444.59
Emissions per Ml of water if using our DI value (kgCO2e/Ml)	405.13	422.17
Emissions per Ml of water if using our gross volume (kgCO2e/Ml)	369.10	386.13

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 the normalisation of values like carbon emissions.

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

We are continuing to include this issue in the commentary so that Ofwat remain aware.

Carbon accounting - SWOT analysis

Strengths

SSC has continued its strong focus and commitment to sustainability throughout the year as it continues its journey towards Net zero.

The first phase of the EV infrastructure project is now complete with charging stations fitted at 4 key sites across both regions and 14 electric vans are now in operation. Future proofing at the Walsall main office site also enables additional charging capacity to be installed for later phases of this project.

The topographically challenging nature of the Staffordshire area means that the company is always driving for maximum energy efficiency with its pumping assets and runs a Pumping Efficiency Program (PEP) as part of this program there was an opportunity to replace the borehole pumps at two sites with new Zetos K12 pumps and permanent magnetic motors, increasing the operating energy efficiency of the units up to 92%. These units will be monitored and further opportunities on other sites explored further.

As part of our long-term Net Zero plan SSC has carried out extensive analysis of all our sites across both regions aimed at targeting 'behind the meter' renewables. 4 sites have been identified that will deliver a Peek capacity of 7.3 MWp and this has led to non-binding offers been in place with a supplier while funding is sourced through the PR24 program.

SSC created a 'Net Zero citizens Jury' where customer and stakeholders were invited to engage with and challenge our Net zero plans and here customers identified that switching to a renewable energy solution as a medium/High priority. In addition, we have engaged with third-party engineering consultancy (AQUA Consultants) who have been undertaking deep dives into solutions that best address the business needs mentioned in the above.

Previously SSC had challenges with reporting and data quality after a Cyber-attack in summer 2022 meaning that several workarounds to existing processes and data collection had been required. Throughout 2024 much attention was focussed on data quality and creating robust methodologies to enhance our reporting capabilities. Links between our SCADA and SQL systems have been rebuilt and though various applications like the OSI/Aveva PI system which provides robust data management solutions and underpin many of our reporting statistics.

Weaknesses:
Post the Pandemic SSC saw notable increases in daily pumping volumes required to service our customer base, this increased demand has remained and when combined with the higher-than-average pumping head due to the region's topography means that the Pumping Efficiency Program plays a key role in reducing our energy consumption.

Embedded carbon reporting is a new requirement under the CAW and not a metric SST has previously measured. For this reporting year the TOTEX embodied carbon was calculated based on guidance set by PAS2080 for a Rapid Gravity Filter project at a treatment works in the SST region. The total embedded carbon figures from this project were then used to calculate the rest of the reporting figures for SSC based on capital expenditure. For future capital projects embodied carbon calculations should be included as part of the design requirements going forwards.

SSC's largest treatment works situated at Hampton Loade operates a CHP engine generating around 5.2 MW of power for the site. This engine runs on natural gas and results in SSC having higher scope 1 emission when compared to the sector.

As a water only company SSC has less opportunity for energy regeneration from bio- mass and waste products that Water and Sewerage companies do however options for energy from waste are being explored.

Opportunities:
As part of SSC's Net zero journey several behind the meter enhancements are being explored. At a wider group level SSPLC has setup a ESG working group aimed at achieving our Net Zero 2030 and 2050 targets. Funding has been sought through the PR24 process to invest £6.2M in ground mounted Photovoltaic (PV) electricity generating assets. Sites have been identified and early business, commercial and environmental cases have been developed and non-binding offers are in place with potential suppliers.

In addition to Photovoltaics an energy from waste facility has also been explored with Standard Gas ltd capable of producing up to 5MW of power. This is a carbon negative technology and would replace the carbon intensive natural gas used at Hampton Loade treatment works considerably reducing emissions there. For the last 6 years SSC has procured zero carbon grid electricity from its electricity supplier however for 2025 onwards we are also exploring the use of Corporate Power Purchase Agreements (CPPAs) with a

number of companies to enable us to directly purchase the energy generated from renewable assets. We currently have several quotes for 5-, 10- and 15-year products.

In addition to zero carbon energy sources a critical part of SSC's net zero journey is demand reduction. The Pumping Efficiency Program (PEP) identifies inefficient assets across our water production sites and provides the justification that enables either refurbishment or replacement of these assets. Further investment in this program planned for 2025 will provide clear benchmarks for these assets and drive carbon reductions through efficiency gains. As well as the PEP program further investment in efficiency schemes within our buildings (BMS, lighting, replacing fossil fuel boilers with heat pumps etc.) will also drive a reduction in energy demand. These efficiencies are identified by our ESOS auditing obligations and findings are presented at board level.

Threats:
Climate Change and Global Warming effects pose a clear threat to SSC's operations. Droughts, water scarcity can mean assets have to be pushed harder or used in inefficient ways. Unpredictable customer demand caused by extreme weather or changing socioeconomic conditions can make optimal planning for the use of our assets or the outages required for refurbishment etc difficult and subsequently drive energy inefficiencies.

The water industry is highly regulated. Competing, conflicting & uncertain regulatory landscapes can make longer term planning and asset investment more difficult. The views and opinions of our customer base prior to investment are explored through schemes like our 'Citizen Jury's'. Public perception and political narratives can influence customer opinion, and these can impact future investment decisions.
Volatile macroeconomic conditions can have a direct impact on global energy prices as well as the availability of certain technologies making it difficult to plan and procure energy sources and produce longer term business cases for large investments.

Maintaining water quality while reducing use of chemicals in treatment also is a challenge for SSC often the alternative water treatment technologies, for example UV or ceramics are more energy intensive and can be counter to the efficiency gains on sites achieved through other means.

SSC previously had challenges with reporting and data quality after a Cyber-attack in summer 2022 meaning that several workarounds to existing processes and data collection had been required. Throughout 2024 much attention was focussed on data quality and creating robust methodologies to enhance our reporting capabilities. Links between our SCADA and SQL systems have been rebuilt and though various applications like the OSI/Aveva PI system which provide robust data management solutions and underpin many of our reporting statistics.

Carbon accounting - embedded carbon RAG assessment

We have reported cradle to build embedded emissions for the first time in this APR.

Our approach has been to collect embedded emissions data for our major treatment works upgrade project at Seedy Mill, where we have constructed a new sand filtration system. This project involved earthworks, concrete, a steel framed building, mechanical and electrical equipment, and instrumentation and control equipment. So the project is representative of the range of assets constructed across our capital programme. We have used the emissions per £m of expenditure for this project to extrapolate to the total value of the capital programme.

Against the RAG assessment criteria contained within RAG4.12, we have assessed that we are 'amber', as follows:

Category	Embedded emissions reporting criteria	SSC comments
Amber	Provision of embedded emissions data as it relates to capital projects (cradle-to gate or cradle-to-build).	Met. We have provided an estimate of cradle to build emissions data by extrapolating a major project where we have collected this data, to the level of our capital programme.
	Clear evidence of external verification by an appropriately qualified party as it relates to the use of standards and frameworks, and quality of data.	Met. The source data from our supplier uses recognised data sources such as the ICE materials database, University of Bath, and DEFRA data freight; and we have assured this through our technical assurer Jacobs as part of our year end assurance process.
	Engagement with one recognised standard, framework, or approach for managing and reporting on embedded emissions.	Met. The data from our supplier has been compiled in accordance with PAS2080 – carbon management in infrastructure.
	Complete and detailed SWOT analysis referring to embedded emissions.	Met. Our SWOT analysis includes embedded emissions and recognises our immaturity in this area.