



Evidence against quality tests

Outcomes

Embodied Greenhouse Gas Emissions –
PR24 Bespoke Performance Commitment



Purpose: This performance commitment is designed to incentivise the company to reduce greenhouse gas emissions arising from its capital delivery programme.

Benefits: In incentivising reductions in company 'embodied' greenhouse gas emissions this performance commitment will also support attainment of UK government and Welsh Government's 2050 Net Zero objectives relating to carbon reduction and climate change and contribute towards the company's challenge to be operational Net Zero by 2030.

The approach is in line with our principles of decarbonisation and climate resilience, reduction in environmental impact and operational efficiencies. Through working with the value supply chain, we will deliver a more sustainable and resource efficient water and wastewater services and provide intergenerational value to customers. Climate change and protecting the environment are viewed by customers as one of the most significant issues requiring transformational change.

The embedding of processes such as whole life carbon assessments and PAS2080 (a construction industry standard in carbon management) into our Engineering Directorate and end-to-end decision-making process on capital project delivery will support customer views on need for carbon and energy reduction.

This applied process will deliver both reductions in embodied carbon in terms of tonnes of carbon dioxide equivalent per £m spend and have a positive impact on future operational carbon, thereby providing long term benefits to the customer.

In summary, this bespoke performance commitment is designed to incentivise South West Water and Bournemouth (Bristol price controls are excluded) to reduce embodied carbon emission associated with our capital investment programme. This will incentivise us to implement sustainable practices and adopt low-carbon technologies to minimise the carbon footprint of projects, while ensuring efficient delivery of essential water and wastewater services.

Version control [not required for initial submission, for completion at draft determinations]

Version	Date of issue	Performance commitment changes
0.1		
1.0		
2.0		

Performance commitment definition and parameters

1.1 Detailed definition of performance measure

This bespoke metric is based on spend analysis (a 'spend-based method'); it is the calculated embodied greenhouse gas (GHG) emissions in tonnes of carbon dioxide equivalent per million capital spend (tCO₂e/£M), related to capital engineering delivery projects undertaken in the reporting year.

This bespoke metric is based on a tCO₂e/£m emission intensity target. It is not appropriate to work from an absolute tCO₂e baseline due to the variability and unpredictability of absolute embodied tCO₂e in any given year.

This bespoke metric is based on PAS2080 applied to Engineering Directorate and our supply chain. This framework looks at the whole value chain, aiming to reduce carbon and reduce cost through more intelligent design, construction and use. Emissions will be considered as 'embodied' based on "cradle-to-build" spend data (as per the PAS2080 definition):

"GHG emissions associated with manufacture of materials and products, transport to site, and emissions associated with construction of the asset".

This will apply to all schemes and activities that are under construction each year. Capital assets will be quantified as embodied carbon for the reporting year. The definition of embodied carbon for the purposes of this performance commitment measure aligns to modules A1-A5 of the Life Cycle Analysis BS ISO 15686-5 standard.

This bespoke metric incorporates water and wastewater price controls for South West Water (the Bristol price controls are excluded).

Business Plan Baseline:

Using the tonnes carbon equivalent per £M approach, the proposed baseline period is 2021/22 in accordance with other Performance Commitments.

Using the spend data for Scope 3 Categories 1 and 2 of the Greenhouse Gas Protocol, a carbon analysis was provided by a specialist carbon consultant using the global CEDA database, in preparation of the 2021/22 Annual Performance Report (APR), the standard carbon emissions factor was as follows (these were the initial estimations used at the time of the submission of our business plan):

- Total capital delivery spend = £650M per annum
- Total carbon equivalent tonnes (using Standardised global database) = 250,514 tCO₂e
- Tonnes carbon equivalent per £1M = 385 tCO₂e/£1M

Revised Baseline:

In our PR24 business plan (and as stated above) the total capital delivery spend assumed a theoretical consistent spend profile of £650M per annum across the 2025-2030 period, using the best available information at the time. A 10% tonnes CO₂e per £m reduction was at the time forecast from the baseline emission intensity of 385tCO₂e/£m (set in 2021/22).

Subsequently, we have forecast an accurate but variable total capital delivery spend profile for the 2025-2030 period. Despite the updated total capital delivery spend profile (£650M applies to the baseline year in 2021/22 but no longer in future years), the forecast percentage tonnes CO₂e per £m reduction (the percentage reduction from baseline) remains the same as per our business plan submission and there is no impact on the emission intensity.

In addition we will be reporting for the Performance Commitment only on the Strategic Improvement Programmes related to construction activities in Engineering Delivery which align with the APR definition of Cradle to Build for embodied carbon, specifically section 11 of RAG4 for table 11A on GHG emissions reporting.¹

¹ Ofwat (2024)) RAG 4 – Guideline for the table definitions in the annual performance report, page 190

Methodology Statement for Spend Analysis (the 'spend-based method'):

There are several ways to approach reporting for this novel bespoke metric:

- **Supplier-specific method** – collects product level cradle to gate GHG inventory data from goods or services suppliers.
- **Hybrid method** – uses a combination of supplier specific activity data (where available) and secondary data to fill the gaps. The method involves:
 - Collecting allocated scope 1 and scope 2 emissions data directly from suppliers.
 - Calculating upstream emissions of goods and services from suppliers' activity data on the amount of material, fuel, electricity used, distance transported, and waste generated from the production of goods and services and applying appropriate emissions factors.
 - Using secondary data to calculate upstream emissions wherever supplier specific data is not available.
- **Average-data method** – estimates emissions for goods and services by collecting data on the mass (e.g., kilograms or pounds) or other relevant units of goods or services purchased and multiplying by the relevant secondary (e.g., industry average) emissions factors (e.g., average emissions per unit of good or service).
- **Spend-based method** – estimated emissions for goods and services by collecting data on the economic value of goods and services purchased and multiplying it by the relevant secondary (e.g., industry average) emissions factors (e.g., average emissions per monetary value of goods).

Due to the limited data that is available, for our PR24 business plan we adopted the '**spend-based method**'. The limited data is impacted by the low level of supplier activity data, the low level of actual usage data, including materials, and the fact that the Carbon Accounting Tool is in its infancy and therefore, is untested. However, a key benefit of this approach is that this builds upon and continues to align with the CEDA (the Comprehensive Environmental Data Archive) carbon conversation factor used as part of the Pennon Group plc.

The spend-based method of estimates entails estimates of goods and services based on the economic value of goods and services purchased multiplied by relevant secondary emission factors. This approach was used for the 2022/23 price review using International Financial Reporting Standards (IFRS) or equivalent capital costs for each year against relevant strategic investment programmes (SIPs).

1. Specialist consultants were appointed for the Annual Report to provide carbon data based on (SWB) spend by suppliers and category list, in line with carbon reporting good practise.
2. Categories of types of spend will be mapped based on the CEDA Global v6 EIEO database and allocated emission factors or where actual project data is available. This will be an established and audited process.
3. Strategic investment programmes (SIP) capital spend for engineering delivery schemes will be allocated emission factors from the various spend categories.
4. The above will generate embodied carbon emissions per annum against the spend.
5. Emission factors will change with time as there is decarbonisation of materials and technologies, as the databases change over time, and with refinement of the spend data analysis & categorisation.

The resultant embodied carbon emissions in absolute tonnes are dependent upon the spend profile and therefore we propose that the Performance Commitment should be based on: tCO₂e/£M for the embodied carbon component of the spend profile.

Over time, with implementation of PAS2080 internally in the Engineering Directorate for construction delivery, and through the supply chain contractually we will move towards a **hybrid method of reporting** using actual activity based data provided by the Tier 1 and 2 contractors. There is likely to always be an element of spend based data

from other suppliers than the Tier 1 and 2 Contractors. However we anticipate an increasing percentage of hybrid reporting over time.

Government and Company Targets of Net Zero:

This bespoke metric will contribute to the government and company targets of Net Zero by 2050. We have signed up to initiatives to formalise this and these consist of:

- Net Zero Commitment - the English and Welsh water company Public Interest Commitment to become a Net Zero Industry for Scope 1, 2 and some Scope 3 operational GHG emissions by 2030. Our plans for delivering on these net zero emissions for our regulated water and wastewater business is published in our 'Promise to the Planet'.
- United Nations Race to Zero – For our parent company, the Pennon Group, including our regulated water and wastewater businesses, to become net zero by 2045 for all Scope 1,2 and 3 GHG emissions.
- Science Based Targets – near-term GHG reduction targets for our parent company, the Pennon Group, including our regulated water and wastewater businesses -
 1. to reduce Scope 1 and 2 emissions by 68% by 2033, from a 2021/22 baseline.
 2. to engage with our Group's supply chain, ensuring that 60% of our emissions in Scope 3 categories 1, 2 and 4 are covered by organisations that themselves have Science Based Targets, by a target deadline of 2028.
 3. to reduce all other relevant Scope 3 emissions in categories 3,5,6 and 7 by 30% by 2033 from a 2021/22 baseline.

South West Water and Bournemouth (SWB) Scope 3 category 1 and 2 purchased goods and services and capital goods represent 95% of the Scope 3 emissions (based on most recent data of 2022/23). A significant percentage of this is capital construction projects and represents embodied carbon, hence the proposed transformation changes of the business to address this category of greenhouse gas emissions.

1.2 Additional detail on measurement units

The value of the metric will be expected to reflect:

1. **Total capital delivery spend:** Spend will change as a function of the nature and size of capital projects constructed over the 2025-2030 period, inflation, and global uncertainty.
2. **Sustainable long-term well-informed decision making:** Transformational change required to identify the best long term value options with long term targets to ensure investment remains affordable for customers.
3. **Implementation of PAS2080:** Adoption and application of PAS2080 to be embedded in SWB and BRL processes internally within the Engineering Directorate and within our supply chain through new framework contracts will encourage carbon reduction amongst our suppliers. Suppliers will need to source low carbon alternatives. SWB and BRL will need to make decisions based on whole life carbon assessments to reduce both operational and embodied carbon. This will be implemented in a phased approach, accompanied by shadow reporting. Initially strategic investment programmes (SIP) capital spend will be used, and tier 1 and 2 suppliers will be required to provide actual embodied carbon data once appointed. We expect full alignment with PAS 2080 by the end of the 2025-2030 period.
4. **Innovative and long-term solutions:** Will enable better outcomes for the environment, operations and customers through the application of more holistic, circular economy and nature-based solutions.
5. **Emissions factors:** Emissions factors databases are updated, typically annually, to reflect best available science. Changes to emissions factors will affect the metric. This is typical of any carbon calculation methodology.

6. **Decarbonisation of capital programmes:** Specifications and processes in the construction and commissioning of capital projects are likely to reduce over the next 5-10 years. This will be reflected in data from key contractors delivering embodied carbon schemes.
7. **Refinement of categories 1 and 2 in Scope 3 eligible for embodied carbon:** This will be ongoing between 2023-2030.

1.3 Specific exclusions

This bespoke metric applies to South West Water and Bournemouth (Bristol price controls are excluded).

We exclude categories of spend and their associated emissions from this bespoke metric that are already accounted for in the common operational GHG emissions (water and wastewater) performance commitments.

We also exclude emissions beyond the build phase, i.e. after commissioning, and exclusion of emissions under operation use stage and end of life deconstruction, demolition and disposal in accordance with PAS2080 and the Life Cycle analysis of modules in accordance with BS ISO 15686-5.

1.4 Reporting and assurance

We will maintain the systems and processes required to undertake the reporting associated with the capital engineering delivery programme of embodied emissions in order to implement appropriate and consistent reporting. A methodology statement will be maintained and used as PR24 bespoke performance commitment decision support tool for this performance commitment. Any changes in the approach compared to previous years and will be recorded and reviewed as part of the company's assurance process.

We will be reporting on embodied carbon as a single metric inclusive of water and wastewater.

We will maintain verifiable data records for all reported emissions irrespective of whether they are included. The aim of the records is to provide an auditable method for identifying the specific emissions that are included and excluded from the return.

We will provide external third-party independent verification (by those with appropriate qualification and experience) focused on the quantification and reporting of GHG emissions associated with embodied carbon. Data will be assured following an audit by an appropriately qualified independent third party.

The company shall ensure that its outcome delivery incentive payments only relate to real performance changes and not definitional, methodological or data changes in performance commitments.

Compliance checklist

Table 1 Compliance checklist for Bespoke PC on Embodied Carbon

	Component / Element	Component R/A/G	Element R/A/G	Reason for any non-compliant component	Confidence grade
1	Methodology Statement				
2	Data Records				
3	Exclusions				
4	Third Party Assurance Statement				

Table 2 Definition parameters

Parameters	
Measurement unit and decimal places	Tonnes of carbon dioxide equivalent per million pounds spend (tCO ₂ e/£m) reported to two decimal places and the percentage reduction since 2021-22. This will also be reported as capital spend relating to embodied carbon and absolute tonnage.
Measurement timing	Reporting year
Incentive form	Revenue
Incentive type	Underperformance and outperformance
Timing of underperformance and outperformance payments	End-of-period
Price control allocation	TBC ²
Frequency of reporting	Annual
Any other relevant information	Performance commitment levels are set as percentage reduction from 2021/22 baseline. Incentive payments relate to performance changes expressed in tCO ₂ e /£m for year 2029/30 only.
Links to relevant external documents	N/A

Annex 1 Frequently Asked Questions

1. What 'direct' company actions will count as leading to a reduction in carbon emissions?

We propose a spend-based method, substituting with actual contractor tCO₂e/£m annual data where available. This means that the company actions will be based on the amount of carbon from the supply chain for a particular level of expenditure.

The 'direct' company actions that lead to emissions reductions are to implement and work towards PAS2080 during the early stages of the projects with decision making to drive down carbon reduction through optioneering to lower carbon and cost solutions using whole life models. This will be supported by a change management process to support low carbon decision making for all capital projects, and the phased collection of actual carbon data from suppliers. This progressive implementation will increase the accuracy of reporting and accountability within the business, and across the supply chain, driving carbon emissions down.

The following activities will support this process:

- Stakeholder engagement on carbon reduction delivery, whole life modelling and application of the carbon reduction hierarchy
- Optioneering to progress lower carbon solutions
- Decision making based on whole life cost and carbon
- New procurement contracts that require contractors to supply embodied carbon data
- Working with the supply chain to reduce carbon in design, materials specifications, asset procurement and construction techniques

² In our PR24 business plan, for simplicity we set out that this should be a 50:50 price control allocation between water and wastewater. Based on our final capital investment programme for PR24, this could be amended to be based on the value of expenditure in the enhancement investment programme that this metric relates to. The price control split could be 6% Water resources, 30% Water network plus, 59% Wastewater network plus and 5% Bioresources. Whilst the former approach is simpler, the latter approach reflects values of expenditure in the enhancement investment programme that this metric relates to. We leave this revision open to Ofwat to consider as part of its draft determination decision-making.

2. What reporting boundaries are to be used to determine emission levels and any subsequent change e.g. types of projects, minimum spend, material inputs etc.?

This is the “spend-based method”; the emission intensity of tCO₂e/£m. The boundaries for the baseline were set based on the entire value of goods and services, with emission factors as per the CEDA – Comprehensive Environmental Data Archive.

The reporting boundaries will be based on:

- Spend-based data using CeDA emission factors to calculate emissions, as per previous years reporting and as outlined in the PC.
- Where available actual tCO₂e/£m data from framework contractors Tier 1 and 2 the capital or embodied works undertaken within year will be requested.

3. How will changes in emissions factors be excluded from the stated performance?

A standard carbon conversion factor will be used for this metric – this is the basis on which the carbon per tonne (for a notional level of capital expenditure per annum) has been set out. Work within the supply chain will however reduce the emissions factors, so it is not proposed to fix these for the purposes of this bespoke metric. Changes to emissions factors are typical of any carbon accounting methodology. More importantly, working with suppliers to decarbonise the materials they use, and their services and processes, is a key element of this bespoke metric. Fixed emissions factors would not reflect the impact of these changes in reducing embodied carbon.

As per the Methodology Statement for Spend Analysis: “Emission factors will change with time as there is decarbonisation of materials and technologies, as the databases change over time, and with refinement of the spend data analysis.” It should be noted that £ spend value will also change as prices of materials and services are subject to inflation and pricing changes. Multiple external variables will affect the tCO₂e/£m metric, none of which can be fixed.

Section 1.1 of this document sets out how the total capital delivery spend (originally fixed at £650M per annum for the business plan submission) has been adjusted to the actual level of expenditure when using the back calculation of the emission intensity, since the business plan was submitted to Ofwat in October 2023.

4. How it will be ensured there is no overlap with the common operational GHG emissions performance commitment e.g. in the context of purchase good and services?

We exclude categories of spend and their associated emissions from this bespoke metric that are already accounted for in the common operational GHG emissions (water and wastewater) performance commitments. This includes the procurement of utility services, fuels, chemicals and any upstream activities already accounted for as part of our Scope 3 operational GHG emissions performance commitment.

5. Do you propose measuring the reduction of the 10% in carbon density target over AMP8 or just in 2029-30?

As this is a novel performance commitment, we continue to recommend that the ODI timing and form be an end-of-period revenue adjustment. We recommend that outperformance and underperformance payments should only apply as to whether the 10% in carbon density target is met in 2029-30 i.e. no ODI would apply for the first four years of AMP8 and the ODI would only apply to performance in 2029-30 (there would be no cumulative impact for the ODI).

Annex 2 Compliance Checklist

This annex sets out the criteria on which to report checklists where specified in the performance commitment definition.

Compliance for elements is reported against:

R	Not compliant with the guidance and having a material impact on reporting
A	Not compliant with the guidance and having no material impact on reporting
G	Fully compliant with the guidance

An overall RAG to be assigned for each component based on the following rules: Compliance for overall components is reported against:

R	There are one or more red elements in the component, or the combined effect of amber elements is considered to produce a material impact.
A	Half or more of the elements in the component are amber and the combined effect of the amber elements is considered not to produce a material impact
G	More than half of the elements in the component are green

For each component on the checklist, and for the overall performance measure, the company will report a confidence grade. Confidence grades provide a reasoned basis for companies to qualify the reliability and accuracy of the data.

The company shall employ a quality assured approach in the methodology used to assign confidence grades, particularly if sampling techniques are in place. The confidence grade combines elements of reliability and accuracy, for example:

A2 - Data based on sound records etc. (A, highly reliable) and estimated to be within +/- 5% (accuracy band 2)
Reliability and accuracy bands are shown in the tables below.

Reliability Band	Description
A	Sound textual records, procedures, investigations or analysis properly documented and recognised as the best method of assessment.
B	As A, but with minor shortcomings. Examples include old assessment, some missing documentation, some reliance on unconfirmed reports, some use of extrapolation.
C	Extrapolation from limited sample for which Grade A or B data is available.
D	Unconfirmed verbal reports, cursory inspections or analysis.

Accuracy band	Accuracy to or within +/-	But outside +/-
1	1%	-
2	5%	1%
3	10%	5%
4	25%	10%
5	50%	25%
6	100%	50%

X	Accuracy outside +/- 100 %, small numbers or otherwise incompatible (see table below)
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Certain reliability and accuracy band combinations are considered to be incompatible, and these are blocked out in the table below.

Compatible confidence grades				
Accuracy band	Reliability band			
	A	B	C	D
1	A1			
2	A2	B2	C2	
3	A3	B3	C3	D3
4	A4	B4	C4	D4
5			C5	D5
6				D6
X	AX	BX	CX	DX