



**The Crown Estate  
Environmental  
Reporting Criteria and  
Methodology**

FOR THE CROWN ESTATE'S SUSTAINABILITY  
AND DATA REPORTING PROGRAMME

1<sup>st</sup> April 2018 – 31<sup>st</sup> March 2019



Document prepared by:

**Henry Gilks, Senior Consultant & Oliver Light, Senior Consultant**

Carbon Credentials Energy Services Limited

E: henry.gilks@carboncredentials.com T: +44 (0) 203 053 6641

E: oliver.light@carboncredentials.com T: +44 (0) 203 053 6646

### **Disclaimer:**

#### **Important Notice**

*Whilst reasonable steps have been taken to ensure that the information contained within this report is correct, you should be aware that the information contained within it may be incomplete, inaccurate or may have become out of date. Accordingly, Carbon Credentials, its agents, contractors and sub-contractors make no warranties or representations of any kind as to the content of this report or its accuracy and, to the maximum extent permitted by law, accept no liability whatsoever for the same including, without limit, for direct, indirect or consequential loss, business interruption, loss of profits, production, contracts, goodwill or anticipated savings. Any person making use of this report does so at their own risk [and it is recommended that they seek professional advice from their own adviser whenever appropriate].*

**TABLE OF CONTENTS****SECTION I: INTRODUCTION**

1.	Introduction & Background	3
2.	The Crown Estate's Portfolio & Stakeholder Structure	4
3.	Scope & Boundary	6
4.	Building Level Energy, Water & Waste Data	9
5.	Transport and Vehicle Data	12
6.	Other Fuel Data	13
7.	Void Data	14
8.	Renewable Generation Data	15
9.	Data Check and Validation	16
10.	Greenhouse Gas Emissions Reporting Methodology	19
11.	Operating Reporting Process	27
12.	The Crown Estate Annual Reporting Process	28
13.	The Crown Carbon Indicator	29

# SECTION I: INTRODUCTION

## 1. Introduction & Background

---

The Crown Estate's role is to make sure that the land and property it invests in and manage are sustainably worked, developed and enjoyed to deliver the best value over the long term. The Crown Estate's vision is to be a progressive commercial business creating significant value beyond financial return. The Crown Estate is committed to working with partners and stakeholders to grow its business, outperforming the market whilst delivering sustainable long-term return and making a positive impact through its Total Contribution to the UK.

Carbon Credentials (CCES) has been engaged to support The Crown Estate in the collation, aggregation and analysis of environmental data for the purpose of compliance, reporting and analysing sustainability performance.

This document sets out roles and responsibilities within the sustainability data process, and details specifically how The Crown Estate and Carbon Credentials ensure that all data is prepared in a robust and auditable manner – with areas of uncertainty clearly identified, documented and managed.

This document will be updated annually to reflect evolution in The Crown Estate's environmental reporting programme. This document specifically relates to the reporting period 1<sup>st</sup> April 2018 – 31<sup>st</sup> March 2019.

## 2. The Crown Estate's Portfolio & Stakeholder Structure

Understanding the organisation structure and key stakeholders is essential when implementing and rolling out the environmental data programme. Carbon Credentials has built relationships with all stakeholders and have taken significant time and effort in appreciating the organisation structure.

### Portfolios

The Crown Estate has three main portfolio strands subject to the measurement of carbon, water and waste – Central London, Regional and Windsor.

#### Central London

The Central London portfolio includes the whole of Regent Street and much of St James's, the portfolio also includes The Crown Estate's residential properties. These are managed by Managing Agents; Regent Street Management Direct (RSMD), BNP Paribas Real Estate (BNPPRE), and Savills respectively.

#### Regional

The Regional Retail portfolio extends to 14 retail and shopping parks, three shopping centre and one leisure destination. The Crown Estate take a bespoke approach at each asset, with a long-term view to investing in, developing and delivering the best retail and leisure destination, in the right locations across the UK. The assets are managed by Savills.

#### Windsor

The Windsor estate covers approximately 6,400 hectares and includes Windsor Great Park, the Home Park of Windsor Castle, extensive forests, residential and commercial properties, golf courses, a racecourse and let farms. The estate is directly managed by The Crown Estate.

### External Stakeholders and Support

It is important to note that in addition to the Managing Agents who are appointed by The Crown Estate, there are other external stakeholders which support and contribute to the environmental data programme.

#### Carbon 2018

The Managing Agents, RSMD and BNPPRE, employ the energy bureau service Carbon 2018 for their respective portfolios. Carbon 2018's main role is to ensure procurement, bill validation and energy performance support. It is important to highlight that Carbon 2018 is appointed by the Managing Agents and not directly by The Crown Estate.

#### Savills Energy

Savills, the Managing Agent for The Crown Estate's regional portfolio, utilise their in-house energy bureau service 'Savills Energy' for procurement, bill validation and energy performance support. As with Carbon 2018, it is important to highlight that Savills Energy is appointed by the Managing Agents and not directly by The Crown Estate.

#### BNP Paribas

BNP Paribas is employed directly by The Crown Estate as the managing agent for the St James's portfolio: the portfolio is comprised of 4 million ft<sup>2</sup> of retail, office and residential space with a value of over £1 billion. As part of the programme the managing agent

provides environmental data such as meter reads to Carbon Credentials. BNP Paribas is responsible for delivering across areas of the SAP.

### Savills

Savills is employed directly by The Crown Estate as the managing agent for the Residential and Regional Portfolio. The Regional Retail portfolio extends to 14 retail and shopping parks, three shopping centre and one leisure destination. The Crown Estate take a bespoke approach at each asset, with a long-term view to investing in, developing and delivering the best retail and leisure destination, in the right locations across the UK.

### Regent Street Management Direct (RSMD)

RSMD is a part of JLL and is employed directly by The Crown Estate as the managing agent for the Regent Street portfolio: the portfolio is comprised of The Crown Estate properties north of Piccadilly Circus, including office and retail units. As part of the programme the managing agent provides environmental data such as meter reads to Carbon Credentials. RSMD is also responsible for delivering across areas of the SAP.

## 3. Scope & Boundary

---

The Carbon Credentials Crown Estate data programme includes 100% of directly managed properties and can extend to additional assets as required by certain reporting requirements, which extends the boundary of properties to be included.

Operationally, the organisation is split into the following portfolios:

### Central London and Regional

The Central London and Regional portfolios are directly managed through third party managing agents and includes some tenant energy where these costs are paid by The Crown Estate and re-charged through service charge. The portfolio's includes:

- Regent Street, which includes offices, retail and some residential in the area around Regent Street, London. This portfolio is managed by Regent Street Management Direct (RSMD).
- St James's, which includes offices and retail in the St James's area of London. This portfolio is managed by BNP Paribas.
- Regional, which consists of a number of retail/leisure parks, shopping centres, and offices. This portfolio is managed by Savills.
- Residential, which is primarily in St James's and managed by Savills.

### Windsor

The Windsor Estate is directly managed and The Crown Estate is only responsible for assets where there is a direct cost to The Crown Estate (no tenant energy is included as this is paid directly by the tenants).

- Windsor Estate, which includes 'The Royal Landscape' and some residential properties.

### Reporting Boundary

Environmental data reporting encompasses all the directly managed operations under The Crown Estate's control on its Central London, Regional, and Windsor portfolios. Within these portfolios, the cost of some tenant energy is paid by The Crown Estate and re-charged through service charge. The Windsor Estate is directly managed and The Crown Estate is only responsible for assets where there is a direct cost to The Crown Estate (no tenant energy is included as this is paid directly by the tenants).

Carbon Credentials, on behalf of the Crown Estate, collects and reports building emissions at a meter level for all energy supplies that are landlord obtained. Usage from other heating fuels (e.g. burning oils) at The Crown Estate's properties is calculated based on the amounts delivered to those properties during the year and meter reads provided by the managing agents. There is also fuel usage for fleet and machinery on the Windsor portfolio. This data is provided by the Windsor Estate finance team directly from the fuel stock database. Primary expenses data from business travel journeys by Crown Estate employees is provided by the London finance team and is used to calculate emissions from those journeys. Types of journey include: tube, train, bus, flights, taxi, ferry and car hire. Finance records void consumption for assets that fall under The Crown Estate's responsibility for the limited time between the lapse and beginning of a new lease. Due to the challenges of collecting void data an estimation technique is applied that applies a historic total. For water usage, data coverage includes water consumed at buildings where the supplies are landlord controlled. For waste generation, the data covers all buildings where The Crown Estate is responsible for the disposal of waste.



## Reporting Checks

The Crown Estate's property, asset management and finance teams provide an up-to-date list of properties across the estate throughout the year. In addition to this, a list of all properties where a service charge is collected, is taken from The Crown Estate's Horizon property database (set up to record all tenancy details and for internal users only). Windsor's finance team provides the property listing for the Windsor estate. Any updates (i.e. acquisitions, disposals, lettings, voids, floor areas etc.) to these lists throughout the year are communicated to The Crown Estate on a quarterly basis. In addition to the property lists, Carbon Credentials collects environmental data directly from the managing agents on an on-going quarterly basis – where they are able to provide their own property lists and a void schedule for properties becoming vacant/ tenanted throughout the year. Collecting data routinely also allows for a continual meter mapping process to track existing and new meters. An annual reconciliation is undertaken between the Horizon database and the information provided by the managing agents to ensure an accurate list of properties and voids is used. Regarding Joint Ventures, Carbon Credentials report on sites where The Crown Estate has operational control and exclude others where they do not, such as Princesshay (Exeter).

Importantly, quarterly meetings and on-going data collection enables Carbon Credentials to provide validation checks and highlight anomalies to the managing agents on a quarterly basis. For energy usage the more sophisticated approach via the Crown Carbon Indicator is applied where usage is calculated per square meter, this enables efficient and inefficient buildings to be identified. All data is stored on a structured database that importantly allows for a number of data streams to be collected, including half hour, invoice, meter reads and supplier statements. By being able to collect these data streams Carbon Credentials can carry out validation checks.

As in the previous reporting year, the total absolute scope 1, 2 & 3 emissions have continued to be split out due to a better understanding of the scope 3 exclusive tenant energy usage. An example of this includes Quadrant 3 where 11 MWh of consumption was re-charged to the tenant.

# SECTION II: DATA MANAGEMENT

## 4. Building Level Energy, Water & Waste Data

### Data Sources

- Electricity
- Natural gas
- Water
- Waste

The Crown Estate's data is collected and then stored on a software tool that acts as Carbon Credentials's data management platform. This specialised tool is catered towards the professional management of environmental data, whereby information can be stored at a granular level - whether this be at the meter, vehicle or asset level etc. In addition to this, the tool can store numerous data sources such as invoices and half hourly data; this permits us to carry out validation checks on the data to ensure it remains accurate. As shown below, numerous data sources are fed into the system to produce an array of outputs (please see figure 1).

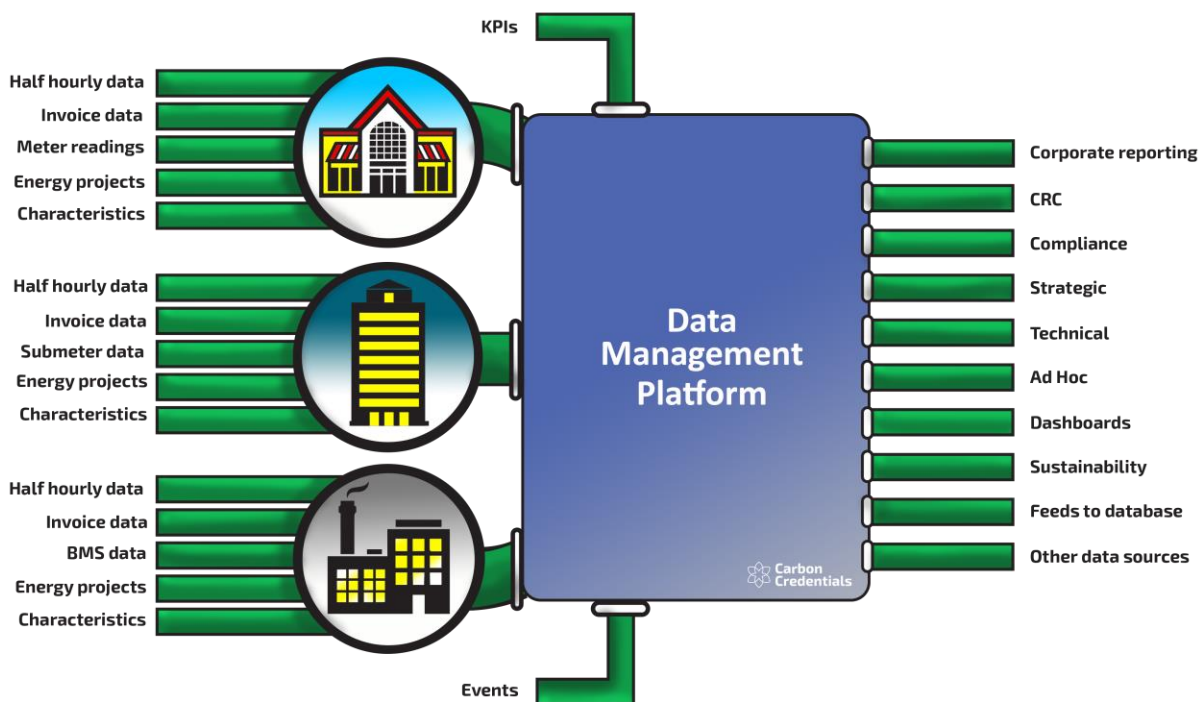


Figure 1: The data management platform inputs and outputs

### Summary of Key Processes

- St James's and Regent Street Energy Invoices: This data is currently obtained monthly, direct from the supplier using the supplier account information provided by Carbon 2018, The Crown Estate and Managing Agent.
- Regional Invoices: This data is currently obtained monthly, direct from the supplier using the supplier account information provided by Savills Energy, The Crown Estate and Managing Agent.
- Electricity meter reads for non-HH/AMR properties are sent by the Managing Agents at the end of each month/beginning of the following month, either via a monthly spread sheet or daily, directly from the data collator.
- Water and natural gas meter reads for all properties are sent by the Managing Agents at the end of each month/beginning of the following month via a monthly spread sheet.
- Regent Street and St James's HH/AMR: sent monthly by Carbon 2018.
- Regional HH/AMR: collected directly from the data aggregator, Siemens.
- Asset Listing: Sent by The Crown Estate and energy bureaus. Requested at least quarterly.
- Projects: Sent by each Managing Agent. Requested at least quarterly.
- Special Events: Sent quarterly by Carbon 2018 for Regent Street, and St James's. Regional is sent by Savills. Requested quarterly from Windsor and Residential.
- Waste Data: This is sent by each Managing Agent responsible for each portfolio on a quarterly basis.
- Sub Meter Data: This is collected by Carbon 2018 and is important for the re-charge of tenant consumption. Sub meter data is key for splitting out scope 3 emissions. The desire is to collect this quarterly.
- Tenant Data: Tenant data is sent by Savills Energy and Carbon2018 on an annual basis, this is based upon energy recharged to tenants. This allows scope 3 emissions to be split out.

## Data Flows

The data flows for each portfolio and thus Managing Agent have been created and distributed to all. These summarise the data flows of all the environmental data and Figure 2 provides an overview.

PM		Monthly Energy Invoices	Energy HH/AMR	Monthly Meter reads (Energy/water)	Waste Data
Regent Street (RSMD)	Data Flow	Obtained monthly directly from supplier. CCES working to obtain this from Carbon 2018 via spread sheet going forward.	Sent monthly by Carbon 2018. CCES to work in automating this for day +1.	Spread sheet sent direct from RSMD monthly.	Sent quarterly in spread sheet form from RSMD.
	Contact	<b>Suppliers:</b> Numerous <b>Carbon 2018</b>	<b>Carbon 2018</b>	<b>RSMD</b>	<b>RSMD</b>
St James's (BNPPRE)	Data Flow	Obtained monthly directly from supplier. CCES working to obtain this from Carbon 2018 via spread sheet going forward.	Sent monthly by Carbon 2018. CCES to work in automating this for day +1.	Spread sheet sent direct from BNPPRE monthly.	Sent quarterly in spreadsheet form from BNPPRE.
	Contact	<b>Suppliers:</b> Numerous <b>Carbon 2018</b>	<b>Carbon 2018</b>	<b>BNPPRE</b>	<b>BNPPRE</b>
Regional (Savills)	Data Flow	Obtained directly from monthly supplier.	Collected directly from data aggregator.	Sent quarterly in spreadsheet form from Savills.	Sent quarterly in spreadsheet form from Savills.
	Contact	<b>Suppliers:</b> Numerous	<b>Siemens</b>	<b>Savills</b>	<b>Savills</b>
Residential (Savills)	Data Flow	Obtained directly from monthly supplier.	To be obtained directly from supplier monthly.	To be sent monthly by FMs.	To be sent quarterly by Savills.
	Contact	<b>Supplier:</b> Numerous	<b>Supplier:</b> Numerous	<b>Savills</b>	<b>Savills</b>
Windsor	Data Flow	Obtained directly from monthly supplier.	Obtained directly from supplier monthly.	Spreadsheet sent annually.	Spreadsheet sent annually.
	Contact	<b>Supplier:</b> Numerous but largely British Gas	<b>Supplier:</b> Numerous but largely British Gas	<b>Windsor</b>	<b>Windsor</b>

Figure 2. Summary of Data Flows and Contacts

## 5. Transport and Vehicle Data

As part of The Crown Estate's annual reporting process; the collection of transport and vehicle takes place towards the end of the financial year (between January and April). This data can be exported from the Finance team's internal database too Agresso. Employee commuting is excluded as the main part of the commute for those based at the London office is by public transport or cycle, and many of the Windsor employees live on site.

Information on how transport and vehicle data is reported can be found below:

### Windsor

- **Fleet Data:** This is captured on the Allstar system, when the driver purchases fuel using their credit card. The data is then exported and input by the Finance Team into the Agresso System.
- **Petrol Data:** The usage is measured and collected by the drivers fob, this can then be accessed and collated by the Finance Team.
- **Diesel Data:** is also processed and collected by Finance and is received by Carbon Credentials annually in a spreadsheet.

**Please Note:** Data is collected by Windsor on their fuel stock system (for transport, machinery and other handheld items). This data is viewed to be more accurate than data provided by Finance and therefore takes priority. Finance fuel stock data can be identified under category 5.

### Non-road Business Travel

- **Rail Data:** This is collected via employees' expenses and stored on the Agresso system. To best understand the total emissions, rail data includes whether the journey was:
  - I. Single or return
  - II. First or second class.
- **Vehicle (incl. Taxi) Data:** This is again collected via employees' expenses data and stored on Agresso. Where possible the engine size is documented by the Finance Team in the expenses system.

### Data Controls

Carbon Credentials carry out year on year variance checks on the data to isolate anomalies. Any anomalies identified are queried with the finance team and rectified if required. With regards to the business travel data, the methodology can be found detailed below:

#### Emissions factors

All emission factors were downloaded from: <http://www.ukconversionfactorscarbonsmart.co.uk/>

Miles to Km: Miles were converted into kilometres using the following conversion:

1 mile = 1.609344 kilometres

## 6. Other Fuel Data

---

Other fuel usage data such as diesel used in machinery or in buildings is again collected largely by Finance and provided in the form of invoices or provided directly by the supplier, for Windsor and the Central London and Regional portfolios. Carbon Credentials receive this data twice a year.

For Regent Street & Regional, Carbon Credentials receive building fuel oil usage from managing agents twice a year.

The types of other fuel usage include:

- Lubricant
- Gas Oil
- Diesel
- Engine Oil
- Kerosene

**Please Note:** Data is collected by Windsor on their fuel stock system (for transport, machinery and other handheld items). This data is viewed to be more accurate than data provided by Finance and therefore takes priority. Finance fuel stock data can be identified under category 5. This includes usage for machinery such as tractors or other handheld items, such as: unleaded, diesel or gas oil.

### Data Controls

Again Carbon Credentials review the data and carries out year on year variance checks, to identify any anomalies of the data – where there are queries outstanding, Carbon Credentials refers back to the primary evidence or supplier.

## 7. Void Data

---

The void period is the period between when a property is vacant and generating no rental income, but the landlord still has to cover overhead costs. The managing agents will inform finance and the suppliers when this takes place and the bills will subsequently be collected and paid for by the finance team.

The finance team store all void consumption data and primary evidence (in the form of invoices) on the Agresso System. The data is collated at the meter level and stores the:

- Start and end date of the usage
- The consumption for the period

This data is subsequently used in the CRC annual report, to ensure The Crown Estate has 100% coverage.

### Void data for annual reporting

Void data consists of around 3% of total supply. In the annual report, void consumption is included as an estimate based upon the void consumption for the previous year - consumption for each void meter is taken from the previous year's CRC submission. The reason for this is that void data is extremely challenging to collect in time for the publication of the annual report; hence last year's data provides a good representation of actual emissions.



## 8. Renewable Generation Data

---

Renewable generation data such as solar PV, biomass, CHP, and Fuel Cell is collected by various contacts within The Crown Estate and provided in various forms. Carbon Credentials receive this data annually. This data is collected for compliance purposes, however, it is not to be assured as a part of the annual GHG assurance process and the generation figure is not a component of the final GHG emissions.

The generation data has been excluded due to the following two scenarios:

- The majority of generation supply is tenant; meaning it does not fall under the operational control of The Crown Estate – therefore it is excluded.
- For the supply consumed by the occupied assets; the generated electricity has an emission factor of zero. This may be re-addressed in the following reporting year, based on the relevant emissions methodology.

### Central London

- Fuel Cell, CHP, and PV data are download in a spreadsheet format off esight. Data is download on a bi-annual basis.

### Windsor

- Solar PV data for Windsor is sent directly from the on-site Windsor team on an annual basis.
- Windsor installed a Biomass boiler in the 2015/16 reporting year and came online on 6<sup>th</sup> August 2015, the primary evidence for consumption is meter reads sent from the on-site team. The biomass boiler largely supplies tenant properties in the Windsor village.

# 9. Data Check and Validation

Carbon Credentials performs an ongoing validation process on data collated which is designed to highlight:

- Meters without data when data is expected
- Meters where invoice and AMR/HHM data do not align
- Meters where weekday on weekday (i.e. this Monday against last Monday) variance is outside of tolerance (typically 5%)
- Meters where Year on Year variance is outside of tolerance (typically 5% for electricity, 15% for gas)
- Consistency and variance in water data (by quarter due to invoice frequency)
- Consistency in waste trend (by quarter)

This validation process is reviewed once per month and The Crown Estate is issued a Data Receipt. This Data Receipt is a PDF report which provides an overview of all data, with gaps, issues and corrective actions highlighted.

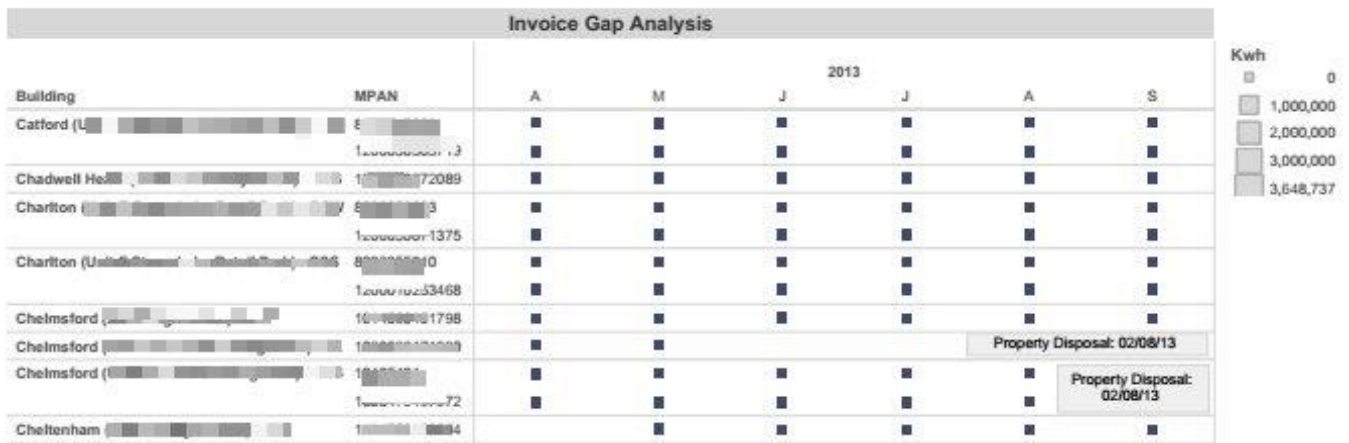


Figure 3: Invoice Data Receipt

Data Receipts are created for Half Hourly Metered (HHM)/Automatic Meter Read (AMR) and Invoice data, each to the relevant granularity. A sense of scale of consumption supports this process – either by size or by colour.

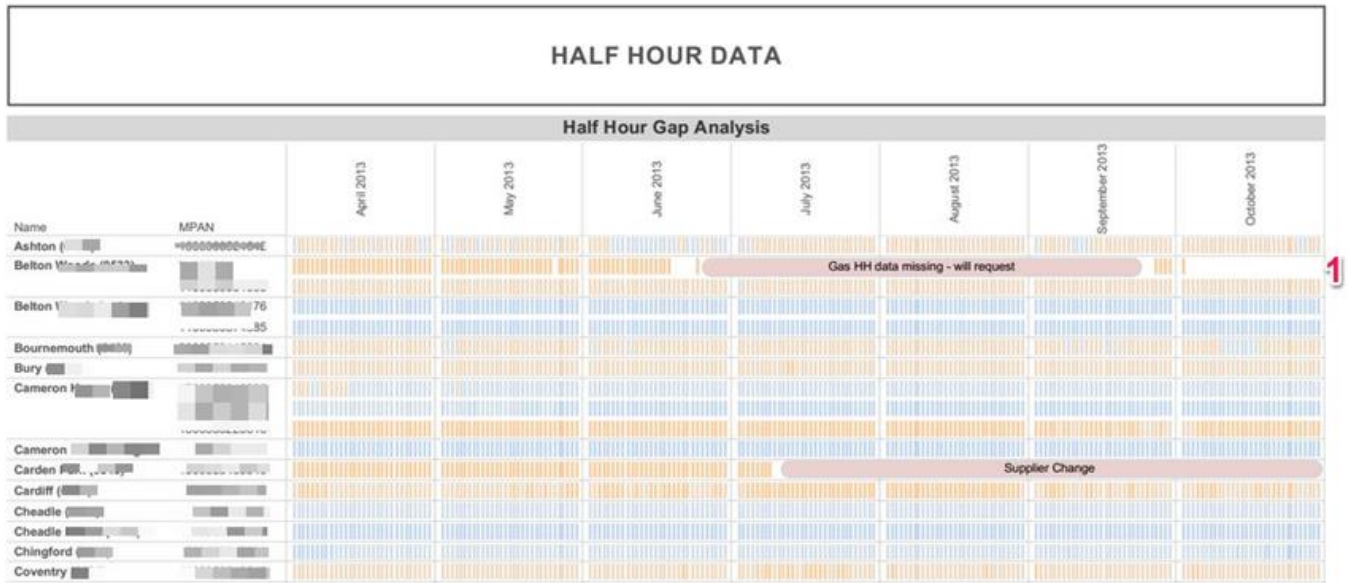


Figure 4: HHM/AMR Data Receipt

Note that for the Data Receipt to be issued to the client, the monthly Quality Assurance process must have been completed. This means that a number of other data validation checks (as listed above) have already been completed. If there are outstanding actions and queries at the time the Data Receipt is issued, these will be listed in the Data Receipt document.

Note that this process is designed to identify exceptions. Top consuming assets will be reviewed exclusively to ensure that trend and consistency with billing are clear. These two processes will be conducted on a monthly basis.

### Monthly Data Validation

As part of the data validation, monthly reports are sent out to all facilities managers at the beginning of the month. The Facilities Managers then have the opportunity within a week to comment on any anomalies or add any comments adding another layer of validation.

### Forecast and Confirmation

As a method for improving data quality, Carbon Credentials is looking at developing energy, water and waste forecasts. Part of the ongoing data validation will be comparing performance against forecast. This is used as a way of both providing forecasts to The Crown Estate as a business but also as a way of analysing expectations across the portfolio and tracking the performance of trends against that analysis.

# SECTION III: EMISSION CALCULATIONS

## 10. Greenhouse Gas Emissions Reporting Methodology

The Crown Estate discloses greenhouse gas (GHG) emissions from its UK wide operations within the company's annual report; the integrated report is aligned with the Companies Act 2006 (Strategic report and Directors report) Regulations 2013. Detailed below are the different scopes that The Crown Estate reports on:

- **Scope 1 'direct' emissions** (from fuel combustion and the operation of any facility)
- **Scope 2 'energy indirect' emissions** (from purchase of electricity, heat, steam or cooling for its own use)
- **Scope 3 'indirect energy usage'** – These are GHG emissions, other than energy indirect GHG emissions, which is a consequence of an organisation's activities, but arises from GHG sources that are externally owned or controlled. The

Crown Estate report on the following Scope 3 emission categories:

- Category 6: Business travel (see detail below)
- Category 13: Downstream leased assets (see detail below)

The Crown Estate continuously reviews and modifies current reporting practices in order to ensure its emissions disclosure is transparent, consistent, comparable, complete and accurate. In addition, The Crown Estate shall also develop and maintain robust procedures and internal controls in order to avoid the risk of any material discrepancy within the annual report.

The reporting period is from 1<sup>st</sup> April to March 31<sup>st</sup> each year; the reported data is audited annually by KPMG and they provide limited assurance on the data reported.

### Methodology

The most recent edition of the GHG Protocol Corporate Accounting and Reporting Standard is used to calculate The Crown Estate's Scope 1, 2 and 3 emissions. It is worth noting that in 2015, the GHG Protocol released additional Scope 2 Guidance to update the Corporate Standard and standardise how corporations measure Scope 2 emissions. The Scope 2 Guidance requires that we quantify and report Scope 2 emissions from purchased electricity consumption for our own use using two different methodologies: the location-based method and the market-based method. This is known as dual reporting.

For the current reporting year (2018/19), evidence has been gathered from our electricity suppliers confirming the exclusivity and traceability of the green electricity that we procure. Carbon Credentials have focused on gathering evidence such as Renewable Energy Guarantees of Origin (REGO) certificates from the suppliers responsible for the largest proportion of energy supplies. The Crown Estate's largest energy supplier, EDF, supply a large proportion of the total electricity supply and due to this we have predominately focused on their provision.

The EDF supplies are on the 'Renewable for Business' tariff which originates from a blend of UK-based sources, including hydropower, wind, solar, biomass and landfill gas. EDF obtains independent assurance of the REGO's for the tariff that is unrelated to The Crown Estate's annual assurance.

The GHG Protocol Scope 2 guidance outlines a number of quality criteria for evaluating the credentials of contractual instruments used in the market-based Scope 2 emission reporting; all assured renewable contracts meet these requirements. KPMG audit the collated evidence and provide limited assurance over The Crown Estate's total Scope 2 market based figure for the annual report.

For that market-based calculation, 81% of Crown's overall scope 2 supply was confirmed to be exclusively supplied with renewable energy by a REGO-backed tariff and therefore a 0 emission factor was applied. For the remaining 19%, we have applied the supplier

specific emission factor where the supplier is known. For a small number of supplies where the supplier specific emission factor is not known, the RE- DISS residual emission factor (published AIB) factor for the UK in line with the GHG Protocol Scope 2 data hierarchy is applied.

### Organisational Boundary

The operational control approach is used to consolidate The Crown Estate's organisational boundary in each reporting year. This approach best reflects the company's influence over its climate change impact. At the legal structure level, it is considered that the company has operational control over an operating entity if The Crown Estate has the full authority to introduce and implement its Environment Policy at the operating entity.

The same operational control approach at the legal structure level is then applied at the facility level in order to define responsibility for emission sources occurring within facilities. The Crown Estate is therefore responsible for reporting GHG emissions from all emission sources that occur within facilities over which The Crown Estate or one of its operations has the full authority to introduce and implement its Environment Policy.

The definition of a facility varies significantly between reporting standards and frameworks, as well as voluntary and regulatory GHG disclosure programmes across the world. ISO14064-1 defines a facility as: "a single installation, set of installations or production processes (stationery or mobile), which can be defined within a single geographical boundary, organisational unit or production process"

The Crown Estate interprets and applies this definition of a facility to mean:

- Any permanent or temporary installation (e.g. a building or portacabin).

For The Crown Estate, facilities therefore predominantly constitute buildings, blocks, and vehicles within their operational control.

Categorizing Emissions from Leased Assets:

1. Operating lease. The lessor has ownership and financial control of these assets but not operational control. Since the operational control approach is used, emissions from fuel combustion and the use of purchased electricity will always be scope 3 (indirect) for the lessor.
2. Finance or capital lease. The lessor does not have ownership, financial or operational control of these assets. Therefore, the associated emissions always are scope 3 (indirect) for the lessor, regardless of the type of organizational boundary approach used.

*For The Crown Estate, the operating lease is the most relevant.*

### Change in Organisational Boundary - Procedure Step

If there is a change in ownership or control at either the legal structure or facility level that could potentially impact data capture, management and/or GHG quantification procedures.

**Example: The Legal Structure Level.**

- *The General Counsel and Company Secretary identifies that The Crown Estate will be acquiring a new subsidiary within the next three months. This entity has several buildings that may need to be included within data processes. As such, the General Counsel and Company Secretary notifies Carbon Credentials and the Sustainability Manager of this change.*
- *Carbon Credentials will review the change to assure it is needed using the Reporting Boundaries Decision Tree (see Appendix 5), which follows the company's chosen operational control approach.*
- *Carbon Credentials evaluates the associated impact of the organisational boundary change on data capture, management and/or GHG quantification procedures in order to plan any necessary course of action.*
- *Carbon Credentials and the Sustainability Manager approve the organisational boundary change and works with relevant persons to ensure it is reflected in data capture, management and/or GHG quantification procedures.*

### Change in Operational Boundary - Procedure Step

A Property Manager identifies a change in emission sources within a facility or group of facilities for which they are responsible that could potentially impact data capture, management and/or GHG quantification procedures.

**Example: Substitute emission source.**

- *A Property Manager identifies that the current oil-fired heating system will be switched next month to an LPG alternative with an automatic fuel gauge. This will affect the way in which data is captured and managed, as well as the required emission factor for GHG quantification. As such, the Property Manager notifies the managing agent of this change.*
- *The Property Manager notifies Carbon Credentials and the Sustainability Manager that a change to the operational boundary is needed.*
- *Carbon Credentials reviews the change to assure it is needed using the GHG Protocol website and Reporting Boundaries Decision Tree (see Appendix 5), which follows the company's chosen operational control approach.*
- *Carbon Credentials and the Sustainability Manager evaluate the associated impact of the operational boundary change on data capture, management and/or GHG quantification procedures in order to plan any necessary course of action.*
- *Carbon Credentials and the Sustainability Manager approve the operational boundary change and works with relevant persons within the GHG Responsible Parties Register to ensure it is reflected in data capture, management and/or GHG quantification procedures.*

### Exclusions

The Crown Estate reports all emission sources under its operational control apart from de minimis sources.

## Emission Factors

Emissions factors for Scope 1, 2 and 3 GHG emission reporting are directly extracted from the DEFRA website:

<https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

The methodology is designed to select the most appropriate emission factors for sections like business travel.

For scope 2 market based reporting, a selection of emission factors are used in order to accurately calculate emissions based upon the electricity purchased from each utility supplier – please refer to page 20 for more detailed information. For reporting, the emission factors applied are used in the below order of preference based upon availability.

1. Market Based
  - a. Market-based emissions factor is specific to the electricity which has been purchased from each utility supplier. It takes into account renewable energy that has been purchased and is a more accurate reflection of carbon emissions.
  - b. These emissions factors are published by the utility suppliers and are publicly available on supplier websites.
  - c. Any supplies on a 100% renewable tariff will have a 0 emission factor applied.
2. Residual
  - a. The residual factor is the UK national grid average energy generation mix.
  - b. [https://www.aib-net.org/documents/103816/176792/AIB\\_2017\\_Residual\\_Mix\\_Results\\_v13/8eb82c2b-0fe9-5786-6b21-03e8b6830a94](https://www.aib-net.org/documents/103816/176792/AIB_2017_Residual_Mix_Results_v13/8eb82c2b-0fe9-5786-6b21-03e8b6830a94)
  - c. The residual factors is only used when the supplier energy mix is unknown.

## Estimations & Assumptions

Where possible, it is better to use primary data to calculate emissions. However, in some cases data may not be available or of sufficient quality (e.g. due to lack of measurement capability, equipment replacements, equipment failures or billing issues) in which case secondary data, such as industry-average figures, proxy data and extrapolation, can be used.

### EXTRAPOLATED

Bridging using consumption data in the invoice period - the surrounding data is converted to an average daily consumption figure and is used to estimate the missing consumption

### PROXY

Bridging using closest actual meter readings to the period - also includes using year-on-year estimation where a previous year's consumption in the same period is used to estimate the current period's consumption.

Estimation techniques should be prioritised based on the level of accuracy provided as illustrated below:



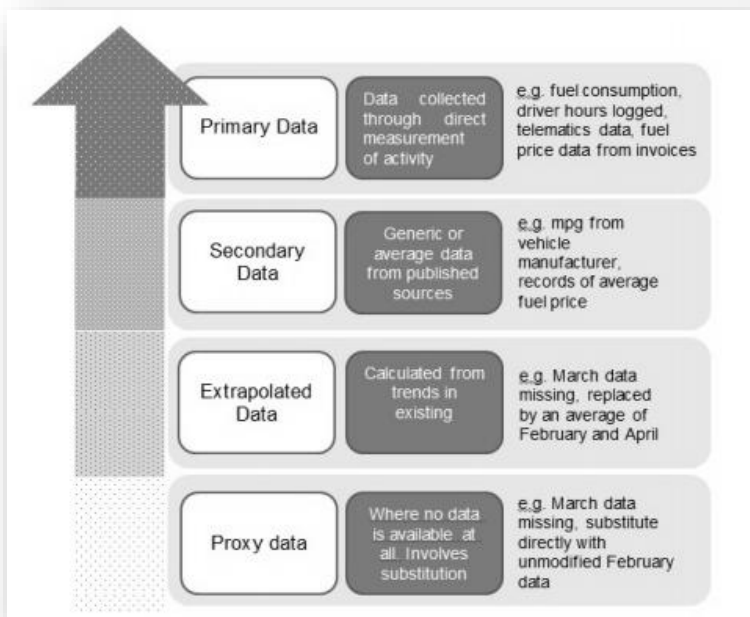


Figure 5: Data hierarchy

We also apply the pro rata technique. More information on this can be found in the CRC section.

## Joint Ventures

Increasingly, The Crown Estate has increased the number of joint ventures within the organisation.

The Crown Estate must report 100% of emissions from operating entities over which they have full authority to introduce and implement Crown operating policies (e.g. Environmental Policy or H&S Policy).

Since The Crown Estate has management control over their joint ventures, a number will be included:

- Wexford Retail LLP; Fosse Park (opened in 2014)
- Maple Investment LP: which occupies under One Eagle Place
- St James Market Haymarket LP – St James’s Market
- St James Market Regent Street LP – St James’s Market
- TCE Purple Investment LP – this is a wholly owned TCE entity. It forms part of the Regent Street structure.

Not to be included:

- Gibraltar LP – full name: The Gibraltar Limited Partnership (managed by British Land)
- The Westgate Oxford Alliance LP (managed by Land Securities)
- Crown Point, Leeds
- Ellington Estate

### Scope 3 Category 6: Business Travel

This category includes emissions from the transportation of employees for business-related activities in vehicles owned or operated by third parties, such as aircraft, trains, buses, and passenger cars. Data is provided by finance for the following business travel types:

1. Bus
2. Tube
3. Train
4. Flights
5. Taxi
6. Ferry
7. Car hire
8. Grey Fleet

#### The following tools have been used to find the distances:

1. Origin and destination points are extracted from the dataset as accurately as possible, using postcodes when available, along with country information.
2. These origins and destinations are then passed through the Google Maps API to obtain distances.
  - For all trips other than flights and ferries, the following API address is used;
    - "https://maps.googleapis.com/maps/api/distancematrix/json?origins=%s&destinations=%s&mode=transit&transit\_method=%s&key=%s"
    - Where the origin and destination are substituted for the first and second "%s" characters, the transit method is substituted for the third, and the API key is substituted for the final (e.g. "AlzaSyBT\_D6OAqsjiesJTeUN6zJ1O5BmQ8tGxWc"). This API call returns distances calculated through Google Maps for the specified travel type.
    - Transit method includes road (car), bus, train, tram and subway.
  - For flights, the following API address is used for both the origin and destination separately;
    - "https://maps.googleapis.com/maps/api/geocode/json?address=%s&key=%s"
    - Where the location is substituted for the first "%s" character and the key for the second. This API call returns latitude/longitude pairs for the specified location. The distance is then calculated as the great-circle distance between locations (i.e. airports) using the Haversine formula.
    - -Ferry trips were found by manually entering the journey in [www.google.co.uk/maps](http://www.google.co.uk/maps), using the directions feature. For flights Air Miles Calculator was used to calculate distance (<http://www.airmilescalculator.com>)
3. For each entry, a multiplying factor is applied to the distance based on whether the journey is single or return, and to account for multiple trips.
4. In each instance, API inputs are detailed alongside the outputs given by Google Maps (where applicable). The outputs are the locations that Google Maps interpreted from the inputs and are a point of reference for auditing the distances.
5. For Mileage, distance was detailed in the 'Text' column. Miles was separated out from the other text within the column to be converted into kgCO<sub>2</sub>.

6. For Fuel, litres of fuel were detailed in the 'Text' Column. Litres was separated out from the other text within the column to be converted into kgCO<sub>2</sub>
7. Estimations of the overall totals were made by finding an average spend per kilometre (£/km) for each transport type and multiplying the total spend by this figure.
8. All emission factors were downloaded from: <http://www.ukconversionfactorscarbonsmart.co.uk/>
9. Miles to Km: Miles were converted into kilometres using the following conversion:
  - 1 mile = 1.609344 kilometres

### **Scope 3 Category 13: Downstream Leased Assets**

This category includes emissions from the operation of assets that are owned by The Crown Estate (acting as lessor) and leased to other entities in the reporting year that are not already included in scope 1 or scope 2.

### **Evidence Pack**

Information relating to the annual reporting process is stored in an evidence pack; all source data such as half hour and invoice data have been signposted.

Carbon Credentials currently manage and maintain the evidence pack on behalf of the Crown Estate.

# SECTION IV: SUSTAINABILITY REPORTING

## 11. Operating Reporting Process

---

A vital part of the Environmental Reporting Programme is to ensure that the environmental data and information is used for improving operations and performance across the group. Consequently, there is a process for developing monthly operational reports which support the environmental programme and provide key information, as required, to the appropriate parts of The Crown Estate.

### Sustainability Action Plans

The Sustainability Action Plan (SAP) programme was implemented during 2013 with the main objective to enable the Central London and Regional Managing Agents to focus on 7 main areas of sustainability within the management of their assigned properties. These include:

- Customer Focus
- Governance
- Place making
- Resource Efficiency (Carbon, Water, Waste)
- Employment
- Certification
- Partnership

The vehicle for monitoring progress is currently via an excel document which is updated on a quarterly basis by the Managing Agents.

### Quarterly Data Release Process

Each quarter in preparation for the Quarterly Managing Agent Forum, Carbon Credentials send out to key contacts the portfolio and site level energy performance of all assets in The Crown Estate portfolio. The energy performance is reviewed based upon the Year to Date changes in consumption. As a part of the release, site that have shown a significant level of variation are flagged as to be investigated with the Managing Agent. Carbon Credentials work with the Managing Agents to contact the flagged sites to create a narrative around the large variance and ensure the reported consumption change is accurate. The information gathered during this process is then sent out to all key stakeholders as a quarterly performance against target data release pack.

### Quarterly Reporting to the Board

The Sustainability team reports to the Executive Committee and the Board every six months against their targets. Carbon Credentials support by providing data against three key targets:

- Reduce carbon emissions intensity by a further 40% from a 2012/13 baseline for property under our direct control (31<sup>st</sup> March 2022/23).
- Procure 100% of electricity from renewable sources (by 2022/23)
- 80% (managed assets where we have control) and 95% (developments) of waste generated to be reused or recycled (by 2022/23).

## 12. The Crown Estate Annual Reporting Process

The Crown Estate's Annual report is based on the FY 1<sup>st</sup> April – 31<sup>st</sup> March. The annual reporting process is conducted between January and May each year. The purpose of the Annual Reporting Process is to define a set of valid figures which will be published as a public statement of performance. These will be aligned to DEFRA and EPRA guidance.

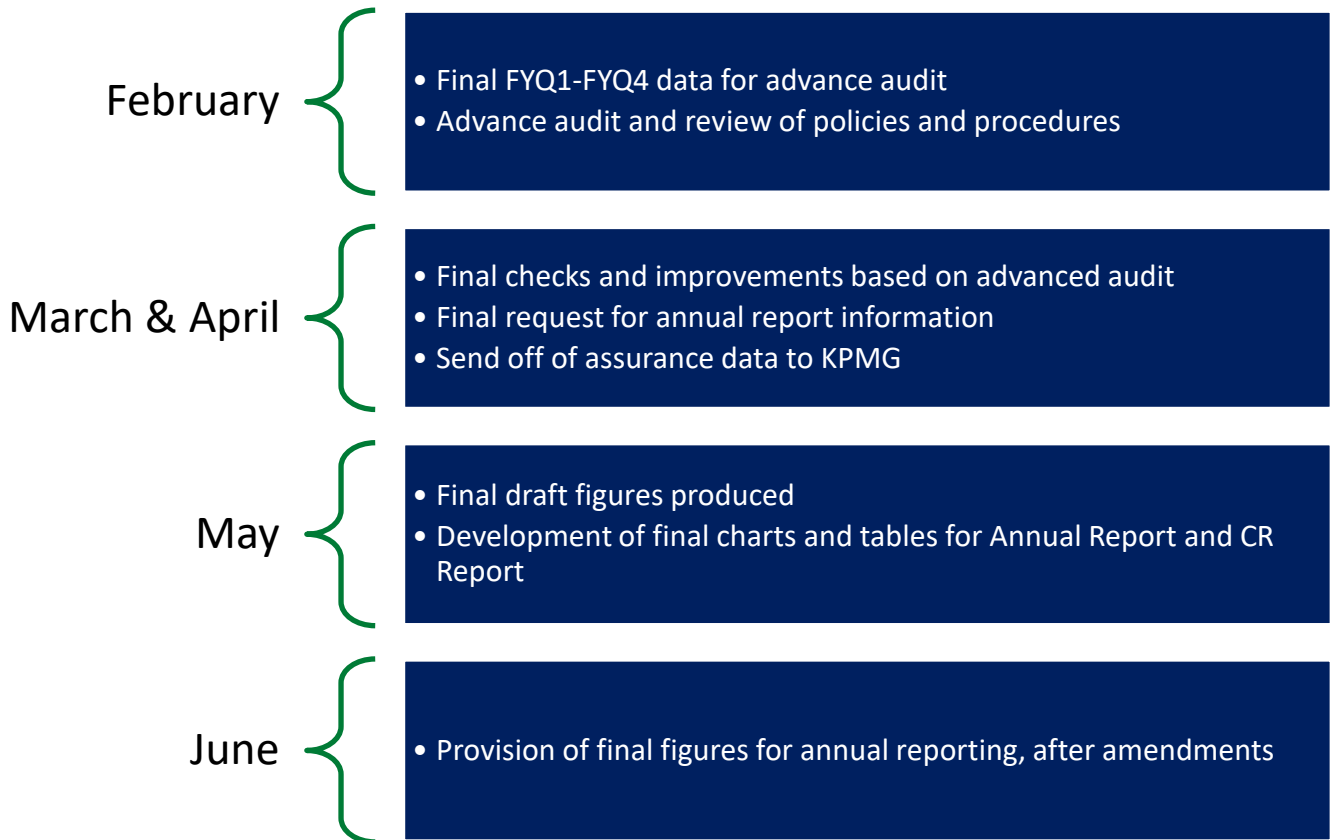


Figure 7: Annual reporting timeline

## 13. The Crown Carbon Indicator

The Crown Carbon Indicator has been developed by Carbon Credentials to track The Crown Estate's Energy Intensity performance against their set target from their baseline year, the purpose of this is to support:

1. Carbon Reporting of Targets – The Crown Estate has a 10 year emissions' intensity improvement target of 40% from 2012/13 baseline by 2022/23.
2. Operational Reporting of Site Performance
3. Portfolio Comparison

The Crown Carbon Indicator was developed to replace a previously developed benchmarking methodology. The data sources applied include:

1. Floor Areas, consisting of:
  - a. Quarterly on-going horizon report
  - b. Historic survey documents
  - c. Valuation reports (where unable to rely on survey documents)
2. Occupancy:
  - a. This information is provided by managing agents or independent surveyors
  - b. Rental values:
    - i. Where floor area information is absent, rental value has been used to calculate occupancy. Percentage occupancy is obtained by taking the actual rental income for each quarter at a site and dividing it by the total expected income of the site. This information is received on a quarterly basis.
    - ii. Quarterly on-going horizon report
    - iii. Evidence: this is a commercial component of The Crown Estate which makes it highly fluid. Since it is sensitive, Carbon Credentials do not have visibility on how it is evidenced.
  - c. Floor areas:
    - i. Where floor area information is available, occupied floor area has been divided by total building floor area to calculate occupancy. This is done quarterly.
3. Carbon Data
  - a. Quarterly on-going energy data gathered from invoices and half hourly readings.

The Crown Carbon Indicator excludes the following:

- Site that emit less than 1 tCO<sub>2</sub> per annum (di minimum threshold)
- Sites with less than 24 months of data
- Sites which came off-line during the reporting period i.e. redeveloped or sold.

There are 4 key components of the methodology as shown below:

#### Occupancy

- Ratio of % of asset which is occupied
- Not required for:
  - Retail Parks: Denominator is Car Park Spaces
  - Shopping Centres: Denominator is common parts areas (CPA)
  - Offices where Common Areas only: Denominator is common parts areas (CPA)

#### Denominator: Occupancy Adjusted Serviced Area

- Based on "appropriate" measurement. Usually:
  - Net Internal Area (NIA) for Offices
  - Common Parts Area (CPA) for Shopping Centres
  - Car Park Spaces for Retail Parks
- Energy Provision: how much area is served by energy: converts to Serviced Area by landlord utilities
- Occupancy adjustment where appropriate

#### Intensity

- Energy data converted to Carbon: GHG Protocol + Defra emissions factors
- 12 months of carbon emissions, rolling quarterly
- Carbon Emissions / "Denominator"
- Only calculated once there is 24 months of data available

#### Index

- Total Energy Intensity for The Crown Estate is calculated (Total Carbon Emissions / Total "Denominator")
- Total Energy Intensity change from the baseline is calculated in each quarter
- Calculation:  $(\text{Energy Intensity for the Quarter} - \text{Baseline Energy Intensity}) / \text{Baseline Energy Intensity} * 100$
- The same calculation is applied to each portfolio

Therefore: baseline = 100

- Quarterly Value = % change in intensity since the baseline year
- Crown Carbon Index (CCI), baseline + quarterly percentage change

Figure 9: 4 Components for the Crown Carbon Index methodology



The data flows can also be seen mapped below:

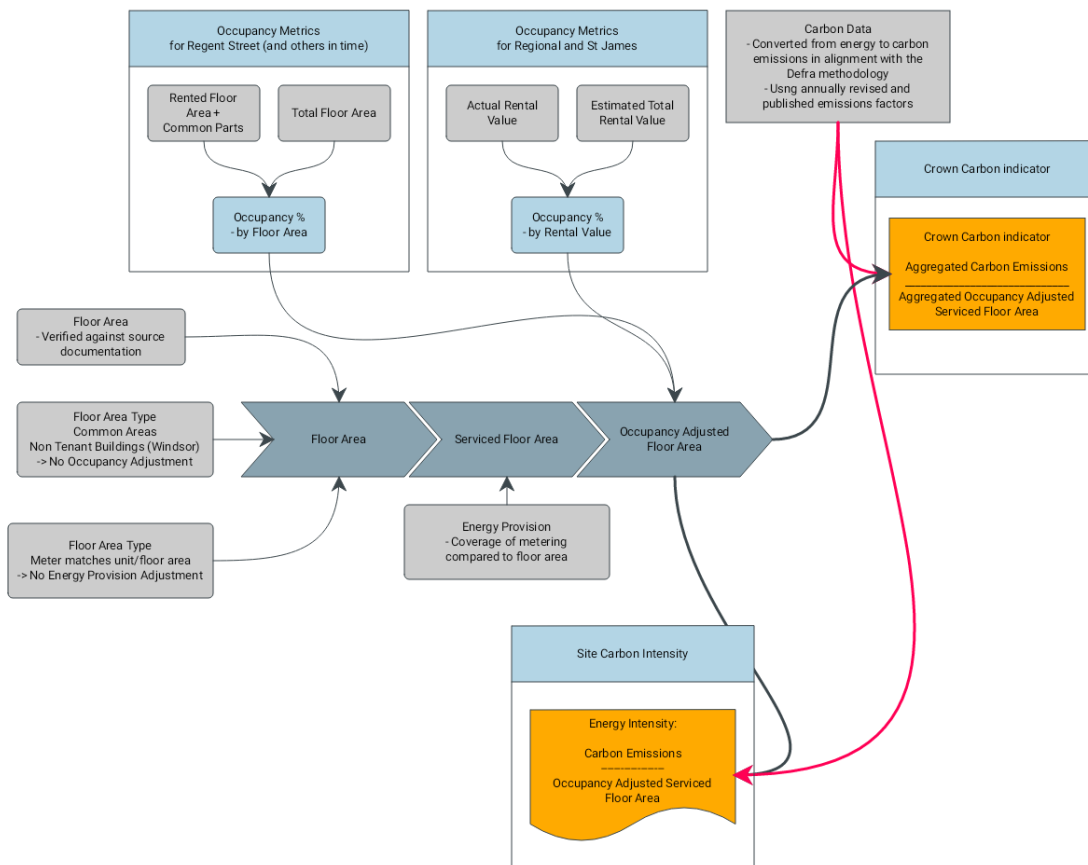


Figure 10: Flow map of Crown Carbon Index data sources

## Energy Provision

The following methodology is applied to establish how much of the floor area is served by the metering, when the metering is known to not supply 100% of the stated floor area:

1. If the energy serves the whole building or 100% of the floor area stated in the denominator, then the Energy Provision is 100%
2. If the energy serves only part of the building or the floor area stated as the denominator, then a percentage is applied to provide the amount of the building, by floor area, that the energy would cover
3. Where the Energy Provision Scenario is unknown, Carbon Credentials worked with Arup to calculate an average energy intensity based upon all assets where the Energy Provision Scenario is known and correct in the baseline year. The value calculated was 194. The value is used to calculate the landlord served floor area where the area is unknown.
4. This part of the metric will be superseded by improving the understanding of which specific floor area are served by meters and specifically allocating the floor areas to the meters.

An illustration of how the floor area split may be split up can be seen below:



Figure 11: Breakdown of floor area

## Indexing

To establish the performance of each site, all individual sites are indexed to 100.

Aggregation is complex and there is a need to scale to: building, portfolio and organisation, as well as this not all buildings are equal.

## Baseline Recalculation

The following methodology is applied for the two scenarios.

### Scenario 1: Building enters portfolio

What should happen?

- If nothing happens, there should be no change to the baseline
- Subsequent changes should then affect the CCI.

### Scenario 2: Building leaves portfolio

What should happen?

- Nothing, building's affect stops with last reporting
- No drop or change due to building departure.