Future Homes Hub

# New Homes Environmental Metrics

## Technical Manual

October 2025

# Contents

# Section 1: Background

## Understanding the context and ambition



## 1.1 Overview

The *New Homes Environmental Metrics* provide a consistent set of environmental measures for the home building sector, establishing a **common language to describe sustainability performance**.

The metrics represent a significant step forward towards the standardisation of green accounting methods for the sector. They will help enable targeted progress across key sustainability topics and set a shared standard for progress on environmental data quality. The metrics cover all key environmental themes including energy, carbon, climate, water, waste, sustainable procurement, placemaking and connectivity.

A consistent approach to environmental measurement and data processes has the potential to bring a range of sector wide benefits, from cost and risk reduction, to meeting stakeholders' expectations, and enhancing green leadership and brand.

The Future Homes Hub strongly encourages all residential developers to commit to reporting environmental data according to the methodologies and practices described in this document to realise these benefits.


## 1.2 Metrics toolkit

The metrics toolkit comprises two documents:

### Technical manual (this document)

- Definitions
- Standards and technical background
- Calculation methods
- Example calculations and method statements

### Reporting tool

- Template workbook
- Instructions
- Data input fields

## 1.3 Environmental data obligations

There are already regulatory mandates for all developers to routinely produce environmental data. Though the Building Regulations there are some detailed requirements to produce energy and carbon data (through SAP) and data on home water consumption.

In England there are data requirements to comply with Biodiversity Net Gain (BNG) through planning. Progressive Local Planning Authorities (LPAs), including the Greater London Authority (GLA), have local planning policy requirements in areas such as embodied carbon, nature and the circular economy.

There are already greater obligations for plcs and larger organisations, for example:

- Under Streamlined Energy and Carbon Reporting (SECR) quoted companies, large unquoted companies and large Limited Liability Partnerships (LLPs) must report energy and carbon data
- Under Task Force for Carbon Related Financial Disclosure (TCFD) quoted companies and other large entities must report on climate governance, risk management, strategy and metrics and targets

In addition, larger organisations may have non-regulatory obligations. Many have net zero strategies and public obligations through SBTi (Science Based Targets initiative). Others have reporting and assurance requirements associated with Sustainability Linked Loans (SLL) or green loans.

Many large developers have their own corporate environmental targets covering for example energy, carbon, water, waste and nature. The results are usually published in their annual and sustainability reports, or on their websites.

Investors often require developers to disclose data through benchmarks such as Carbon Disclosure Project (CDP) or Sustainability Accounting Standards Board (SASB). Plus, there are investor numerous benchmarks that collect and rank developers' public environmental information.

Significant metric alignment work has been ongoing between the Future Homes Hub and NextGeneration, the UK homebuilder specific benchmark.

Looking towards the future, the UK Sustainability Reporting Standards, expected in 2025, may bring in additional obligations. Investors have started to promote Task Force for Nature Related Financial Disclosure (TNFD) which is likely to have significant environmental data implications. Developers realise that most of their environmental impacts are in their supply chain, and many have started to collect detailed information to enable strategic planning.

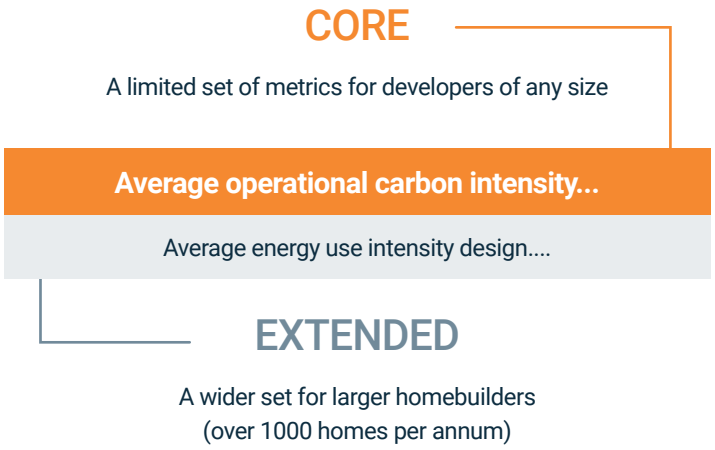
## 1.4 Data disclosure

The Hub will only disclose aggregated sector wide data. The Hub will never disclose individual developer data without permission, although developers are encouraged to publish their own data. This could be in their annual report, their sustainability report, or on their website.

## 1.5 Core and extended metrics

It is recognised that some developers, including Small or Medium-Sized Enterprises (SME) , may be relatively new to environmental reporting. The five *Core metrics* in this document are aimed at those starting their environmental reporting journey.

Larger and quoted developers may already have mature processes in place. The *Extended metrics* are aimed at this group, and it is recognised that many already report beyond the *Extended metric* set. Extended metrics methodologies are under development and will be released in the next version of this document.



## 1.6 Metrics list

| Theme | Number | Name | Unit |
|---|---|---|---|
| **HOMES THAT ARE:** | | | |
| ▪ ZERO CARBON IN USE | C1 | **Average operational carbon intensity of completed homes** | **$kgCO_2e/m^2/year$** |
| | E1 | Average energy use intensity design of completed homes | $kWh/m^2/year$ |
| | E2 | Average SAP rating of completed homes | # |
| | E3 | Average kWp for PV | $kWp/100m^2$ |
| | E4 | Completed homes with means in place to compare predicted and actual energy consumption | % |
| | E5 | Completed homes which are zero carbon ready | % |
| ▪ WATER EFFICIENT | C2 | **Average internal water efficiency of completed homes** | **lpppd** |
| **PLACES THAT ARE:** | | | |
| ▪ WELL DESIGNED, CONNECTED AND ACCESSIBLE | E6 | Completed homes built < 800m of a public transport node, accessible through active travel modes | % |
| | E7 | Completed homes with key amenities located <1000m of the home via safe pedestrian routes | % |
| | E8 | Placemaking policy and / or strategy | Commitment type |
| ▪ NATURE POSITIVE | C3 | **Total and average project biodiversity net gain (BNG)** | **BNG units & %** |
| | E9 | Number of Future Homes Hub 'Homes For Nature' measures | # |
| ▪ CLIMATE AND WATER RESILIENT | E10 | Climate change adaptation policy and / or strategy | Commitment type |
| **PRODUCTION AND CONSTRUCTION THAT IS:** | | | |
| ▪ LOW CARBON | C4 | **Total emissions (Scope 1 & 2) (Future Homes Hub modification)** | **$tCO_2e$** |
| | E11 | Total energy use (Scope 1 & 2) (Future Homes Hub modification) | MWh |
| | E12 | Upfront embodied emissions (A1-A5, homes only) | $kgCO_2e/m^2$ |
| | E13 | Whole life embodied emissions (A1-C4, development wide) | $kgCO_2e/m^2$ |
| | E14 | Whole life embodied emissions (A1-C4, homes only) | $kgCO_2e/m^2$ |
| | E15 | SBTi Commitment | Commitment type |
| ▪ RESOURCE AND WATER EFFICIENT | C5 | **Construction waste intensity** | **$Tonnes/100m^2$** |
| | E16 | Metered mains water intensity on site | $m^3/100m^2$ |
| | E17 | Proportion of construction waste diverted from landfill | % |
| ▪ RESPONSIBLE | E18 | Sustainable procurement policy and / or strategy | Commitment type |

Core metrics have 'C' prefix and Extended metrics have an 'E' prefix

## 1.7 Principles

The approach has been designed for new build residential only and excludes refurbishment and change of use.

In developing the metrics, the following principles have been applied by the Future Homes Hub:

| | |
|---|---|
| Relevance | ▪ Through extensive stakeholder management |
| Definition | ▪ Well defined metrics against credible standards |
| Quantification | ▪ Quantitative metrics wherever possible |
| Comparability | ▪ Define intensity metrics for comparability and performance tracking |
| Sector impacts | ▪ Define absolute metrics for sector impact and its reduction over time |

The following principles must be applied by the developer when collecting and reporting environmental data:

| | |
|---|---|
| Completeness | ▪ Report against all metrics if possible, and explain any exclusions |
| Data quality | ▪ High integrity developer and supplier data processes |
| Accuracy | ▪ High integrity measurement, calculation, and specification |
| Record keeping* | ▪ Record all assumptions, calculations, and methodologies used |
| Comply or explain | ▪ Follow the methodologies given or explain why you cannot |
| Transparency | ▪ Reporting in the public domain |

### Standards

For each metric, definitions and processes have been grounded in relevant and credible standards. General sustainability, carbon accounting and metric specific standards are listed in the Standards library at the back of this document.

### Operational and financial control

The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard is the prime document for carbon accounting and provides the option of using either **operational** or **financial** control for GHG reporting. The Hub approach allows for the use of both operational and financial control for carbon metrics, although the default is operational control. Developers with an established control approach cannot change this easily, especially in the near term, as it may be tied up with other pre-existing commitments.

| Operational control | Financial control |
|---|---|
| ▪ An organisation has operational control if it has the authority to introduce and implement operating policies at the operation | ▪ Financial control is the ability to direct a business's financial and operating policies, while operational control is the authority to implement operating policies<br>▪ A company has financial control if it has the right to most of the operation's benefits, risks and rewards. It is consistent with international financial accounting standards |

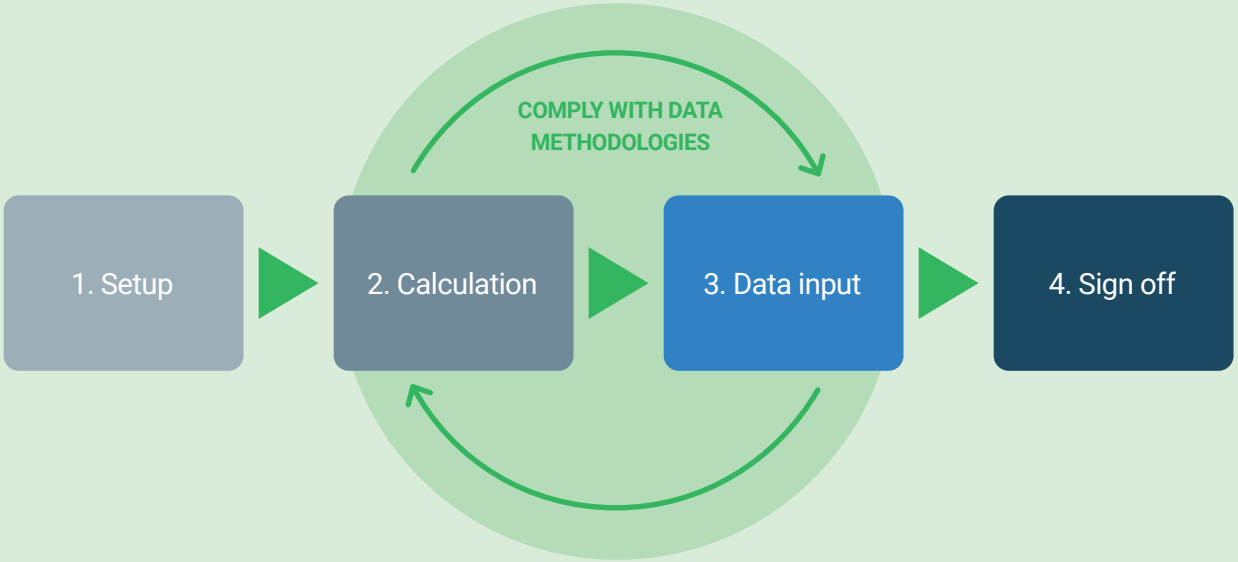
Different control approaches impact both the tonnes of carbon reported and (for some intensity metrics) the sqm associated with Joint Ventures (JV). It is recognised that both the numerator (carbon) and the denominator (sqm) will vary depending on the control approach selected. For all other (non-carbon) intensity metrics normalised to sqm, the sqm associated with JVs calculated is on the operational control basis, which is used by default.

*Record keeping must include:

- Mergers, acquisitions, and divestments impacting the organisational boundary
- Process changes, including outsourcing and insourcing of relevant activities
- Changes in calculation methods or improvements in the accuracy of factors, such as emission factors
- Discovery of significant errors
- Discovery of several cumulative errors that are collectively significant
- Any other relevant factors

## 1:8 Using the metrics

There are four stages as illustrated below. Setup and Sign off are for the whole metric set and completed once, whereas calculation and data input are needed for each individual metric.




### 1. Setup

At the setup stage the developer will enter some basic information about their operations, their background, and geographies. They will then need to input some data points:

- Reporting year
- Revenue
- Completions
- Floor area of the completions (sqm) detail

Finally, developers will confirm that they will report against all the metrics using the Future Homes Hub methodology or provide an indication that they have made use of the permitted exceptions (see detail).

### 2. Calculation & 3. Data input

This is detailed in Section 2.

Here, each individual metric and its reporting methodology is defined in detail. The limitations and assumptions around its use are explained, and the key standards it relies on are given. Each calculation and data input step are defined. An example calculation and data method statement are also provided for reference.

### 4. Sign off

Sign off has two stages:

- Input fields for capturing details of any data assurance that the developer has completed
- Sign off by the highest-ranking individual in the organisation with a good understanding of sustainability metrics and data processes

## 1.9 Additional reporting guidance

### Data quality and assurance

The Future Homes Hub approach seeks to improve data quality in a variety of ways:

- It uses relevant and credible standards to define metrics and processes
- It makes recommendations for developers to review their own data systems and processes, and those of their data suppliers
- It recommends that developers review the performance of their suppliers, and to trace back, understand, and rectify anomalies
- Waste segregation is needed to avoid cross contamination from non-target waste streams, making site control part of data quality control for this metric

There is no data assurance requirement. However, should the developer choose to complete assurance, there is a requirement to record it

### Good practice and technical background

In Annex A for each metric there are some tips on good practice, along with technical background information, to:

- Improve developer data quality systems
- Improve data quality from service providers
- Tips on what to include in data method statements
- Provide technical context for those less familiar

## 1.10 Restatement

In some cases there may be structural changes to businesses, for example a developer purchasing another developer, or divesting part of its business after having submitted metrics. This may require an individual developer to restate their metrics. This in turn has a potential impact on published Future Homes Hub metric values.

In addition, it is recognised that errors could potentially be made by developers when submitting data, and it is good practice for developers to explain those errors in subsequent disclosure cycles. It is envisaged that while individual errors aggregated across sector wide data are unlikely to be material, their potential materiality cannot be discounted.

Developers are requested to advise the Hub if it needs to restate data points from previous reporting cycles.

## 1.11 Transition arrangements

The Hub recognises that developers may have existing obligations to report using specified methodologies, for example for SBTi or SLLs. Where this is the case, in the near term the developer can report based on their current methodology for C4 Scope 1 & 2 Carbon or C5 construction waste intensity. This will reduce any intolerable reporting burden during the initial stages of the initiative.

Where there are opportunities to switch to the Hub approach we would encourage developers to take them. There are ongoing discussions regarding the feasibility of a hard stop end date to encourage industry to use Future Homes Hub metrics as standard, but these have not concluded.

For methods C1 to C3, no non-compliant data methodologies can be accepted.

## 1.12 Evolution

While this approach marks a significant forward step, it is recognised that this metric set and data processes behind it will need to evolve. Increased standardisation, consistency and comparability, while making it easier for developers (and especially SMEs) to use, will be an ongoing objective.

External guidance is regularly being updated which will require a watching brief and relevant updates. Just as a few examples:

- SAP will be replaced by the Home Energy Model (HEM) as part of the transition to the FHS
- Scotland is planning its own approach to Biodiversity Net Gain (BNG)
- The UK's Sustainability Reporting Standards (SRS) are due out imminently
- SBTi has issued a new version of the Corporate Net-Zero Standard for consultation

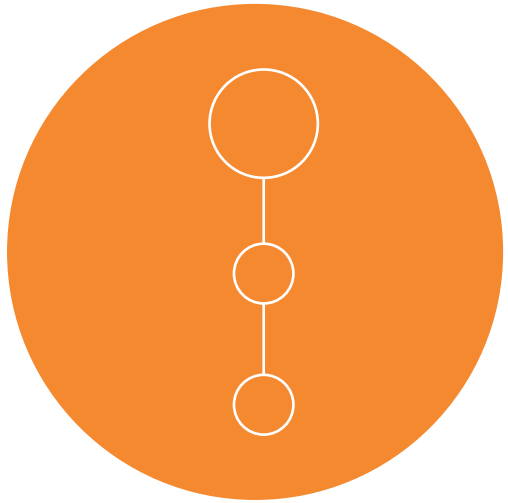
## 1.13 Aggregating and averaging developer data

The Hub will aggregate and average developer data for publication. This will be a weighted average based on sqm of build.

# Section 2: Reporting methodologies

## Working with the details





# 2.1 Setup

## DATA INPUT STEPS

Go to the Metric Tool to input the data as described below.

| | | |
|---|---|---|
| STEP 1 | Input your company name | This should correspond to the highest UK legal entity in your company structure, and the data collected should also correspond to that entity |
| STEP 2 | Give a brief general description and introduction to your organisation | This could include your company history, what it builds, its vision and its approach to sustainability |
| STEP 3 | Select the countries in mainland UK in which you operate | Whether you operate in England and / or Scotland and / or Wales |
| STEP 4 | State the start date of the year for which you are reporting data | The metrics accounting year will be aligned to the developers normal accounting period. This should be consistent for all metrics |
| STEP 5 | State the end date of the year for which you are reporting data | |
| STEP 6 | Input your revenue generated by the entity in **Step 1** | This will normally be identical to that stated in any annual reporting. If there is a need to step away from that please add text in **Step 10** |
| STEP 7 | Input your annual completions | This will normally be identical to that stated in any annual reporting. If there is a need to step away from that please add text in **Step 10** |
| STEP 8 | Complete the sqm process including for Joint Ventures (JV) **sub steps 8A to 8C** | The GIA (Gross Internal Area) of homes (in line with the SAP definition of 'heated internal floor area' as published on EPCs) for plots recognised within revenue and profit in the reporting period |
| STEP 8A | Input your sqm (excluding JVs) | On the same basis as **Step 8**. If you have no JVs, leave this field blank |
| STEP 8B | Input your sqm for your JVs | If you have no JVs leave this field blank. If you report carbon on an *operational control* basis leave this field blank |
| STEP 8C | If your business has JVs,and your business uses the *financial control* approach for GHG reporting from the GHG Protocol, input the sqm of the JVs using equity share approach | |
| STEP 9 | Confirmation that your organisation will report against all the metrics using the Future Homes Hub methodology, or an indication that you have made use of the permitted exceptions (see next page) | All developers including SMEs are encouraged to report against all the *Core metrics* All large developers are also encouraged to report all the *Extended metrics* However, there are permitted exceptions |
| STEP 10 | Optional field to include any supporting narrative on any of the setup steps that you feel is important for your business | |

## Permitted exceptions

| Core metric | Permitted exceptions | Notes |
|---|---|---|
| C1 Average annual operational carbon intensity of completed homes | None | This is mandated for all businesses. |
| C2 Average internal water efficiency of completed homes | I develop in Scotland | Reporting this metric is optional for businesses that operate wholly in Scotland, and for Scottish parts of businesses who also operate in England and / or Wales. |
| C3 Total and average v total project Biodiversity Net Gain (BNG) | I only develop in Scotland and / or Wales | The BNG metric applies in England only. |
| | I only use the small sites metric | The small sites metric is not included in this version of the Future Homes Hub metric because of challenges with its implementation. |
| C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification) | I have used a different Scope 1 & 2 methodology as my business is already publicly committed to this methodology | This is most likely to be selected by a large housebuilder with existing public commitments. Provided the developer acknowledges this and describes the alternative methodology, this is permitted. The ambition is for all developers to move towards reporting on the same basis over time. |
| | My businesses data systems are not yet mature enough to report on this metric | This is most likely to be selected by an SME builder at the start of their sustainability data journey. It is acknowledged that some businesses may not have sufficiently mature data systems to report on the more complex Scope 1 & 2 metric. |
| | Other (free text box) | Describe why you cannot report against this metric. |
| C5 Construction waste intensity | I have used a different construction waste methodology as my business is already publicly committed to this | This is most likely to be selected by a large housebuilder with existing public commitments. Provided the developer acknowledges this and describes the alternative methodology, this is permitted. The ambition is for all developers to move towards reporting on the same basis over time. |
| | My businesses data systems are not yet mature enough to report on this metric | This is most likely to be selected by an SME builder at the start of their sustainability data journey. It is acknowledged that some businesses may not have sufficiently mature data systems to report on the more complex construction waste metric. |
| | Other (free text box) | Describe why you cannot report against this metric. |

## Revenue

| Metric definition | |
|---|---|
| **Name** | Revenue in reporting year |
| **Metric** | £ |
| **Quantitative or Qualitative** | Quantitative |
| **Absolute / Intensity / Other** | Absolute |
| **Countries covered** | England, Scotland and Wales |
| **Inputs into the calculation** | Revenue in the reporting period |

### Limitations and assumptions

- Revenue is provided for context and is not used in any of the calculations
- The revenue inputted should normally be identical to the revenue stated in any annual reporting
- It should include revenue from JVs
- It is recognised that accounting practices may vary between developers to suit their business model, and so revenues may not be stated on a like for like basis
- Revenue is normally calculated by developers at the point when title of the property passes to the customer on legal completion
- It is assumed that the revenue figure been prepared correctly by the developer and no review of the data or the collection processes behind the data has been conducted

### Key standards

- Financial reporting is tightly governed by national and international regulations and standards, such as the Companies Act and IFRS standards
- These have not been reviewed as part of the development of the Future Homes Hub methodologies

## Completions

| Metric definition | |
|---|---|
| **Name** | Completions in reporting year |
| **Metric** | £ |
| **Quantitative or Qualitative** | Quantitative |
| **Absolute / Intensity / Other** | Absolute |
| **Countries covered** | England, Scotland and Wales |
| **Inputs into the calculation** | The number of homes that have completed in the reporting period |

### Limitations and assumptions

- Completions in the reporting year is provided for context and is not used in any of the calculations
- The completions inputted should normally be identical to the completions stated in any annual reporting
- It is recognised that practices to calculate completions may vary between developers to suite their business model
- It is assumed that completions calculations have been prepared correctly by the developer and no review of the data or the collection processes behind the data has been conducted

### Key standards

- RICS Practice Standards, UK, Defining completion of construction works, 1st edition guidance note

## Floor area

| Metric definition | |
|---|---|
| **Name** | Floor area of completions in reporting year |
| **Metric** | Sqm |
| **Quantitative or Qualitative** | Quantitative |
| **Absolute / Intensity / Other** | Absolute |
| **Countries covered** | England, Scotland and Wales |
| **Inputs into the calculation** | The GIA (Gross Internal Area) of homes (in line with the SAP definition of 'heated internal floor area' as published on EPCs) for plots recognised within revenue and profit in the reporting period |

### Limitations and assumptions

For bulk housing association deals / contract accounting, where homes may not be built or completed when they are recognised in accounts:

- This definition assumes that pre-construction / completion GIA is measured in line with the SAP definition of heated internal floor area, but other forms of GIA measurement are also acceptable
- This definition accepts that the GIA may not be perfectly aligned with the GIA in the EPCs when issued, but the difference is likely to be small
- For those developers most focused on delivering apartment blocks, it is recognised that the floor area for communal areas (e.g. corridors, basements, stairwells etc.) will not be captured, which may skew sqm intensity figures compared with low rise developers. Future Homes Hub will keep a watching brief on this

Where developers have JVs:

- For all sqm intensity metrics, with the exception of the case in the bullet below, the sqm of wholly owned plots will be added to the sqm of JV plots recognised within revenue and profit in the reporting period
- For carbon-based intensity metrics only and where the financial control approach from the GHG Protocol is selected, the sqm of wholly owned plots will be added to the sqm of JV plots based on equity share
- It is assumed that the sqm data has been prepared correctly by the developer and their advisors. No review of the data or the collection processes behind the data has been conducted

### Key standards

- Global Code of measuring practice, 6th edition, RICS, May 2015
- The Building Regulations 2010, Conservation of heat and power. Approved Document L, Volume 1 Dwellings, 2021 Edition incorporating 2023 amendments, (England)
- The Building Regulations 2010, Conservation of heat and power. Approved Document L, Volume 1 Dwellings, 2022 Edition incorporating 2024 amendments, (Wales)
- Scottish Government Domestic, Building Standards Division, Technical Handbook January 2025 (Scotland)
- BRE, The Government's Standard Assessment Procedure for Energy Rating of Dwellings, SAP 10.2, 2021

## 2.2 Metric C1: Methodology

### C1 Average annual operational carbon intensity of completed homes

**CALCULATION STEPS and DATA INPUT STEPS**

| | | |
|---|---|---|
| STEP 1 | ▪ Developer to collect a Dwelling Emission Rate (DER) figure (in $kgCO_2e/m^2$/year) for every completion in the reporting year*<br>▪ Collect the floor area used in SAP for every completion in the reporting year | Data can be from SAP consultants or developers own records |
| STEP 2 | ▪ Calculate the operational carbon that each completed home will emit in a year ($kgCO_2e$/year) | For each completed home, multiply the average annual operational carbon intensity figures by the floor area of the home to calculate the kilogrammes of carbon that will be emitted from that home in a year |
| STEP 3 | ▪ Calculate the average annual operational carbon intensity of completed homes ($kgCO_2e/m^2$/year) for each country you operate in (England and / or Scotland and / or Wales) and for your business as a whole | Divide the total carbon($kgCO_2e$/year) by the total floor area ($m^2$) for each mainland UK country and for your business |

Go to the Metric Tool to input the data as described below.

| | | |
|---|---|---|
| STEP 4 | ▪ Input average DER (in $kgCO_2e/m^2$/year) to the Metric Tool field for each country you operate in (England and / or Scotland and / or Wales) and for your business as a whole | Relevant boxes will appear depending on which countries you operate in and have inputted in the Setup |
| STEP 5 | ▪ Input brief description of the data collection process (your data method statement) into the Metric Tool field | The suggested contents for a data method statement is included in the *Good practice* section in Annex A |

* As HEM replaces SAP, and Scottish regulations become embedded, new measures of carbon and energy efficiency will replace DER, and this metric will need to be updated

## C1 Average annual operational carbon intensity of completed homes

| Metric definition | |
|---|---|
| **Metric** | $kgCO_2e/m^2/year$ |
| **Quantitative or Qualitative** | Quantitative |
| **Absolute / Intensity / Other** | Intensity |
| **Countries covered** | England, Scotland and Wales |
| **Inputs into the calculation** | DER figures from SAP in England, Scotland and Wales for homes completed in the reporting year |

### Limitations and assumptions

- The SAP tools in England, Scotland and Wales are used extensively and are assumed to be in general correct They have not been reviewed in detail as part of the development of this metric
- It is understood that some of the carbon conversion factors in the SAP tool are out of date. We have not included using the most up to date conversion factors in this methodology, but rather accept the outputs of SAP
- It is up to the developer to satisfy themselves as to the skill and professionalism of their SAP assessors on appointment, and to check their work during the period of the contract
- It is up to the developer and their advisors to ensure that the floor area (GIA) is measured correctly and transferred into SAP correctly
- It is recognised that the versions of SAP for England and Wales are very similar, but the Scottish version is different. For the purpose of this metric we have stated that the collated figures from England, Wales and Scotland should be aggregated together
- This method considers regulated emissions only
- This method uses a weighted average (weighted on floor area) and not a simple average

### Key standards

- The Building Regulations 2010, Conservation of heat and power. Approved Document L, Volume 1 Dwellings, 2021 Edition incorporating 2023 amendments, (England)
- The Building Regulations 2010, Conservation of heat and power. Approved Document L, Volume 1 Dwellings, 2022 Edition incorporating 2024 amendments, (Wales)
- Scottish Government Domestic, Building Standards Division, Technical Handbook January 2025 (Scotland)
- BRE, The Government's Standard Assessment Procedure for Energy Rating of Dwellings, SAP 10.2, 2021
- IFRS S1 General Requirements for Disclosure of Sustainability Related Financial Information June 2023
- Environmental Reporting Guidelines: Including streamlined energy and carbon reporting (SECR) guidance (BEIS and Defra March 2019)

## C1 Average annual operational carbon intensity of completed homes

### Example calculation

| Base data | | |
|---|---|---|
| | DER ($kgCO_2e/m^2/year$) | from SAP |
| Home 1 | 10.17 | |
| Home 2 | 16.01 | |
| Home 3 | 15.63 | |
| Home 4 | 16.57 | |

| | Floor area ($m^2$) | from SAP |
|---|---|---|
| Home 1 | 160 | |
| Home 2 | 110 | |
| Home 3 | 80 | |
| Home 4 | 60 | |
| **Total** | **410** | |

| Calculation | | |
|---|---|---|
| | Carbon ($kgCO_2e$) | = DER * Floor area |
| Home 1 | 1627.2 | |
| Home 2 | 1761.1 | |
| Home 3 | 1250.4 | |
| Home 4 | 994.2 | |
| **Total** | **5632.9** | |

| Result | | |
|---|---|---|
| | $kgCO_2e/m^2/year$ | = carbon/floor area |
| **Result** | **13.74** | |

Repeat for each country you operate in (England and / or Scotland and / or Wales) plus calculate an overall average for your business.

### Example data method statement

*Good practice* guidelines for a C1 data method statement are given in Annex A. However, there is no obligation for the developer to adhere to this, and provision of some key points (as given in the example below) is sufficient.

"Data was gathered from our three SAP consultants for all homes legally completed in the reporting year. We completed a weighted average calculation, in line with the Future Homes Hub methodology. We are working with our SAP assessors to ensure floor area calculations are consistently assessed between providers."

## 2.3 Metric C2: Methodology

### C2 Average internal water efficiency of completed homes

**CALCULATION STEPS and DATA INPUT STEPS**

**STEP 1**

- For all completed homes in the accounting year, collect their average internal water efficiency (lpppd), for each mainland UK country you operate in

If you only operate in Scotland and indicated in the **Setup** that you will not report on this metric, no further action is required

If you only operate in England and / or Wales as indicated in the **Setup**, or you only operate in Scotland but indicated you will report on this metric in the Setup, you will need to follow the calculation and data input steps

Data can be from plumbing or MEP engineer, or the developer's own records

**STEP 2**

- Calculate the average internal water efficiency of completed homes in past year (lpppd) for each mainland UK country you operate in, plus the overall average for all the countries you operate in

Both the Water Efficiency Calculator, and the Water Fittings Approach, or a combination of both, can be used. Total the average internal water efficiency of completed homes in past year, and divide by the number of homes completed (simple average) for each country you operate in (England and / or Scotland and / or Wales), plus the overall average for all the countries you operate in

Go to the Metric Tool to input the data as described below.

**STEP 3**

- Input average internal water efficiency of completed homes (lpppd) to the Metric Tool field, including a breakdown for each country in which you operate (England and / or Scotland and / or Wales)

Relevant fields will appear depending on which countries the developer operates in, and for those that operate in Scotland, whether the developer has indicated that they will report on the metric for Scotland

**STEP 4**

- Input brief description of the data collection process (your data method statement) into the Metric Tool field

The suggested contents for a data method statement is included in the *Good practice* section in **Annex A**

## C2 Average internal water efficiency of completed homes

| Metric definition | |
|---|---|
| **Metric** | Litres per person per day (lpppd) |
| **Quantitative or Qualitative** | Quantitative |
| **Absolute / Intensity / Other** | Intensity |
| **Countries covered** | England, Scotland* and Wales |
| **Inputs into the calculation** | Outputs from the Water Efficiency Calculator for new dwellings, or the Fittings Approach, in Approved Document G (England and Wales) for homes legally completed in the reporting year |

*There are no mandatory lpppd reporting requirements in Scotland. This data point is therefore optional for businesses who operate in Scotland.

### Limitations and assumptions

- For England & Wales, both the Water Efficiency Calculator for new dwellings, and the Fittings Approach, or a combination of both, can be used
- If the Water Efficiency Calculator is used the output is a home specific lpppd
- If the Fittings Approach is used and the output is "less than 125 lpppd" then 125 lpppd should be used in the calculation; and if the output is "less than 110 lpppd" then 110 lpppd should be used in the calculation
- Water efficiency calculations in England and Wales are used extensively and are assumed to be correct. They have not been reviewed as part of the development of this metric
- Calculations optional for Scottish based businesses. Relevant fields will appear in the Metric Tool depending on which countries the developer operates in, and for those that operate in Scotland, whether the developer has indicated that they will report on the metric for Scotland
- Alternatives to the England and Wales Water Efficiency Calculator for new dwellings or the Fitting Approach method are permissible in Scotland
- It is up to the developer to satisfy themselves as to the skill and professionalism of their plumbing and MEP engineers on appointment, and to check their work during the period of the contract
- Uses simple average

### Key standards

- The Building Regulations 2010, Sanitation, hot water safety and water efficiency, Approved Document G, 2015 edition incorporating 2016 and 2024 amendments (England)
- The Building Regulations 2010, Sanitation, hot water safety and water efficiency, Approved Document G, incorporating 2010 and 2018 amendments (Wales)
- IFRS S1 General Requirements for Disclosure of Sustainability Related Financial Information June 2023
- Environmental Reporting Guidelines: Including streamlined energy and carbon reporting (SECR) guidance (BEIS and Defra March 2019)

## C2 Average internal water efficiency of completed homes

### Example calculation

| Base data | |
|---|---|
| | Water efficiency (lpppd) |
| Home 1 | 120 |
| Home 2 | 121 |
| Home 3 | 123 |
| Home 4 | 116 |
| Home 5 | 125 |
| Home 6 | 125 |
| Home 7 | 125 |
| | Simple Average |
| | **122** = total of lpppd / number of homes |

Values for homes 1-4 have been derived using the Water Efficiency Calculator, and values for homes 5-7 have been derived using the Fittings Approach.

Repeat for each country you operate in (England and / or Scotland and / or Wales) plus calculate an overall average for your business.

### Example data method statement

*Good practice* guidelines for a C2 data method statement are given in Annex A (as given in the example below). However, there is no obligation for the developer to adhere to this, and provision of some key points is sufficient.

"A shared spreadsheet was set up with our plumbing engineers to enter the Water Efficiency Calculation results for all homes legally completed in the reporting year. Both the Water Efficiency Calculator, and the Fittings Approach have been used on different sites. Our in-house team have cross checked against our completion records. There were a small number of discrepancies between our central records and those of our suppliers, but these were almost all resolved. When we were satisfied, we completed a simple average calculation, in line with the Future Homes Hub methodology. England is the only UK mainland country in which we operate.

We are encouraging our business to increase the use the Water Efficiency Calculator to increase the accuracy of our assessments, and this the information we provide to customers. We are working with our plumbing engineers to check calculations are completed consistently between providers."

## 2.4 Metric C3: Methodology

### C3 Total and average project Biodiversity Net Gain (BNG)

**CALCULATION STEPS and DATA INPUT STEPS**

**STEP 1**
- Collect biodiversity units, both baseline (on site) and planned (on site, off site and statutory) for each project that achieved an LPA approved Biodiversity Gain Plan in the reporting year. You will need to collect figures for each of the three measures of BNG; area habitat, hedgerow and watercourse biodiversity units

Baseline and planned area biodiversity units are from an LPA approved Biodiversity Gain Plan and can be provided by your ecologist

Joint Ventures (JV) between two or more developers, phased sites and re-planning are subject to special treatment. This is defined in the limitations and assumptions section

**STEP 2**
- Calculate the % split for on site, off site and statutory units for each of the three measurements of BNG (recommended but optional)

Sum each credit type (on-site, off-site, statutory) across all sites and then complete a simple % split calculation on the totals

**STEP 3**
- Calculate the planned biodiversity units increase (%) using a weighted average. You will need to complete this calculation for each of the three measures of BNG

For a weighted average, firstly sum the baseline units from each of the relevant sites. Secondly, sum the planned biodiversity units from each relevant site, including all on-site, off-site and statutory units. The total biodiversity units gained is the difference between these two figures. Calculate the % increase from the total baseline units to the total planned units

Go to the Metric Tool to input the data as described below.

**STEP 4**
- Input total biodiversity units gained (number), and the on-site, off-site, statutory unit split for: area habitat; hedgerows; and watercourses, into the Metric Tool fields

**STEP 5**
- Input average biodiversity unit increase (%) for: area habitat; hedgerows; and watercourses, into the Metric Tool fields

**STEP 6**
- Input brief description of the data collection process (your data method statement) into the Metric Tool field

The suggested contents for a data method statement are included in the *Good practice* section in **Annex A**

## C3 Total and average project Biodiversity Net Gain (BNG)

| Metric definition | | |
|---|---|---|
| | **Total** | **Average** |
| **Name** | Total Biodiversity Net Gain (BNG) units gained for area habitat, hedgerow and watercourses | Average project BNG for area habitat, hedgerow and watercourse biodiversity units |
| **Metric** | Number | % |
| **Quantitative or Qualitative** | Quantitative | Quantitative |
| **Absolute / Intensity / Other** | Absolute | Intensity |
| **Countries covered** | England | England |
| **Inputs into the calculation** | Biodiversity units for the three biodiversity metrics as stated in an LPA approved Biodiversity Gain Plan, that has been approved in the reporting year. Plus, the number of these units that were delivered on site, off site and through the statutory mechanism | Biodiversity units for the three biodiversity metrics as stated in an LPA approved Biodiversity Gain Plan, that has been approved in the reporting year |

# C3 Total and average project Biodiversity Net Gain (BNG)

## Limitations and assumptions

- England only
- Deals with mandated BNG only, not voluntary
- Considers planned units only. It does not consider delivered units. There is an aspiration to consider delivered units at a later date
- It considers ***operational control*** only, not ***financial control***
- The metric provides three separate figures for each of the three measures of BNG; area habitat, hedgerow and watercourse biodiversity units
- The metric collects the unit and % split of on-site, off-site and statutory BNG units
- It is up to the developer to satisfy themselves as to the skill and professionalism of their ecologist on appointment, and to check their work during the period of the contract
- It is assumed that the Statutory Biodiversity Metric User Guides and Tools provide valid outputs. These have not been reviewed as part of this metric analysis
- The metric recognises that the Department for Environment, Food & Rural Affairs (Defra) has developed a separate methodology for small sites. This has been excluded from this version due to the challenges associated with its implementation. It will be considered for inclusion in the next version
- The methodology uses a weighted average for biodiversity units. This avoids sites with a low baseline but a large gain that could skew the data, which might otherwise occur if a simple average were used
- For phased sites built by a single developer, it is the data from the approved Biodiversity Gain Plan for the whole site that should be used. If a developer has accounted for the whole site then individual phases of the same site should be excluded in subsequent years to avoid double counting
- For phased sites built by multiple developers, only the original developer who submitted the whole site application should report to avoid double counting
- For sites where data has been submitted in previous years but is re-planned and as a consequence the Biodiversity Gain Plan changes, this should be explained and recorded in the data method statement
- Joint Ventures (JV) between two or more developers are subject to special treatment. Here the baseline and planned biodiversity units are calculated based on the developers interest in the site. This is defined as the proportion of units that the developer will deliver compared with the total units that the site will deliver. This proportion is then applied to baseline and planned units in the approved Biodiversity Gain Plan. Where there are JVs between developers and funders or developers and housing associations, under the operational control principle the developer should account for all BNG
- Where the Biodiversity Gain Plan is approved prior to transfer of land to the developer, the BNG data can be included where the date of land transfer is within the reporting year, but only where the BNG has not been accounted for elsewhere
- It is understood that Scotland is developing a distinct approach to BNG. This was not finalised at the point of the development of this metric and is therefore not included

## Key Standards

- The Statutory Biodiversity Metric Use Guide Defra July 2024
- IFRS S1 General Requirements for Disclosure of Sustainability Related Financial Information June 2023
- Environmental Reporting Guidelines: Including streamlined energy and carbon reporting (SECR) guidance (BEIS and Defra March 2019)

# C3 Total and average project Biodiversity Net Gain (BNG)

## Example calculation

% Split *On-site*, *Off-site* and *Statutory BNG units*

| Gain (BNG units) | |
|---|---|
| | |
| Site 1 | 1.7 |
| Site 2 | 4.6 |
| Site 3 | 4.1 |
| Site 4 | 3.8 |
| **Total** | **14.2** |

| Split by credit type (BNG units) | | | |
|---|---|---|---|
| | **On-site** | **Off-site** | **Statutory** |
| Site 1 | 1.7 | 0 | 0 |
| Site 2 | 3.0 | 1.2 | 0.4 |
| Site 3 | 3.2 | 0.9 | 0 |
| Site 4 | 2.5 | 1.3 | 0 |
| **Total** | **10.4** | **3.4** | **0.4** |

| Split by credit type (%) | | | |
|---|---|---|---|
| | **On-site** | **Off-site** | **Statutory** |
| **Total** | **73%** | **24%** | **3%** |

## Example calculation

Weighted average calculations for *area habitat units*

| Baseline (BNG units) | |
|---|---|
| Site 1 | 1.7 |
| Site 2 | 4.6 |
| Site 3 | 4.1 |
| Site 4 | 3.8 |
| **Total** | **14.2** |

| Planned (BNG units) | |
|---|---|
| Site 1 | 17.6 |
| Site 2 | 49.1 |
| Site 3 | 12.9 |
| Site 4 | 26.5 |
| **Total** | **106.1** |

| Increase (BNG units) | |
|---|---|
| Site 1 | 17.6 |
| Site 2 | 49.1 |
| Site 3 | 12.9 |
| Site 4 | 26.5 |

| Total increase (BNG units) | |
|---|---|
| **Total** | **14.2** |
| Increase (%) | |
| Site 1 | **10.7** |
| Site 2 | **10.3** |
| Site 3 | **46.6** |
| Site 4 | **16.7** |
| **C3 weighted average (%)** | |
| | **15.5** |

## Example data method statement

*Good practice* guidelines for a C3 data method statement are given in **Annex A**. However, there is no obligation for the developer to adhere to this, and provision of some key points (as given in the example below) is sufficient.

"We have set up a system whereby all LPA approved Biodiversity Gain Plans are sent to our central finance department to extract the data into a shared spreadsheet. After year end the calculations are completed and the spreadsheet sent to business unit Technical Directors for approval. As part of our Ecology Value programme, we are reviewing placemaking benefits of BNG and this includes a data quality review."

# 2.5 Metric C4: Methodology

## C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

### CALCULATION STEPS

| | | |
|---|---|---|
| STEP 1 | Confirm **control approach** | The control method selected will define your approach including to Principal Contractors, and Joint Venture (JV) schemes (Table C4.1) |
| STEP 2 | Use the **facility matrix** to confirm Scope 1 & 2 carbon data footprint boundary | The facility matrix (Table C4.2) colour codes emission sources and facilities to help developers define which data sets they need to collect |
| STEP 3 | Use the facility matrix to confirm Scope 1 & 2 **carbon data footprint boundary exclusions** | Vertically integrated and some categories of expected immaterial emissions are excluded (Table C4.3) |
| STEP 4 | Select either *location-based methodology* for electricity emissions (the default), or *location plus market-based* emissions | Two approaches to reporting emissions from electricity are given in the GHG Protocol Supplementary Scope 2 Guidance. *Location-based* is calculated on grid averages, whereas *market-based* is calculated on the specific supplies purchased |
| STEP 5 | Collect **activity data** | Table C4.4 details the activity data to be collected |
| STEP 6 | Calculate **Scope 1 & 2 emissions** | Multiply activity data by the relevant conversion factors to calculate the total Scope 1 & 2 carbon footprint (see Table C4.5) |

# C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

| Metric definition | |
|---|---|
| **Metric** | Tonnes $CO_2e$ |
| **Quantitative or Qualitative** | Quantitative |
| **Absolute / Intensity / Other** | Absolute |
| **Countries covered** | England, Scotland and Wales |
| **Inputs into the calculation** | kWh electricity; kWh natural gas; litres diesel; litres or kg other fuels; kg of F-gas; fleet data; UK Government greenhouse gas conversion factors |

## Key Standards

- WBCSD WRI GHG Protocol Corporate Accounting and Reporting Standard, revised edition (2004)
- WRI GHG Protocol Scope 2 Guidance (2015)
- IFRS S1 General Requirements for Disclosure of Sustainability Related Financial Information (June 2023)
- IFRS S2 Climate Related Disclosures (June 2023)
- UK Government Greenhouse Gas conversion factors, Department for nergy Security and Net Zero (updated annually)
- UK Greenhouse Gas Conversion Factors, Common Queries about the Greenhouse Gas Conversion Tool, Defra (April 2014)
- Environmental Reporting Guidelines: Including streamlined energy and carbon reporting (SECR) guidance (BEIS and Defra March 2019)

## Limitations and assumptions

- For while ***operational control*** is the default position, it is also possible to choose ***financial control***. Both are defined in the GHG Protocol, and given that the control mechanisms will be hard for developers to change in the near term, both options are available. It is recognised that the footprints for Joint Venture (JV) sites are directly impacted by the control mechanism selected
- The approach allows for developers' different business models. For example some may use HVO, build energy centres, or limit or exclude natural gas use, while others do not. This means that footprints may not be completely comparable
- This approach includes the principle of ***comply*** or ***explain***. While there is an expectation that the methodology should be followed in as complete a way as possible, there may be (relatively minor) data collection or data quality challenges that means that this is not always possible. These need to be explained by the developer as part of their data collection process
- The approach excludes vertically integrated facilities such as brick factories and timber frame manufacturing facilities. This is not fully in line with the GHG Protocol. If the developer has collected this data they should include it within their own publicly reported Scope 1 & 2 emissions
- The approach excludes part exchange properties, property management and the letting of premises to third parties on the basis of expected immateriality. If the developer has collected this data, and it is material for their business, they should include it within their own publicly reported Scope 1 & 2 emissions
- This approach includes fugitive emissions. These include from air conditioning units in the office estate. They also include escapes from heat pumps in plots before sale, and heat pumps in show homes for the duration of their use
- Emissions from electricity must be calculated on a ***location*** basis by default but with an option to also include the ***market-based*** methodology. If ***market-based*** is reported, this must be from the specific REGO based tariff electricity procured

This approach has provided some high level good practice guidance on data collection processes. However, it is recognised that practices between organisations of different sizes and maturities of approach will vary significantly, and the process will impact the numerical output. The approach requires that developers provide a description of their data collection processes including:

- Carbon emissions from energy centres, which need to be considered on a case by case basis
- Fleet emissions, where calculations depend on method of purchase, use of expenses systems or fleet provider data
- F-Gas fugitive emissions, whether estimated or measured from maintenance records
- This approach assumes all offices (head office and regional offices) are included in Scopes 1 and 2, even where leased from a landlord. Emissions can either be calculated (from real data) or estimated from the emissions from other offices (based on floor area)

## C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

| Table C4.1 | Confirm control approach | |
|---|---|---|
| **Control approach** | Operational control (default). | Financial control (by exception). |
| **Developer is Principal Contractor** | Where the developer is the Principal Contractor during the construction phase, then the developer has operational control. Therefore, the data is included in the Scope 1 & 2 footprint. | Where the developer is the Principal Contractor during the construction phase, then the developer has financial control. Therefore, the data is included in the Scope 1 & 2 footprint. |
| **Third Party Principal Contractor** | Where sites are operated by a third party Principal Contractor during the construction phase, then the developer does not have operational control. Therefore, the data is excluded from the Scope 1 & 2 footprint but should be included as Scope 3. | Where sites are operated by a third party Principal Contractor during the construction phase, while the developer does have financial control, the carbon data is Scope 3 and not Scope 1 & 2. |
| **Treatment of Joint Ventures (JV)** | JVs are to be included, to reflect the Scope 1 & 2 carbon generated by the developer from their operations in the reporting period, but excluding the contributions from the other JV partners. | JVs are to be included, to reflect % of financial control the developer has. For example, in a 50/50 JV the developer should account for 50% of the Scope 1 & 2 carbon. |

## C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

| Table C4.2 | | Facility matrix – COMPLY OR EXPLAIN | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Emission Source | | Building sites compounds | Building sites fuel combustion | Other energy consuming activities* | District heating / energy centres before adoption | Show homes and sales areas | Plots before sale | Head office and regional offices | Transport (car fleet and van fleet) |
| **Scope 1** | **Natural Gas** | Not relevant | Not relevant | **Include if relevant** | **Include if relevant** | **Include** | **Include** | **Include** | Not relevant |
| | Diesel | Not relevant | **Include** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **Include** |
| | Petrol | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **Include** |
| | HVO | Not relevant | **Include if relevant** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant |
| | Other Fuels** | Not relevant | **Include if relevant** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant |
| | F- Gas | Not relevant | Not relevant | Not relevant | Not relevant | **Include** | **Include** | **Include** | Not relevant |
| **Scope 2** | **Purchased Electricity** | **Include** | Not relevant | **Include** | **Include if relevant** | **Include** | **Include** | **Include** | **Include** |
| | Heat | Not relevant | Not relevant | **Include if relevant** | **Include if relevant** | **Include if relevant** | **Include if relevant** | **Include if relevant** | Not relevant |

***On construction sites such as community buildings, streetlights and pumping stations before adoption**

**** Such as LPG, butane and propane**

- Where it is anticipated that all developers will need to collect data the cells are colour coded green with the text *Include*
- Where it is anticipated that no developers will need to collect data the cells are colour coded grey with the text *Not relevant*
- Orange cells with the text 'Include if relevant' means that if the developer is using energy and has emission sources from those facilities, they MUST collect the data
- If the developer cannot comply with the matrix they must explain why. (Examples might include "We built no energy centres" or "We have no diesel cars")

## C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

| Table C4.3 | Facility matrix exclusions |
|---|---|
| **Vertically integrated Scope 1 & 2 emissions excluded** | Vertically integrated facilities such as timber frame factories, brick and tile factories, and logistics businesses are excluded. This will enable better comparison between developers and will avoid prejudicing those businesses with these facilities. While excluded for the purpose of the Future Homes Hub metric, under GHG Protocol rules these emissions will need to be included within publicly reported Scope 1 & 2 emissions. |
| **Immaterial Scope 1 & 2 emissions excluded** | Part exchange properties, property management and the letting of premises to third parties are excluded on the basis of expected immateriality. If the developer has this data, it can be included within their own publicly reported Scope 1 & 2 emissions. |
| **Other transport** | Business travel (grey fleet, plane, train taxi etc) is a Scope 3 category. Employee commuting is a Scope 3 category. They are therefore excluded from Scope 1 & 2 calculations. |

| Table C4.4 | Collect activity data |
|---|---|
| **Electricity** | kWh from bills, meter readings, automated readings, specialist providers, customer handover data etc. |
| **Natural gas** | kWh from bills, meter readings, automated readings, specialist providers, customer handover data etc. |
| **Site diesel** | Litres from invoices, this will include diesel generators and plant & equipment such as forklifts and telehandlers. |
| **Site other fuels** | Litres or kg from invoices, for example propane, butane and LPG used for drying out, cooking, or specialist purposes. |
| **Owned and leased car and van fleet** | Miles from fleet provider and / or expenses systems by fuel type and / or litres from fuel cards. |
| **F Gas** | Kg losses from maintenance records, or where data is not available, use estimation techniques. |
| **Head office and regional offices** | This approach assumes all offices (head office and regional offices) are included in Scope 1 & 2, even where leased from a landlord. Emissions can either be calculated (from real data) or estimate from the emissions from other offices (based on floor area). |
| **District heating / energy centres** | This should be considered on a case-by-case basis, depending on whether it comprises air source or ground source heat pump arrays, CHP, or something else. This could be gas, electricity, heat or another fuel. |

| Table C4.5 | Calculate Scope 1 & 2 emissions |
|---|---|
| **Multiply activity data by the relevant conversion factors to calculate total Scope 1 & 2 carbon** | Identify the relevant GHG conversion factors . |
| | Multiply activity data (kWh, litres etc) by the relevant conversion factors. |
| | Create an inventory of emissions by Scope, fuel and facility. |
| | Sum emissions to create an overall Scope 1 & 2 footprint. |

## C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

### DATA INPUT STEPS

| | | |
|---|---|---|
| STEP 7 | ▪ Input control approach (*operational* or *financial*) | |
| STEP 8 | ▪ Input Scope 1 emissions (tonnes $CO_2e$) | |
| STEP 9 | ▪ Input Scope 2 emissions *(location-based)* (tonnes $CO_2e$) | |
| STEP 10 | ▪ Input Scope 2 emissions *(market-based)* (tonnes $CO_2e$) | This field is optional |
| STEP 11 | ▪ Input brief description of the data collection process (your data method statement) into the Metric Tool field | See *Good practice* in **Annex A** for details |

## C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

### Below

Step 1: Select operational or financial control

Step 2: Identify emission sources and facilities for data collection

Step 3: Select 'location' or 'location and market'-based Scope 2 methodology'

### Next page

Step 4: Collect activity data

Step 5: Identify relevant GHG conversion factors and multiply by activity data to calculate carbon emissions. Collate and convert into tonnes $CO_2e$

| **Step 1** | Operational control | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Step 2** | Include relevant emission sources and facilities | | | | | | | | |
| | **Emission source** | **Building sites components** | **Building sites fuel combustion** | **Other energy*** | **District heating / energy centres before adoption** | **Show homes and sales areas** | **Plots before sale** | **Head office and regional offices** | **Transport (car fleet and van fleet)** |
| **Scope 1** | Natural gas | Not relevant | Not relevant | **Include** | Not relevant | **Include** | **Include** | **Include** | Not relevant |
| | Diesel | Not relevant | **Include** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **Include** |
| | Petrol | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **Include** |
| | HVO | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant |
| | LPG | Not relevant | **Include** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant |
| | Propane | Not relevant | **Include** | Not relevant | Not relevant | Not relevant | Not relevant | **Include** | Not relevant |
| | HFC 404A | Not relevant | Not relevant | Not relevant | Not relevant | **Include** | Not relevant | **Include** | Not relevant |
| | HFC 410A | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **Include** | **Include** | Not relevant |
| **Scope 2** | Purchased electricity | **Include** | Not relevant | **Include** | Not relevant | **Include** | **Include** | **Include** | Not relevant |
| | Heat | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant |
| **Step 3** | Location-based | | | | | | | | |

*Consuming activities on construction sites such as community buildings, streetlights and pumping stations before adoption

## C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

| Step 4 | Collect activity data | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Emission source** | **Building sites components** | **Building sites fuel combustion** | **Other energy*** | **District heating / energy centres before adoption** | **Show homes and sales areas** | **Plots before sale** | **Head office and regional offices** | **Transport (car fleet and van fleet)** |
| **Scope 1** | Natural gas (kWh) | Not relevant | Not relevant | **745,687** | Not relevant | **274,008** | **3,745,687** | **689.884** | Not relevant |
| | Diesel (litres) | Not relevant | **1,234,619** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **374,060** |
| | Petrol (litres) | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **259,040** |
| | LPG (litres) | Not relevant | **76,908** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant |
| | Propane (kg) | Not relevant | **198,629** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant |
| | HFC 404A | Not relevant | Not relevant | Not relevant | Not relevant | **2** | **16** | Not relevant | Not relevant |
| | HFC 410A | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **3** | Not relevant |
| **Scope 2** | Purchased electricity (kWh) location-based | **1,998,276** | Not relevant | **94,956** | Not relevant | **71,295** | **591,533** | **135,981** | Not relevant |

| Step 5 | Identify GHG conversion factors | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Scope 1** | Natural gas (kg $CO_2$e per kWh) | Not relevant | Not relevant | **0.22241** | Not relevant | **0.22241** | **0.22241** | **0.22241** | Not relevant |
| | Diesel (kg $CO_2$e per litre) | Not relevant | **2.66155** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **2.66155** |
| | Petrol (kg $CO_2$e per litre) | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **2.08440** |
| | LPG (kg $CO_2$e per litre) | Not relevant | **0.2145** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant |
| | Propane (kg $CO_2$e per kg) | Not relevant | **0.21411** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant |
| | HFC 404A (kg $CO_2$e per kg) | Not relevant | Not relevant | Not relevant | Not relevant | **3943** | **3943** | Not relevant | Not relevant |
| | HFC 410A (kg $CO_2$e per kg) | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **1924** | Not relevant |
| **Scope 2** | Purchased electricity (kg $CO_2$e per kWh) location-based | **0.20705** | Not relevant | **0.20705** | Not relevant | **0.20705** | **0.20705** | **0.20705** | Not relevant |

*Consuming activities on construction sites such as community buildings, streetlights and pumping stations before adoption

## C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

| | Collect activity data | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Emission source** | **Building sites components** | **Building sites fuel combustion** | **Other energy*** | **District heating / energy centres before adoption** | **Show homes and sales areas** | **Plots before sale** | **Head office and regional offices** | **Transport (car fleet and van fleet)** | **Total (kg)** | |
| **Scope 1** | Natural Gas (kg $CO_2e$) | Not relevant | Not relevant | **165,848** | Not relevant | **60,942** | **833,078** | **153** | Not relevant | **1,060,022** | **16%** |
| | Diesel (kg $CO_2e$) | Not relevant | **3,286,000** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **995,579** | **4,281,580** | **65%** |
| | Petrol (kg $CO_2e$) | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **539,943** | **539,943** | **8%** |
| | LPG (kg $CO_2e$) | Not relevant | **16,497** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **16,497** | **0%** |
| | Propane (kg $CO_2e$) | Not relevant | **42,528** | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **42,528** | **1%** |
| | HFC 404A (kg $CO_2e$) | Not relevant | Not relevant | Not relevant | Not relevant | **7,886** | **63,088** | Not relevant | Not relevant | **70,974** | **1%** |
| | HFC 410A (kg $CO_2e$) | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | **5,772** | Not relevant | **5,772** | **0%** |
| **Scope 2** | Purchased electricity (kg $CO_2e$) location-based | **413,743** | Not relevant | **19,661** | Not relevant | **14,762** | **122,477** | **28,155** | Not relevant | **598,797** | **9%** |
| **Total (kg)** | | **413,743** | **3,345,025** | **185,509** | **-** | **83,590** | **1,018,643** | **34,080** | **1,535,522** | **6,616,113** | |
| | | **6%** | **51%** | **3%** | **0%** | **1%** | **15%** | **1%** | **23%** | | |

| | |
|---|---|
| Total Scope 1 (tonnes $CO_2e$) | **6,017** |
| Total Scope 1 *location* (tonnes $CO_2e$) | **599** |
| Total Scope 1 & 2 *location* (tonnes $CO_2e$) | **6,616** |
| Total Scope 2 *market* (tonnes $CO_2e$) | **Not calculated** |

*Consuming activities on construction sites such as community buildings, streetlights and pumping stations before adoption

## Example data method statement

*Good practice* guidelines for a C4 data method statement are given in **Annex A** (as given in the example below). However, there is no obligation for the developer to adhere to this, and provision of some key points is sufficient.

**Explain position on Principal Contractors, Joint Ventures (JV) and any exclusions**

- Data has been collected across our whole business with no exclusions. We were the principal contractor for the construction phase on all our sites, and didn't operate any JVs in the reporting year

**Data collection process**

- Natural gas and electricity: For plots before sale, meter readings are taken on installation of the meters and again at handover to the customer. For all other facilities, meter readings are taken quarterly and reconciled against bills
- Site diesel and propane: Information is gathered from suppliers invoicing
- Fleet petrol and diesel: Information is gathered from fuel cards and the expenses systems
- F-Gas: There are limited maintenance records available. Data that is available has been extrapolated across the estate

**Calculation methods**

- Activity data was collected for all emission sources and multiplied by the relevant UK Government GHG conversion factors. Some estimations were made for gaps in F-Gas and diesel data

**Variations from the Future Homes Hub methodology**

- There have been no significant variations from the Hub methodology

**Outsourcing and insourcing of relevant data activities**

- All data has been gathered from within the business. A carbon consultant has been employed to complete the calculations on our behalf

**Data accuracy (this reporting cycle)**

- This cycle, we have focussed our meter readings as closely as possible to align with year-end, to improve the accuracy of gas and electricity footprints
- There are electric and hybrid vehicles in the fleet, but there is no current way of measuring their electricity use. For vehicles charged at offices use is included in the office's electricity total. For vehicles charged on site it is spread across show homes, plots and other facilities. Vehicles are also charged at employee's homes

**Data accuracy (next reporting cycle)**

- We are working with the fleet provider to improve the accuracy of fleet data for the next reporting cycle

**Discovery of errors (previous reporting cycle)**

- As this is our first year of reporting, this is not relevant

# 2.6 Metric C5: Methodology

## C5 Construction waste intensity

### CALCULATION STEPS

| | | |
|---|---|---|
| STEP 1 | ▪ *Comply* or *Explain* your **construction waste footprint parameters** | See Table C5.1– if the developer is not able to comply with these parameters, they must explain how they have constituted their waste footprint. |
| STEP 2 | ▪ Construction **waste data quality requirements** – *Comply* (with good practice) or *Explain* (data gaps) | If the developer is not able to comply with these data quality requirements, they must explain how they manage their data quality (Table C5.2) |
| STEP 3 | ▪ Confirm **construction waste footprint data boundary** | Table C5.3 details waste types included in the footprint |
| STEP 4 | ▪ Confirm **construction waste footprint data boundary exclusions** | Table C5.4 details waste types excluded from the footprint |
| STEP 5 | ▪ Collect **construction waste data** | You can ask your waste broker or contractor(s) to provide you with the right data – details in Table C5.5 |
| STEP 6 | ▪ Using GIA floor area data given at **Setup**, calculate waste intensity | This is a simple division of the total construction waste by the total floor area (in tonnes/100m$^2$) |

## C5 Construction waste intensity

This construction waste metric has been developed to reinforce the commercial benefits of resource efficiency during the construction phase of homes by focussing on a narrow subset of construction waste types.

| Metric definition | |
|---|---|
| **Metric** | tonnes/100m$^2$ |
| **Quantitative or Qualitative** | Quantitative |
| **Absolute / Intensity / Other** | Intensity |
| **Countries covered** | England, Scotland and Wales |
| **Inputs into the calculation** | Tonnes of construction waste and sqm of completed build (GIA) |

### Key Standards

- IFRS S1 General Requirements for Disclosure of Sustainability Related Financial Information June 2023
- Environmental Reporting Guidelines: Including streamlined energy and carbon reporting (SECR) guidance (BEIS and Defra March 2019)
- Guidelines for measuring and reporting construction, demolition and excavation waste, WRAP, 2010
- Construction Waste Measurement Protocol ENCORD 2016

### Limitations and assumptions

- Tightly defined waste data boundary above lowest floor slab level only
- For the purposes of this metric, only materials within the waste data boundary taken off site as a waste are to be recorded as a waste
- There are many exclusions from the footprint boundary as defined. A developer may wish to measure and report these wastes separately
- The method does not look to capture materials reused or recycled on site (e.g. brick offcuts). A developer may wish to measure and report these wastes separately
- This method uses the common understanding of the word 'inert waste' to mean fragments of brick, tile etc It does not mean the technical definition of inert which involves passing Waste Acceptance Criteria (WAC) testing
- The approach relies on good data collection processes by waste contractors and waste brokers for provision of the tonnes of construction waste
- It is recognised that good waste segregation is essential for good quality waste data
- It is recognised that it is difficult to account for all construction waste and there is a requirement for data gaps to be highlighted
- The metric numerator is in tonnes. It is recognised that waste data may be collected in different ways (bags, skips, volume etc) before being converted into tonnes. Conversion factors have not been defined. It is up to the developer working with their waste brokers and contractors to use the most appropriate conversion factors
- The approach relies on good data collection processes by developers for sqm of completed build (GIA)

## C5 Construction waste intensity

| Table C5.1 | Comply or explain your construction waste footprint parameters |
|---|---|
| **Principal Contractor** | Where sites are operated by a third party Principal Contractor during the construction phase, then there must be a contractual obligation for the Principal Contractor to provide the relevant waste data, and that data must be included. |
| **Treatment of Joint Ventures (JV)** | JVs are to be included, to reflect the waste generated and the floor area completed by the developer in the reporting period, but excluding the contributions from the other JV partners. |
| **Mixed use** | Where >90% of Gross Development Value (GDV) is residential, then all the construction phase waste should be reported. On mixed use schemes where <90% of GDV is residential, then the waste should be reported for residential elements only and other wastes (e.g. from new commercial, industrial etc) should be excluded. |

| Table C5.2 | Construction waste data quality requirements comply (with good practice) or explain (data gaps) | | | | |
|---|---|---|---|---|---|
| | **Examples** | | **Good practice for waste segregation** | **Good practice for data capture** | **Data gaps** |
| **Subcontractors building superstructure above lowest floor slab** | bricklayer<br>carpenter<br>carpet fitter<br>decorator<br>door and window fitter<br>dry liner<br>electrician | joiner<br>labourer<br>plasterer<br>plumber<br>roofer<br>screeder<br>tiler | Contractual obligation to use the skips provided by the developer are in place and effective. | Contractual obligation to provide details of the waste they remove from the site is in place and effective. | Trades taking off waste with no capture or collation of waste data. |
| **Subcontractors building substructure below the lowest floor slab and / or activities across the wider site** | demolition<br>ecological contractor<br>fencer<br>foundations<br>geotechnics<br>groundworker | landscaper<br>paving & driveway<br>piling<br>remediation<br>road and sewer<br>site clearance | Contractual obligation to dispose of their own waste separately is in place and effective. | If co-disposal into developer skips occurs, a contractual obligation to measure or estimate the waste is in place and effective. | Contractor waste co-disposal with construction waste and no collation of waste data. |

## C5 Construction waste intensity

| Table C5.3 | Confirm construction waste footprint data boundary |
|---|---|
| **Lowest floor slab level up** | All construction wastes generated from home building from UK construction sites above lowest floor slab level are included. |
| **Examples of included wastes** | Flooring and carpets<br>*(Textiles EWC 20-01-11)* |
| | Hazardous waste<br>*(EWC depends on the nature of the hazardous waste)* |
| | Inert waste (except where it has been incorporated into the works)<br>*(mixed non-hazardous EWC 17-01-07)* |
| | Light mixed waste (packaging)<br>*(mixed construction waste EWC 17-09-04)* |
| | Paint cans<br>*(Hazardous residues EWC 15-01-10*) (Non hazardous residues EWC 15-01-02)* |
| | Pallets (except where they have been repatriated for reuse)<br>*(Untreated timber EWC 17-02-01)* |
| | Plasterboard waste<br>*(gypsum-based construction materials EWC 17-08-02)* |
| | 'Simpler Recycling' wastes from construction<br>*(paper and card EWC 20-01-01; glass 20-0102 copper brass and bronze EWC 17-04-01; aluminium EWC 17-04-02; iron and steel EWC 17-04-05; mixed metals EWC 17-04-07; plastic excluding packaging EWC 17-02-03)* |
| | Timber waste<br>*(Untreated timber EWC 17-02-01) (Treated timber EWC 17-02-04*)* |
| | Other construction waste such as concrete / rebar mix, glass, damaged goods, insulation and plastic waste<br>*(EWC depends on the constituents)* |

*Indicative European Waste Codes (EWC) in brackets*

## C5 Construction waste intensity

| Table C5.4 | Confirm construction waste footprint data boundary exclusions |
|---|---|
| **Below lowest floor slab level** | All construction wastes generated from home building from UK construction sites below lowest floor slab level and from the wider construction site and the wider business are excluded |
| **Examples of excluded wastes – site preparation** | Demolition<br>*(concrete EWC 17-01-01) (bricks EWC 17-01-02) (Tiles and ceramics EWC 17-01-03) (mix hazardous 17-01-06*) (mix non-hazardous 17-01-07) (bituminous non-hazardous EWC 17-03-02) (mixed demolition EWC 19-09-04)* |
| | Soil and stones<br>*(non-hazardous soils EWC 17-05-04) (hazardous soils EWC 17-05-03*)* |
| | Waste from site clearance such as green waste and fly tipping<br>*(Biodegradable waste EWC 20-02-01)* |
| **Substructure and wider site** | Drainage<br>*(plastic EWC 17-02-03) (ceramic EWC 17-01-03)* |
| | Driveway and patio<br>*(non-hazardous soils EWC 17-05-04) (bituminous non-hazardous EWC 17-03-02)* |
| | Fencing wastes<br>*(untreated non-hazardous EWC 17-02-01) (treated hazardous 17—02-04*)* |
| | Inert where it has been incorporated into the works or 'fully recovered' by crushing to the Aggregates Quality Protocol<br>*(mixed non-hazardous EWC 17-01-07)* |
| | Substructure brick work<br>*(bricks EWC 17-01-02)* |
| | Waste from foundations and piling<br>*(non-hazardous soils EWC 17-05-04) (hazardous soils EWC 17-05-03*)* |
| **Site management** | Customer care waste<br>*(mixed demolition EWC 19-09-04)* |
| | Green waste from landscaping<br>*(Biodegradable waste EWC 20-02-01)* |
| | Road sweepings & interceptor sludges<br>*(Street-cleaning residues EWC 20-03-03)* |
| | Sanitary waste<br>*(sanitary waste is 18 01 04)* |
| | Septic tank sludge<br>*(Septic tank sludge EWC 20-03-04)* |
| | Site canteen and food waste<br>*(animal origin EWC 02-02-99) (vegetable origin EWC 02-03-99)* |
| | Site compound<br>*(Mixed municipal waste EWC 20-03-01)* |
| | Waste water effluent<br>*(aqueous liquid wastes EWC 16-10-02)* |
| **Vertical integration** | Waste from other buildings or processes outside the construction site such as timber frame factories, brick factories, off site manufacturing sites or logistics hubs<br>*(mixed construction EWC 19-09-04)* |
| **Offices** | Regional and head offices<br>*(Mixed municipal waste EWC 20-03-01)* |
| **Fire remediation** | Cladding replacement<br>*(mixed demolition EWC 19-09-04)* |

*Indicative European Waste Codes (EWC) in brackets*

## C5 Construction waste intensity

| Table C5.5 | Collect construction waste data |
|---|---|
| **Collect construction waste data** | If you have a contract with a waste management broker, they should be able to provide you with the relevant data. |
| | If you have a contract with one or multiple waste contractors, you will need to ask them to provide you with the relevant data. This might mean data from several contractors on one site for different types of waste. |
| | You should ask your broker or contractors to provide your data in metric tonnes. If data was collected in other units ($m^3$, skips of different sizes, bags of different sizes etc) then the data will need to be converted into tonnes using relevant conversion factors. |
| | When the developer is happy with the quality of the waste data provided for each key waste stream, the tonnage data from each waste stream is added together to provide the total tonnage disposed of in the reporting period. |

# C5 Construction waste intensity

## DATA INPUT STEPS

Go to the Metric Tool to input the data as described below.

| | | |
|---|---|---|
| STEP 7 | ▪ Input construction waste (in tonnes) to the Metric Tool field | |
| STEP 8 | ▪ Input construction waste intensity (in tonnes/100m$^2$) to the Metric Tool field | |
| STEP 9 | ▪ *Comply* or *explain* your waste footprint parameters into the Metric Tool fields | Comply or explain for data from sites operated by a third party Principal Contractor during the construction phase, treatment of JVs and treatment of mixed-use schemes |
| STEP 10 | ▪ *Comply* or *explain* your construction waste data quality requirements | Include descriptions of waste segregation, and waste data capture for subcontractors. Highlight any data gaps. See *Good practice* section in **Annex A** for details |
| STEP 11 | ▪ *Comply* or *explain* your construction waste footprint data boundary – inclusions and exclusions | Confirm compliance with inclusions and exclusions or explain variations |
| STEP 12 | ▪ Input brief description of the data collection process (your data method statement) into the Metric Tool field | See *Good practice* section in **Annex A** for details |

## C5 Construction waste intensity

### Example calculation

**Collect construction waste data (example only – no requirement to follow this format)**

| Waste type in tonnes | Specialist plasterboard collection | Waste contractor 1 | Waste contractor 2 | Waste contractor 3 | Dry liner 1 | Dry liner 2 | Groundworker 1 | Groundworker 2 | Specialist wood collection | Total (tonnes) | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Plasterboard waste | 450 | | | | 43 | 67 | | | | 560 | 13% |
| Light mixed waste (packaging) | | 1,056 | 277 | 1,432 | | | | | | 2765 | 63% |
| Dry recyclables (simpler recycling wastes) | | 8.9 | | | | | | | | 8.9 | 0% |
| Hazardous waste | | 433 | | 88 | | | | | 44 | 565 | 13% |
| Timber waste | | 0.4 | | | | | | | | 0.4 | 0% |
| Inert waste (except where it has been incorporated into the works) | | 32 | | | | | 154 | 266 | | 452 | 10% |
| Pallets (except where they have been repatriated for reuse) | | | | | | | | | 18 | 18 | 0% |
| Total (tonnes) | 450 | 1,530.3 | 277 | 1520 | 43 | 67 | 154 | 266 | 62 | 4,369.3 | |
| % | 10% | 35% | 6% | 35% | 1% | 2% | 4% | 6% | 1% | | |

| | | | | | |
|---|---|---|---|---|---|
| Floor area (sqm ) (from Setup) | 60,266 | Construction waste (tonnes) | 4,369.3 | Construction waste (tonnes/100m$^2$) | 7.25 |

## C5 Construction waste intensity

### Example data input

| | | |
|---|---|---|
| STEP 7 | ▪ Input construction waste generation (in tonnes) | 4,369.3 |
| STEP 8 | ▪ Input construction waste intensity (in tonnes/100m$^2$) | 7.25 |

| | Construction waste footprint parameters | Comply | Explain |
|---|---|---|---|
| STEP 9 | Data from sites operated by a third party Principal Contractor during the construction phase, is included. | No | We are Principal Contractor for all our sites except for our two Central London sites. There is no contractual obligation for our London Principal Contractors to provide waste data. We have therefore excluded the waste and the associated sqm from this cycle's waste figures. We will seek to include for the next cycle. |
| | There are either no JVs, or data from JVs has been included. | Yes | |
| | There are either no mixed-use schemes, or data from mixed use schemes has been included according to the requirement in Calculation Step 1. | Yes | |

| | Construction waste data quality requirements | | Comply | Explain |
|---|---|---|---|---|
| STEP 10 | Subcontractors building superstructure above lowest floor slab. | Contractual obligation to use the skips provided by the developer are in place and effective. | No | These are in place across c. 50% of the business. However, we have identified that even where there are central requirements some local deals on waste removal have been struck, and we will follow up on those with the businesses concerned. |
| | | Contractual obligation to provide details of the waste they remove from the site is in place and effective. | No | These are in place across c. 50% of the business. However, several subcontractors for homes have been poor in providing the required waste data returns. |
| | Subcontractors building substructure below the lowest floor slab and / or activities across the wider site. | Contractual obligation to dispose of their own waste separately is in place and effective. | No | These are in place across 100% of the business. However, we have identified instances where subcontractors are using our skips, and we are considering options. |
| | | If co-disposal into developer skips occurs, a contractual obligation to measure or estimate the waste is in place and effective. | No | These are in place across 100% of the business. However, several subcontractors for development have been poor in providing the required waste data returns. |

## C5 Construction waste intensity

### Example data input

| | Construction waste footprint data boundary | Comply | Explain |
|---|---|---|---|
| STEP 11 | All construction wastes generated from home building from UK construction sites above lowest floor slab level are included. | No | Because there is difficulty in obtaining waste data from subcontractors for homes, we believe some data isn't captured, and we estimate this to be c. 5% of the total. |
| | All construction wastes generated from home building from UK construction sites below lowest floor slab level and from the wider construction site and the wider business are excluded. | No | Because there are only partial contractual relationships in place there is a high likelihood some excluded wastes being included in the footprint inflating our figures. We do not have the data to estimate this %. |
| STEP 12 | Input brief description of the data collection process into the Data Tool field. | | Except for our two Central London sites, we identified all the subcontractors for homes who remove included wastes from our construction sites. This year we accepted their waste data on face value. In the next cycle we intend to review their waste data processes and tonnage conversion factors e.g. from skips to tonnes, or $m^3$ to tonnes. |

Good practice guidelines for a C5 data method statement are given in **Annex A**. However, there is no obligation for the developer to adhere to this, and provision of some key points (as given in the example above) is sufficient.

# 2.7 Sign off

## DATA INPUT STEPS

Go to the Metric Tool to input the data as described below.

| | | |
|---|---|---|
| STEP 1 | ▪ Select the metrics that have been subject to independent third party assurance | There is no requirement for assurance, but if conducted it should be to the Future Homes Hub Methodology |
| STEP 2 | ▪ For each assured metric, state the level of assurance, the party that completed the assurance and the standard against which the assurance was conducted | Limited assurance is good practice among developers<br>Standards such as ISAE3000 or AA1000 have been used by developers for general assurance purposes. Specialist standards such as ISO14064 for carbon have also been used<br>If assurance has been completed to an alternative methodology, please explain this |
| STEP 3 | ▪ Provide the name and role in the company of the person who has signed off your Future Home Hub Metrics submission | This should be the highest-ranking individual in the organisation with a good understanding of sustainability metrics and data processes<br>By signing, it means that to the best of the individuals' knowledge and belief, their organisation has used reasonable skill and care in meeting the principles and definitions, and following the processes, given in the Hub Metric Tool kit |

# Glossary and standards library

# Glossary

| Term | Description |
|---|---|
| Absolute metric | A measure of the total environmental impact, can be either positive or negative |
| Activity data | A term used in GHG accounting for units such as kg, litres or kWh prior to their conversion into GHG emissions |
| BNG | Biodiversity Net Gain is a government strategy that aims to improve the natural environment in England |
| CDP | CDP is an international non-profit organisation that helps companies disclose their environmental impact |
| $CO_2e$ | Carbon dioxide equivalent, enabling the warming potential of other greenhouse gases (such as methane and nitrous oxides) to be expressed in terms of carbon dioxide |
| Collate & calculate | A type of Future Homes Hub metric where information has been generated by an existing process or tool, but there remains a need to collate the information and complete a calculation |
| Core metric | A limited set of metrics for developers of any size |
| Data assurance | Where a skilled third party confirms data accuracy, completeness, and reliability |
| Data collection process | A standardised approach to data collection developed by the Future Homes Hub |
| Data methodology | A systematic approach and set of principles used to collect data |
| DER | Dwelling Emission Rate, a measure of emissions from homes derived from SAP |
| EPC | Energy Performance Certificate, a certificate detailing the energy performance of a building |
| ESG | Environment, Social and Governance |
| EWC | European Waste Catalogue – a numerical classification of different types of waste |
| Extended metric | The wider set of Future Homes Hub metrics for larger homebuilders (over 1000 homes per annum) |
| Facility matrix | A Future Homes Hub tool to help assess GHG emissions from different developers' facilities such as building sites or offices |
| FHS | Future Homes Standard, a set of building regulations paving the way for homes to be all electric and zero carbon ready |
| Final completion | Where all contractual obligations on a home have been completed including rectification of defects |
| Financial control | Financial control is the ability to direct a business's financial and operating policies, while operational control is the authority to implement operating policies |
| GEA | Gross external area, a measure of sqm in buildings |
| GIA | Gross internal area, a measure of sqm in buildings |
| Greenhouse Gas (GHG) Protocol | A set of standards and tools for measuring and reporting greenhouse gas emissions |
| HEM | Home Energy Model, the replacement for SAP |
| IFRS | International Financial Reporting Standards, the global governance body for financial standards |
| Intensity metric | A measure of the environmental impact per unit of activity e.g. sqm or £ turnover |
| ISSB | International Sustainability Standards Board, part of IFRS for sustainability standards |
| Joint Venture (JV) | A business arrangement in which two or more parties agree to pool their resources for the purpose of accomplishing a specific task |
| Legal completion | Transfer of a home to its new owner |
| Location-based emissions | An approach to reporting emissions from electricity based on grid averages |
| lpppd | Litres per person per day |
| Market-based emissions | An approach to reporting emissions from electricity based on the specific supplies purchased |

| Term | Description |
|---|---|
| Metric | A measure of performance, and of tracking performance over time. Metrics are typically quantitative but can be semi-quantitative or qualitative |
| NIA | Net internal area, a measure of floor area |
| Operational control | An organisation has operational control if it has the authority to introduce and implement operating policies at the operation |
| Permitted exceptions | Conditions where developers are permitted to exclude reporting against a metric |
| Practical (or build) completion | When a home is fully functional with only minor defects |
| PV | Photovoltaics |
| Quantitative metric | A measurable outcome expressed numerically |
| Qualitative metric | A non-numerical measure |
| REGO | Renewable Energy Guarantees of Origin – a guarantee that the source is genuinely green energy |
| SAP | Standard Assessment Procedure – a tool for quantifying the energy performance of homes |
| SASB | The Sustainability Accounting Standards Board (SASB) is an independent non-profit, whose mission is to develop and disseminate sustainability accounting standards |
| SBTi | The Science Based Targets initiative (SBTi) is a corporate climate action organisation that helps companies and financial institutions set ambitious, science-based targets to reduce greenhouse gas (GHG) emissions |
| Scope 1,2 and 3 emissions | Scope 1, 2, and 3 emissions are categories of greenhouse gas (GHG) emissions, defined by the Greenhouse Gas Protocol (GHG Protocol) to help organisations understand and manage their carbon footprint, encompassing direct emissions (Scope 1), indirect emissions from purchased energy (Scope 2), and other indirect emissions in the value chain (Scope 3) |
| SECR | UK governments Streamlined Energy and Carbon Reporting, specifying mandatory and voluntary requirements for business |
| Setup | The first stage of the Future Homes Hub data process where the developer provides general information about their business |
| Sign off | The final stage of the Future Homes Hub data process where the developer provides information about any data assurance, and signs off their returns |
| Sustainability Linked Loan | A Sustainability-Linked Loan (SLL) is a loan where the economic terms, like interest rates, are tied to a borrower's achievement of specific, predetermined Sustainability Performance Targets (SPTs) |
| TCFD | The Task Force on Climate-related Financial Disclosures (TCFD) is a framework developed by the Financial Stability Board (FSB) to help organisations disclose climate-related risks and opportunities |
| TER | In the context of UK Building Regulations and energy performance, the Target Emission Rate (TER) is the maximum allowable $CO_2$ emissions level for a new dwelling, determined by a notional building |
| TNFD | The Taskforce on Nature-related Financial Disclosures (TNFD) is a global, market-led initiative that aims to develop and deliver a risk management and disclosure framework for organisations to report and act on evolving nature-related risks |
| Transfer | A type of Future Homes Hub metric comprising simple transfer of information to confirm an action |
| Upfront embodied emissions | Upfront embodied emissions, also known as upfront carbon, refer to the greenhouse gas (GHG) emissions associated with the production and construction of materials and buildings before they are used |
| Whole life embodied emissions | Whole life embodied emissions encompass all greenhouse gas (GHG) emissions associated with a building's entire lifecycle, from material extraction to demolition and disposal, including construction, maintenance, and operation |

# Standards library

Key general and carbon standards used for the development of the metrics are described in the table below.

Metric specific standards that have been referred to are given over page by author.

| Key General and Carbon Standards | | |
|---|---|---|
| | General | Carbon |
| **IFRS** | **IFRS ISSB S1**<br>▪ In 2023 the International Financial Reporting Standards (IFRS) / International Sustainability Standards Board (ISSB) announced international sustainability standard IFRS S1 for sustainability-related financial disclosures. Many international investors already support this standard<br>▪ The UK Government has indicated that it will include IFRS S1 as part of the UK SRS (Sustainability Reporting Standards) which are a set of regulations designed to standardise how UK companies report on their environmental, social, and governance (ESG) impacts. The UK standards are expected to be published by early 2025<br>▪ The IFRS S1 standard is currently voluntary but is likely to become mandatory for UK listed companies through UK SRS. The Financial Conduct Authority (FCA) is likely to be responsible for enforcing the requirements | **IFRS ISSB S2**<br>▪ S2 is the sister document to S1, but specifically designed for climate-related disclosures |
| **Other** | **SECR**<br>▪ The Streamlined Energy and Carbon Reporting Regulation (SECR) makes it mandatory for large businesses in the UK to annually report on their energy and carbon emissions as well as any efficiency measures. However, it also considers other areas such as water, nature and waste. It covers listed companies, large companies and Limited Liability Partnerships (LLP)<br>▪ Unquoted companies or LLPs are defined as 'large' if they meet at least two of the following three criteria:<br>» An annual turnover of £36 million<br>» A yearly balance sheet of £18 million<br>» 250+ employees<br>▪ LLPs and large unquoted companies are exempt from SECR reporting if they can demonstrate their energy use during the reporting period is below 40 MWh | **Greenhouse Gas (GHG) Protocol**<br>▪ The Greenhouse Gas (GHG) Protocol is a set of standards and tools for measuring and reporting greenhouse gas emissions. It is the most established standard and is routinely used by many companies, including developers, to calculate corporate GHG emissions<br>▪ There is a secondary standard on Scope 2 which defines and enables *location* and *market-based* electricity emissions which is also commonly used |

| Author | Title | Date |
|---|---|---|
| BEIS and Defra | Environmental Reporting Guidelines: Including streamlined energy and carbon reporting (SECR) guidance | March 2019 |
| BRE | The Government's Standard Assessment Procedure for Energy Rating of Dwellings, SAP 10.2 | 2021 |
| Defra | UK Greenhouse Gas Conversion Factors, Common Queries about the Greenhouse Gas Conversion Tool | April 2014 |
| Defra | The Statutory Biodiversity Metric Use Guide | July 2024 |
| DESNZ | UK Government Greenhouse Gas conversion factors | Updated annually |
| ENCORD | Construction Waste Measurement Protocol | 2016 |
| HM Government | The Building Regulations 2010, Conservation of heat and power. Approved Document L, Volume 1 Dwellings, 2021 Edition incorporating 2023 amendments | 2023 |
| HM Government | The Building Regulations 2010, Sanitation, hot water safety and water efficiency, Approved Document G, 2015 edition incorporating 2016 and 2024 amendments | c.2024 |
| IFRS | IFRS S1 General Requirements for Disclosure of Sustainability Related Financial Information | June 2023 |
| IFRS | IFRS S2 Climate Related Disclosures | June 2023 |
| RICS | Practice Standards, UK, defining completion of construction works, 1st edition guidance note. | |
| RICS | Global Code of measuring practice, 6th edition | May 2015 |
| Scottish Government | Domestic, Building Standards Division, Technical Handbook | January 2025 |
| WBCSD WRI | GHG Protocol Corporate Accounting and Reporting Standard, revised edition | 2004 |
| Welsh Government | The Building Regulations 2010, Conservation of heat and power. Approved Document L, Volume 1 Dwellings, 2022 Edition incorporating 2024 amendments | c. 2024 |
| Welsh Government | The Building Regulations 2010, Sanitation, hot water safety and water efficiency, Approved Document G, incorporating 2010 and 2018 amendments | c. 2018 |
| WRAP | Guidelines for measuring and reporting construction, demolition and excavation waste | 2010 |
| WRI | GHG Protocol Scope 2 Guidance (2015)<br>IFRS S1 General Requirements for Disclosure of Sustainability Related Financial Information | June 2023 |

# Annex A

## Good practice and technical background

# Setup

## Good practice

- You should check practices, internal understanding and data systems in you business to ensure the consistent and accurate collection of completions information
- This should include clear definitions and clarity that the correct type of completion information reaches the correct internal stakeholder
- Training should be refreshed periodically

## Technical background

- **Types of completion**

Builders use different measures of completion:

  - » **Substantial completion:** Building can be occupied with only minor works outstanding (e.g flats common areas)
  - » **Practical (or build) completion:** Building fully functional with only minor defects
  - » **Final completion:** End of contractual obligations including rectification of defects
  - » **Legal completion:** Transfer to new owner

- **For financial and legal purposes, legal completion is the key completion type**
- **For commercial and production purposes practical and final completions are the most important**

# Setup SQM

## Good practice

- You should check practices, internal understanding and data systems in your business to ensure the consistent and accurate collection of sqm information, including for housing associations, contract accounting and JVs
- Different sqm measures may be collected for technical, commercial, production, financial and legal reasons
- There should be clear definitions and clarity that the correct type of sqm information reaches the correct internal stakeholder for its intended purpose
- Training should be refreshed periodically

## Technical background

### Measurement of floor area

RICS definitions of the different floor area measurements are given below.

- **Gross internal area (GIA):** The total area of a building, including the internal walls, measured to the internal face of the perimeter walls at each floor level. GIA is used for building cost estimation, planning applications, and construction calculations
- **Gross external area (GEA):** The total area of a building, including all enclosed spaces, measured externally at each floor level. GEA is used for planning applications, property footprint planning, and façade designs
- **Net internal area (NIA):** The usable area of a building, excluding structural elements, shared spaces, and non-usable areas. NIA is used for property lettings, lease negotiations, and rating valuations

### Final completions and equivalent build

- Floor area can be measured on a 'final completions' basis (i.e. when the building is finished) or an 'equivalent build' basis (i.e. work in progress)

### GIA in SAP

- The developer floor area figure that is most deeply analysed, and is put into the public domain, is that on the EPC
- This figure is a modified GIA, following a SAP definition of 'heated internal floor area' which includes detailed consideration around certain rules and principles including:
  - » Stairs are not included but the floor area should be measured as if there were no stairs but a floor in their place at each level
  - » Spaces, such as built-in cupboards, are included in the calculation of the floor area where these are directly accessible from the occupied area of the dwelling
  - » There are specific rules for porches, conservatories, storerooms, utility rooms, basements garages and attics. They may or may not be included in the floor area calculation mainly depending upon whether they are heated and / or directly accessible from the main parts of the home
  - » Unheated spaces clearly divided from the dwelling should not be included

## METHOD C1 Average annual operational carbon intensity of completed homes

### Good practice

**Data systems**

- Set up or check your own data systems to ensure that you have appropriate methods to collect and collate DER data consistently and accurately

**SAP Consultants**

- Check the quality of your SAP consultants work by looking for anomalies between providers for similar house types.
- This could be for the same service provider on the same or different sites, or between different service providers.

**Data method statements**

- Identify DER data collection process
- Explain calculation methods
- Explain any significant variations from the Future Homes Hub methodology
- Identify outsourcing and insourcing of relevant data activities
- In this reporting cycle, highlight areas of data quality uncertainty, and actions taken that have resulted in improvements in data accuracy
- Highlight any plans to improve accuracy for the next cycle.
- Highlight the discovery of significant individual errors, or where cumulative errors are collectively significant, from the previous reporting cycle

### Technical background

Standard Assessment Procedure (SAP) is the UK's government approved method for calculating the energy efficiency of residential buildings.

- Since 1995, all new builds in the UK are required to undergo a SAP calculation to comply with Part L of the Building Regulations (England and Wales) and the Technical Handbook (Scotland)
- This process is essential for obtaining an Energy Performance Certificate (EPC), which rates the building's energy performance
- For a new home, the main target for SAP is to get the DER Dwelling Emission Rate (DER) equal to or below the Target Emission Rate (TER)
- The DER is based upon the actual (or proposed) specification, and the TER is calculated by creating a 'notional dwelling' with the same dimensions as the one specified, but using 'reference values' for various aspects such as U-values and heating efficiencies, and then calculating that building's $CO_2$ emissions
- In England & Wales the Part L process and the SAP calculations are similar
- However 'reference values' for various aspects such as U-values and heating efficiencies, and then calculating that building's $CO_2$ emissions are different in Scotland
- The different reference values lead to a different TER. The lower the TER, the lower the DER must be for compliance
- $CO_2e$ stands for carbon dioxide equivalent and enables the warming potential of other greenhouse gases (such as methane and nitrous oxides) to be expressed in terms of carbon dioxide
- The Home Energy Model (HEM), is to be introduced in the UK to replace the SAP, which is currently used to demonstrate that new homes comply with Part L of the Building Regulations and to produce Energy Performance Certificates (EPCs)
- HEM is in many respects a much more accurate and detailed modelling tool and has been under development with continuing industry consultations for a long time. It is intended to be implemented alongside the Future Homes Standard (FHS) in 2025
- In Scotland in February 2023 there was an exemption from undertaking a DER / TER calculation where homes are fueled by electricity or thermal energy from a heat network. There is a 3 year warrant period with the potential for an extension
- In Scotland from April 2024 emission targets are no longer being set for new Building Warrants

## METHOD C2 Average internal water efficiency of completed homes

### Good practice

**Data systems**

- Set up or check your own data systems to ensure that you have appropriate methods to collect and collate lpppd data consistently and accurately

**Plumbing / MEP engineer**

- Check the quality of the work by your plumbing / MEP Engineer by looking for anomalies for similar house types
- This could be for the same service provider on the same or different sites, or between different service providers

**Data method statement**

- Identify lpppd data collection process
- Explain calculation methods
- Explain any significant variations from the Future Homes Hub methodology
- Identify outsourcing and insourcing of relevant data activities
- In this reporting cycle, highlight areas of data quality uncertainty, and actions taken that have resulted in improvements in data accuracy
- Highlight any plans to improve accuracy for the next cycle
- Highlight the discovery of significant individual errors, or where cumulative errors are collectively significant, from the previous reporting cycle

### Technical background

- **Approved Document G**
  Approved Document G provides guidance on sanitation, hot water safety, and water efficiency in buildings. However, there are differences in the regulations and guidance for England, Scotland, and Wales
- **England**
  Approved Document G in England covers cold water supply; water efficiency, hot water supply and systems; sanitary conveniences and washing facilities, bathrooms, and food preparation areas. The document includes specific requirements for water efficiency, such as the use of a water efficiency calculator for new dwellings. New homes in England must meet the water efficiency standard of 125 litres per person per day. The standard of 110 litres per person per day can be adopted as a local policy by each planning authority

- There are two measurement methods in Part G: the water efficiency calculator; and the water fittings approach. The water efficiency calculator is the more complex and bespoke approach. The output is a figure in lpppd specific to the home assessed. The water fittings approach is a simpler approach where the developer has to ensure that appliances meet set standards. The two potential outputs are:*"Less than 125 litres/person/day using fittings approach"*; or *"Less than 110 litres/person/day using fittings approach"*
- **Wales** In Wales, the guidance is similar to that in England, but there are some differences. The Welsh Building Regulations 2010 incorporate amendments made in 2010 and 2018. New homes in Wales must meet the water efficiency standard of 110 litres per person per day
- **Scotland** has its own set of building standards, which are different from those in England and Wales. New homes in Scotland must meet minimum requirements such as a maximum flush volume for WCs, and flow rates for taps and shower heads. However Scotland does not have a total lpppd requirement like England and Wales. This is due to the relative abundance of water in Scotland

## METHOD C3 Total and average project BNG

### Good practice

**Data systems**

- Set up or check your own data systems to ensure that you have appropriate methods to collect BNG data consistently and accurately

**Ecologist**

- Check the quality of your ecologists work

**Data method statement**

- Identify BNG unit data collection process
- Explain calculation methods
- Explain any significant variations from the Future Homes Hub methodology
- Identify outsourcing and insourcing of relevant data activities
- In this reporting cycle, highlight areas of data quality uncertainty, and actions taken that have resulted in improvements in data accuracy
- Highlight any plans to improve accuracy for the next cycle
- Highlight the discovery of significant individual errors, or where cumulative errors are collectively significant, from the previous reporting cycle

### Technical background

**Biodiversity Net Gain**

- Biodiversity Net Gain (BNG) is a government strategy that aims to improve the natural environment in England
- There are no BNG requirements in Scotland or Wales
- BNG is intended to leave nature in a better state than it was before development
- BNG requires the enhancement of habitats, hedgerows and watercourses for wildlife
- BNG units can be on-site, off-site or both
- It can also be delivered through purchasing statutory biodiversity credits from government
- It is administered by the Local Planning Authority (LPA)
- It became mandatory on February 12, 2024 for developments in England
- There is a separate metric for small sites and BNG became mandatory for small sites on April 2, 2024
- BNG is additional to existing protections for habitats and species

## METHOD C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

### Good practice

**Data systems**

- Collecting Scope 1 & 2 data is complicated. It needs to include directly procured electricity, gas, diesel, other fuels (HVO, LPG, butane, propane etc) and heat
- Electricity and gas consuming activities such as portacabins, street lighting, pumping stations and community centres before adoption; consumption in show homes, sales areas, plots before sale and offices; owned and leased car and van fleet; and energy centres and district heating before adoption, are all included
- Diesel consuming activities such as generators, forklifts and telehandlers are included
- Smaller organisations often use spreadsheets and manual data input processes. Large organisations may have multiple sophisticated internal and external systems, relating to invoicing, expenses, car hire, energy bills, and other areas
- While it is possible to collect all the data for the reporting year as a single exercise this is not recommended. In order to have a routine process and collection discipline good practice is to collect data over the year. Many developers do this quarterly, but it could also be done monthly if that better suits the developer business model
- Set up or check your own data systems to ensure that you have appropriate methods to collect your own data consistently and accurately

**Good data processes**

- It is good practice to collect gas and electricity data using actual meter readings at key dates, typically near the beginning and the end of the reporting period
- For plots before sale good practice is to take readings for gas and electricity meters at installation and at handover
- Automated meters take half hourly readings, which can be extracted from the suppliers' online portals
- Diesel and other fuels such as HVO, LPG, butane and propane are typically collected in litres from invoicing data
- Fleet mileage is often obtained from the fleet hire company and / or expenses systems

**Third party support on data**

- For large organisations experience has shown that obtaining good quality energy data direct from local business units can be challenging
- Better quality data can be achived by employing a specialist third party who can cross check bills with meter readings, and analyse gaps and anomalies
- For diesel consolidation of procurement under a national supply agreement results in better data
- Purchasing diesel indirectly from a groundworks contractor is often more expensive and the diesel is classified as Scope 3 rather than Scope 1, so this should be avoided

**Data method statement**

- Explain position on Principal Contractors, Joint Ventures (JV) and any exclusions
- Identify Scope 1 & 2 data collection process
- Explain calculation methods
- Explain any significant variations from the Future Homes Hub methodology
- Identify outsourcing and insourcing of relevant data activities
- In this reporting cycle, highlight areas of data quality uncertainty, and actions taken that have resulted in improvements in data accuracy
- Highlight plans to improve accuracy for the next cycle
- Highlight the discovery of significant individual errors, or where cumulative errors are collectively significant, from the previous reporting cycle

## METHOD C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

# Technical background

### Definitions

- Scope 1 emissions arise from direct burning of fossil fuels such as natural gas or diesel
- Scope 2 emissions arise from indirect burning of fossil fuels and are mostly related to electricity, although can also be related to heat (e.g. CHP) $CO_2e$ stands for carbon dioxide equivalent and enables the warming potential of other greenhouse gases (such as methane and nitrous oxides) to be expressed in terms of carbon dioxide

### High level process for emission calculations

- Activity data such as kWh of gas and electricity, or litres of diesel, can be converted to carbon using UK Government conversion factors

### Financial and operational control in GHG accounting

- Financial control is the ability to direct a business's financial and operating policies, while operational control is the authority to implement operating policies. A company has financial control if it has the right to most of the operation's benefits, risks and rewards. It is consistent with international financial accounting standards. An organisation has operational control if it has the authority to introduce and implement operating policies at the operation. Operational control can apply to entities, assets, and sites that are not included in consolidated financial statement

### Market and location-based methods for electricity

- Two approaches to reporting emissions from electricity are given in the GHG Protocol Supplementary Scope 2 Guidance. *Location-based* is calculated on grid averages, whereas *market-based* is calculated on the specific supplies purchased

### Regulatory compliance

- The Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013 introduced changes to require quoted companies to report their annual Scope 1 & 2 emissions in their Directors' Report
- The 2018 Regulations bought in additional disclosure requirements for quoted companies
- The 2018 Regulations also introduced requirements for large unquoted companies and limited liability partnerships to disclose their annual energy use and greenhouse gas emissions, and related information
- The definition of "large" is the same as applies in the existing framework for annual accounts and reports, based on sections 465 and 466 of the Companies Act 2006
- The qualifying conditions are met by a company or LLP in a year in which it satisfies two or more of the following requirements:
  - » Turnover £36 million or more
  - » Balance sheet total £18 million or more
  - » Number of employees 250 or more
- This is described in Government Streamlined Energy and Carbon Reporting (SECR) guidance

### Developer use cases

- It is a normal component of carbon targets and is often used as a SPT for Sustainability Linked Loans, and sometimes for senior management bonuses

### Frameworks and disclosures

- There are also mandated reporting requirements under Task Force for Climate Related Financial Disclosure (TCFD)
- There are many non mandated uses of Scope 1 & 2 data such as the CDP Disclosure
- Many investor benchmarks collect Scope 1 & 2 data including FTSE4Good, MSCI and Sustainalytics

## METHOD C4 Total emissions (Scope 1 & 2) (Future Homes Hub modification)

### Technical background (continued)

**Energy and carbon reduction measures**

- Electricity
  - » Early grid connection and early adoption of infrastructure such as street lighting and pumping stations saves operational carbon and cost
  - » Buy REGO backed green tariff electricity can make a significant near term reduction in carbon, although there is a financial premium
  - » Other things to consider include sub metering for subcontractors (and recharging), efficient appliances, PIRS (daylight sensors which can switch off lights and equipment) or a switch off campaign
- Gas
  - » Set thermostats and timers correctly across the estate, including cabins, offices, show rooms and plots before sale, can save cost and carbon while maintaining a comfortable working environment
  - » Natural ventilation for plot drying in good weather
- Diesel
  - » Hybrid generators can save cost and carbon, especially when taking care to use plant of the correct size
  - » Hydrotreated Vegetable Oil (HVO) is a green diesel, which can rapidly reduce carbon in the short term, but comes with a cost premium
  - » Procure efficient plant and equipment
- Transport
  - » Hybrid and electric company cars and vans, video conferencing and homes working, and ride sharing, can all save carbon and may save cost
- Portacabins
  - » When buying portacabins ensure they are high energy efficiency
- Offices
  - » When buying or refurbishing offices, embed high levels of energy efficiency

## METHOD C5 Construction waste intensity

## Good practice

### Data systems and third parties

- Developers are largely reliant on third parties for construction waste data; typically either waste contractors and / or waste brokers
- Typically there is a need to compile and collate data from multiple sources, with specialist contractors managing different types of waste. Even where there is a national waste broker there can be additional specialist waste collection contractors, for example for plasterboard and pallets. Check third party data systems. Set up or check your own data systems to ensure that you have appropriate methods to collect multiple party data consistently and accurately
- While it is possible to collect all the data for the reporting year as a single exercise this is not recommended. In order to have a routine process and collection discipline good practice is to collect data over the year. Many developers do this quarterly, but it could also be done monthly, if that better suits the developer business model

### Waste segregation – this means two main things:

- Firstly that waste included in the *construction waste footprint boundary* is collected in separate skips or containers from waste not included in the footprint boundary as detailed
- Secondly, it includes avoiding cross contamination of wastes into the target waste skips. It is recognised that having additional skips on site and extra supervision to enable a high degree of segregation and obtain clean data, may not always be commercially viable

### Good data processes

- Because of many possible routes to and from site, construction waste can be hard to account for accurately
- You should therefore not take the data on face value but conduct some quality checks. Do the waste figures for individual sites or business units look anomalous? Is there missing data? Have the dry liners collected and removed plasterboard waste and is this accounted for? Have the ground workers collected and removed inert waste and is this accounted for?
- Where waste data problems are identified, they should be mitigated. For example asking dry liners or groundworkers to account for the construction waste data they have removed. This should be included in the total
- It is helpful to understand how each waste stream was measured. In some cases real weights may have been collected on weigh bridges. Often there are manual estimates based on the volume of the skip, how full it is, and the type of material. Amounts of waste need to be included on waste transfer notes, and these can be referred to. These may include units other than tonnes and if so conversion factors will be needed
- Under the 'comply or explain' principle, if it is not possible to account for waste data gaps these should be explained

### Data method statement

- Identify construction waste data collection processes
- Explain calculation methods
- Explain any significant variations from the Future Homes Hub methodology
- Identify outsourcing and insourcing of relevant data activities
- In this reporting cycle, highlight areas of data quality uncertainty, and actions taken that have resulted in improvements in data accuracy
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## METHOD C5 Construction waste intensity

# Technical background

### Definition of waste

- The definition of waste has been in use for over three decades and it is now embedded in the 2008 Waste Framework Directive (Directive 2008/98/EC). Article 3(1) defines "waste" as: *"…any substance or object which the holder discards or intends or is required to discard…"*

### Waste hierarchy

- There is a hierarchy of how to deal with your waste which has legal standing. You will need to tick a box in your Waste Transfer Note when you hand over your waste saying that you are applying the Waste Hierarchy. That means that you are ensuring that your waste will be treated with the best waste management available for that specific waste. You must give priority to waste prevention, followed by activities that prepare waste for re-use (e.g. cleaning, checking, repairing), followed by recycling, then other forms of recovery (including energy from waste). Disposal (e.g. landfill) is regarded as the last resort. Defra has issued guidance on the application of the Waste Hierarchy guidance

### Duty of Care

- You have a legal responsibility as an organisation to ensure that you produce, store, transport and dispose of your waste without harming the environment: this is called your duty of care. This should help you understand the implications of your organisation's waste activities and detail of what to measure and report under for each

- You must ensure that you:
  - » Store and transport your waste appropriately and securely so it does not escape and any hazardous waste is kept separately from other waste streams
  - » Check that your waste is transported and handled by organisations that are authorised to do so. If a waste carrier takes your waste away, you may also need to check that the site it is taken to is authorised to accept it
  - » Complete Waste Transfer Notes (WTNs) to document all waste you transfer and keep them as a record for at least two years. In the case of hazardous waste you will need to use consignment notes and keep them for 3 years. The WTN will provide the evidence trail to ensure that you have correctly applied the Waste Hierarchy to the type of waste you consigned

### European Waste Catalogue

- The European Waste Catalogue (EWC) codes for construction waste start with 17. The specific code depends on the type of waste, and guidance is given by government. https://www.gov.uk/how-to-classify-different-types-of-waste/construction-and-demolition-waste

## METHOD C5 Construction waste intensity

## Technical background (continued)

**Designing out waste**

- Designing out waste through sizing to reduce offcuts, standardisation, reuse of timber and insulation wastes, and other actions can save money, materials and reduce waste

**Procurement and storage**

- Procurement of materials and the subsequent delivery and storage of them can have a significant impact on the generation of waste on any site. Careful management of the supply of materials to site will lead to less being wasted

**Inert materials**

- Inert materials such as brick offcuts can be reused for example beneath site compounds, pathways and driveways

**Take back**

- Using established take-back schemes with suppliers, i.e. plasterboard, paint and pallets can reduce waste and save cost

**Training**

- Providing information in site inductions, regular site meetings and toolbox talks, and informing sub-contractors of the relevant waste actions required of them, also saves waste

**Storage**

- Careful planning of the location, layout and size of the waste storage area, colour coded skips, and checks for tidiness all improve waste management

**Avoid paying for water and air**

- Avoid paying for disposal of water (by keeping rain off the skips where possible)
- Avoid paying for thelr disposal of air. How well waste is sorted in a skip also makes a difference, for example a pallet in a skip will increase the void space, and this may or may not be taken into account as part of waste estimations for timber skips

**Internal reporting**

- Waste data can be presented in tabular or better still in infographic form so that internal teams can understand their performance. This can be done for individual construction sites, waste streams, business units and for the organisation as a whole

Future Homes Hub

If you have any queries or would like to give feedback on the report please contact us.

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