

**SKANSKA**

---

**Carbon management system  
Technical report**

May 2019

## Carbon management system Technical report

08/05/2019

### Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
01						

### Change log

Rev	Section	Description

### Hold list

Rev	Section	Description

## Introduction

This report sets out the methodology Skanska UK uses to estimate its total level of carbon emissions.

The estimate includes:

- Direct emissions
- Indirect emissions (The total amount produced by our entire supply chain, from their work on our projects. This includes both construction and maintenance activities.)

Covered are:

- Construction and maintenance activities
- Embodied carbon – from the materials we use in construction and maintenance activities

The estimate does not include:

- Post-handover emissions from projects
- Emissions arising from capital investments

## ENCORD protocol

The European Network of Construction Companies for Research and Development – ENCORD – has created a protocol for measuring greenhouse gases emitted by the construction industry, measured as CO<sub>2</sub>e. The ENCORD protocol is based on the greenhouse gas protocol – the world standard for measuring carbon emissions.

In measuring our carbon emissions, we have adopted the ENCORD protocol.

Under ENCORD, just as in the greenhouse gas protocol, emissions are broken down into a number of different types, called scopes:

Scope	Definition
1	These are greenhouse gases from sources owned or controlled by the organisation reporting its emissions. These are known as direct emissions.
2	These are emissions created by the generation of energy, such as electricity, which is bought by the organisation reporting its emissions. These are indirect emissions.
3	These are all other indirect emissions. They may be created by an organisation's supply chain, or by the products it produces. This also includes embodied carbon – the emissions produced when materials, such as steel, concrete and so on. Travel by aeroplane for business purposes would fall into this scope.

ENCORD sets out the following sources of emissions:

Category	Emissions source	Scope	Type	Included
1	Fuel (project)	1, 3	Direct, Indirect	Yes
2	Fuel (premises)	1, 3	Direct, Indirect	Yes
3	Process and fugitive	1	Direct	Yes
4	Electricity (project)	2, 3	Direct, Indirect	Yes
5	Electricity (premises)	2, 3	Direct, Indirect	Yes
6	Imported heat	2, 3	Direct, Indirect	Yes
7	Vehicle fuel	1, 2, 3	Direct, Indirect	Yes
8	Public transport	3	Indirect	Yes
9	Subcontractors	3	Indirect	Yes
10	Waste	3	Indirect	Yes
11	Materials	3	Indirect	Yes
12	Products	3	Indirect	No

The recommendation of ENCORD is that, as a minimum, companies should measure or estimate categories 1 to 7.

We have gone further than that, and we have included categories 8 to 11.

The only category where we do not measure or estimate emissions is 12.

The ENCORD protocol asks an organisation to assess emissions from each category, in terms of significance, using three criteria:

- **Scale** – how large the emissions are from the source, compared with the total amount of the organisation’s emissions.
- **Relevance** – how important the emissions source is to an organisation and its stakeholders. As an example, this would include emissions that a customer would expect to be measured.
- **Reduction potential** – How much could an organisation influence or reduce emissions from a particular source.

Skanska UK considers sources in categories 1 to 8 and 10 to be significant, and have fully included these in our inventory . For those in categories 9 and 11, we have developed a robust estimation methodology based on financial spend which is explained later in this document.

## Emissions responsibility

Skanska UK works in a range of joint ventures, on a number of different projects. These joint ventures may have one or more partners. We use an 'equity-share' approach to determine the amount of emissions that we should attribute to Skanska UK.

For example, if both parties in the joint venture are equal, then we would divide up the emissions as follows:

- 50 per cent Skanska UK
- 50 per cent Joint venture partner

Depending on the scale of our contribution, in relation to our joint venture partners, the percentage attributed to Skanska UK may vary.

Where Skanska UK is the only main contractor, we attribute *all* the emissions to Skanska UK.

Where we are partnering with Skanska Sweden, on projects not in the UK, Skanska Sweden records all the carbon emissions from the project. Skanska Sweden also has its own carbon reduction targets.

The technical term for emissions responsibility is reporting boundaries.

## Post-handover emissions

We have not included post-handover or downstream emissions in our methodology. These would fall into category 12 of the ENCORD protocol.

These are the emissions from the use of the asset – such as a building or piece of infrastructure like a road.

We are not measuring these is because there is no established way for construction firms to determine their level of responsibility for them. We are working with the Carbon Trust to develop a protocol to establish this.

While we do not specifically measure these emissions, we do believe that this is an area where Skanska UK can have a significant influence in terms of reducing post-handover emissions: for example, through design changes.

The construction industry has a responsibility beyond project supply chain emissions. It must minimise the ongoing emissions of the assets it builds and maintains.

This whole-life approach – looking beyond the construction phase – is extremely important, because a significant amount of emissions is generated through the use of buildings and infrastructure.

Skanska UK has already adopted a whole-life approach to reducing emissions. We were the first UK contractor to achieve PAS2080 certification. PAS2080 is the world's first specification – in effect, a standard - for whole-life carbon management in infrastructure.

PAS2080 was developed by the British Standards Institution (BSI), which worked with key stakeholders from industry and the government. The specification sets out a consistent approach to cutting emissions.

Skanska UK has been reviewing and improving its processes across the preconstruction and project delivery phases of projects, particularly focussing on estimating, design and carbon measurement.

Our River Humber tunnelling project was also as a case study in managing the carbon process on a project, helping us get PAS2080 certification. For example, we reduced carbon emissions by 11 per cent by changing the design of the concrete platforms used by the tunnelling machines.

## Carbon factors

Our estimate of the emissions of the supply chain from their work on our projects is based on a range of data. It includes emissions from fuel, electricity, materials, waste and other categories. All parts of our supply chain are included, whatever the type of sub-contractor activity, including construction, transport and maintenance.

Where we were unable to obtain actual emissions data we developed a methodology to estimate emissions. This uses carbon factors – which enable conversion into emissions – from the Department for Business, Energy & Industrial Strategy and Bath University's Inventory of Carbon and Energy. These allow us to turn activities, procurement spend and quantities of materials into emissions estimates.

This is done on an itemised basis, so we can link the emissions from particular materials, activities or suppliers to specific projects. The level of detail provided gives us a holistic picture of our emissions.

### **Inventory of Carbon and Energy (ICE) v2.0**

This is a database of the embodied energy and carbon of building materials produced the sustainable energy research team at the University of Bath. The database provides details of the original references used, so that users can check the original sources.

### **Department for Business, Energy & Industrial Strategy (BEIS)**

BEIS annually produces a set of greenhouse gas reporting carbon factors, which have a wide range of applications. It is standard to these government conversion factors to quantify emissions.

## Emissions by percentage

This shows, for each ENCORD category, the percentage of Skanska UK's emissions – and those of our supply chain, from their work on our projects – that fall into it.

We have included the relevant percentage in the detailed section about each category.

Category	Percentage of total
Fuel (project)	6.1
Fuel (premises)	0.2
Process and fugitive	0.01
Electricity (project)	0.6
Electricity (premises)	0.1
Imported heat	0.0
Vehicle fuel	1.5
Public transport	0.2
Subcontractors	13.8
Waste	1.5
Materials	75.9
Product	0.0

Note that due the effect using round figures means they do not add up to exactly 100 per cent.

## Category 1: Fuel (project)

Types of emissions	Direct, Indirect
Scope	1, 3
Percentage of total	6.1 per cent

### What's included

Fuel used directly by Skanska to deliver its projects, in commercial vehicles and site plant and equipment.

This includes all vehicles, plant and equipment – either owned or leased – that Skanska directly operates and buys fuel for.

We have included an estimate of the emissions produced by getting the fuel from the oil well to the tank. This includes processing, transport and other factors.

### The data

We've used the company fuel card system and supplier to calculate how much fuel is being used. All fuels have been measured in litres.

Fuel has been subdivided into the following types:

- Diesel
- Petrol
- Gas oil (red diesel)

### Trends

Fuel use has risen since the baseline year. This is due to increasing revenue, a growing commercial fleet, the acquisition and expansion of a highways' maintenance business and the increased geographical area of major framework projects.

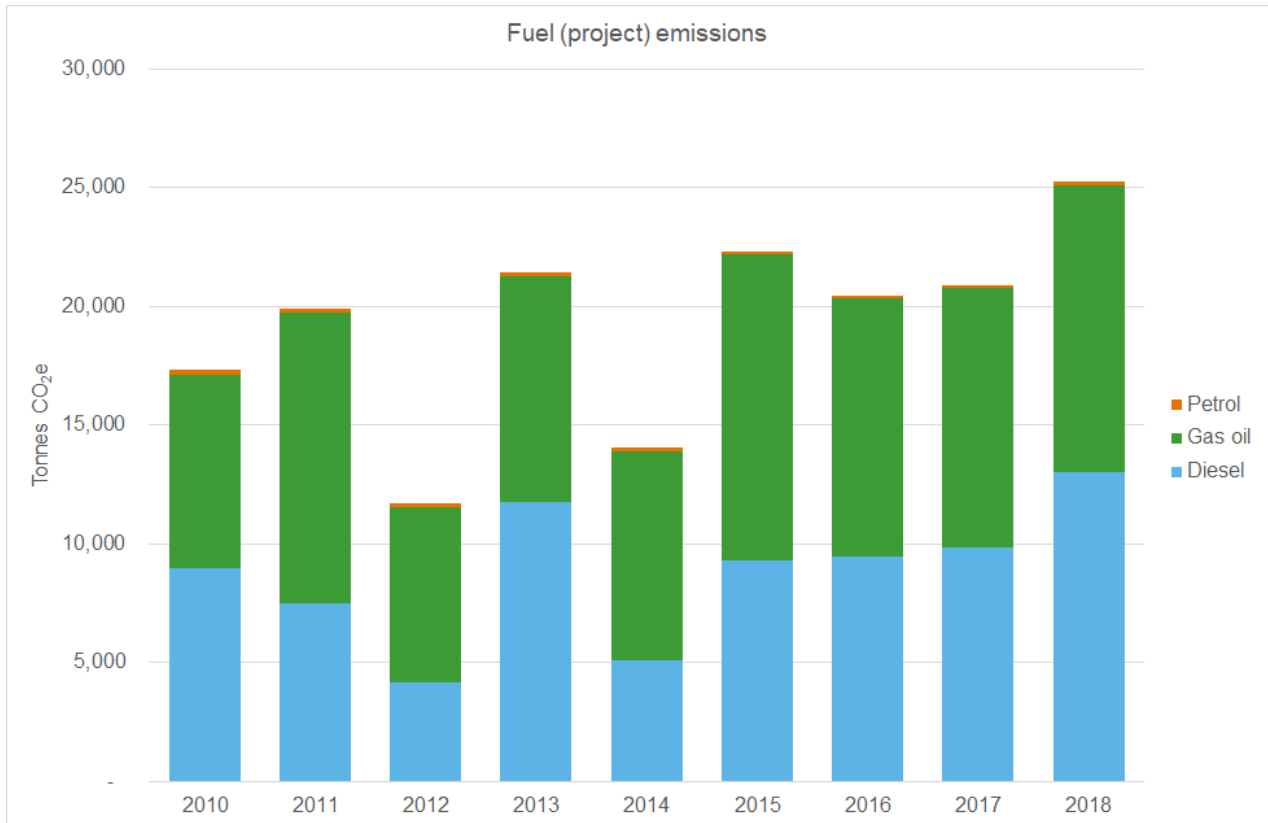
The decarbonisation of vehicles, plant and equipment is a major focus of future action. With steps to increased efficiency, trial alternative fuels and electrification underway we expect to see major improvement in this area.

Advances in vehicles and plant efficiency together with electrification will reduce all fuel-related emissions.



## Chart

This graph shows the annual emissions level from different kinds of fuels used on projects.



## Category 2: Fuel (premises)

Types of emissions	Direct, Indirect
Scope	1, 3
Percentage of total	0.2 per cent

### What's included

This includes all fuels used at Skanska premises for heating or power generation.

In this case, premises means any offices, workshops, maintenance depots or warehouses which are independent of any one particularly project. This area is split into:

- Directly measured fuel supplies – where Skanska pays for and controls the fuel supply directly
- Estimated fuel supplies – where the fuel is provided by a landlord, is not metered, and is paid for as part of a wider service charge.

We have included an estimate of the emissions produced by getting the fuel from the oil well to the tank. This includes processing, transport and other factors.

### The data

We have used meter data and supplier invoices to calculate directly measured fuel use.

Fuels have been split into:

- Gas (measured in kWh)
- Heating or burning oil (measured in litres)
- Gas oil (red diesel) (measured in litres)
- Biomass (measured in tonnes)

To calculate emissions from leased facilities where Skanska either doesn't control the fuel supply or it isn't metered, an average consumption rate of kWh per m<sup>2</sup> has been calculated using measured fuel supplies. This consumption rate has then been applied to the floor area of the leased facility to provide an estimate of total kWh consumption. The floor areas of all Skanska properties (including those leased) are recorded in a company property register.

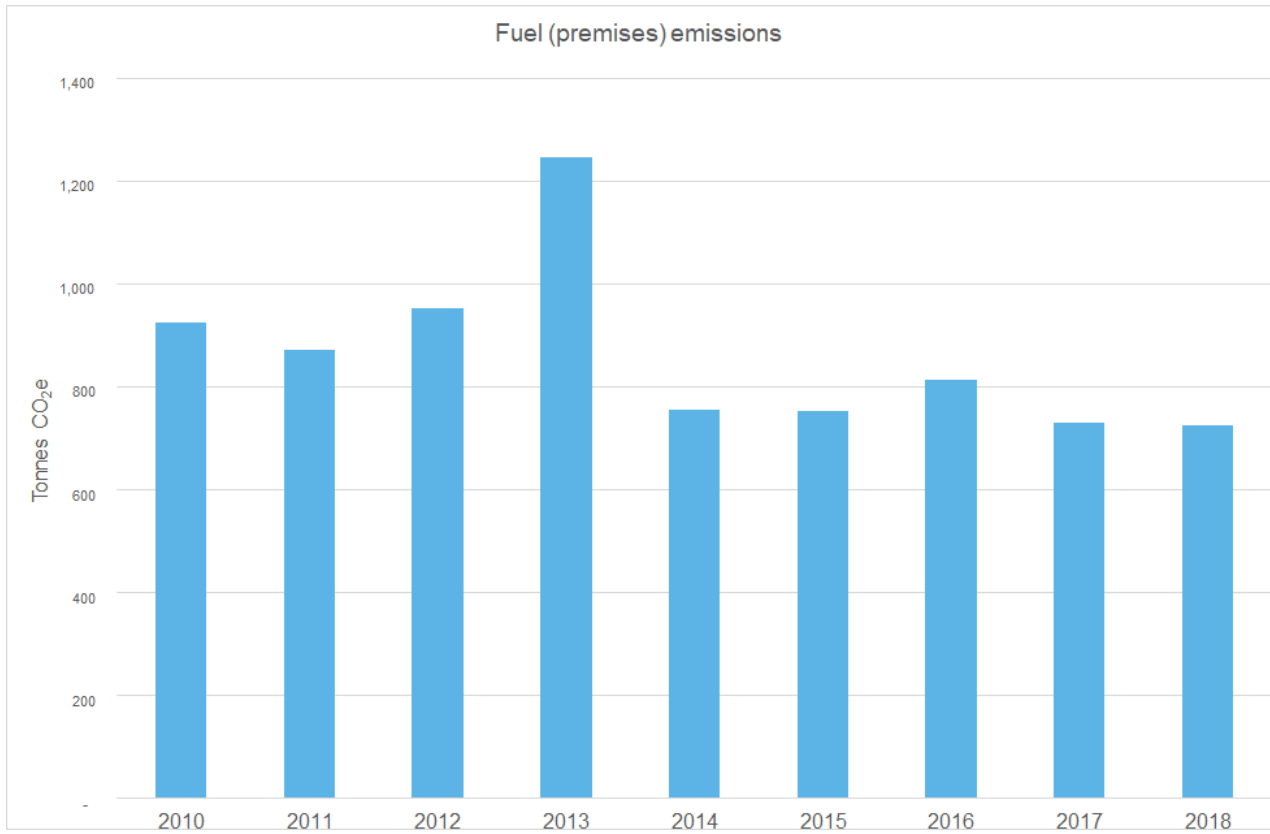
### Trends

Fuel usage to provide heating can vary, depending on seasonal variations. The emissions spike in 2013 was caused by the temporary use of heating oil during a gas boiler outage at one of our sites.

The downward trend has been achieved with energy efficiency upgrades and installation of biomass boilers which have a lower carbon intensity at two of our main facilities.

## Chart

This shows emissions levels from fuel used on our premises.



## Category 3: Process and fugitive

Types of emissions	Direct
Scope	1
Percentage of total	0.01 per cent

### What's included

Process and fugitive emissions are created by industrial activities such as oil and gas mining or processing, which are not related to construction industry. It also includes leaks of greenhouse gases into the atmosphere from industrial equipment. This can include refrigeration and air conditioning systems.

Our estimate relates to leaks from air conditioning systems in our premises.

### The data

We have taken leakage rates from a sample of the premises – where we are responsible for the air conditioning system (in some cases, the landlord is responsible for it).

We have then calculated a leakage per square meter rate and applied that to all our premises.

## Category 4: Electricity (project)

Types of emissions	Indirect
Scope	2, 3
Percentage of total	0.6 per cent

### What's included

Electricity used to deliver Skanska projects and covers our construction sites, welfare and project offices. It includes electricity that Skanska pays for directly through metered supplies. There are also a small number of projects where the customer provides electricity for us to carry out work on their behalf and these are also included.

### The data

We have used meter readings and supplier invoices to calculate the kWh of electricity consumed across our projects. To reflect our electricity purchasing decisions we have followed the market-based emission methodology from 2016 as defined in the greenhouse gas protocol. Electricity generation emission rates (kgCO<sub>2</sub>/kWh) have been identified for each electricity supplier with this rate being applied to the quantity of electricity consumed. Where the supplier is unknown we use the residual fuel mix conversion factor.

The totals of the carbon emitted through the consumption of each supplier's electricity are then added together to provide the total tonnes of CO<sub>2</sub>e for our electricity consumption for the year. Location-based emissions are also recorded.

The occasional situation arises where Skanska works on a customer site with an unmetered supply and electricity consumption cannot be measured. This situation usually only occurs on smaller projects and currently only amounts to 1.9 per cent of total electricity consumption. We keep this under review using a kWh/£ revenue estimate as a guide.

To reflect the total impact of electricity use we have included the scope 3 impacts in generating and transmitting it. This also takes into account distribution losses.

Total electricity consumption varies considerably as result of the different projects we are delivering at any given year. In recent years the carbon emissions per unit of electricity have dropped considerably, reducing the impact of the electricity we have used.

The energy regulator Ofgem runs a scheme called REGO, which guarantees that electricity from certified suppliers is generated sustainably. Since 2016, Skanska has been increasing the supply of REGO-backed renewable electricity across our projects, accelerating carbon savings. Some 69 per cent of the total electricity purchased by Skanska in 2018 was from REGO-backed renewable sources.

### Chart

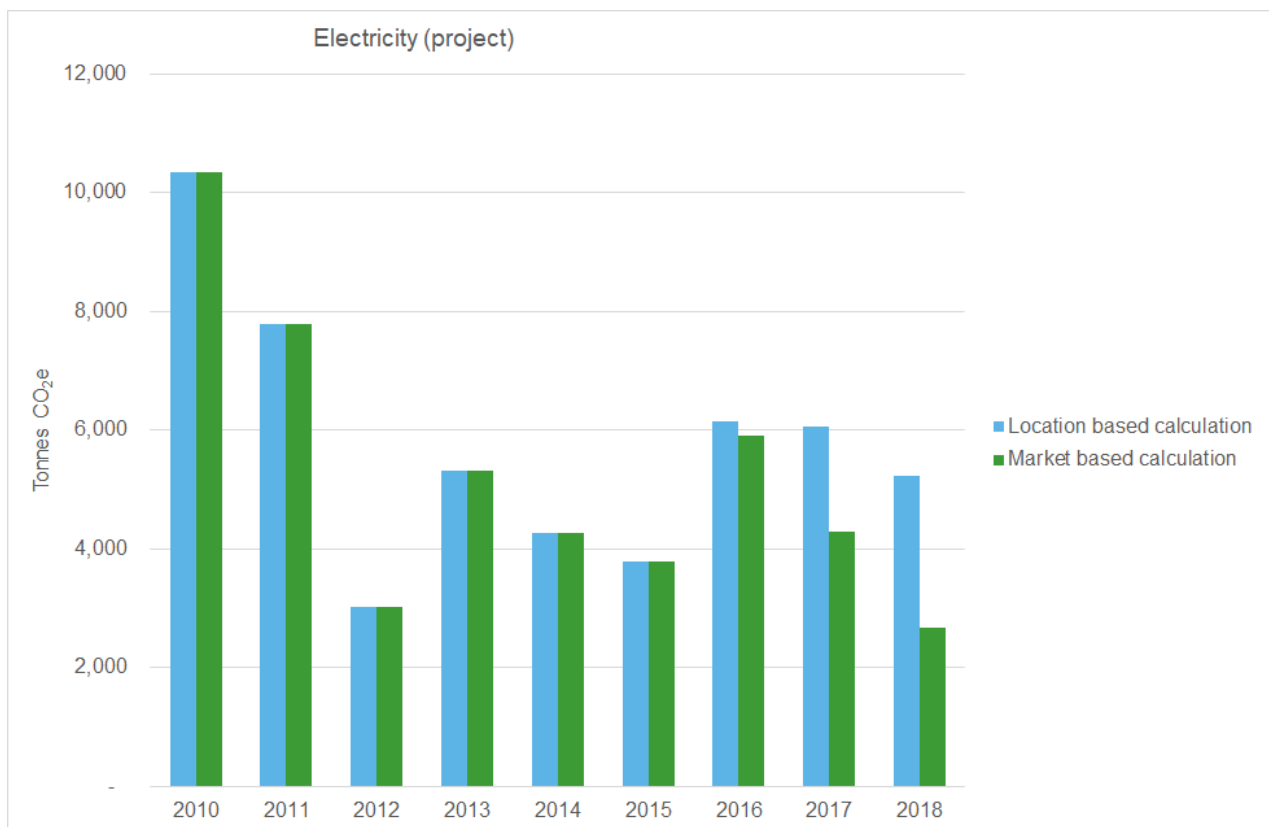
This chart shows the impact of the level of emissions from electricity used on projects.

There two different ways of measuring emissions from electricity. The first is location-based, and uses a national average of emissions produced for kilowatt hour of electricity. This includes all types of power generation in UK, some of which may not be sustainable.

The market-based calculation is based on actual energy suppliers you use and is based on their data.

You can see the impact of our policy to buy REGO-backed sustainably generated electricity, and the reduction in emissions compared to the national average.

We have greenhouse has protocol in measuring electricity.



## Category 5: Electricity (premises)

Types of emissions	Indirect
Scope	2, 3
Percentage of total	0.1 per cent

### What's included

This includes all electricity consumed at Skanska premises the company operates from.

Premises are considered to be offices, workshops, maintenance depots or warehouses which are independent of any one particularly project. This area is split into:

- Directly measured electricity controlled and paid for by Skanska.
- Directly measured electricity that is not paid for directly by Skanska. This happens when a landlord controls the supply and we pay them for the energy we use.
- Estimated electricity supplies. This covers cases where the electricity supply is controlled by a landlord but it is not measured or directly paid for. This includes power which is covered by a wider service charge.

The totals of the carbon emitted through the consumption of each supplier's electricity are then added together to provide the total tonnes of CO<sub>2e</sub> for our electricity consumption for the year.

### The data

We have used meter readings and supplier invoices to calculate the electricity consumption in kWh for all the facilities where Skanska pays for the supply.

As set out in the market-based methodology we have identified the electricity generation emission rate (CO<sub>2e</sub>/kWh) for each supplier used at our premises and calculated total emissions.

Where Skanska is not in direct control of the metered electricity supply, we have used the residual fuel mix carbon conversion factor to calculate emissions.

If we do not control the supply and consumption is not metered, we have applied a kWh/m<sup>2</sup> rate across the floor area of the premises, based on our typical power consumption.

We use solar power to generate electricity at our Hertfordshire head office and at our regional base at Bentley Works in Doncaster. This is included in our emissions total as a measured reduction in grid electricity consumption. Both facilities operate data rooms which consume electricity 24/7 which minimises the export of renewable electricity.

### Trends

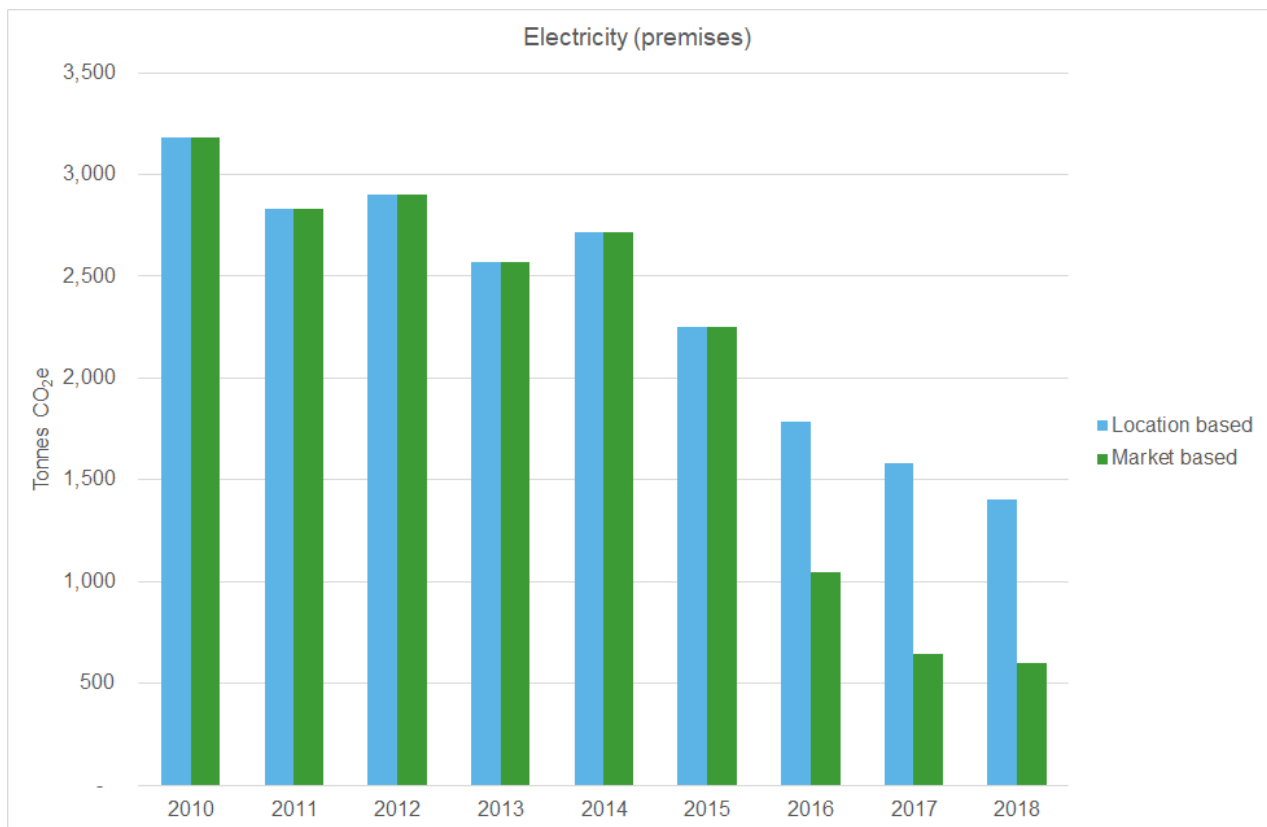
Since the base year there has been a steady reduction in emissions from Skanska premises. Green retrofits at our Maple Cross and Bentley Works have greatly reduced

emissions through efficiency and renewable electricity generation. Since 2016, we have phased in REGO backed renewable electricity supply contracts on all contracts we directly control. The only electricity that not sustainably sourced is where we do not control the supply contract. We are engaging with our landlords to try and influence their procurement decisions.

## Chart

This chart shows the impact of the level of emissions from electricity used on premises. It uses the same principle as the previous chart.

In both cases, you can see our approach has led to significant reductions in emissions.





**Category 6: Imported heat**

<b>Types of emissions</b>	<b>Indirect</b>
<b>Scope</b>	<b>2, 3</b>
<b>Percentage of total</b>	<b>0 per cent</b>

This is not included in our estimates.

We currently do not import heat across any of our projects or premises.

## Category 7: Vehicle fuel

Types of emissions	Indirect
Scope	1, 2, 3
Percentage of total	1.5 per cent

### What's included

All the fuel used in vehicles used by our staff to travel on public roads in support of our operations:

- Vehicles directly owned or leased by Skanska.
- Vehicles owned by Skanska employees who receive a car allowance.
- Vehicles privately owned by employees.

We have included an estimate of the emissions produced by getting the fuel from the oil well to the tank. This includes processing, transport and other factors.

### The data

Information to calculate total emissions from vehicles comes from a number of sources. The company fuel card system tracks directly the litres of each fuel type purchased.

Commuting and private use of employees using a company fuel card is identified through the company card system which requires users to itemise mileage. The average overall split between business mileage (39 per cent) and private mileage (61 per cent) has been applied to the total fuel card consumption to identify the fuel use for each. We review this split between business and private mileage every year. Private or commuting mileage has been recorded but excluded from this calculation.

For employees who do not use a company fuel card, business miles are claimed through the company expense system. The expense system also records the fuel type of the vehicle driven. This allows the total mileage for each fuel type to be identified. UK government greenhouse gas conversion factors for 'average diesel' and 'average petrol' cars have been applied calculate total emissions. Then the fuel conversion factor for the average biofuel blend for diesel and petrol has been used to calculate the approximate litres of each fuel used.

### Trends

Vehicle emissions are driven by fleet size, vehicle efficiency, vehicle use and the location of projects at any given time. Since 2010 Skanska's vehicle fleet has increased steadily from approximately 1300 vehicles to 1900 in 2018. There has also been a significant improvement in vehicle efficiency over the period.

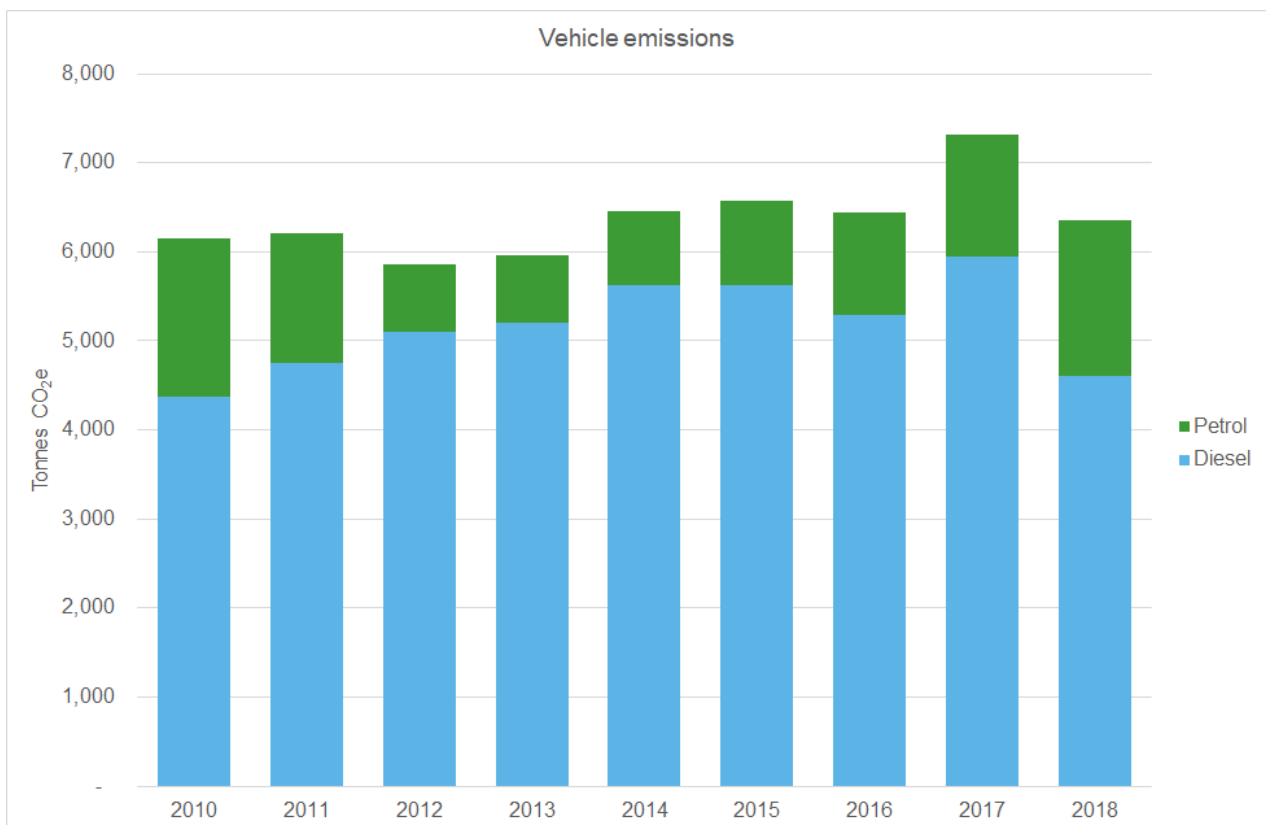
Since 2009 Skanska has applied a green car policy to our company car fleet restricting all vehicles to 130gCO<sub>2</sub>/km or below. This has also been applied to our car allowance policy since 2014 reducing total emissions. The current average of the company car fleet

is 96gCO<sub>2</sub>/km down from 133gCO<sub>2</sub>/km in 2010. We apply green travel policies to minimise vehicle use and track mileage per staff.

Petrol use is on the increase reflecting the shift away from diesel and the increased number of hybrid vehicles in the fleet. Electrification of vehicle technology will significantly reduce emissions in this area.

## Chart

This chart shows vehicle emissions.



## Category 8: Public transport

Types of emissions	Indirect
Scope	3
Percentage of total	0.2 per cent

### What's included

Emissions from the use of public transport by employees in support of Skanska's operations. This covers:

- Air travel
- Rail travel
- Taxis

Our assessment of the carbon impact of air travel includes radiative forcing. In simple terms, air travel has a bigger impact on climate change than just the greenhouse gases produced by flights. Radiative forcing measures the overall impact of these extra factors on the environment – in terms of a warming effect.

Well to tank factors have been applied to reflect the total environmental impact

### The data

Business air travel is managed through a company travel agency that records the km and passage class of every journey. Domestic, European or international flights are categorised, allowing emissions to be calculated using the UK government greenhouse gas reporting conversion factors.

Rail travel is calculated from two sources. Journeys over £100 are booked through the company travel agency and the distances are recorded allowing direct calculation of emissions from government conversion factors.

Other rail journeys are recorded through the company expense system and the total distance has been estimated using industry average price for the number of passenger km. Government conversion factors are then applied.

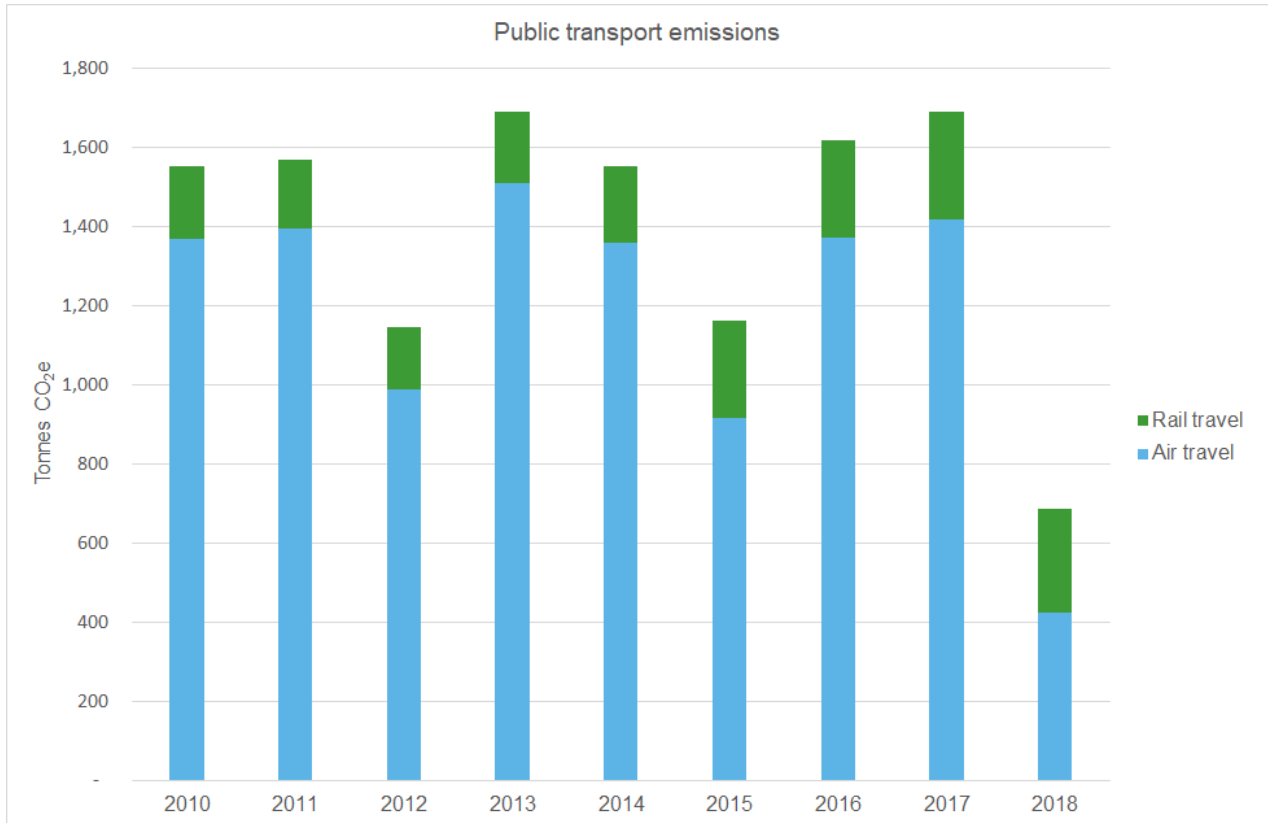
Emissions from taxi journeys have been estimated using the total money claimed in the company expense system against industry average price-per-passenger km and by using the appropriate conversion factor

### Trends

The main emission contribution is from air travel in this area. Business flights are affected when Skanska UK supports projects by other parts of Skanska abroad. This can be seen in the peaks and troughs over the reference period. 2018 saw a significant drop in emissions due to completion of a major overseas project.

## Chart

This chart shows a breakdown of emissions from rail and air travel.



## Category 9: Subcontractors

Types of emissions	Indirect
Scope	3
Percentage of total	13.8 per cent

### What's included

An estimate for subcontractor emissions from their work on our behalf. This covers:

- Fuel used in subcontractor commercial vehicles traveling on the public roads.
- Gas oil used in plant and equipment used on Skanska construction sites.

To communicate the full impact of fuel use clearly, we have included an estimate of the emissions produced by getting the fuel from the oil well to the tank. This includes processing, transport and other factors.

### The data

We have produced a detailed spend-based estimate for the use of fuel by our subcontractors.

All our activities have been analysed to identify those which would require subcontractors to use fuel. We have used actual data analyse various activities to understand how much fuel – on average – is used for each activity. We have then applied that average across all relevant spend.

We have used price-per-unit data for diesel and gas oil to estimate the total quantity of fuel used, and then used the appropriate government conversion factors.

### Trends

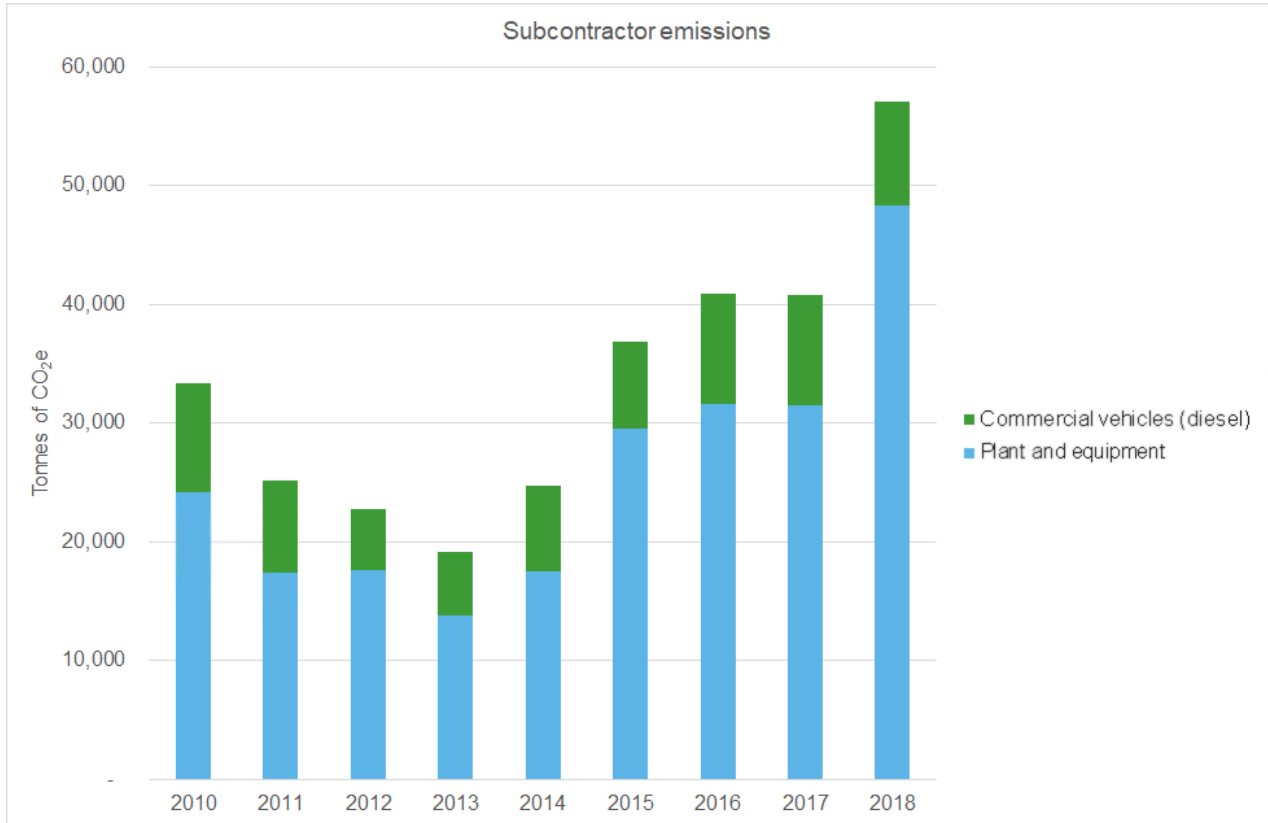
Subcontractor emissions will be directly related to volume of construction or maintenance activities so variations do occur. Our projects, by their nature, are different. While there many common activities, the scale and complexity of these varies considerably, leading to very different levels of emissions.

We will monitor the carbon efficiency our suppliers, and work with them to reduce their carbon footprint.

Commercial vehicles (diesel)  
Plant and equipment

## Chart

This



## Category 10: Waste

Types of emissions	Indirect
Scope	3
Percentage of total	1.5 per cent

### What's included

Emissions associated with the generation and disposal of waste across our operations.

It includes all waste generated on Skanska projects, premises and by subcontractors working on our behalf.

### The data

All waste is tracked through our dedicated management system. The types and volume of material and how they are reused, recycled, or disposed of is recorded. In terms of waste management, these are technically known as disposal methods.

Different disposal methods have an impact on the emissions produced. For each one, we have calculated the total tonnage of waste and then used the relevant government conversion factors to quantify emissions.

We have estimated the emissions from waste transport. We have used actual data on waste movements and journey distances and then applied the government's conversion factors.

### Trends

Over 96 per cent of our construction waste does not go to landfill sites. However, reuse and recycling of materials does in itself generate emissions – and our aim is to show the full impact of waste management.

Waste related emissions have risen in recent years, because some of our major projects involve significant earthworks or demolition, highlighting the fact that different types of work produce different levels of emissions.



## Chart

This chart shows the emissions from the various disposal methods we use.



## Category 11: Materials

Types of emissions	Indirect
Scope	3
Percentage of total	75.9 per cent

### What's included

Emissions associated with all the materials used across all our operations, projects and premises.

It also includes emissions from the manufacture and production of construction materials. This is known as embodied carbon, which is defined by the BS EN ISO15978:2011 sustainability of construction works standard, sections A1 to A3.

We have used actual data and developed a way of estimating emissions for materials where this is not the case. This utilises itemised spend data at a project level to build up an accurate emissions picture.

### The data

We used a multi-step approach to quantify emissions:

#### *Step 1*

A register was created, with conversion information for 56 of the most common materials we use. Here, we have used environmental product declarations and the inventory of carbon and energy dataset, together with government conversion factors to estimate emissions.

#### *Step 2*

We identified cost-per-unit information for every material in the register. We used pricing documents, direct consultation with suppliers and estimating data.

#### *Step 3*

All the spending categories in our cost control system were assessed. They were the designated high, medium or low, depending on their emissions potential. This was qualitative assessment.

#### *Step 4*

We assigned the materials from step 1 to the high and medium categories identified in step 3. For example, concrete, reinforcement, timber, and gas oil were assigned to spend category 'reinforced concrete frames', which is designated as having a high emissions potential.

## *Step 5*

We created materials breakdowns – in terms of the percentage of our spend – for each of the high and medium emissions potential spending categories.

To do this, we reviewed a range of information from across our business for each spend category.

To turn the percentage into a quantity of each material – which we can then use to calculate emissions – we identified how much of each material you would get for each £1 million spent in the spending category.

Then, we calculated the emissions of the materials, using the cost-per-unit data from step 2 and relevant carbon conversion factors from step 1.

## **Methodology**

There are some limitations to the materials estimating methodology. For example, it does not – and is not intended to – measure emissions on a project-by-project basis, but it can be used to look at materials as a strategic whole.

We have developed separate processes to measure carbon emissions on a project-by-project basis. For example, our infrastructure projects comply with the PAS2080 carbon management standard.

## **Trends**

Material emissions vary with the requirements of our projects and this can be seen clearly in the graph below. Overall emissions associated with material use are reducing due to better information on material production and innovation in materials technology. This area will be a key focus of future action and we will work closely with our design teams, suppliers and subcontractors to find more efficient low carbon solutions.

## Chart

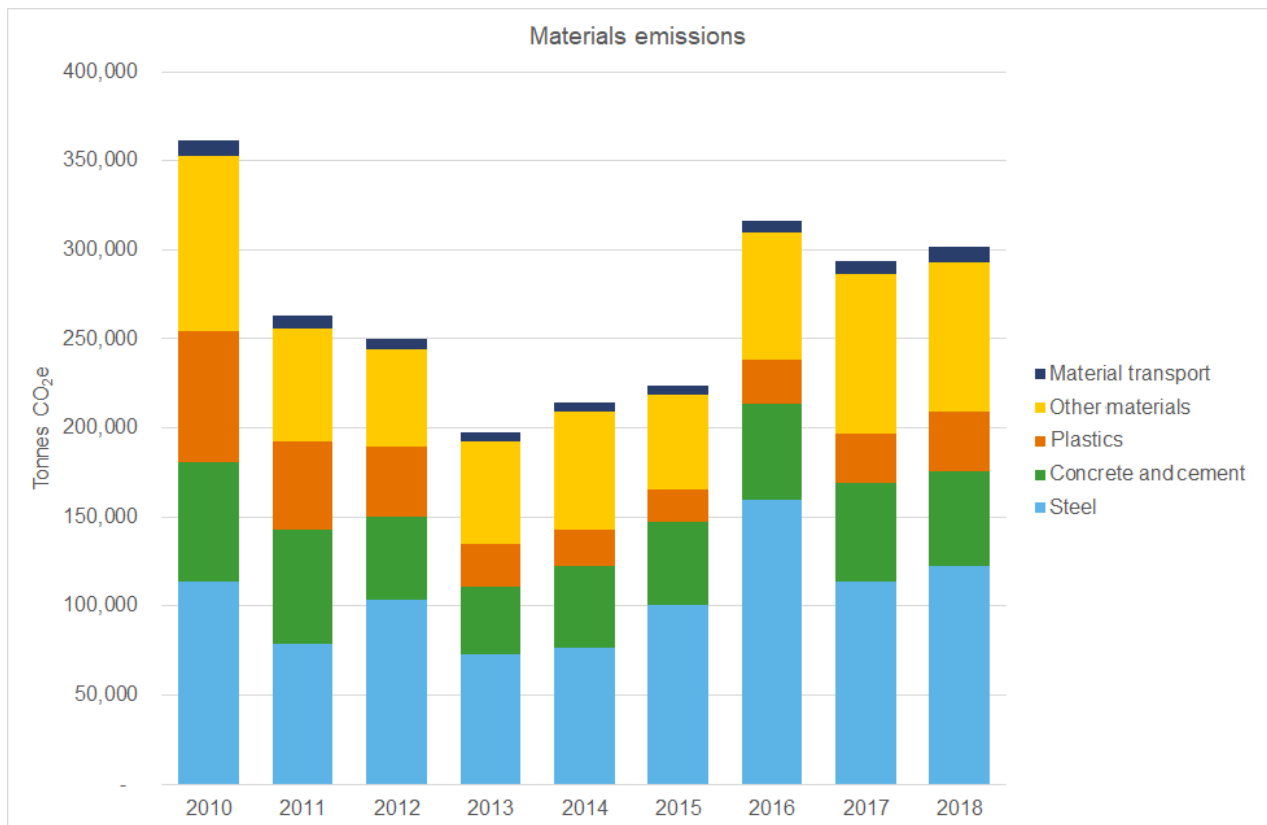
This show a breakdown of the emissions from key types of materials.

The largest emissions come from:

- Steel
- Cement and concrete
- Plastics

Emissions from the remaining materials have been included in the 'other' category.

We have also included materials transport emissions in the chart, for completeness.



**Category 12:            Product**

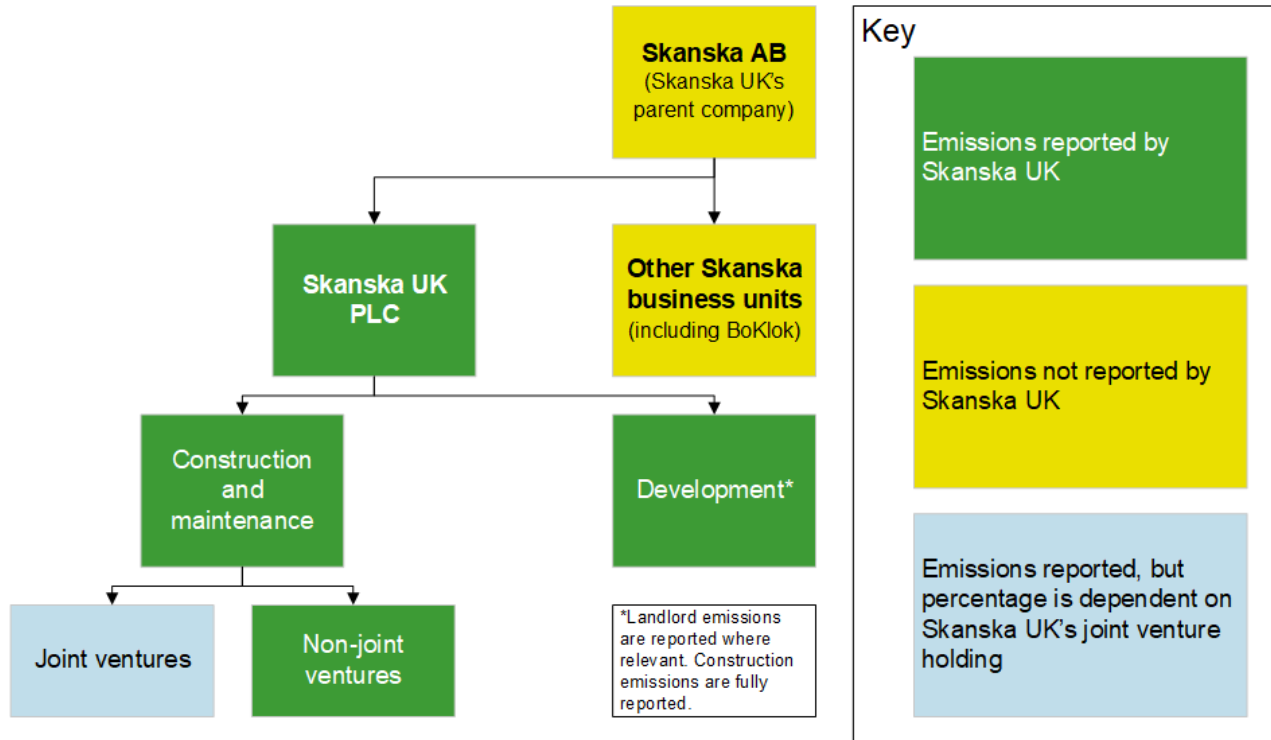
<b>Types of emissions</b>	<b>Indirect</b>
<b>Scope</b>	<b>3</b>
<b>Percentage of total</b>	<b>0 per cent</b>

We have not included post-handover emissions in our estimates.

This is because there is no established way for construction firms to measure responsibility for the post-handover emissions impact of the assets they build. This is due to significant challenges, such as defining the emissions that should be allocated to a tier one contractor when many other organisations are involved. Other issues include defining the impact of post-handover modifications and how long to link emissions with a construction phase contractor.

At group level, Skanska is sharing best practice and exploring how to report on whole-life emissions. Skanska UK is also working with the Carbon Trust to develop our way of understanding whole-life emissions. In the meantime, we will continue to reduce whole-life carbon emissions on a project-by-project basis, using the principles of the low carbon roadmap and PAS2080.

## Appendix A Carbon reporting boundaries chart



## Appendix B Construction sources emissions and scopes

Source: [www.encord.org](http://www.encord.org)

	GHG Protocol Scope 1	GHG Protocol Scope 2	GHG Protocol Scope 3	ENCORD emissions sources
Buildings / depots and other fixed facilities including off-site manufacture and assembly	Fuel used in all buildings/ facilities owned, leased or rented by the company eg: <ul style="list-style-type: none"> <li>• Gas Oil</li> <li>• Diesel</li> <li>• Petrol</li> <li>• Fuel Oil</li> <li>• Heating Oil</li> <li>• Natural Gas</li> <li>• Liquefied Petroleum Gas (LPG)</li> <li>• Compressed Natural Gas (CNG)</li> <li>• Coal</li> <li>• Etc.</li> </ul> Process and fugitive emissions eg: <ul style="list-style-type: none"> <li>• Air conditioning equipment</li> </ul>	Electricity used in all buildings/ facilities owned, leased or rented by the company: <ul style="list-style-type: none"> <li>• Electricity</li> </ul>		ENCORD emissions sources 1, 2, 3, 4, 5, 6
Projects / Sites	Fuel purchased for all plant and equipment owned, leased or hired by the company eg: <ul style="list-style-type: none"> <li>• Gas Oil</li> <li>• Diesel</li> <li>• Petrol</li> <li>• Fuel Oil</li> <li>• Heating Oil</li> <li>• Natural Gas</li> <li>• Liquefied Petroleum Gas (LPG)</li> </ul>	Electricity used in site accommodation etc.: <ul style="list-style-type: none"> <li>• Electricity</li> </ul>	Fuel purchased for all plant and equipment by others eg. sub-contractors or clients eg: <ul style="list-style-type: none"> <li>• Gas Oil</li> <li>• Diesel</li> <li>• Petrol</li> <li>• Fuel Oil</li> <li>• Heating Oil</li> <li>• Natural Gas</li> <li>• Liquefied Petroleum Gas (LPG)</li> <li>• Electricity</li> </ul>	ENCORD emissions sources 1, 2, 4, 5, 6  ENCORD emissions source 9
Travel in cars and vans (Vehicle Fuel)	Fuel purchased/paid for by the company for the purpose of business travel in vehicles owned, leased or hired by the company or in privately owned vehicles eg: <ul style="list-style-type: none"> <li>• Petrol</li> <li>• Diesel</li> <li>• LPG</li> <li>• Km / miles travelled</li> </ul>	Electricity purchased/paid for by the company to power electric vehicles for the purpose business travel in vehicles owned, leased or hired by the company or in privately owned vehicles eg: <ul style="list-style-type: none"> <li>• kWh</li> <li>• km / miles travelled</li> </ul>	Fuel and electricity used for the purpose of commuting in vehicles owned leased or hired by the company or in privately owned vehicles eg: <ul style="list-style-type: none"> <li>• Petrol</li> <li>• Diesel</li> <li>• LPG</li> <li>• kWh electricity</li> <li>• km / miles travelled</li> </ul>	ENCORD emissions source 7
Business Travel in addition to road miles including rail and air travel			Miles travelled for relevant mode of transport eg: <ul style="list-style-type: none"> <li>• Rail</li> <li>• Long haul flights</li> <li>• Short haul flights</li> <li>• Taxi</li> <li>• etc</li> </ul>	ENCORD emissions source 8
HGV Vehicles	Fuel purchased for use in HGVs owned, leased or hired by the company eg: <ul style="list-style-type: none"> <li>• Petrol</li> <li>• Diesel</li> <li>• LPG</li> </ul>		Fuel purchased by sub-contractor / supplier for use in HGVs eg: <ul style="list-style-type: none"> <li>• Petrol</li> <li>• Diesel</li> <li>• LPG</li> </ul>	ENCORD emissions source 7  ENCORD emissions source 9