

Highways England Carbon Tool

E-learning Training Programme





Highways England Carbon Tool

E-learning Training Programme

Please use full screen mode and click the buttons to navigate through the programme

Start Programme

Objectives of this programme

 To understand the principles behind the Highways England Carbon Tool and its key features; and

To enable you to use the tool effectively to produce accurate carbon returns for Highways England.

Proceed to Menu Page



PROGRAMME MENU

Exit Programme

Module 1: Advantages of carbon accounting	2mins
Module 2: Key features of the tool	3mins
Module 3: Data boundaries	3mins
Module 4: Using the tool - step by step guide	3mins
Module 5: Tool outputs	1min

Module 1 – Carbon accounting

Click to start



Carbon accounting

Background

Carbon accounting is the process of measuring an organisations carbon emissions.

There are standardised approaches and guidance documents such as the Greenhouse Gas Protocol and the publicly available standard PAS2050. These resources give guidance how to measure carbon and what you should include in your calculations (known as boundaries). Module 3 will clearly explain for you where we have set these boundaries for our tool.



Home Page

Carbon accounting

Department for Transport

Road Investment Strategy: Performance Specification



Highways England's Approach

The government monitors Highways England's performance in key areas through indicators, including carbon emissions.

With this in mind, we need to account not only for our own emissions, but also the emissions from our supply chain community to truly understand our role in promoting sustainable infrastructure.

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Carbon accounting

How you can support us

As part of our supply chain community, we need the information you provide to accurately account for the carbon emissions of construction and maintenance activities on our network.

This data will allow us to provide accurate reports on our carbon performance and will give us the opportunity to drive down carbon emissions where possible.

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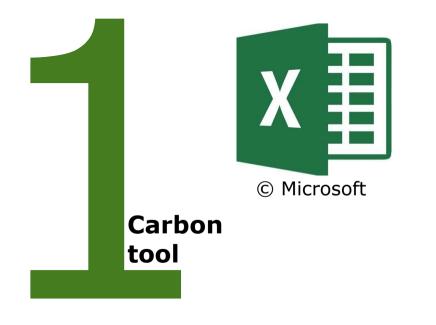
Proceed to module 2

Module 2 – Key tool features

Click to start



One tool for all our contractors

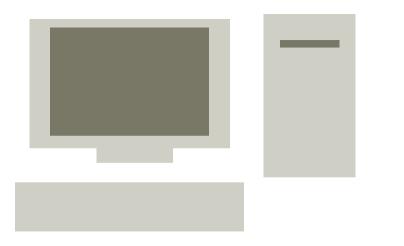


Our carbon tool consists of one excel file for use by all our construction and maintenance contractors.

Our carbon tool has been designed in consultation with our supply chain community to ensure the tool is straight forward to use.

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One file for the length of a project/contract



You save each carbon return for the duration of the whole project/contract in one file. This allows you to compare your own carbon returns each month/quarter and makes it easier to access your previous data.

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The option to report monthly or quarterly

The tool allows carbon returns to be entered monthly or quarterly, depending on your preference.

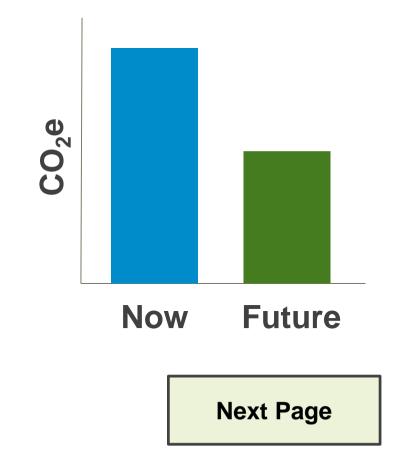


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Carbon management not carbon counting

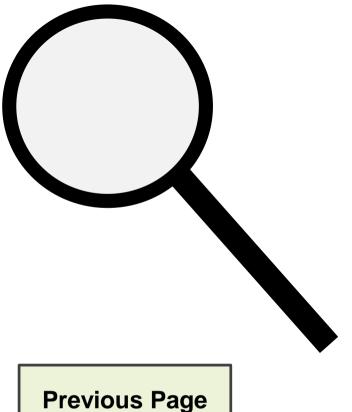
The tool collects sufficient data to enable analysis of the most carbon intensive areas of our construction and maintenance activities. This supports carbon reduction decision making.



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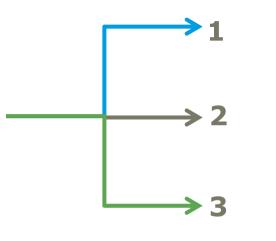
Traceable data sources



We need you to keep hold of the data sources that you use to fill in the tool (receipts, delivery notes etc.) for the duration of the contract, so that we can audit the data in our carbon accounts should we be required to do so.

Home Page

A large number of items to choose from



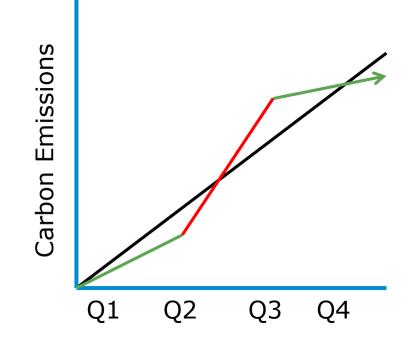
There are a large number of items in the tool, split across a number of recognisable highways specific categories to reduce the need to do your own calculations and estimations. For example, you only need to choose the diameter of a pipe you have used and enter its length rather than having to calculate the weight of plastic in that pipe.

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Introducing a baseline

The tool is able to compare your emissions against a baseline carbon number which has been generated from historic data (this can be viewed in the summary report page). This feature will help us see which of our contractor's are performing best in terms of carbon.



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Accessible guidance

The tool guidance is provided in a range of formats and is intended to be concise and easy to read.

In addition to this e-learning training programme, there is a more in depth guidance document and also guidance within the tool itself.



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2 Key benefits: Questions

Which of these are benefits of the tool?

Carbon management not carbon counting

Traceable data sources

One file for the length of a contract

Reducing the amount of data collected

The option to report monthly or quarterly

Accessible guidance

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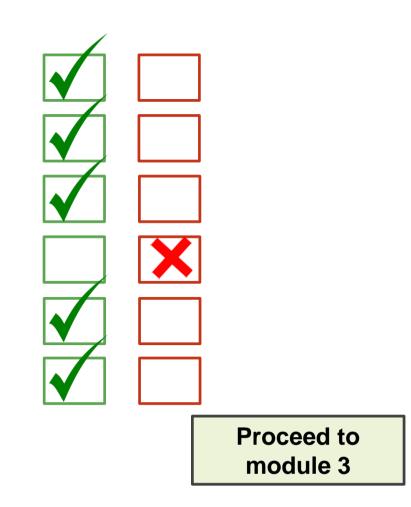
Answers

2 Key benefits: Answers

Carbon management not carbon counting Traceable data sources One file for the length of a project Reducing the amount of data collected The option to report monthly or quarterly Accessible guidance

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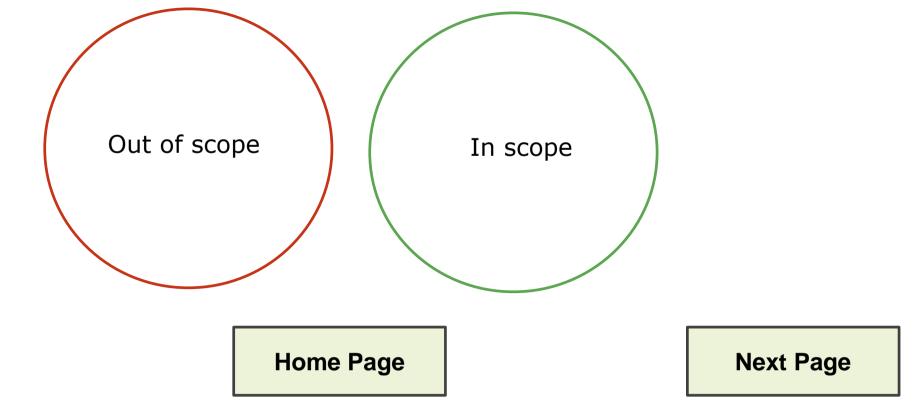
Module 3 – Data boundaries

Click to start



3

Before collecting and putting data into the tool, it is important to know the boundaries for your data collection. This will make sure you don't miss anything you need to include and don't include anything you shouldn't.



3

Data boundaries

The tool collects data under the following 10 categories, the boundaries for each of these will be clearly defined in the following pages.

- 1. Bulk Materials
- 2. Earthworks
- 3. Fencing, Barriers and Road Restraint Systems
- 4. Drainage
- 5. Road Pavements
- 6. Street Furniture and Electrical Equipment
- 7. Civil Structures and Retaining Walls
- 8. Fuel, Electricity and Water
- Business and Employee Transport
 Waste

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Categories 1-7 can be

 thought of as the 'Materials' categories.

Data boundaries Categories 1-7 (Materials)

Categories 1-7 will require the following data:

- Quantities of materials this period
- Distance from the supplier to the site
- The % of bulk materials used in each of the other categories (for bulk materials only)
- Forecast amount of material for next period (for bulk materials only)

Materials need to be recorded as they are delivered to your site/ reporting area, all construction and maintenance materials that enter your site must be recorded.

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Data boundaries Categories 1-7 (Materials)

You should record materials when they are delivered, not when they are used, as this will not capture everything, such as over-ordering of materials that become waste.

For Category 1 (Bulk Materials) you will need to forecast what materials you are anticipating to receive in the next reporting period. This can be an estimate; it may be helpful to base this estimate on the construction/maintenance programme.

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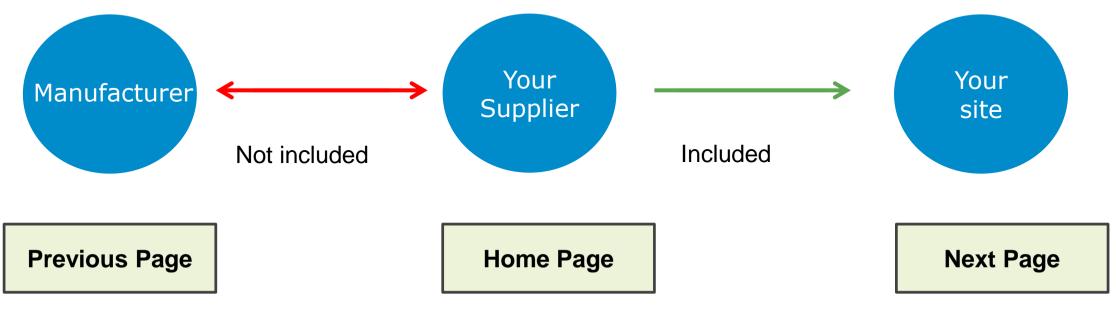
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Categories 1-7 (Transport of materials)

You should record transport of a material as the distance from **your supplier** to **your site**. You do not need to record any transport prior to your supplier or the return leg of the journey (the tool will account for the return journey and number of journeys automatically).

For example: If by road your concrete supplier is 16km from your site, you must record a transport distance of 16km and select the mode of transport e.g. van or HGV.



Category 8 Energy, Fuel and Water

All energy (electricity, gas etc.), fuel (petrol, diesel etc.) and water used for the reporting contract should be recorded. This includes use for both welfare purposes and construction/maintenance purposes. This consists of, but is not limited to:

- Site offices / buildings within construction / maintenance area (does not include buildings owned by the reporting contractor but outside the construction site or maintenance area, such as head offices).
- Mobile plant including site vehicles;
- Fixed plant; and
- On site accommodation.

Note this does not include any company vehicles used for business travel or employee commuting as this is covered in category 9.

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Category 9 Business and Employee Transport

Business Transport

3

All company vehicles and public transport used for business purposes must be recorded. This should be captured by recording the distance they have travelled (note that fuel use for on site vehicles should be recorded within category 8).

Employee Transport

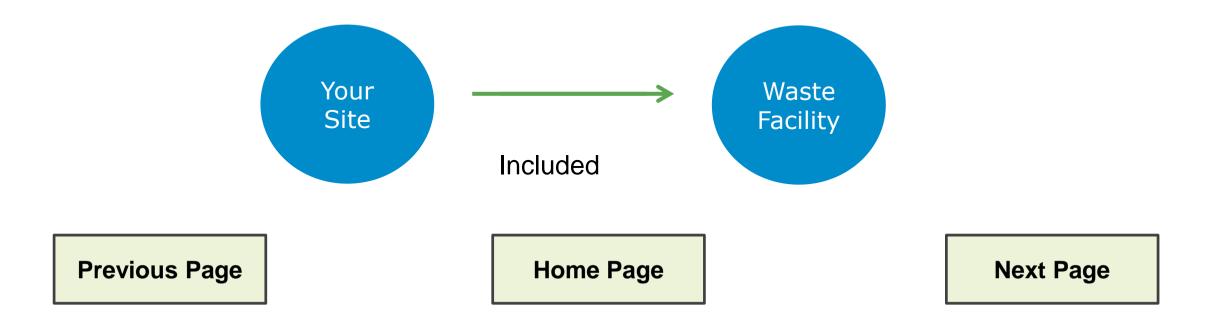
Staff commuting to site should be recorded in km. This includes all construction site maintenance area workers, including both your direct employees and Tier 1 sub-contractors. It is appreciated that this may involve an element of estimation.

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3

Category 10 Waste

The weight of all waste materials leaving the site /area must be recorded. You must also include the distance from your site to the receiving waste facility and how the waste will be dealt with at the facility (recycled, landfill etc.). All of this information should be available from your waste transfer/consignment notes.

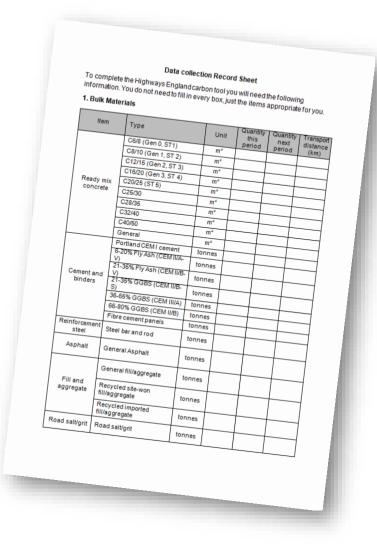


3

Data boundaries

Data collection pro-forma

We appreciate that collecting all this data can take time and will require other people to collect data for you. To help with this process we have created a data pro-forma for you to distribute to colleagues or sub-consultants to aid recording this data. This is available in word format on request.



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Proceed to Module 4

Module 4 – Using the tool - step by step guide

Click to start



Using the tool

4

This step by step guide will help take you through using all the tools basic functions.

When following each step, please read the text carefully and click where necessary to proceed.

You may find it useful to have the tool and full guidance document open as you go through this guide.

Before you start using the tool make sure it is saved in a suitable folder.

When using the tool remember that cells formatted like this:

will require you to enter some data.

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Home Page

4 Step 1 Enabling Macros

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File	e Home	Raml	boll	Insert	Page Layout	Formulas	Data	Review	View	Develo
Paste	Cut Copy -	inter	Calibri B I		• 11 • A					enter 🔻
	Clipboard	E.		F	ont	E I	A	lignment		ra l
1	SECURITY WAR	NING	Some a	ctive cor	itent has been di	sabled. Click f	or more deta	ails.	Enable Cor	itent
A1	•	: ×	< 🗸	f _x						

When you first open the tool you will need to **click here to enable macros** (the exact wording in the yellow banner may vary depending the version of excel you are using). This is essential to be able to use the tool correctly. Try it now.



4 Step 1 Enabling Macros

AutoSave 💽 Off 🗮	5-0	≷ • ∓						
File Home Ram	ıboll	Insert Page l	Layout Fo	ormulas	Data	Review	View	Develo
Paste	Calibri B I	▼ 11 <u>U</u> ~ <u></u> ~	► A ×				rap Text erge & Cen	iter 🔻
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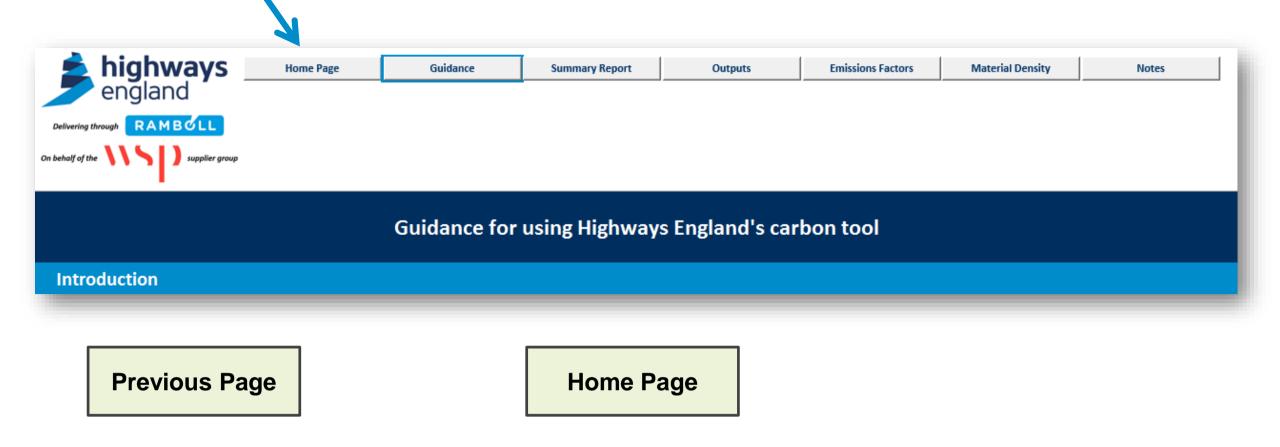
You will now see the banner has gone and macros are enabled. This means the buttons in the tool will now work. If the yellow banner did not appear and you cannot use the buttons in the tool please refer to the full guidance document.

Click next step to learn about navigating through the tool.

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When you open the tool for the first time you will see the guidance page. After enabling macros please take a few minutes to read this the first time you use the tool. The guidance page will always be available to refer to should you need it. Now click on the 'home page' button to proceed.

4



This is the homepage. Here you will enter your project details, create your carbon returns and export your data. All of this will be covered in the following steps of this programme.

Click next step to learn about adding your project details.

Previous Page

Home Pa	ige		Pro	oject Det	ails								
Carbon Tool v2.0	Contractor Name:]			Current	live return:	0	
	Project / Contract Name:								Total carbo	n this retu	rn (tonnes):	0.000	
	Contract Type:							т	otal carbon	this contra	ct (tonnes):	0.000	
	Return Frequency:									L	ast Update:		
	Contract Location:											·	
	Contract Activity:							Ado	d new retu	m			1-
	Type of Construction:											Input data into shaded cel	15
	Lane km Maintained:							Crea	ate export	file			
	Contract Start Date:		01/01/0001										
	Contract End Date:		31/12/9999				Fix p	project det	ails				
	Contract Value (£):			£0									
					Click a	category to	switch it or	n / off					
Return Period	Return Status	Bulk Materials	Earthworks	Fencing, Barriers & Road Restraint Systems	Drainage	Road Pavements	Street Furniture & Electrical Equipment	Civils Structures & Retaining Walls	Fuel, Energy & Water	Business and Employee Transport	Waste	Options	Estimate spend i return per (£)

Step 2 Project Details

You will need to enter your project details into the Home Page. All of the purple formatted cells require your input. These questions can only be answered once (although the contract start date, end date and value can be edited)

You will need to fix the details by **clicking on the button below**. You will no longer be able to edit them.

Fix project details

Previous Page

	Project Details
Contractor Name:	
Project / Contract Name:	
Contract Type:	
Return Frequency:	
Contract Location:	
Contract Activity:	
Type of Construction:	
Lane km Maintained:	
Contract Start Date:	01/01/0001
Contract End Date:	31/12/9999
Contract Value (£):	£0

Home Page

4

Step 2 Project Details

4

You will see that some cells have now turned white, these can no longer be changed and are 'fixed' for all future carbon returns for this contract.

Click next step to learn about adding a carbon return.

Project Details Contractor Name: Example Ltd. **Project / Contract Name:** Example Motorway Improvement Contract Type: **Major Project** Quarterly **Return Frequency:** Contract Location: Area 4 - Kent, Surrey, East Sussex, West Sussex Construction works **Contract Activity:** Type of Construction: Smart Motorway Lane km Constructed: 100 **Contract Start Date:** 01/01/2019 Contract End Date: 01/01/2025 Contract Value (£): £10,000,000

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Next Step

4 Step 3 Creating a Carbon Return

To create a carbon return you will need to **click the 'Add new return'** button.



Create export file

A carbon return is an accurate and complete summary of the carbon emissions associated with the activities of a contractor in the supply chain for a given period; inputting data into the Highways England carbon tool produces a carbon return. The full guidance document provides definitions for other terms used in the tool.

					Click a	category to	switch it o	n / off					
Return Period	Return Status	Bulk Materials	Earthworks	Fencing, Barriers & Road Restraint Systems	Drainage	Road Pavements	Street Furniture & Electrical Equipment	Civils Structures & Retaining Walls	Fuel, Energy & Water	Business and Employee Transport	Waste	Options	Estimated spend in return period (£)

Previous Step

Step 3 Creating a Carbon Return

Add new return

4

Create export file

You will now see that a new carbon return has been added to the table on the Home Page (as shown below). Each time you add a new return, each return will appear in this table as a new row and the status of the return will update as you progress.

You can also 'switch off' categories that you know you will not need to use. Try switching off the drainage category by clicking the heading in the table.

					Click a	category to	switch it o	n / off							
Return Period	Return Status	Bulk Materials	Earthworks	Fencing, Barriers & Road Restraint Systems	Drainage	Road Pavements	Street Furniture & Electrical Equipment	Civils Structures & Retaining Walls	Fuel, Energy & Water	Business and Employee Transport	Waste		Options		Estimated spend in return period (£)
2019 Jan - Mar	Not Started	-	-	-	-	-	-	-	-	-	-	Resume	Restart	Delete	£250,000

Previous Step

Step 3 Creating a Carbon Return

You will now see that the cell below the Drainage heading has turned grey indicating that you do not need to input data into this category.

Add new return

4

You will also notice you are required to provide your spend for the period in the column on the right of the table. This only needs to be an estimate.

Click next step to learn about entering data into the tool.

					Click a d	category to	switch it o	n / off							•
Return Period	Return Status	Bulk Materials	Earthworks	Fencing, Barriers & Road Restraint Systems	Drainage	Road Pavements	Street Furniture & Electrical Equipment	Civils Structures & Retaining Walls	Fuel, Energy & Water	Business and Employee Transport	Waste		Options		Estimated spend in return period (£)
2019 Jan - Mar	Not Started	-	-	-		-	-	-	-	-	-	Resume	Restart	Delete	£250,000

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Next Step

Step 4 Adding Data

4

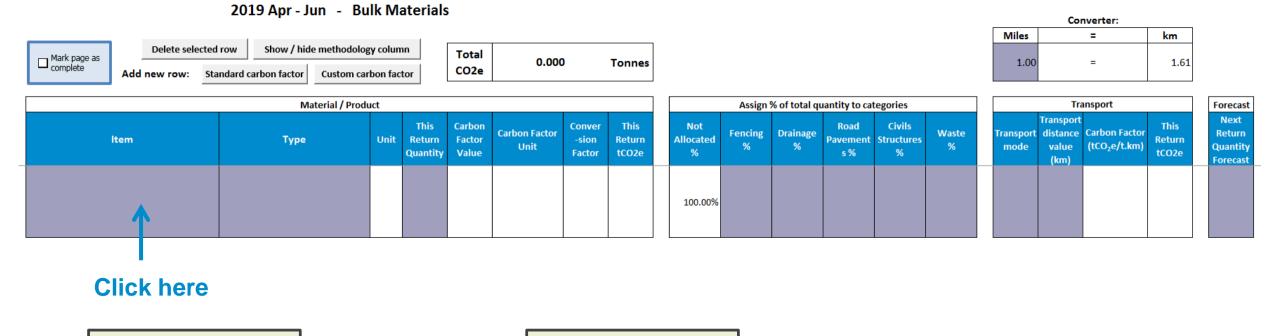
The top row of menu buttons allow you to view various information about the tool as well as allowing you easy access to the Home Page where your carbon returns are stored.

Home Pa	age		Guidance		Sum	mary Report	Output	s	Emissions Factors		Mate	rial Density
Bulk Materials	Fencing, Ba & Road Rest System:	traint	Drainage	Ear	rthworks	Road Pavements		Civils Struct & Retainin Walls	Fuel, Electricity & Water	Em	ness and pployee ansport	Waste

Once you have created or resumed a carbon return a second row of menu buttons will appear at the top of the page. The bottom row of menu buttons are the 'categories' where you need to input your data. Click the first category "Bulk Materials" to see an example of how to add data.



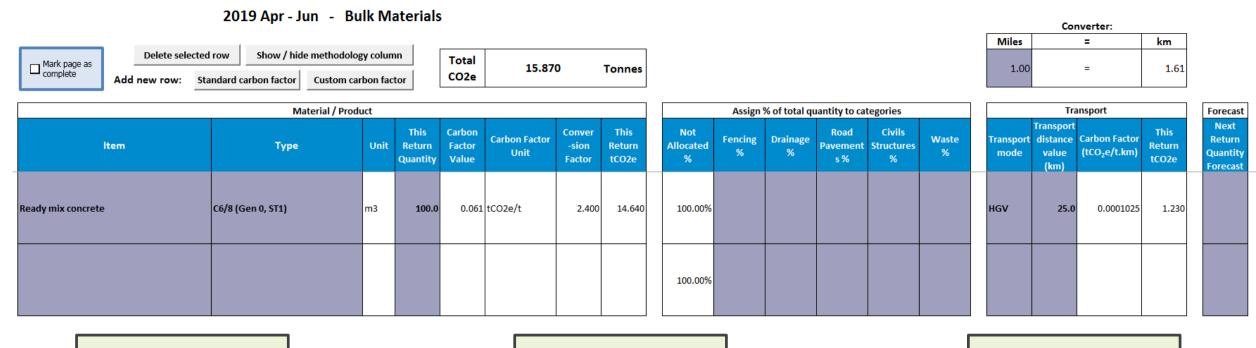
Once you have selected a category you will be presented with a data input table such as this. The first row of the table will automatically appear, each of the purple cells in this row requires you to insert data. To add data you will need to choose an item by clicking on the purple cells.



Previous Step

4

A row has been added for ready mix concrete. The input unit is cubic m³; 100m³ of concrete was delivered by HGV from a supplier 25km from the site. This data has been entered below. **Click next step** to learn about how to assign these bulk materials to the other categories in the tool.



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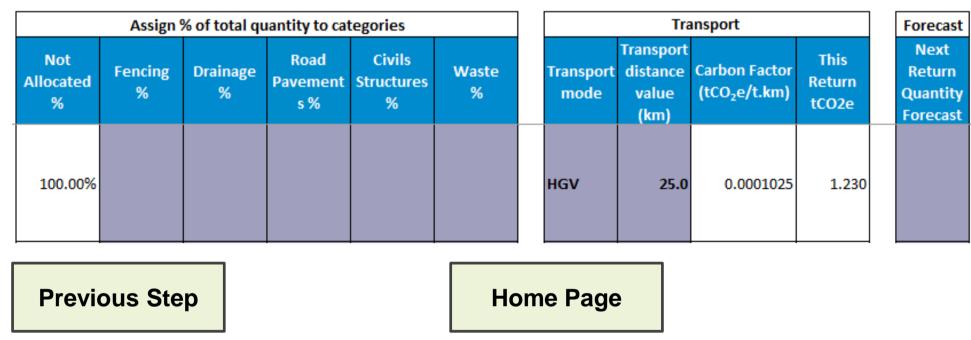
Home Page

Next Step

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For the Bulk Materials category, you are required to assign a percentage of the bulk materials used in the other categories. For example if you have entered 100 tonnes of concrete into the bulk materials category, 60% may have been used in drainage works, 20% for fencing, 10% for road pavements and 10% was wasted. A realistic estimate for this is acceptable

You are also required to estimate how much of each of the bulk materials are to be used in the next reporting period. Click on the purple cells to add the data.



4

For the Bulk Materials category, you are required to assign a percentage of the bulk materials used in the other categories. For example if you have entered 100 tonnes of concrete into the bulk materials category, 60% may have been used in drainage works, 20% for fencing, 10% for road pavements and 10% was wasted. A realistic estimate for this is acceptable

You are also required to estimate how much of each of the bulk materials are to be used in the next reporting period. Click next step to learn about adding custom carbon factors.

Not Allocated %	Assign S Fencing %	% of total qu Drainage %	Road Pavement s %	tegories Civils Structures %	Waste %		Transport mode	Transport		This Return tCO2e	Forecast Next Return Quantity Forecast	
0.00%	20.00%	60.00%	10.00%		10.00%		нgv	25.0	0.0001025	1.230	150.0	
Previo	ous Ste	р			Но	m	e Page	•			N	ext Step

See here a row has been added to the road pavements category for Pre-cast concrete kerbs. The input unit is metres; 100m of kerb were delivered by HGV from a supplier 25km from the site. This data has been entered below. If you know that the carbon factor for a material is not appropriate for the item you are using or you have a more accurate value available to you, you are encouraged to input your own custom carbon factor. To do this click on add new row 'Custom carbon factor'.

									Со	nverter:	
			_		(exclu	iding bulk	materials)	Miles		=	km
Mark page as complete Add new row: Sta	row Show / hide methodolog andard carbon factor Custom ca			Total CO2e	0.798	•	Tonnes	1.0	D	=	1.61
	Material / Prod	uct							Tr	ansport	
Item	Туре	Unit	This Return Quantity	Carbon Factor Value	Carbon Factor Unit	Conver -sion Factor	This Return tCO2e	Transpo mode	Transport t distance value (km)	Carbon Factor (tCO2e/t.km)	This Return tCO2e
Kerb	Pre-cast concrete 125x150mm	metres	100.0	0.180	tCO2e/t	0.043	0.776	HGV	25.0	0.0001025	0.022
Previous Step		н	ome	Page							

4

Additional columns will become purple so you can enter your own carbon factor and methodology. To add data you will need to choose an item by clicking on the purple cells of the bottom row.

Click here

4

							(exc	luding bulk	materials)		N	Ailes		=	km
	Mark page as complete	Delete selected Add new row: Sta	row Show / hide methodolog ndard carbon factor Custom car			Total CO2e	0.798	1	Tonnes			1.00		=	1.61
ſ						Material	/ Product						Tra	ansport	
	h	em	Туре	Unit	This Return Quantity	Carbon Factor Value	Carbon Factor Unit	Conver -sion Factor	This Return tCO2e	Methodology				Carbon Factor (tCO ₂ e/t.km)	
	Kerb		Pre-cast concrete 125x150mm	metre s	100.0	0.180	tCO2e/t	0.043	0.776	Carbon factor taken directly from the ICE inventory: Concrete > 40/50 mpa + precast factor. Dimensions of kerbs taken from supplier.	HG	v	25.0	0.0001025	0.022

Previous Step

Remember to **click "mark page as complete**" once you have finished entering all the data in each category.

Click here



				Material	/ Product					Tra	ansport	
Item	Туре	Unit	This Return Quantity	Carbon Factor Value	Carbon Factor Unit	Conver -sion Factor	This Return tCO2e	Methodology			Carbon Factor (tCO ₂ e/t.km)	
Kerb	Pre-cast concrete 125x150mm	metre s	100.0	0.180	tCO2e/t	0.043	0.776	Carbon factor taken directly from the ICE inventory: Concrete > 40/50 mpa + precast factor. Dimensions of kerbs taken from supplier.	HGV	25.0	0.0001025	0.022
Kerb	Pre-cast concrete 125x150mm	metre s	100.0	0.120	tCO2e/t	0.047	0.564	Carbon factor provided by our Kerb supplier (Example Kerbs Ltd.). Carbon factor value from product specification document. Carbon factor lower due to type of concrete used. Weight per metre is slightly higher.	HGV	36.0	0.0001025	0.035

Previous Step

Click next step to learn about creating your export file.

Click here



				Materia	l / Product					Tra	ansport	
Item	Туре	Unit	This Return Quantity	Carbon Factor Value	Carbon Factor Unit	Conver -sion Factor	This Return tCO2e	Methodology			Carbon Factor (tCO2e/t.km)	
Kerb	Pre-cast concrete 125x150mm	metre s	100.0	0.180	tCO2e/t	0.043	0.776	Carbon factor taken directly from the ICE inventory: Concrete > 40/50 mpa + precast factor. Dimensions of kerbs taken from supplier.	HGV	25.0	0.0001025	0.022
Kerb	Pre-cast concrete 125x150mm	metre s	100.0	0.120	tCO2e/t	0.047	0.564	Carbon factor provided by our Kerb supplier (Example Kerbs Ltd.). Carbon factor value from product specification document. Carbon factor lower due to type of concrete used. Weight per metre is slightly higher.	HGV	36.0	0.0001025	0.035

Previous Step



Step 5 Creating Your Export File

Once you have entered data into each of the category pages and marked them complete the status of the return on the Home Page will turn green:

					Click a d	category to	switch it o	n / off							
Return Period	Return Status	Bulk Materials	Earthworks	Fencing, Barriers & Road Restraint Systems	Drainage	Road Pavements		Civils Structures & Retaining Walls	Fuel, Energy & Water	Business and Employee Transport	Waste		Options		Estimated spend in return period (£)
2019 Jan - Mar	Complete	Complete	Complete	Complete		Complete	Complete	Complete	Complete	Complete	Complete	Resume	Restart	Delete	£250,000

Add new return
Create export file

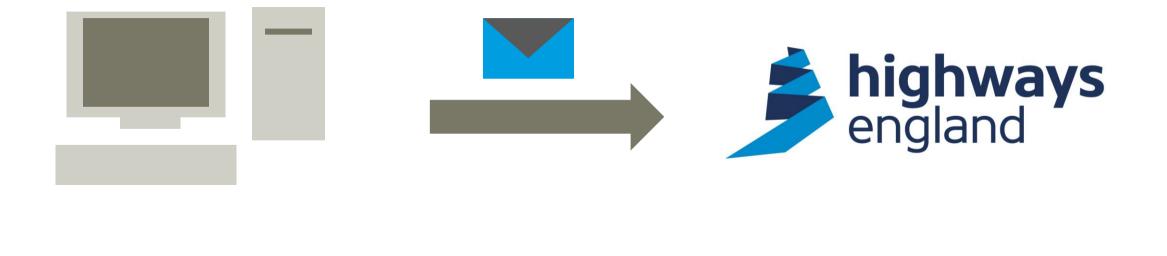
4

The data is now ready to be sent to Highways England. To do this **click the 'Create export file' button**. This will create the file you need to send to us.



Step 6 Send Us Your Carbon Return

Once you have created your export file, please email this to us at <u>sustainability@highwaysengland.co.uk</u> so we can analyse your results.



Previous Step

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Home Page

Next Step

Now you have finished inputting your data and sent it to Highways England, click save.

Save the file somewhere you can access it next time you need to enter a carbon return.

You will need to use the same excel file each time to enter your carbon returns, they will all be saved in the one place, making it easier for you to analyse and view your own carbon data.



Now you have finished inputting your data and sent it to Highways England, click save.

Save the file somewhere you can access it next time you need to enter a carbon return.

You will need to use the same excel file each time to enter your carbon returns, they will all be saved in the one place, making it easier for you to analyse and view your own carbon data.

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Home Page

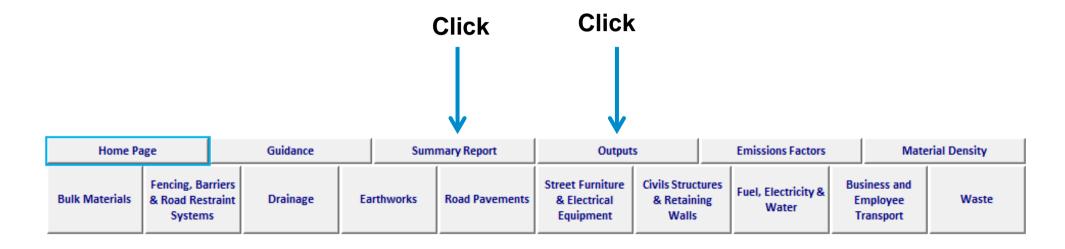
Proceed to Module 5

Module 5 - Tool outputs

Click to start



The tool produces a series of charts and summary data for analysis. It also produces an output table, which you can extract to complete your own analysis.



Tool outputs

Summary report

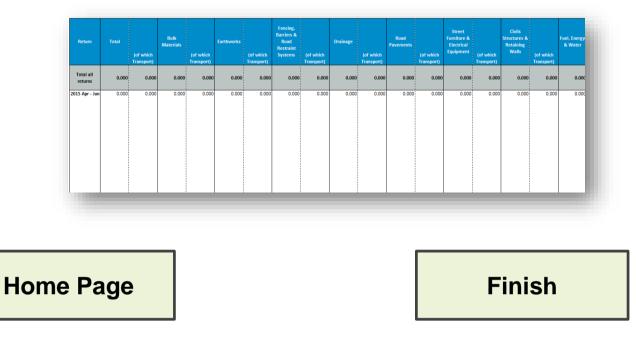
Previous Page

This report contains graphs outlining the headline figures from your data.

Category	Emissions		Category	Emissions
Fencing/ RRS/ barriers	1		Materials Total	1
Drainage	1		Materials Transport	1
Earthworks	1		Energy Use	1
Pavements Street furniture	1		Busines and Employee transport	1
Civil Structures	1		Waste	1
Total	6		Total	4
	-	-	-	_

Outputs

This page contains all the data you have input into the tool in one table.





Thank you for using the Highways England Carbon Tool E-learning Training Programme Please refer to the full guidance document for further detail

Restart Programme

Press 'Esc' key to exit full screen mode