elemental

GUIDE

Elemental Guide
v.1.3 19 Mar 2025

Get started

1 Create an account

create an account and log into Elemental.

Watch our quick start video, and find your way around this new tool.

2 Start a report for your project

Select the project type and begin answering as many of the questions as possible.

You can return to your report at any time - it is autosaved as you go.

3 Start looking for required data

Whilst answering the questions you may have to search for new project data.

With more answers, the more accurate your sustainability score in your report.

4 Search the knowledge base

Within the tool and within this document you will find detailed guidance on each question, as well as extensive links and further documents which you can use to grow your understanding.

5 See your results!

Your report results consist of scores across all elements of sustainability and a total.

Download this or export tables and graphs to display the sustainability of your project.

6 Explore the next steps

Why not compare your projects to one another on the report summary page.

To improve your scores, you may want to copy your report build a scenario to investigate which changes might have the most impact.

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CONTENTS Click a section to jump ahead

1. ABOUT ELEMENTAL

Elemental is a tool which supports the landscape industry to reach best outcomes for climate and nature. Elemental considers impacts on sustainability from things like materials use, carbon accounting, biodiversity, water, communities and society. In doing so the tool offers information to help professionals understand how these interact in their work.

Elemental is sponsored by Royal Horticultural Society, British Association of Landscape Industries, Society of Garden and Landscape Designers, Landscape Institute, Nicholsons, and John and Vicky Wyer, and Liz and Niel Nicholson. Elemental is supported by the Association of Professional Landscape Designers; The Horticultural Trades Association.

Our values

Sustainability, Collaboration, Integrity, Simplicity.

Sponsored by

RHS

British Association Landscape Industries bali.org.uk

SOCIETY OF GARDEN + LANDSCAPE DESIGNERS

Landscape Institute Inspiring great places

NICHOLSONS

Supported by

The Association of Professional Landscapers

HTA

2. THIS GUIDE

This is a guide for users of Elemental to be used alongside the software. Contained within is information about the tool, our knowledge base, as well as detail about the methodology which sits behind the tool and its development.

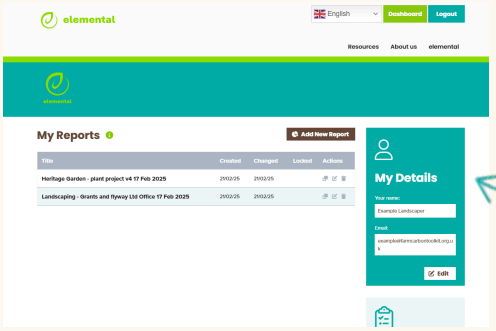
Elemental's mission is to enable the landscape industry to reduce impacts and optimise benefits to climate and nature.

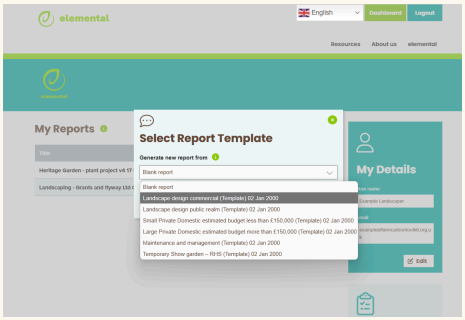
Transparency in the sector is crucial as we grapple with the urgent task of rapidly reducing greenhouse gas emissions. This comprehensive resource explains how the different elements of sustainability inform your report and how landscape-related greenhouse gas emissions are measured, and by producing it we hope Elemental's users and the wider public will have a greater understanding about the opportunities to make positive change.

3. GETTING STARTED

Elemental is designed to be easy to use as part of your design workflow, whilst offering an in-depth and informative journey through the assessment of your designs' sustainability. With a completed report you should feel more informed about your design, have opportunities to learn more, and feel equipped to make or investigate changes to the sustainability of your design.

Elemental consists of a **dashboard** where you can view and manage your reports once logged in and put these in folders to organise or share with other users.

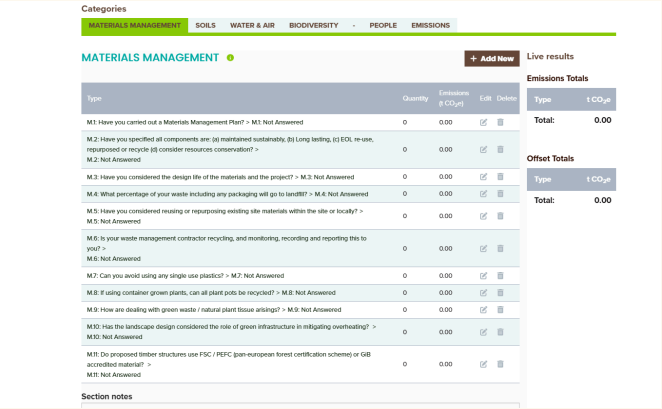




Create Reports to measure the sustainability of a project. They can be either standard, testing, or scenario reports. You may have multiple per project. Each report has a creator, though you can collaborate on other users's reports by working in shared folders, or view others' reports with a share link.

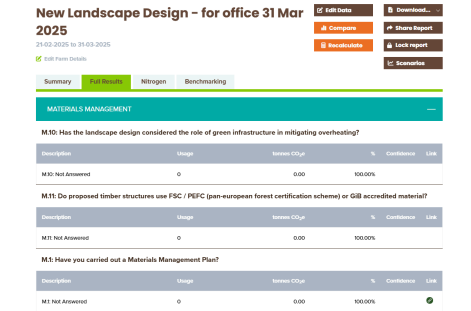
Completing your report involves entering project information and answering tailored questions dependent on the type of project you are working on. Your questions are organised into **6 elements of sustainability:**

- Materials Management
- Soils
- Water & Air
- Biodiversity
- People
- Emissions.



Set out by experts in this field, these 6 elements cover all aspects of sustainability relevant to the landscape sector from social impacts to notions of natural capital.

Your report is scored against up to **98 questions**. Some questions may require quick yes/ no answers about the various aspects of your project whilst others require an in-depth background knowledge. Questions are categorised and numbered. The knowledge base contains curated guidance and further links to assist you in tackling all questions in your report and can be found below in full for your benefit.

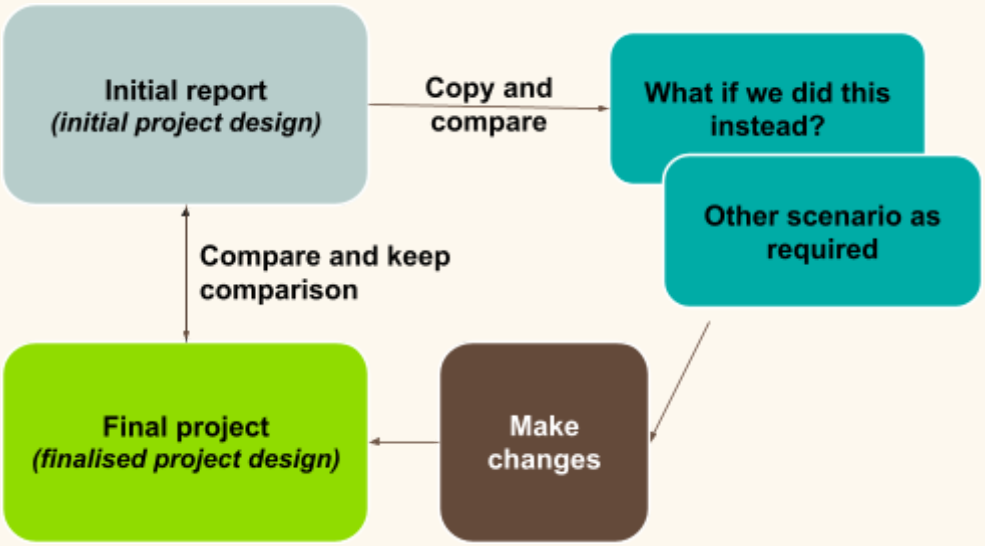


Scores in your report are calculated based on your answers, and the weighting of the question which indicates the relative importance of each question to sustainability. This information is set out below and within the tool. When you view your report you can interrogate your answers and scores, as well as download your results.

4. ADVANCED USE

You don't have to wait until you have all the project information to receive a report. For example you might try making a quick report for a client based on an idea which you can then use to inform your design process or undecided project decisions.

You could create scenario reports and use these to explore more sustainable options, whilst preserving the ability to compare this to 'what could have been'. Once you have a project report completed, create a scenario and tweak the answers or numbers - noting your assumptions - to see how much your score could be increased by. This can create great evidence of sustainability credentials.



Elemental is flexible so it fits your existing design workflow. Let us know if you are finding it useful - we'd like your feedback!

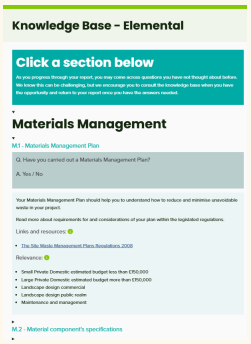
5. KNOWLEDGE BASE

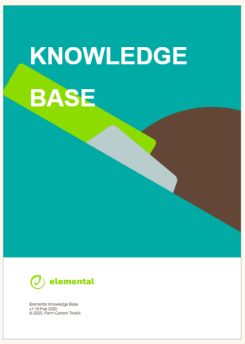
As you progress through your report, you may come across questions you have not thought about before. We know this can be challenging, but we encourage you to consult the knowledge base when you have the opportunity and return to your report once you have the answers needed.

5.1 USING THE KNOWLEDGE BASE

All of the guidance in the knowledge base is found within the tool beside each question - but if you would like to see this all in one place as a summary then view the Knowledge Base. **This is best viewed online, or in a downloadable resource available on the homepage.**

View online **Download pdf (from resources page)**





The Knowledge Base is organised into the **6 elements of sustainability** found within the tool:

- Materials Management
- Soils
- Water & Air
- Biodiversity
- People
- Emissions.

The question, and available answers are shown. Answers are either Yes or No, or multiple choice. If a question is not in the Knowledge Base - no guidance is available. If you are not sure about these questions make sure you get in touch.

Guidance and links then follow which give either quick tips, or more in-depth guidance around tools and resources that you may require to answer the question.

5.2 RESOURCES

The links below are a summary of those available as guidance within the knowledge base. If you just want to find a link, or start exploring then start here. If you find any of the below links no longer work let us know.

Resource	Guidance
BwN Standards Framework BwN 2.0	A set of quality standards for placemaking and place-keeping, covering the themes of Wellbeing, Water and Wildlife.
Green Infrastructure for Roadside Air Quality (G4RAQ)	Estimating site-specific changes in exposure to road transport pollution close to source

MAGIC Maps Tool - Natural England	Authoritative geographic information about the natural environment from across government.
Natural England - Green Infrastructure Principles, 2023	The principles cover the Why, What and How to do good green infrastructure.
Natural England – National Character Area Profiles	Interactive profiles which describe each of England's 159 National Character Areas (NCAs)
Outdoor Recreation Valuation Tool (ORVal: Version 2.0)	Generate estimates of public and private site usage, how visitation and welfare values may change, and the site's potential monetary value in terms of household recreational benefit.
Rodwell, J.S. (2006) NVC Users' Handbook, JNCC,	Assists in understanding the National Vegetation Classification.
Soilscapes viewer	Soilscapes is a 1:250,000 scale, simplified soils dataset covering England and Wales.
Sustainable Drainage Systems: Non-statutory technical standards for sustainable drainage systems, 2015 (pdf)	The non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems to drain surface water have been published by DEFRA. The standards apply to systems that drain surface water from housing, non-residential or mixed use developments for the lifetime of the developments.
The Construction (Design and Management) Regulations 2015 - HSE	The Construction (Design and Management) Regulations 2015 (CDM 2015) are intended to enable those involved in construction, from design to build, to control relevant safety risks in a sensible manner.
The Ecological Site Classification (ESC) decision support tool - Forest Research	Free tool allowing users to Assess the current and future suitability of tree species for a forest site.
The National Biodiversity Network Atlas	UK's largest repository of publicly available biodiversity data.
The Plant Healthy Certification Scheme	Certification scheme aiming to unite growers, garden retailers, landscapers and arborists, to help protect against destructive pests and diseases.
The Site Waste Management Plans Regulations 2008	Government regulations relevant to waste management.
The statutory (official) biodiversity metric - DEFRA	This official calculation tool measures all types of habitat and produces results in standardised biodiversity units.
UK Soil Observatory (UKSO) map viewer	Some of the most accurate soil data for the UK available in a graphical format.
UKCEH Countryside Survey	Insight into how UK plants, soil, woodlands and small water bodies have changed over time.
UKHab Ltd (2023) Habitat Classification Manual 2.01	The UK Habitat Classification - classification, survey and monitoring of habitats.
What will climate change look like in your area' - BBC, Dale and Stylianou.	A quick way of assessing predicted weather patterns.

6. METHODOLOGY

6.1 SCORES IN YOUR REPORTS

Elemental has been designed to be flexible and cover all sorts of garden and landscape projects and designs. Within each of the six sustainability sections are weighted questions which contribute to your overall sustainability score for your project.

This weighting is indicated below alongside all questions for transparency. Scores in each element were developed by an appropriate technical advisory group consisting of experts on sustainability chosen from within the landscape sector and further afield. Scores are subject to ongoing rigorous review. The emissions element is not weighted since the data is quantitative - details follow below.

6.2.1 MATERIALS MANAGEMENT

ID	Question	Weight	Max Score
M.1	Materials Management Plan	**3**	6
M.2	Material component's specifications	**3**	6
M.3	Design life considerations	**3**	6
M.4	Landfill waste	**3**	6
M.5	Repurposing site materials	**2**	4
M.6	Monitoring of recycling	**3**	6
M.7	Single use plastics	**2**	4
M.8	Plant pot recycling	**2**	4
M.9	Treatment of green waste	**2**	4
M.10	Consideration of overheating	**1**	2
M.11	Timber certification	**2**	4

6.2.2 SOILS

ID	Question	Weight	Max Score
S.1	Understanding of area	**3**	6
S.2	Retaining vegetation	**3**	6
S.3	Soil health	**2**	4
S.4	Soil structure	**3**	6
S.5	Land contamination	**2**	4
S.6	Soil type	**2**	4
S.7	Soil nutrients	**1**	2
S.8	Soil survey	**3**	6
S.9	Minimising cultivation	**2**	4
S.10	Soil movements	**3**	6
S.11	Soft landscape	**3**	6

6.2.3 WATER & AIR

ID	Question	Weight	Max Score
W.1	Water movement	**3**	6

W.2	Sustainable Drainage Systems	**3**	6
W.3	Infiltration	**3**	6
W.4	Control of runoff	**3**	6
W.5	Runoff pollution	**3**	6
W.6	SuDS maintenance	**3**	6
W.7	Nitrate vulnerability	**2**	4
W.8	Climate resilient planting	**3**	6
W.9	Targeted watering	**3**	6
W.10	Irrigation, species and soil	**3**	6
W.11	Water systems	**2**	4
W.12	Water recycling	**2**	4
W.13	Biodiversity benefits	**3**	6
W.14	Amenity benefits	**3**	6
W.15	Roadside air quality	**3**	6

6.2.4 BIODIVERSITY

ID	Question	Weight	Max Score
B.1	Baseline survey	**3**	6
B.2	Arboriculture assessment	**3**	6
B.3	Predicted weather patterns	**2**	4
B.4	Planting mix	**3**	6
B.5	Climate resilience of trees	**2**	4
B.6	Tree diversity	**3**	6
B.7	Shrub diversity	**3**	6
B.8	Non-woody species diversity	**2**	4
B.9	Wildlife food sources	**2**	4
B.10	Food webs	**2**	4
B.11	Habitat mix	**2**	4
B.12	Habitat connectivity	**3**	6
B.13	Wider green infrastructure	**3**	6
B.14	Habitat management and development	**3**	6
B.15	Endangered species	**2**	4
B.16	Lighting and impacts	**2**	4
B.17	Chemical use	**3**	6
B.18	Supplier certification	**2**	4
B.19	Biodiversity assessment	**2**	4

6.2.5 PEOPLE

ID	Question	Weight	Max Score
P.1	Design Risk Assessment	**3**	6
P.2	Safety of users	**3**	6

P.3	Security of users	**3**	6
P.4	Physical and mental health and wellbeing	**3**	6
P.5	Inclusion and belonging	**3**	6
P.6	Local context	**3**	6
P.7	Capturing a sense of place	**3**	6
P.8	Recreational value	**2**	4
P.9	Sustainable access	**2**	4
P.10	Welfare facilities	**2**	4
P.11	Engagement opportunities	**2**	4
P.12	Site interpretation	**3**	6
P.13	Vocational skills development	**1**	2
P.14	Accessibility	**3**	6

6.3 TECHNICAL ADVISORY GROUPS

Element	Advisory Group
Materials Management	Paul Cowell - PC Landscapes (**Chair**) Malcolm Anderson - Royal Horticultural Society Nadine Charlton - Association of Professional Landscapers Alasdair Bayford - Frost Landscapes Allon Hoskin - Modular Mark Gregory - Landform consultants
Soils	Malcolm Anderson - Royal Horticultural Society (**Chair**) Liz Nicholson - Nicholsons Rachel Bailey - Society of Garden Designers Sheila Das - National Trust Robin Truslove - Nicholsons Allon Hoskin - Modular Tecwyn Evans - Living Landscapes
Water & Air	Liz Nicholson - Nicholsons (**Chair**) Sue Ilman - Illman Young Landscape Design Dr Tijana Blanusas - Royal Horticultural Society Dr Nicolas Cryer - Royal Horticultural Society Janet Manning - Royal Horticultural Society
Biodiversity	Rachel Bailey - Society of Garden Designers (**Chair**) Rachel Jackson - Nicholsons Tom Massey - Tom Massey Studio Jillayne Rickards - Jilayne Rickards Contemporary Garden Design
People	John Wyer - Bowles & Wyer Ltd (**Chair**) Ian Dudley - Nicholsons Wayne Grills - British Association of Landscape Industries Sue Moss - Royal Horticultural Society
Emissions	Liz Nicholson - Nicholsons (**Chair**) Jake Conway - Nicholsons Romy Rawlings - Deep Green Lizzy Parker, James Pitman, Grace Wardell - Farm Carbon Toolkit

7. EMISSIONS METHODOLOGY AND REFERENCES

Here we are transparent about how the important emissions of your project are calculated. The emissions element calculates a carbon footprint of your project from design through to completion including maintenance where indicated - depending on the purpose of your report. All scopes are included:

Scope 1	Also known as **direct emissions**, these are emissions that are owned or controlled by your company such as the use of machinery, gas for heating and from change of land use. Additional emissions arise from N_2O released as a consequence of vegetation grown.
Scope 2	These are associated with emissions resulting from the generation of **purchased electricity** used within your project.
Scope 3	Also known as **indirect emissions**, associated with the production, processing and distribution of inputs into your project. This list would include the use of fertilisers and other products in the management of projects, as well as the emissions that occurred in the manufacture of machinery purchased as part of the project, building materials and in the creation of other infrastructure.
Out of scopes	These are emissions associated with the combustion of biofuels, wood or other plant biomass - as defined by the Greenhouse Gas Protocol guidance.

Emissions are reported in the standard tonnes of CO_2e. In the report, a breakdown of fluxes from carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) in tonnes of CO_2e is given, as well as a breakdown by scope.

The accuracy of the emissions calculation in your report is dependent on a number of factors:

- Accuracy of the emissions factors we use;
- Whether a factor is based on actual or proxy values;
- Accuracy of user data collection and input;
- Level of completeness of user data collected and input.

Be as comprehensive as possible with the data you submit for calculation and ask us if you are not sure. The tool indicates confidence levels in the emissions calculated on a scale from 1 to 3, where results with 3 are those in which we have the most confidence in results. This scale is created by us and incorporates the above list of factors for accuracy.

Note on proxy and actual data - Some emissions factors are calculated based on actual data (e.g. litres of fuel used), and some are based on proxy data (e.g. distance travelled). Entering direct fuel usage in this instance provides a more accurate assessment of emissions, whereas the mileage is a less accurate proxy assessment.

7.1. WHERE THE EMISSIONS RELATE TO ENERGY AND TRANSPORT

Emissions relate to the use of fuels, running machinery, electricity, travel or deliveries. These include scope 1 (direct), scope 2 (indirect emissions from purchased energy) and scope 3 (indirect – such as processing and transport) emissions, including ‘well-to-tank’ emissions factors.

All of the items are derived from BEIS GHG conversion factors (86).

Section	Item	Units	Reference
Emissions	Electricity with different tariff or known carbon footprints	Kilowatt Hours or Tonne CO2e / kWh if known	86
Emissions	Gas - Butane or propane used by volume	Litres	

Emissions	Liquid fuels - Forecourt diesel/ petrol, biodiesel, lubricant oil used	Litres	86, 107
Emissions	Employee or worker transportation - entered as MPG or distance travelled	MPG / kWh or miles travelled	86, 107
Emissions	Contracted or in-house deliveries and collections entered by vehicle and distance	Delivery distance in miles	107a

7.2. WHERE THE EMISSIONS RELATE TO MATERIALS USE

Calculations include the embodied energy in a range of materials used in your project, including aggregates, metals, wood and plastics. These are all Scope 3 emissions.

Emissions factors are drawn from the Inventory of Carbon and Energy database, either version 2.0 (2) or version 3.0 (2a). A range of metrics are used, including tonnes, kg, m^2 and m^3.

Section	Item	Units	Reference
Emissions	Purchased growing media covering various items from bark, green waste compost, peat, rockwool etc.	Cubic meters or kilograms where appropriate	2, 16, 107, 108
Emissions	Landscaping materials including aggregates, boulders, paving of various types, glass, plastics, metals, walling materials and wood	Weight in tonne or kg, area in m2, or volume in m3 depending on materials used	2, 2a, 60, 108, 107a
Emissions	Structures; Glass houses, polytunnels, Renewable energy generation infrastructure, vineyard trellising.	Weight in tonne, volume in m3, or various specific modelled structural dimensions dependent on structure type	2, 2a, 60, 86, 107a, 108

7.3. WHERE THE EMISSIONS RELATE TO MATERIALS BEING DISPOSED OF

Emissions relating to the disposal of materials like soil, metal, plastic, concrete and aggregate as part of the project. Users enter data against each item.

Emissions factors are derived from BEIS GHG conversion factors (86).

Section	Item	Units	Reference
Emissions	Soils sent to landfill or otherwise reused	Kilograms	107a
Emissions	Aggregates sent to landfill or otherwise reused	Kilograms	107a
Emissions	Concrete sent to landfill or recycled	Kilograms	107a
Emissions	Metals sent to landfill or recycled	Kilograms	107a
Emissions	Wood sent to landfill, composted, combusted or recycled	Kilograms	107a
Emissions	Glass sent to landfill, recycled, or combusted	Kilograms	107a

Emissions	Average plastics sent to landfill, recycled, or combusted	Kilograms	107a
Emissions	Paper sent to landfill, recycled, composted or combusted	Kilograms	107a
Emissions	Organic garden waste sent to landfill, composted, or combusted	Kilograms	107a
Emissions	Commercial waste and industrial waste sent to landfill or combusted	Kilograms	107a
Emissions	Commercial and industrial waste - Combustion	Kilograms	107a
Emissions	Commercial and industrial waste - Landfill	Kilograms	107a

7.4. CONVERSIONS USED FROM INDIVIDUAL GHG EMISSIONS TO CO2e

The emissions factors for some items may come from sources such as individual GHG emissions and where this is the case tThe three main GHGs are calculated using the following ratios under GWP100 (53):

CO_2 to CO_2e per CO_2 = 1 : 1

CH_4 to CO_2e per CH_4 = 28 : 1

N_2O to CO_2e per N_2O = 265 : 1

8. REFERENCES

The emission factors which underpin Elemental's carbon calculations come from peer-reviewed scientific papers and are shared with those used in the industry-leading Farm Carbon Calculator's published sources. A full list of current references follows:

Reference number	Source
2	Hammond & Jones (2011). The Inventory of Carbon & Energy (ICE) database v2.0
2a	Jones (2019). The Inventory of Carbon & Energy (ICE) database v3.0. Accessed on 16/03/2023 https://circularecology.com/embodied-carbon-footprint-database.html
86	Department for Energy Security and Net Zero (2023). Greenhouse Gas Reporting: Conversion Factors 2023 (full file .xls) Published 07/06/2023, accessed on 01/12/2023 https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023 - Scope 1: Fuels, Passenger vehicles, Freighting goods - Scope 2: UK electricity, Freighting goods - Scope 3: WTT-Fuels, WTT-Bioenergy, Transmission and Distribution, WTT UK electricity (gen) & WTT UK electricity (T&D), WTT pass vehs & travel- land, WTT- Del vehs & freight, Waste Disposal - OoS: Outside of scopes
107	Department for Energy Security and Net Zero (2024). Greenhouse Gas Reporting: Conversion Factors 2024 (full file .xlsx) Published 08/06/2024,

	accessed on 14/03/2025 https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024
107a	Department for Energy Security and Net Zero (2024). Greenhouse Gas Reporting: Conversion Factors 2024 (flat file .csv) Published 08/06/2024, accessed on 14/03/2025 https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024
108	The Inventory of Carbon and Energy (ICE) Database Advanced V4.0 (2024). Published Dec 2024, accessed on 14/03/2024 https://circularecology.com/embodied-carbon-footprint-database.html
16	Warwick HRI (2009). Preliminary assessment of greenhouse gases associated with growing media materials. DEFRA project report IF0154 http://randd.defra.gov.uk/Default.aspx?Module=More&Location=None&ProjectID=15967

CONTACTING US

Elemental welcomes enquiries relating to your reports, or about sustainability. For assistance contact Nicholsons: **elemental@nicholsonsgb.com**

If you are experiencing issues with accessing the software or are experiencing issues of a technical nature contact: **calculator@farmcarbontoolkit.org.uk**

As we develop Elemental, we believe it's critical to listen to the views, requests and questions of our users, ensuring we are as relevant, up to date and user-friendly as possible. Send your feedback at any time.

9. GLOSSARY

BEIS	Department for Business, Energy and Industrial Strategy
CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
N_2O	Nitrous oxide
NH_3	Ammonia
PAS	Publicly Available Standard
SOC	Soil Organic Carbon

10. DOCUMENT VERSION

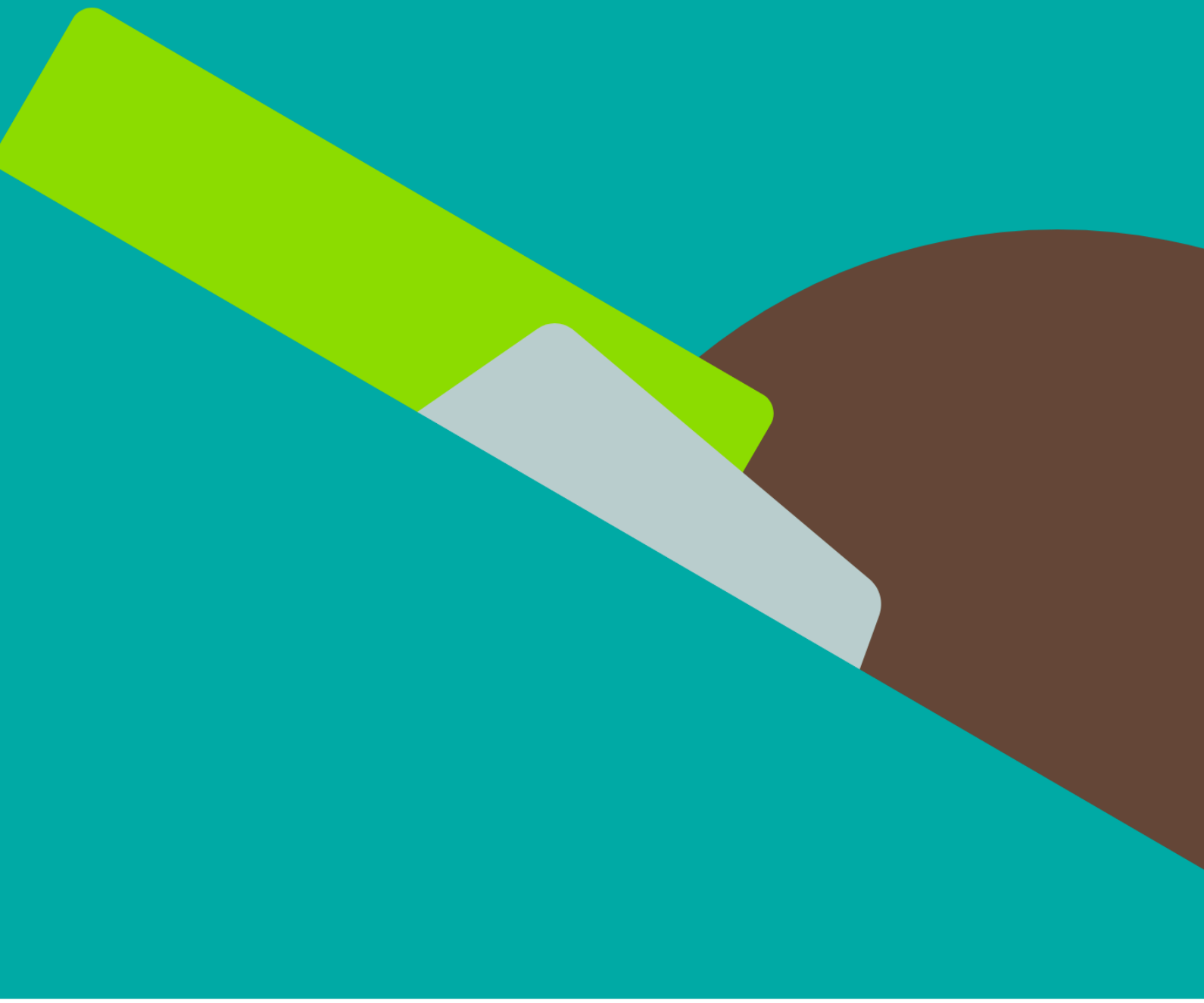
Version	Date	Description
Version v.1.0	February 2025	Guide and methodology drafted
Version v.1.3	19 March 2025	**Guide and methodology finalised at launch**

We encourage you to share this guide with anyone who might find it useful. Because it can be updated at any time however - please send a link to the resources page where the latest version can be found.

11. DEVELOPMENT CYCLE

Elemental remains in development but with a schedule of annual development seeing updates in spring each year to ensure your reports remain at the forefront of sustainability. The project team and supporters are investigating the incorporation of new elements to include within the tool. Where required research into new data, methodologies, and new user functions will therefore continue at the time of this guide and minor adjustments may be made to the tool.

Elemental was developed in association with **Farm Carbon Toolkit,** a community interest company and non-profit organisation with expertise in landscape and environment.



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