Towards Responsible Sourcing and Manufacture of Growing Media

Guidance Notes: Responsible sourcing scheme for growing media

August 2026

These guidance notes will continue to be updated; this is a working document. Please ensure you are using the latest available version.

Change log

Changes from version 10 of the guidance notes:

- Table 1 – ‘topsoil’ removed from recycled materials and ‘loam’ added to virgin materials as it should be considered either a virgin material or virgin by-product.
- Change of name of input material from ‘topsoil’ to ‘loam’ with update to glossary definitions.
- Table 3 – level of responsibility for loam at different production stages added
- Table 4 – modified starting points for loam added
- New criterion of Greenhouse gas emissions replaces Energy use – energy use remains as part of the method with conversion to carbon dioxide equivalents.
- Water use – amendment to scoring to clarify water use to achieve top two scores, illustration added to clarify how out of scope water sources should be considered in calculations (Figure 9).
- Social compliance scoring adjusted (Figure 10 and tools) and explained (Figure 12)
- Figure 14 – clarified the cut-off year for the different set of scores.
- Figure 15 – reduced scores for material from unsustainably managed forests.
- Figure 16 – habitat and biodiversity decision tree for coir revised
- Figure 17 – clarification of the cut-off % primary purpose for restoration for different scores.
- Loam co-extracted with root vegetables added to Figure 18. Criterion scoring decision to apply to all agricultural crops. Higher-level environmental schemes defined and added to glossary.
- New habitat and biodiversity decision tree for loam added (Figure 19)
- Figure 20 – simplified scoring decision tree to remove redundant question.
- Figure 21 – made maximum score for upland and lowland sheep derived wool the same.
- Pollution – replaced storage of materials section of pollution questionnaire with a wider water pollution risk assessment.
- Worked examples updated to reflect the above changes; peat worked example added
- Annex 3 – Example methodology for conducting air and water pollution risk assessments added
- Annex 4 – Documentary evidence checklist updated

Introduction

Use of any materials, in any industry, will have an impact on the environment we live in, and the people involved in their manufacture.

The UK horticultural industry actively seeks to improve its sustainability wherever possible. As part of this, the industry has examined its sourcing of growing media and drafted the following scheme to enable manufacturers and users of growing media to understand and measure how their choice of growing media materials impacts on seven criteria (greenhouse gas emissions, water use, social compliance, habitat and biodiversity, pollution, renewability and resource use efficiency). Sourcing materials responsibly is about making deliberate, educated choices to minimise those impacts, but there is also a need to constantly revisit and challenge thresholds in order to maintain "best practice". The criteria have been defined as being able to differentiate more responsibly sourced from less responsibly sourced material. It will enable users of the scheme to source materials more responsibly, which we hope will help to improve the sustainability of this part of their businesses.

Some of the decision criteria may appear arbitrary but they have been chosen to account for complicated and variable situations which can include global supply chains. The criteria have been developed through careful deliberation and have evolved through numerous iterations into their current form. The intention has been to make the scheme globally relevant, with reference to documents, standards etc. applicable to all countries.

The scheme will be independently audited, and users will need to provide evidence to support the scores they claim. Evidence will need to be gathered from across the supply chain, as described under each criterion.

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Part 1: The basis of a scheme towards the responsible sourcing and manufacture of growing media

Core requirements

All responsibly sourced and manufactured growing media and soil improvers must meet these requirements:

- ✓ **Fitness for purpose**: They must be capable of growing plants (growing media) or improving the physical, chemical or biological condition of soils (soil improvers). These Guidance Notes do not set out the method for assessing fitness for purpose. Member companies are required to undertake an annual assessment of product performance in accordance with the P7 protocol: https://www.responsiblesourcing.org.uk/media/leshn2xs/p7-protocol_nov22-version.pdf
- ✓ **Environmental accountability**: They must have minimal impact on the environment. This assessment is in-scope for this scheme.
- ✓ **Social accountability**: The supply chain must have transparent social compliance programmes in place. This assessment is in-scope for this scheme.
- ✓ **Product safety**: They must be safe to use. The assessment of this is out of scope of this scheme.
- ✓ **Legality**: They must comply with all legal requirements. The assessment of this is out of scope of this scheme.

The promise

All growing media (and soil improvers) are made from materials that are sourced and manufactured in a way that is both socially and environmentally responsible.

	In scope	Out of scope
Life cycle stages (Stage in process)	✓ Extraction/growing and harvest ✓ Transport to manufacturer ✓ Processing and Production ✓ Up to the point of being mixed	× Bagging (including packaging) × Transport from manufacturer to consumer × Use/disposal by consumer
Ingredients	✓ Bulk ingredients that contribute to the final volume and provide physical structure (>5% by volume) ✓ Organic and inorganic	× Additives (e.g., fertilisers, wetting agents, lime)
Climate change impacts	✓ Greenhouse gas emissions ✓ Energy use ✓ Carbon turnover and cycling with the atmosphere ✓ Land use change	× Carbon sinks
Sustainability pillars	✓ Environmental ✓ Social	× Economic

The promise is a pragmatic compromise, balancing the need for detail relating to the detrimental environmental and social effects of sourcing and manufacturing growing media and soil improving materials with the need to design a relatively simple and workable scheme.

Criteria

Seven criteria have been selected to assess growing media and soil improvers:

- Greenhouse gas emissions (in extraction, transport and production)
- Water use (in extraction and production)
- Social compliance
- Habitat and biodiversity
    - The assessment for this varies by class of material. Materials which do not fit one of the existing methods of assessment will need to be referred to the technical committee.
- Pollution
- Renewability
- Resource use efficiency

Materials, starting and end points

Table 1: Materials

Material [a]	Category	Starting point	End point [g]
agricultural crops, anaerobic digestate (from energy crops) [b], bark, biochar (from forestry products), bracken, coir pith, cork, grit, loam [c], oilseed rape straw, peat, wood fibre, wool, perlite, sand, sphagnum (farmed), vermiculite	Virgin material (including virgin by-products) [d]	Extraction, cultivation establishment, or equivalent point of material production [e]	• Materials and ingredients: Start of mixing system (including transport from point of entry where imported) • Imported finished products: Point of entry into the country of sale
anaerobic digestate (from waste materials) [b], biochar (from waste materials), coir (recycled), cork (recycled), green compost, spent mushroom substrate	Recycled material	Volume where commercial transport becomes viable [f]	

Notes:

a. Bulk ingredients of growing media and soil improvers that contribute to the final volume and provide physical structure (and make up >5% by volume of the mix). Example materials presented.
b. Anaerobic digestate and biochar should be treated as a virgin material or a recycled material depending on the source material. Where the digestate or biochar is a blend of sources the scores for the material should be the weighted average for the proportion of each source in the blend on an annual basis. The weighting should be applied after the individual score is generated for each source (e.g. 70% digestate from energy crops + 30% digestate from waste materials) even though they are in a blend for parts of the production process.
c. Loam removed from construction sites remains classified as a virgin material because it is removed from its in-situ location and forms part of the primary land-use change activity rather than being a recovered waste.
d. Virgin by-products are not treated separately as they form part of the business model for the material. However, they are allocated responsibility for only a proportion of the impact of the material at different production stages (Table 2 and Table 3).

e. The starting point for virgin materials (including by-products) is extraction (peat, loam, minerals) or equivalent (e.g., raising of a tree seedling or transplant for wood-based material including biochar (from forestry products), harvesting of bracken, sowing or establishment for Sphagnum (farmed)). For coir pith and wood-based materials (including biochar (from forestry products) and cork) it is extremely challenging to obtain data from this starting point for all criteria. For anaerobic digestate (from energy crops), oilseed rape straw and wool (sheep only) the additional effort of collecting specific data from this starting point is not always justified due to low apportionment of impact (Table 2 and Table 3). Modified starting points have been identified for these materials for certain criteria (Table 4).
f. The starting point for recycled materials is the volume where commercial transport becomes viable. For recycled materials such as green compost and anaerobic digestate (from household waste materials) this would be municipal collection. The assessment is volume-based and not dependent on market value or actual transport contracts. A default transport distance of 25km is assumed for municipal collection (WRAP (2021) Carbon Waste and Resources Metric - Technical report templates (wrap.org.uk)).
g. In general, the end point for measuring impact is the start of the mixing system, where bulk ingredients are combined. For ingredients imported into the country of sale, this includes transport from the point of entry into the country of sale to the growing media manufacturer. For finished products imported into the country of sale, the end point is the point of entry into the country of sale. Supply chains beyond these end points, including the distribution of finished products via intermediaries such as distributors and retailers and onwards to the end user, are too variable and complex to be assessed consistently.

Table 2: Allocated responsibility [a] for virgin by-products by production stage – wood-based materials

By-product		Forest [c]	Sawmill [b]	Processing [d, e]	Pyrolysis Plant [f]
Bark [g]	Final product	7%	7%	100%	-
	Biochar production	2.5%	2.5%	35%	35%
Sawdust, shavings and fines	Final product	12.5%	12.5%	100%	-
	Biochar production	4.4%	4.4%	35%	35%
Wood chips	Final product	25%	25%	100%	-
	Biochar production	8.8%	8.8%	35%	35%

Notes:

a. By-products share the impacts going back up the supply chain with the main product and other by-products and are allocated responsibility for an appropriate proportion of these impacts at different stages in production. The proportion will be dependent on the supply chain. Allocation methods differ between production stages and use the most appropriate available evidence for that stage.

Source or detail:

b. FAO, ITTO and United Nations. 2020. Forest product conversion factors. Rome. https://doi.org/10.4060/ca7952en

c. Impacts generated during forest operations are initially assigned to harvested roundwood and then apportioned between the resulting products and by-products as shown in Table 2.
d. Processing includes all activities within the processing system from the sawmill until the material reaches the start of the mixing system. Processing may occur at one or more sites in the supply chain, including sites operated by third-party processors before transport to the growing media manufacturer.
e. The impact for the source material for biochar is modified by the percentage impact that biochar has at the pyrolysis plant, i.e., 35%.
f. Pyrolysis of biomass produces three products 1) bio-oil, 2) synthetic gas, and 3) biochar. All three products have a value as a fuel substitute, but the value can vary depending on the fuel that is substituted. Biochar also has a range of other uses and economic values associated with them. Therefore, it is not possible to assign impact based on market value of the product. Instead, impact is split based on mass of product. This can vary based on the type of conversion process that is used (i.e., fast and slow pyrolysis and gasification). Slow pyrolysis maximises production of biochar. A ratio of 30:35:35 is proposed for oil, gas and char from slow pyrolysis in Tomczyk, A., Sokołowska, Z. & Boguta, P. Biochar physicochemical properties: pyrolysis temperature and feedstock kind effects. Rev Environ Sci Biotechnol 19, 191–215 (2020). https://doi.org/10.1007/s11157-020-09523-3 . Therefore, an impact of 35% is assigned to biochar at the pyrolysis plant.
g. According to 'FAO, ITTO and United Nations. 2020. Forest product conversion factors. Rome.' bark should be allocated 12% of the impact based on the volume of bark compared to the volume of roundwood. However, it also states that not all of this bark will be recoverable. No published data on the volume of recoverable bark has been identified. However, anecdotal evidence from one company suggests that the value could be around 5.5%. Therefore, the decision has been made to continue to use the previous value of 7%. Alternative values can be used if suitable evidence can be provided to the auditors.

Table 3: Allocated responsibility for virgin by-products by production stage – other materials

By-product	Production stage	Responsible for % of impacts [a]
Coir pith	Coconut production	5% [b]
	Coir fibre production	50% [b]
	Coir pith processing	100%
Anaerobic digestate (from energy crops)	Farm	6% [c]
	Anaerobic digestion facility	6% [c]
	Separation of liquid from fibre	67% [c]
Wool	Farm	3% [d]
	From farm gate	100%
Oilseed rape straw and other crops	Farm	10% [e, f]
Cork	Forest/Farm	30% [g]
	Natural cork stopper production	30% [g]
	Grinding processing	100%
Loam	Extraction	1-3% [h]
	Processing	100%

Notes:

a. By-products share the impacts going back up the supply chain with the main product and other by-products and are allocated responsibility for an appropriate proportion of these impacts at different stages in production. The proportion will be dependent on the supply chain. Allocation methods differ between production stages and use the most appropriate available evidence for that stage.

Source or detail:

b. Newleaf (2012): Coir: a sustainability assessment. Final report for Defra project SP1214.
c. Responsibility for impacts is assigned based on the economic value of the products from anaerobic digestion. Using the example of an on-farm digester with an annual feedstock volume of 10,000 tonnes FW, producing 3,000 tonnes FW separated fibre. Value of energy to the business is £300,000 per annum, value of the fibre based on its fertiliser replacement value (price on 4 November 2020) is £19,500, value of liquid digestate based on its fertiliser replacement value is assumed to be half that of the fibre. Giving a value ratio of 91:6:3 at the farm (respectively) and 0:67:33 at the separation process.
d. Responsibility for impacts is assigned based on the economic value of the products from sheep production. The economic value of a sheep in the UK is around 97% for the carcass and 3% for the wool.
e. Value of oilseed to straw ratio is 9:1 based on market value in October 2022.
f. The ratio of value between main product and by-product for other agricultural crops is assumed to be similar to that of oilseed rape straw.
g. Natural wine corks, despite accounting for less than 30 per cent of actual weight of cork production, account consistently for approximately 70 per cent of the value of all cork products and exports. (Goncalves, E. (2000) The Cork Report: A study on the economics of cork. Report to RSPB.) Therefore, the remaining cork products from the ground-up leftovers of the wine cork making process have 30% impact at these earlier stages in the supply chain.
h. Responsibility for the impact of loam is assigned based on the economic value of the products. For loam from construction sites, assuming 8,000 tonnes are removed from a 1-hectare construction site, at a value of £50/t, and that the site has 40 semi-detached houses built on them valued at £300,000 per home, the soil to house value ratio is 1:30. For loam co-extracted with root vegetables, the value of the sugar from 1-hectare of sugar beet is £7,480, with the value of the soil from the sugar beet washings from that 1-hectare being £100 (at £50/t), giving a ratio of 1:74. These ratios equate approximately to the 1-3% responsibility range shown in Table 3. For habitat and biodiversity scoring a default impact of 3% is assumed.

Table 4: Modifications to starting points for materials for which assessment at the extraction or equivalent production stage has been judged too challenging (coir pith, cork and wood-based materials) [a] or where additional effort is not justified because of low allocated responsibility (<10%) (anaerobic digestate (from energy crops), agricultural crops and wool) [b]

Modification	Material	Criteria modification applies to		
		Social compliance	Pollution	Resource use efficiency
Move starting point	Anaerobic digestate (from energy crops)	Farm [e]	AD facility	AD facility
	Coir pith	Fibre mill	Fibre mill	Fibre mill
	Cork	Processor [f]	Processor [f]	Processor [f]
	Loam	Growing media manufacturer	Growing media manufacturer	Growing media manufacturer
	agricultural crop by-products (including oilseed rape straw)	Farm [e]	Farm [e]	Growing media manufacturer
	Wood based [d]	Sawmill	Sawmill	Sawmill
	Wool	Farm [e]	Growing media manufacturer	Growing media manufacturer
		Greenhouse gas emissions	Water use	
Use generic data for uncertain supply chain tiers [c]	Anaerobic digestate (from energy crops)	Farm and transport to the AD facility		
	Coir pith	Coconut small holding/plantation and transport to the fibre mill		
	Cork	Forest/Farm and transport to the cork processor		
	Loam	Transport to Growing media manufacturer		
	agricultural crop by-products (including oilseed rape straw)	Farm		
	Wood based [d]	Forest and transport to the sawmill		
	Wool	Farm and transport to a collection hub (where utilised)		
		Habitat and biodiversity	Renewability	
Approach	Anaerobic digestate (from energy crops)	Weighted average farm approach	No change	
	Coir pith	Regional approach		
	Cork	Scores 20 [g]		
	Loam	Weighted average site approach		
	agricultural crop by-products (including oilseed rape straw)	Weighted average farm approach		
	Wood based [d]	Proxy approach		
	Wool	Weighted average farm approach		

Notes:

a. It is not always possible to collect relevant data for the proposed starting point for coir pith and wood-based materials (including biochar (from forestry products) and cork) for all the criteria. Modifications to the starting point apply, which in some cases move the starting point to a more pragmatic and accurately assessable production stage. Modifications to the starting point are set by the scheme not the user. These will be reassessed periodically.

b. As anaerobic digestate (from energy crops) is only judged to be responsible for 6% of the impact at the farm, the additional effort of collecting data from this starting point (multiple fields) is not worth the additional cost or impact on the total score to be justified. The same is true of agricultural crop by-products, including oilseed rape straw, which are judged to be responsible for approximately 10% of the impact at the farm, and wool (sheep only), which is judged to be responsible for 3% of the impact at the farm. Modifications to the starting point apply, which in some cases move the starting point to a more pragmatic production stage. Modifications to the starting point are set by the scheme not the user. These will be reassessed periodically.
c. If a company has real data which can be used in place of generic data this is encouraged, if it is fully auditable.
d. Wood based products include biochar (from forestry products) but excludes cork as the tree is not felled.
e. Starting point is the farm rather than individual fields or production units and should encompass the area used to produce the material.
f. Starting point is the cork processor.
g. There is agreement in the literature that the harvesting of cork is beneficial for habitat and biodiversity at the site level and that the economic value of harvested cork is beneficial in conserving and retaining these valuable habitats at a landscape or national level.

Scoring

Scores out of 20 have been separated into categories, illustrated using a traffic light system (Figure 1).

(green)	18-20	Current good practice
(yellow)	12-17.99	Watch
(amber)	6-11.99	Poor
(red)	0-5.99	Critical

Notes:
20 = highest score for all criteria
0 = lowest score for three criteria – habitat, social, pollution
1 = lowest score for the remaining criteria

Figure 1: Boundary Scores

Scores are allocated using scoring decision trees (Part 2: The criteria in detail). Not all of the scores 0-20 are available on each tree.

For every product each bulk ingredient will be assessed and awarded a score for each criterion. All criteria have equal weighting. The product score is the sum of the ingredient scores weighted by percentage volume. Figure 2 demonstrates the calculation of ingredient scores, substrate scores, product scores and responsibility indices. In practice, product scores will normally be generated using the RSS calculator rather than calculated manually.

There is no threshold score at which a product is deemed to be responsible. Instead, a rating system (A to E) has been developed to indicate the degree of responsibility (responsibility index – Figure 3).

	Peat	Coir	Woodfibre	Composted bark fines	Bark fines	Green compost	
Greenhouse gas emissions	1	18	18	14	14	14	
Water use	20	8	18	20	20	20	
Social compliance	9	9	5	4	4	5	
Habitat & biodiversity	1	12	3	15	15	20	
Pollution	18	12.02	15.7	14.42	14.42	17.4	
Renewability	1	20	17	17	17	20	
Resource Use Efficiency	8	15	15	15	15	17	
Substrate Score	58.00	94.02	91.70	99.42	99.42	113.40	
Mix 1	80%					20%	69.08
Mix 2	50%			30%		20%	81.51
Mix 3		20%	30%	30%		20%	98.82
Mix 4		50%		25%		25%	100.22

Figure 2: Example of scored criteria for a range of products

A	>101
B	93-100.9
C	85-92.9
D	77-84.9
E	<77

Figure 3: Responsibility index

Part 2: The criteria in detail

Each of the 7 criteria is described here in detail with a decision tree to follow to derive a score for that criterion.

Only scores set out in the decision trees can be awarded, unless the methodology calls for an average score to be generated. The colour scheme and boundary values for the categories (current good practice, watch, poor and critical) are a visual representation (see Scoring).

The criteria require consideration of the total impact/resource use through each step in the supply chain from the material start point to end point.

Therefore, in order to use the decision trees an understanding of the supply chain for each material is required.

Supply chain mapping

The supply chain for each material and product must be mapped out. Supply chain maps should include details of each company in the chain (Figure 4).

Evidence should be collected from each company in the supply chain for inspection by the auditor.

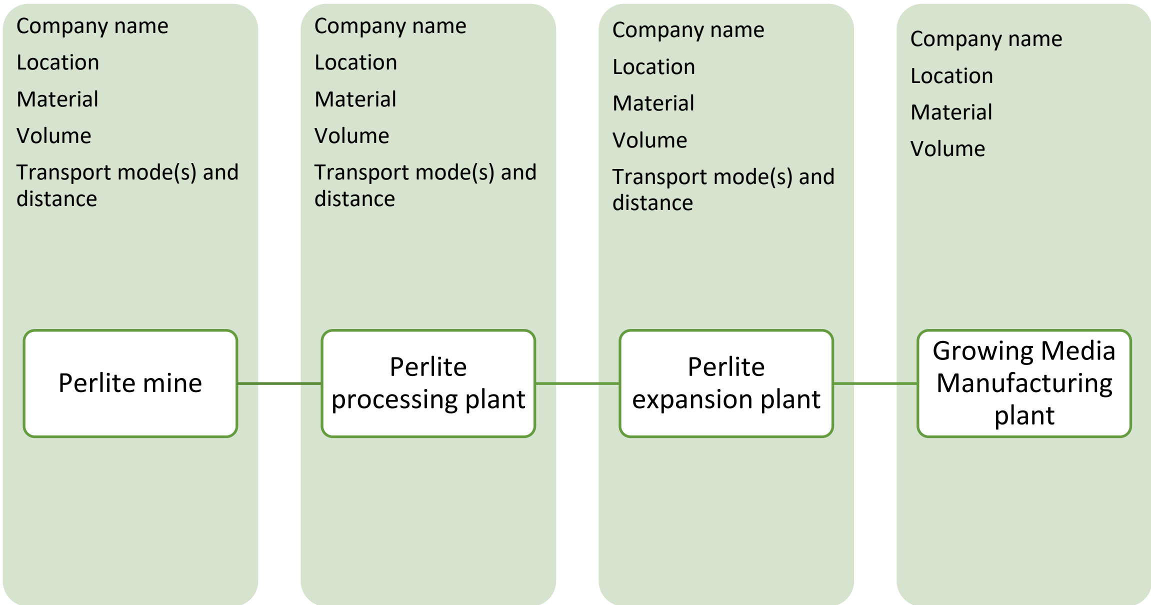


Figure 4: Example supply chain map

More complicated supply chain maps are included in the worked examples (see Part 3: Worked examples).

Greenhouse gas emissions (in extraction, transport and production)

This criterion assesses the contribution of growing media ingredients to climate change through greenhouse gas emissions. The assessment focuses on emissions resulting from the extraction, transport and production of materials, together with the release of fossil or near-fossil carbon where relevant. Emissions are expressed as kilograms of carbon dioxide equivalent (kg CO_2e) per cubic metre of material, allowing comparison between different growing media ingredients and supply chains.

For most materials, greenhouse gas emissions are derived from fossil fuel and electricity use across the supply chain. To maintain consistency with previous versions of the scheme, the methodology continues to collect data on energy use and transport activities before converting these values to greenhouse gas emissions using recognised greenhouse gas conversion factors. Existing energy-use calculations can therefore continue to be used, while new assessments may calculate greenhouse gas emissions directly where suitable data are available.

Peat is assessed differently from other materials. In addition to emissions associated with energy use and transport, the assessment includes emissions from the drained state of the peatland that enables extraction to take place and the eventual oxidation of peat following use. These emissions are treated as the release of near-fossil carbon and are therefore included directly within this criterion.

Method overview

1. Calculate greenhouse gas emissions associated with extraction, transport and production from the starting point to the end point (Table 1).
2. Apply any allocated responsibilities for virgin by-products (Table 2 and Table 3).
3. Convert energy use data to greenhouse gas emissions using the relevant emission factors or use directly measured greenhouse gas emissions where available.
4. For peat, add emissions associated with the drained state of the peatland that enables extraction to take place and the oxidation of peat following use.
5. Sum all emissions and express the total as kg CO_2e/m^3.
6. Use Figure 5 to determine the score.

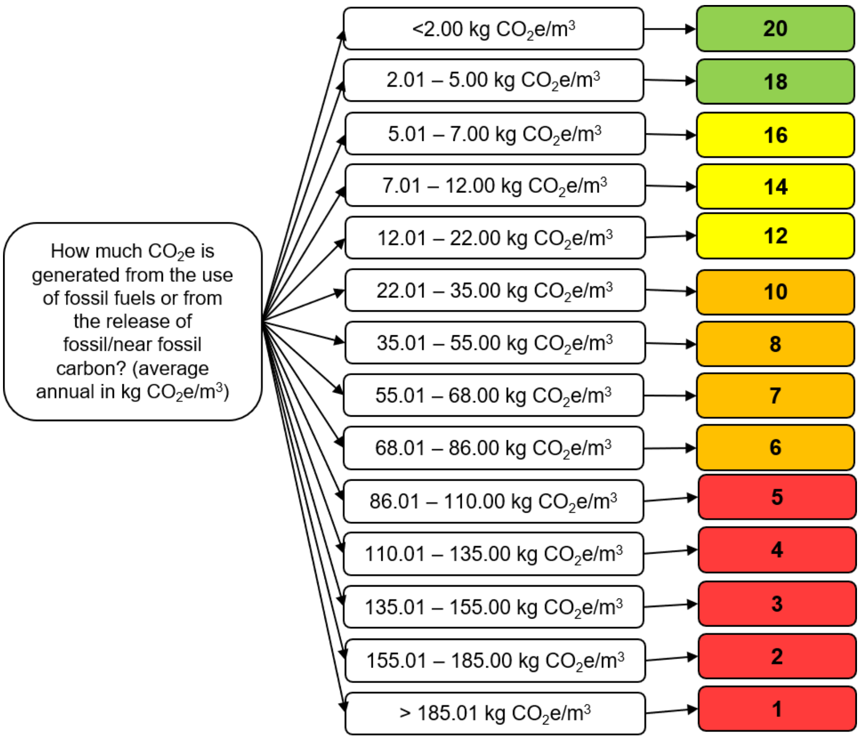


Figure 5: Greenhouse gas emissions (in extraction, transport and production) scoring decision tree

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest ✓ Transport to manufacturer ✓ Processing and Production ✓ Up to the start of the mixing system ✓ Waste disposal by manufacturer	× Construction of infrastructure × Mixing system × Bagging (including packaging) × Office × Transport from manufacturer to consumer[1] × Use/disposal by consumer
Imported finished products	✓ Transport from manufacturer to point of entry into country	× Bagging (including packaging)
Return journeys for empty vehicles	✓ Road based transport ✓ Specialist vehicles which are unlikely to have a return or onward load, e.g., timber transport	× Third party haulage (except where specialist vehicles are used) × Transport by air and rail
Emission sources	✓ Fossil fuels ✓ Grid electricity ✓ Transport emissions Peat emissions from drained peatland and off-site oxidation	× Renewable energy generated and consumed on site × Certified renewable electricity × Carbon sinks × Carbon offsetting credits

[1] The Technical Committee has reviewed bringing transport from the manufacturer into scope but concluded that unless a complex methodology is developed this would result in a uniform approach being taken for all finished products which would not allow different ingredients and mixtures to be scored separately. As the purpose of the scheme is to allow this differentiation the Technical Committee has determined that this should remain out of scope.

	In scope	Out of scope
Near-fossil carbon emissions	✓ Emissions from drained peatland where peat is extracted ✓ Oxidation of extracted peat following use	✗ Biogenic carbon emissions from non-peat materials ✗ Carbon sequestration claims

Greenhouse gas emissions are calculated from the material start point to the end point defined in Table 1 and expressed as kilograms of carbon dioxide equivalent (kg CO_2e) per cubic metre of material. For most materials, greenhouse gas emissions are derived from fossil fuel and electricity use associated with extraction, transport and production. For peat, additional emissions from the drained state of the peatland that enables extraction to take place and from oxidation of extracted peat following use are also included because peat is a source of near-fossil carbon. The total greenhouse gas emissions are used to determine the score shown in Figure 5.

Calculating emissions from energy use, processing and transport

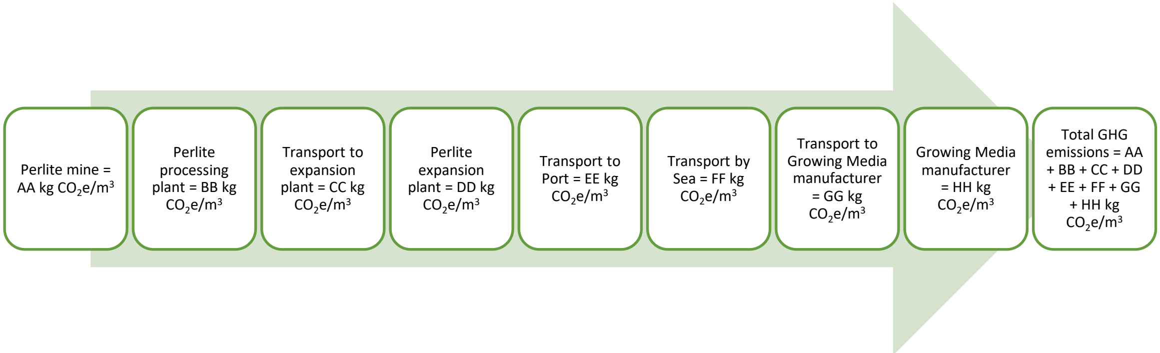


Figure 6: Example greenhouse gas emissions calculation

Two routes are available to calculate greenhouse gas emissions

Route 1: Energy-based greenhouse gas calculation

- Calculate fuel use, transport and energy use as described in version 10 of the scheme guidance.
- Where fuel quantities are converted to energy values (kWh), use the latest version of the Fuel Properties worksheet (currently 2026) and update any calculations where fuel properties have changed.
- Where transport calculations are based on energy conversion factors, use the latest transport conversion factors (currently 2026) and update any calculations where factors or vehicle classifications have changed.
- Convert the resulting energy use values to greenhouse gas emissions using the conversion factors in Table 5 and Table 6.
- Sum emissions across the supply chain to obtain a greenhouse gas emission value (kg CO_2e/m^3).

Route 2: Direct greenhouse gas emissions

- Use auditable greenhouse gas emissions data expressed directly as kg CO_2e/m^3, without first calculating energy use.
- Ensure that the assessment boundaries, allocation factors and scope requirements defined in this guidance are applied.

- Sum emissions across the supply chain to obtain a greenhouse gas emission value (kg CO_2e/m^3).

Both approaches should produce equivalent greenhouse gas emission values when applied to the same supply chain boundaries, allocation factors and assumptions.

For peat, the relevant route is used to calculate transport and production emissions. The additional peat-specific on-site and off-site emissions must then be added as set out under “Additional requirements for peat”.

Standard conversion factors and transport data are provided in Table 5, Table 6 and Table 7. Generic data for the first production stages of coir pith, wood-based materials and anaerobic digestate (from energy crops) and for other supply chain tiers where the collection of specific data is uncertain or not justified (Table 4) are given in Table 8. Where data is missing from one or more sites or companies within a supply chain, an average of the other suppliers or sites at that tier of the supply chain may be used, provided this does not apply to more than 10% of the volume of the material in that tier. See also Part 3: Worked examples.

Greenhouse gas emissions at each stage of production and transport are calculated from the material starting point to the end point (Table 1), taking into account the allocated responsibility at different stages of production for virgin by-products (Table 2 and Table 3). For existing users of the scheme, greenhouse gas emissions may be derived from energy use calculations by applying appropriate greenhouse gas conversion factors. New users may calculate greenhouse gas emissions directly where appropriate data are available. Emissions from individual stages of the supply chain are then added together to generate a total greenhouse gas emission value (kg CO_2e/m^3). Documentary evidence is required.

Table 5: Greenhouse gas conversion factors for fuels *(see note for grid electricity)*

Fuel	Unit	kg CO_2e
Aviation spirit	litres	2.33
	kWh (Net CV)	0.26
Aviation turbine fuel	litres	2.54
	kWh (Net CV)	0.26
Burning oil	litres	2.54
	kWh (Net CV)	0.26
Diesel (average biofuel blend)	litres	2.58
	kWh (Net CV)	0.26
Diesel (100% mineral diesel)	litres	2.66
	kWh (Net CV)	0.27
Fuel oil	litres	3.17
	kWh (Net CV)	0.29
Gas oil	litres	2.76
	kWh (Net CV)	0.27
Lubricants	litres	2.75
	kWh (Net CV)	0.28
Naphtha	litres	2.12
	kWh (Net CV)	0.25
Petrol (average biofuel blend)	litres	2.08
	kWh (Net CV)	0.23
Petrol (100% mineral petrol)	litres	2.35
	kWh (Net CV)	0.25
Marine gas oil	tonnes	3245.30
	litres	2.77
	kWh (Net CV)	0.27
Marine fuel oil	litres	3.10
	kWh (Net CV)	0.28

Source: Greenhouse gas reporting: conversion factors 2026, Department for Energy Security and Net Zero. https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2026 (Fuels worksheet)

Note: When using Table 5:

- Existing users who have previously calculated energy use (kWh/m^3) may continue to use that approach. However, users should check the current Fuel Properties worksheet and update any energy calculations where fuel properties have changed before applying the greenhouse gas conversion factors in Table 5. See Part 3: Worked examples
- Grid electricity should be converted using the latest UK greenhouse gas reporting conversion factor for electricity. For 2026, the conversion factor for UK electricity is 0.18 kg CO_2e per kWh. The year and source of all factors used should be recorded with the calculation.

Table 6: Diesel freight conversion factors

			Average laden	0% Laden	50% Laden	100% Laden
Activity	Type	Unit	kg CO_2e	kg CO_2e	kg CO_2e	kg CO_2e
HGV (non-refrigerated, all diesel)	Rigid (>3.5 - 7.5 tonnes)	km	0.50	0.47	0.51	0.55
		miles	0.80	0.75	0.82	0.88
	Rigid (>7.5 tonnes-17 tonnes)	km	0.61	0.56	0.64	0.72
		miles	0.98	0.91	1.04	1.16
	Rigid (>17 tonnes)	km	1.00	0.78	0.95	1.12
		miles	1.61	1.25	1.53	1.80
	Average non-refrigerated rigids	km	0.85	0.69	0.82	0.95
		miles	1.36	1.11	1.32	1.53
	Articulated (>3.5 - 33t)	km	0.79	0.64	0.79	0.95
		miles	1.27	1.02	1.27	1.53
	Articulated (>33t)	km	0.94	0.65	0.87	1.08
		miles	1.51	1.05	1.40	1.74
	Average non-refrigerated artics	km	0.93	0.65	0.86	1.08
		miles	1.50	1.05	1.39	1.73
	Average non-refrigerated HGVs	km	0.90	0.67	0.84	1.02
		miles	1.44	1.07	1.36	1.65

Source: Greenhouse gas reporting: conversion factors 2026, Department for Energy Security and Net Zero. https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2026

Notes:

1. The % weight laden refers to the extent to which the vehicle is loaded to their maximum carrying capacity. A 0% weight laden means the vehicle is travelling carrying no loads. 100% weight laden means the vehicle is travelling with loads bringing the vehicle to its maximum carrying capacity. The average laden value used is derived from Department of Transport Road Freight Statistics.
2. Tonne.km is an equivalent measure of one tonne of transported goods over one kilometre.
3. Existing users who have previously calculated transport energy use (kWh/m^3) may continue to use that approach. However, transport conversion factors and vehicle classifications may be revised between releases of the greenhouse gas conversion factors. Users should therefore check the current transport conversion factors (SECR kWh pass & delivery vehs worksheet) and update any calculations where necessary before applying the greenhouse gas conversion factors in Table 6.See Part 3: Worked examples

Table 7: Standard port to port transport distances

Transport distances (km)		Bristol	Hull	Liverpool	Southampton	Belfast	Rotterdam	Felixstowe
Sri Lanka	Colombo	13646	14353	13899	13683	13892	14210	14040
Northern Ireland	Belfast	670	1298	357	1069	-	1613	1443
Eire	Dublin	402	1439	328	765	309	1308	1139
Netherlands	Rotterdam	1346	570	1600	543	1613	-	248
Estonia	Tallinn	3785	2600	3417	2982	3060	2556	2687
Latvia	Riga	3643	2459	3274	2841	2917	2415	2547
Lithuania	Klaipeda	3256	2072	2887	2454	2530	2028	2159
India	Tuticorin	13512	14220	13766	13549	13759	14077	13905
Germany	Bremerhaven	1800	615	2054	996	2067	572	702

		Sri Lanka
		Colombo
India	Tuticorin	365

Conversion factor - 1 nautical mile = 1.8520km.

(Source: Ports.com (2023). [Online] Available at: http://ports.com/sea-route [Accessed 06.10.23])

Table 8: Generic production, transport and energy data for uncertain supply chain tiers or where effort to collect specific data is not justified (Table 4) (greenhouse gas emissions)

Production tier	Generic data	Source
Coconut small holding/plantation	Energy use assumed to be negligible per m^3 at a 5% impact	
Transport of coconut husks to fibre mill	As for coir pith transport to pith factory (1m^3 of coir pith is produced from 4m^3 of coconut husks)	
Coir pith transport to pith factory	Generally, coir pith is collected from fibre mills within a 20km radius of the pith processing unit. Medium commercial vehicles in India (and Sri Lanka) travel 4.3 km per litre of diesel.	Newleaf (2012): Coir: a sustainability assessment. Final report for Defra project SP1214. http://randd.defra.gov.uk/ ICRA Management Consulting Services Limited (IMaCS)(2013): Market Survey leading to Fuel Consumption norms for Diesel (Engine Driven) Trucks & Buses in India. Final Report for the Petroleum Conservation Research Association
Forest site preparation and establishment	19525.26 MJ/ha (5423.68 kWh/ha or 6.8 kWh/m^3 of wood assuming 796m^3 of standing volume per hectare)	Whittaker CL, Mortimer ND, Matthews RW. (2010) Understanding the Carbon Footprint of Timber Transport in the United Kingdom. Sheffield, UK: North Energy Associates LTD. https://www.researchgate.net/publication/312448400_Understanding_the_carbon_footprint_of_timber_transport_in_the_United_Kingdom

Production tier	Generic data	Source
Forest harvest	Diesel fuel consumption for felling is estimated at 1.2 litres/m^3 of biomass and for forwarding at 0.9 litres/m^3 of biomass	Whittaker, C., Mortimer, N., Murphy, R. and Matthews, R. (2011) Energy and greenhouse gas balance of the use of forest residues for bioenergy production in the UK. Biomass and Bioenergy, 35 (11). pp. 29-45. ISSN 0961-9534 http://opus.bath.ac.uk/26708/1/Whittaker_BiomassBioenergy_2011.pdf
Transport of wood to sawmill	The average timber haulage distance is 51 miles (82 km) (or 102 mile/164 km round trip). 20% of the journey is on forest roads. Fuel use is 0.459 l/km for forest roads and 0.342 l/km for public roads.	Whittaker CL, Mortimer ND, Matthews RW. (2010) Understanding the Carbon Footprint of Timber Transport in the United Kingdom. Sheffield, UK: North Energy Associates LTD. https://www.researchgate.net/publication/312448400_Understanding_the_carbon_footprint_of_timber_transport_in_the_United_Kingdom
Transport of wood to sawmill	The load capacity of road timber transport is limited by weight rather than volume, due to the weight of fresh roundwood (>400 kg/m^3). Therefore a 40-tonne vehicle with a load capacity of 25.5 tonnes can carry a maximum of 63.75m^3 in a load. It is assumed that timer haulage vehicles are not overloaded and that a typical load is 50m^3.	Whittaker CL, Mortimer ND, Matthews RW. (2010) Understanding the Carbon Footprint of Timber Transport in the United Kingdom. Sheffield, UK: North Energy Associates LTD. https://www.researchgate.net/publication/312448400_Understanding_the_carbon_footprint_of_timber_transport_in_the_United_Kingdom
Cultivation and harvesting of energy crops and on-farm transport to anaerobic digestion (AD) facility	Crop specific energy – litres of diesel for a typical yield for that crop in the UK - scaled for the field size and converted to kWh using Fuel Properties worksheet of Greenhouse gas reporting: conversion factors 2026, Department for Energy Security and Net Zero. Assumption of 10% recoverable fibre by weight of input material. Assumption that 1 tonne of fibre has a volume of 2.7 m^3. Apply 6% impact factor (Table 3).	Typical energy use for farm practices associated with energy crops are available from a range of sources. One example is the AD tool produced by the Bioenergy and Organic Resources Research Group at the University of Southampton available at: https://borrg.soton.ac.uk/resources/
Transport of crops to AD facility	Generally, energy crops are only transported within a 10-mile radius of the AD facility.	
Sheep farm	The average energy use by grazing livestock system per hectare is 444.44 kWh for Least Favoured Area Livestock Grazing and 1088.33 kWh for Lowland Grazing Livestock.	Statistics on farm energy use in England was published in 2013 using the results of the 2011/2012 Farm Business Survey. Data is taken from Table 8 and converted to kWh.

Production tier	Generic data	Source
	Apply 3% impact factor (Table 3). Volume of wool will need to be converted to number of fleeces and then an area using stocking density data.	https://www.gov.uk/government/statistics/farm-energy-use Typical stocking densities on productive grass can be approximately 6 to 10 sheep per acre. But optimal stocking densities for some habitats will be considerably lower: https://www.fas.scot/downloads/tn686-conservation-grazing-semi-natural-habitats/
Transport of wool fleeces to collection hub	90% of British Wool members are within 1 hour of a British Wool distribution hub. Average speed on rural A roads in England in 2021 was 34.3 miles per hour. Assuming majority of distance wool travels from farm to British Wool distribution hub is by A roads, the wool travels a maximum distance of 30 miles.	Distance to distribution hubs: https://www.britishwool.org.uk/ksupload/userfiles/About/British%20Wool%20Report%20&%20Accounts%202022%20spreads.pdf Average speeds on rural A roads in England are compiled annually by the Department of Transport. https://www.gov.uk/government/statistics/travel-time-measures-for-the-strategic-road-network-and-local-a-roads-january-to-december-2021/travel-time-measures-for-local-a-roads-january-to-december-2021-report
Cultivation and harvesting of oilseed rape	National average yields of OSR (seed) were 3.4 t/ha in 2022. At harvest 35% of the biomass is stored in each of the seed and the stem and 30% is stored in the seed pod walls. Therefore, average yields of OSR straw (stem plus empty seed pod) would be 7.2 t/ha. Energy use for the sowing, maintenance and harvesting of OSR is 115 litres of fuel per hectare.	Data on yields are compiled by the AHDB: https://ahdb.org.uk/oilseeds-market-outlook Data on growth stages of OSR come from the AHDB: https://ahdb.org.uk/knowledge-library/senescence-and-harvest-of-oilseed-rape-gs9 Data on energy use for OSR comes from table 7 of Richards, I. R. (2000) Energy balances in the growth of oilseed rape for biodiesel and of wheat for bioethanol. Report to the British Association for Bio Fuels and Oils. http://www.homepages.ed.ac.uk/jwp/research/sustainable/levington/levington.pdf
Cork harvest	Cork is harvested manually. The extracted cork was traditionally stacked in the field and transported to the factory after 21 days. Nowadays, more producers (54% in 2019) choose the direct transport of cork to the factory on the day of extraction or the following days, avoiding the costs associated with the construction of the pile (labour, insurance, guard, etc.).	https://repository.incredibleforest.net/oppla-factsheet/20519

Production tier	Generic data	Source
Transport of cork to processor	160 - 600 km depending on the grade of cork for round trip journeys.	Demertzi M, Paulo JA, Arroja L, Dias AC (2016) A carbon footprint simulation model for the cork oak sector. Science of the Total Environment 566: 499–511 https://doi.org/10.1016/j.scitotenv.2016.05.135.

Note: The values in Table 8 are generic production, transport and energy data that may be used where collection of site-specific information is uncertain or not justified (Table 4). Where greenhouse gas emissions are being calculated directly, equivalent auditable greenhouse gas emissions data may be used instead.

Additional requirements for peat

For peat, greenhouse gas emissions include emissions associated with the drained state of the peatland that enables extraction to take place and the eventual oxidation of the extracted peat following use, in addition to emissions associated with transport and production. These emissions are treated as the release of near-fossil carbon and should be calculated using the appropriate on-site and off-site emission factors published in the latest UK Greenhouse Gas Inventory.

The current UK Greenhouse Gas Inventory[2] factors used in this scheme are: on-site emissions from peatland managed for extraction (extraction industrial): 18.85 t CO_2e ha^{-1} yr^{-1}; and off-site emissions from oxidation of extracted peat following use: 0.235 t CO_2e/m^3 (235 kg CO_2e/m^3). The on-site factor must be converted to kg CO_2e/m^3 using the annual volume of peat extracted per hectare.

Peat greenhouse gas calculation

1. Calculate greenhouse gas emissions associated with transport and production using the same approach as for other materials.
2. Calculate on-site greenhouse gas emissions using the appropriate UK Greenhouse Gas Inventory emission factor for peat extraction sites. This factor represents emissions from the drained peatland while it is in a condition that allows extraction to take place.
3. Calculate off-site greenhouse gas emissions using the appropriate UK Greenhouse Gas Inventory emission factor for the oxidation of extracted peat following use.
4. Sum transport, production, on-site and off-site emissions.
5. Express the total as kg CO_2e/m^3 and use Figure 5 to determine the score.

A worked example showing the application of the peat greenhouse gas methodology is provided in Part 3: Worked examples.

Why are off-site peat emissions included?

The off-site emission factor assumes that peat removed from the extraction site is ultimately oxidised and released to the atmosphere. This approach is consistent with the methodology used by the Intergovernmental Panel on Climate Change and the UK Greenhouse Gas Inventory. Although some peat may remain associated with plant root

[2] UK Greenhouse Gas Inventory, 1990 to 2024: Annual Report for submission under the Framework Convention on Climate Change | National Atmospheric Emissions Inventory – See Annexes

systems following planting, incorporation of peat into mineral soils does not generally recreate the permanently waterlogged conditions under which peat accumulates and carbon is preserved. The carbon contained within the peat is therefore assumed to be released over time and is treated as an instant loss for accounting purposes.

Documentary evidence required

- Supply chain map with distances and methods of transport.
- Production/manufacturing fossil fuel and electricity use records, greenhouse gas emissions records, and supporting calculations.
- Transport calculations covering the whole supply chain, using standard distances and conversion factors where necessary.
- Evidence of the greenhouse gas conversion factors used, including the version/year of the conversion factor source and the relevant worksheets or tables used.
- Where previous energy-use calculations are reused, evidence that the latest fuel properties, transport conversion factors and vehicle classifications have been checked and calculations updated where necessary.
- Where direct greenhouse gas emissions data are used, auditable evidence of the data source, calculation method, assessment boundary, units and any allocation factors applied.
- For renewable energy generated by the company and used in processing or manufacture of material, documented evidence of energy generation and consumption.
- For energy obtained through a green tariff, documented evidence of certification of the tariff through the Renewable Energy Guarantees of Origin (REGO) scheme or equivalent.
- For peat, evidence of the UK Greenhouse Gas Inventory emission factors used for on-site and off-site emissions.
- For peat, evidence of the annual volume of peat extracted per hectare, or the value used to convert on-site emissions from ha/year to kg CO_2e/m^3.
- For peat, calculations showing the addition of transport, production, on-site and off-site emissions to generate the final kg CO_2e/m^3 value.

Where values are taken from published conversion factor workbooks or the UK Greenhouse Gas Inventory, users should record the source, year, worksheet/table and factor used so that calculations can be audited and updated when factors are revised.

Improvement process

- Reduce greenhouse gas emissions from in-scope transport, production and processing activities.
- Increase energy efficiency of production and processing.
- Increase use of renewable energy generated and consumed within the in-scope supply chain.
- Review supply chains, transport modes and load efficiencies to reduce transport-related emissions.
- For peat-containing materials, review options to reduce the greenhouse gas emissions associated with peat within the product formulation and supply chain, including formulation changes where technically and commercially appropriate.

Water use (in extraction and production)

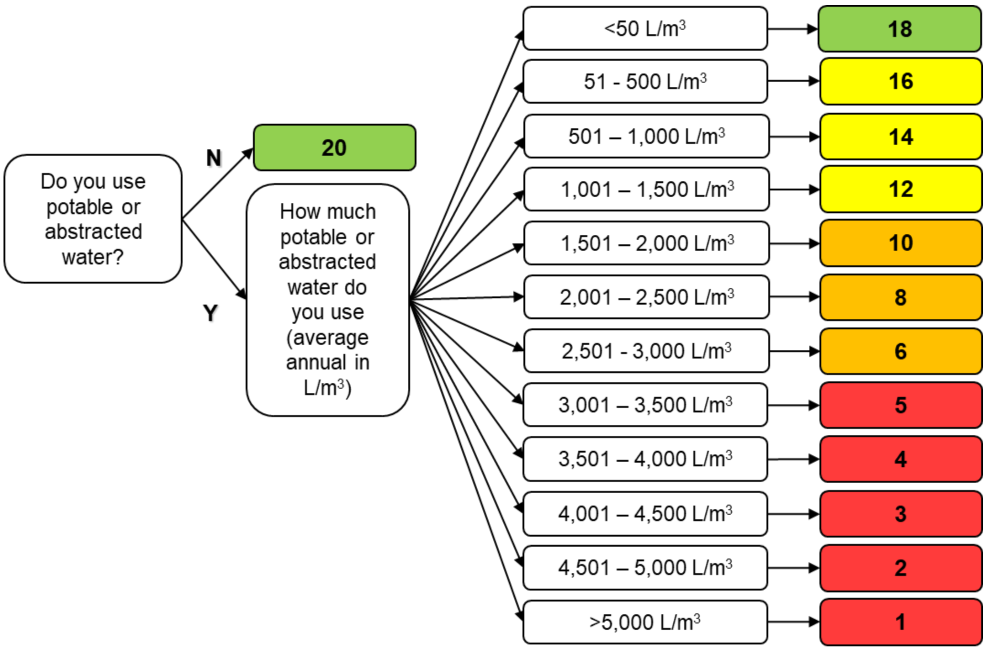


Figure 7: Water use (in extraction and production) scoring decision tree

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest ✓ Transport to manufacturer (water use assumed to be negligible) ✓ Processing and Production ✓ Up to the start of the mixing system ✓ Waste disposal by manufacturer	× Construction of infrastructure × Mixing system × Bagging (including packaging) × Office × Transport from manufacturer to consumer × Use/disposal by consumer
Imported finished products		× Bagging (including packaging) × Transport from manufacturer to point of entry into country (water use assumed to be negligible)
Water	✓ Potable or abstracted water used for, e.g.: ○ Irrigation ○ Washing ○ Industrial processes	× Rain (direct) × Harvested rainwater × Reused water

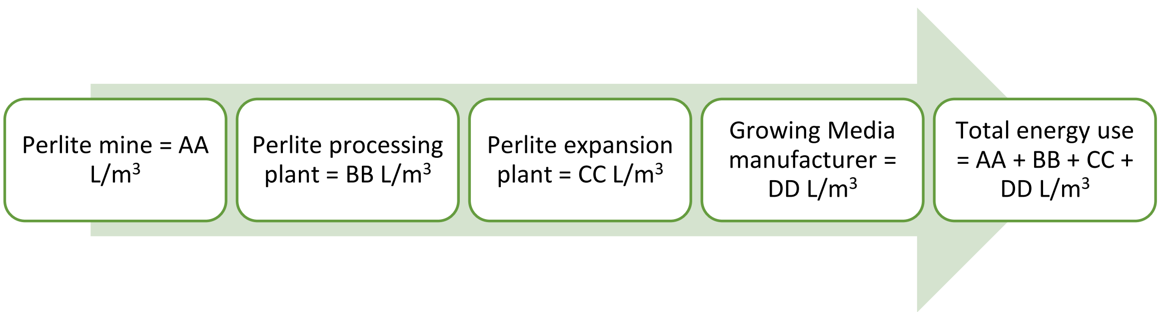


Figure 8: Example water calculation

Potable water use at each stage of production is calculated (from starting point to end point (Table 1), taking into account the allocated responsibility at different stages of production for virgin by-products (Table 2 and Table 3) and excluding out-of-scope water sources (Figure 9)). The values are then added together to generate a total water use value (L/m^3). Documentary evidence is required.

Generic data for the first production stages of coir pith, wood-based materials and anaerobic digestate (from energy crops) (Table 4) are given in Table 9. Where data is missing from one or more sites or companies in a supply chain, an average of the other suppliers or sites at that tier of the supply chain can be used if the this does not apply to more than 10% of the volume of the material in that tier. See also Part 3: Worked examples.

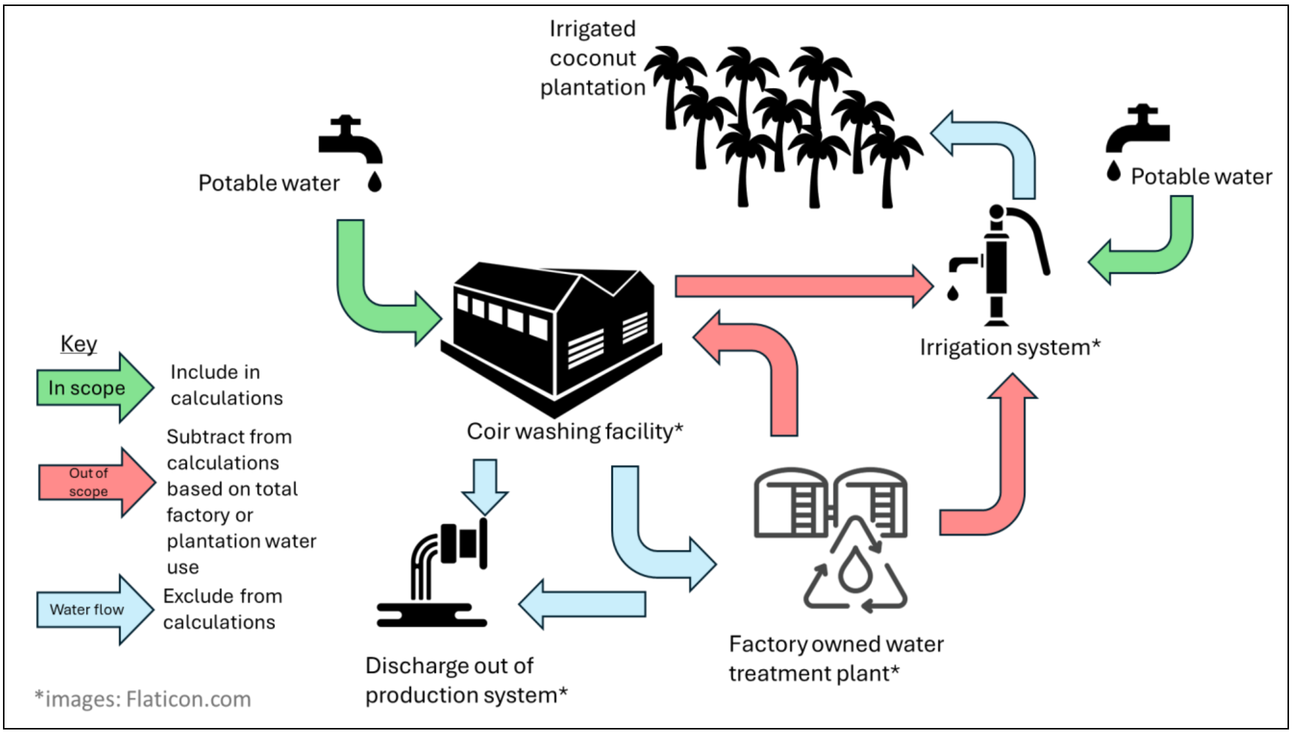


Figure 9: Illustration of how out of scope water sources should be removed from calculations in coir production

Table 9: Generic data for uncertain supply chain tiers or where effort to collect specific data is not justified (see Table 4) (water)

Production tier	Generic data	Source
Coconut small holding / plantation	Global average water footprint/embedded water for coconuts = 2669 m3 of water per ton. (1 ton of coconuts produce 1.9m3 of coir pith.) Regional assessments of the proportion supplied via irrigation need to be applied.	Mekonnen, M.M. and Hoekstra, A.Y. (2010) The green, blue and grey water footprint of crops and derived crop products, Value of Water Research Report Series No. 47, UNESCO-IHE, Delft, the Netherlands. https://research.utwente.nl/en/publications/the-green-blue-and-grey-water-footprint-of-crops-and-derived-crop-3 For selected regional data from the same source see Table 10.
Forest	• Forests in temperate regions such as the UK are un-irrigated. • Water is not used in harvesting operations.	Pers. comm. Forestry Commission 2015.

Production tier	Generic data	Source
	• Nurseries which irrigate to produce softwood trees use around 3.39 litres of water per m^3 of standing wood.	
Farm	Energy crops used to supply AD facilities and oilseed rape are typically un-irrigated in the UK.	
Sheep Farm	The average water use by grazing livestock system is 13,200 litres per livestock unit per year (13,000 litres for drinking water and 200 litres for washdown of buildings and equipment). Apply 3% impact factor (Table 3). Volume of wool will need to be converted to number of fleeces and then livestock units (one ewe is 0.15 LU).	Statistics on farm water use in England was published in 2011 using the results of the 2009/2010 Farm Business Survey. Data is taken from Table 2 and converted to litres. 31% of sheep farms had access to watercourses for drinking water (Table 3)[3]. Defra (2011): Water Usage in Agriculture and Horticulture, Results from the Farm Business Survey 2009/10 and the Irrigation Survey 2010 https://docplayer.net/12177033-Water-usage-in-agriculture-and-horticulture-results-from-the-farm-business-survey-2009-10-and-the-irrigation-survey-2010.html Livestock unit data is taken from Table 1 of: https://www.fas.scot/downloads/tn686-conservation-grazing-semi-natural-habitats/
Cork forest/Farm	Traditionally cork forests are unirrigated. The use of drip irrigation during the first 10 years post planting is being explored to shorten the first harvest date.	

[3] The 2015/16 Farm Business Survey, water use on farm, statistical note, published in 2017, did not collect data which would allow these statistics to be updated.

Table 10: Selected regional water footprints for coconuts

Sri Lanka		India					
Region	m^3/t	Region	m^3/t	Region	m^3/t	Region	m^3/t
Central	2942	Andhra Pradesh	2275	Haryana	1790	Orissa	2238
North Central	2741	Arunachal Pradesh	1398	Himachal Pradesh	1823	Pondicherry	2580
North Eastern	2556	Assam	1709	Jammu & Kashmir	1846	Punjab	1868
North Western	2851	Bihar	2092	Jharkhand	2039	Rajasthan	2310
Sabaragamuwa	3113	Chandigarh	-	Karnataka	2399	Sikkim	1920
Southern	3044	Chhattisgarh	2151	Madhya Pradesh	2372	Tamil Nadu	2449
Uva	2955	Dadra & Nagar Haveli	2784	Maharashtra	2416	Tripura	2120
Western	3060	Daman & Diu	2886	Manipur	1912	Uttar Pradesh	2179
Average	2914	Delhi		Meghalaya	1971	Uttaranchal	2186
		Goa	2648	Mizoram	2060	West Bengal	2080
		Gujarat	2495	Nagaland	1791	Average	2461

Source: https://research.utwente.nl/en/publications/the-green-blue-and-grey-water-footprint-of-crops-and-derived-crop-3 (Volume 2)

Documentary evidence required

- Supply chain map.
- Excavation/production/manufacturing water use records for all production and manufacturing processes.
- Records of any rainwater harvesting or water recycling used.

Improvement process

- Increase water use efficiency (volume per m^3 of product).
- Increase use of non-potable or non-abstracted water, e.g., by harvesting rainwater.
- Recycle/reuse water throughout the production process/supply chain.

Social compliance

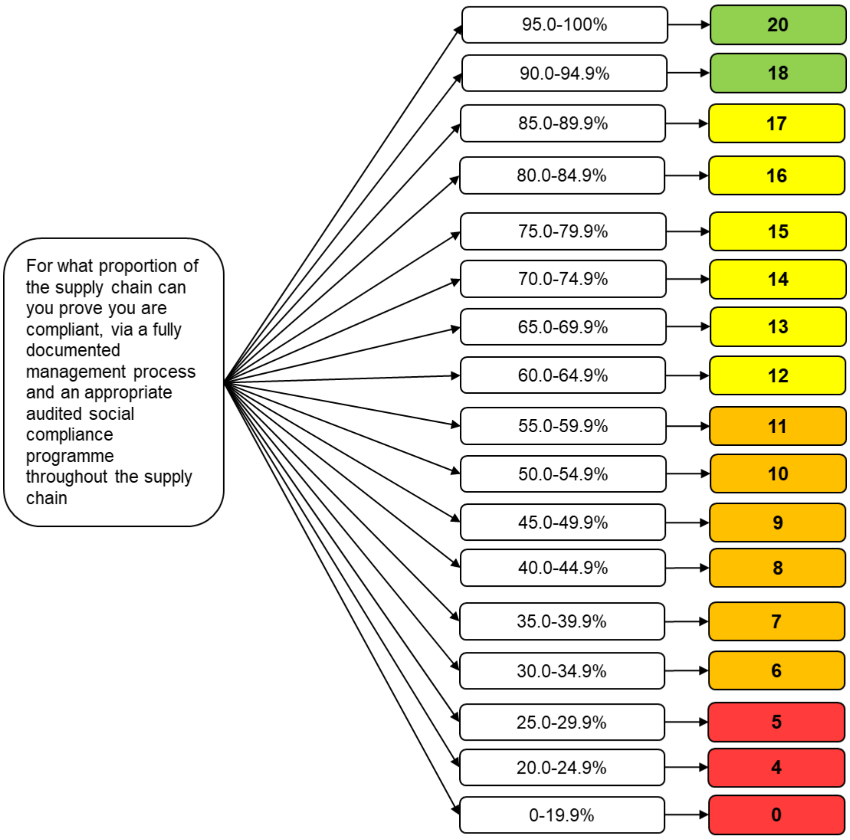


Figure 10: Social compliance scoring decision tree

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest ✓ Transport to manufacturer ✓ Processing and Production ✓ Up to the start of the mixing system	× Bagging (including packaging) × Transport from manufacturer to consumer × Use/disposal by consumer
Coir pith	✓ Starting point is Fibre Mill (Table 4)	× Coconut small holding/plantation × Husk traders
Cork	✓ Starting point is the processor (Table 4)	× Forest/Farm
Wood-based materials	✓ Starting point is Sawmill (Table 4)	× Forest operations
Anaerobic digestate (from energy crops) and oilseed rape straw	✓ Starting point is the Farm (Table 4)	× The proportion of a farm that is not involved in energy crop production
All other materials	✓ Starting point is as set out in Table 1	

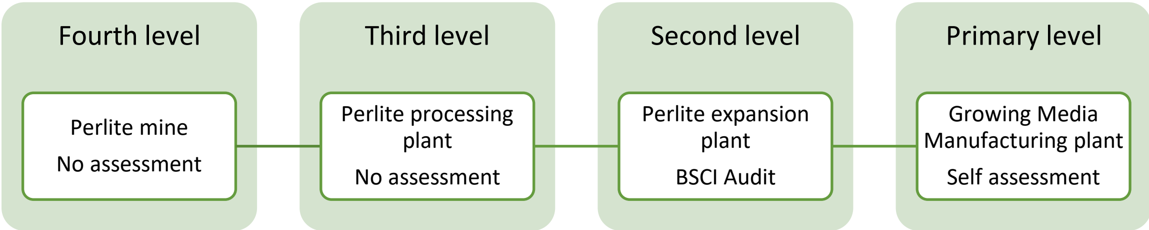


Figure 11: Example social compliance calculation

The methodology used to prove social compliance for each company in each of the in-scope tiers of the supply chain (Table 1 and Table 4) needs to be determined. Self-assessment questionnaires (which meet the minimum requirements of containing the questions set out in the 'self-assessment minimum requirements' spreadsheet and achieve no more than 2 major and/or 5 minor failures, see Annex 2) are valued at half of the value of third-party audits (Table 11). Self-assessment questionnaires which achieve more than 2 major and/or 5 minor failures have the same value as no assessment. Self-assessment questionnaires should be reviewed at least every two years.

Where no assessment has been carried out there is no proof of social compliance; assumptions cannot be made based on country of manufacture and compliance with local law. 100% coverage of all the in-scope tiers of the supply chain is not a requirement as excluding low volume material suppliers will not significantly affect the outcome.

The percentage shown in Figure 10 represents the weighted level of demonstrated social compliance across the in-scope supply chain. It takes into account both the form of proof available for each supplier (Table 11) and the contribution of each tier of the supply chain to the overall assessment (Table 12).

The total level of proof is assessed across the supply chain with different weighting applied to each tier according to the length of the supply chain (Table 12); **the further back along the supply chain the smaller contribution each tier makes to the score**. The percentage allocated impact at each stage of production for virgin by-products (Table 2 and Table 3) is not currently applied. The level of proof at each tier is weighted by the volume of material supplied by each supplier in that tier. A tool has been developed which can be used to undertake this calculation (Figure 13). Documentary evidence is required.

Table 11: Relative value of different forms of proof of social compliance

Form of proof	Relative value
Third party audit	1
Self-assessment questionnaire	0.5
No assessment	0

Table 12: Contribution of each tier of the supply chain to the overall level of social compliance

Number of tiers	Primary level (manufacturer)	Second level	Third level	Fourth level	Fifth level
1	100%				
2	60%	40%			
3	50%	30%	20%		
4	45%	30%	20%	5%	
5	44%	30%	20%	5%	1%

There is a minimum level of social compliance demonstration required to obtain a non-zero score (Figure 10 and Figure 12). This has been revised down from 21% to 20.0%. The maximum level of demonstrated compliance to achieve the top score has been revised down from 100% to 95.0%.

Figure 12: Social compliance scoring system

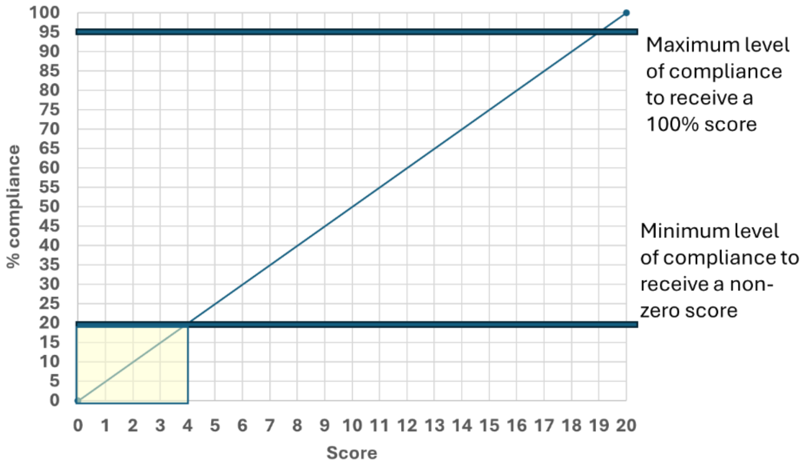


Figure 13: Social compliance ingredient rater tool

Towards Responsible Sourcing and Manufacture of Growing Media
Social Compliance Ingredient Rater

Growing media material type	Number of tiers / steps in supply chain	Primary level	Second level	Third level	Fourth level	Fifth level
Perlite	4	1	1	1	1	

	Percentage
Overall Material Score	**52.50**

Percentage of material obtained from each supplier by level

Supplier		Primary level	Second level	Third level	Fourth level	Fifth level
	1	100	100	100	100	
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
Value must not exceed 100%	Sum	100	100	100	100	0

SAQ or Audit

Supplier		Primary level	Second level	Third level	Fourth level	Fifth level
	1	SAQ	Audit	None	None	
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					

Documentary evidence required

- Supply chain map including sources of all materials.
- Details of the social compliance process, including any internal checks of suppliers. Certification alone does not automatically demonstrate compliance unless it covers the requirements of this criterion.
  - Transparency is obtained through the use of either an internal management system or an external management system such as Sedex or BSCI.
  - Self-assessment questionnaires may be used as proof where they meet the minimum requirements in Annex 2: Social compliance self-assessment questionnaire minimum requirements and have been passed. Self-assessment questionnaires which achieve more than 2 major and/or 5 minor failures have the

  - same value as no assessment. They are scored at a lower value than independent audits (Table 11).
  - Neither ISO14001 nor ISO9001 are acceptable proof. OHSAS18001 only offers partial proof as it does not cover the labour standards elements required but does cover the health and safety requirements.
- Risk assessments
- Certification to confirm successful independent audits throughout the supply chain.
- Independent audits of suppliers need to be conducted using recognised approaches such as SMETA, BSCI, SA8000 or similar.

Improvement process

- Increase the proportion of the supply chain included in your social compliance programme.

Habitat and biodiversity

Habitat and biodiversity impacts vary considerably between different growing media ingredients. As a result, a single scoring decision tree is not appropriate for all materials.

Nine different categories of bulk ingredient are considered in separate scoring decision trees or assessments:

- Peat
- Wood based material (including biochar from forestry products)
- Coir pith
- Minerals (other than peat)
- Recycled materials
- Agricultural crops (also including farmed Sphagnum, loam co-extracted with root vegetables and Short Rotation Coppice Willow)
- Loam (except where co-extracted with root vegetables)
- Bracken
- Wool (sheep only)
- Cork
- Loam

The same life cycle stage is in-scope throughout, i.e., extraction/growing and harvest.

Land used to develop the office and production plant is out of scope.

The allocated responsibility for virgin by-products at the extraction/growing and harvest stage (Table 2 and Table 3) has already been incorporated into the scoring decision trees (Figure 14 to Figure 21).

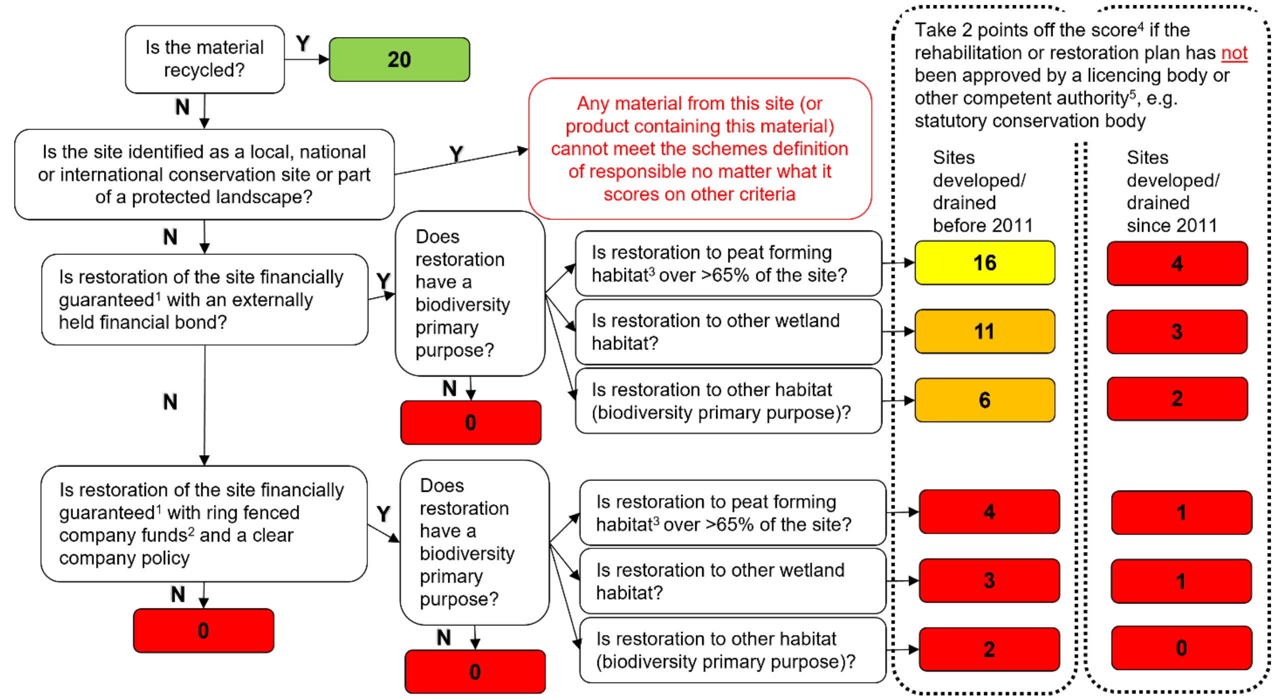
The simpler scoring decision trees for wood-based materials (including biochar), coir pith, agricultural crops and wool reflect their lower allocated impacts at this stage of the supply chain.

At this stage of scheme development, farmed Sphagnum is assessed using the agricultural crops decision tree despite having 100% of the allocated impact at the farm. This approach will be kept under review.

Select the decision tree that corresponds to the material being assessed and follow that methodology to determine the habitat and biodiversity score.

Materials for which there is no appropriate decision tree or assessment methodology must be referred to the Technical Committee.

Peat



[1] that guarantees sufficient resource for restoration of the site
[2] published in company's public accounts NB: Company track record of restoration is not sufficient
[3] appropriate to the country of the site (as demonstrated by restoring hydrological conditions)
[4] Negative scores are rounded to zero
[5] Where there is no Competent Authority an alternative external reviewer must be agreed with the Technical Committee

Figure 14: Habitat and biodiversity peat decision tree (100% allocated impact)

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest	× Transport × Processing and production × Bagging (including packaging) × Office/Production plant × Use/disposal by consumer × Re-use/recycling of waste
Recycled peat	✓ Waste peat removed from development sites; where removal of peat is not the purpose of development, i.e., the purpose is not peat extraction (for fuel or horticulture) and where it is demonstrated that excavation and removal is unavoidable.	× Peat gathered from run-off from degraded habitats

Peat extracted from sites identified as a local, national or international conservation site, or from land within a protected landscape, is excluded from this scheme. Any material from these sites (or product containing this material) cannot meet the scheme definition of responsible no matter what it scores on other criteria. Sites that are local, national and international conservation sites or protected landscapes will be those identified by statutory conservation bodies or regulating authorities and where formal notification has been given or is underway.

Figure 14 provides two sets of scores depending on when drainage or site development first occurred. Sites developed or drained after 2011 receive lower scores to reflect the biodiversity impacts associated with more recent habitat loss. The score is then modified (reduced by 2) at the end of the tree if the site's rehabilitation or restoration plan has not been approved by a licencing body or other competent authority, e.g., statutory conservation body. Where there is no competent authority, an alternative external reviewer must be agreed with the Technical Committee. Negative scores should be rounded to zero.

The guaranteed funding for restoration or rehabilitation must be sufficient to deliver the restoration plan for the site.

Acceptable mechanisms include externally held financial bonds and ring-fenced company funds. Where ring-fenced company funds are used, these must be identified in the company's published accounts and supported by a published company policy. A track record of restoration on other sites is not accepted as proof that future restoration funding is secured. Biodiversity offsetting cannot be used in place of guaranteed funding for restoration of the extraction site.

Restoration to a peat-forming habitat receives the highest score. However, the type of peat forming habitat is not specified; it should be appropriate to the country of the site. If the planned peat forming habitat will not cover more than 65% of the site, the score for other wetland habitat should be used. If the planned restoration for the site is not for a biodiversity primary purpose this does not achieve a score above zero for habitat and biodiversity.

Documentary evidence required (each site)

- Supply chain map including sources of peat.
- Evidence that the site has not been identified as a local, national or international conservation site or part of a protected landscape.
- Proof of development/drainage start date.
- Restoration/rehabilitation plan – including proof that this has been approved by a licencing body or other competent authority, e.g., statutory conservation body.
- Proof of provision to guarantee the financing of restoration – including documentation of the method of guarantee (and associated policy where relevant) and that the funds will be sufficient to deliver the restoration plan.
- Proof of source of recycled peat and that excavation and removal of peat at that site is unavoidable.

Improvement process

- Ensure that there is financial provision to fund restoration and increase the level of guarantee of this funding.
- Target restoration to habitats which have higher scores.
- Gain approval of restoration plans

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Wood-based material

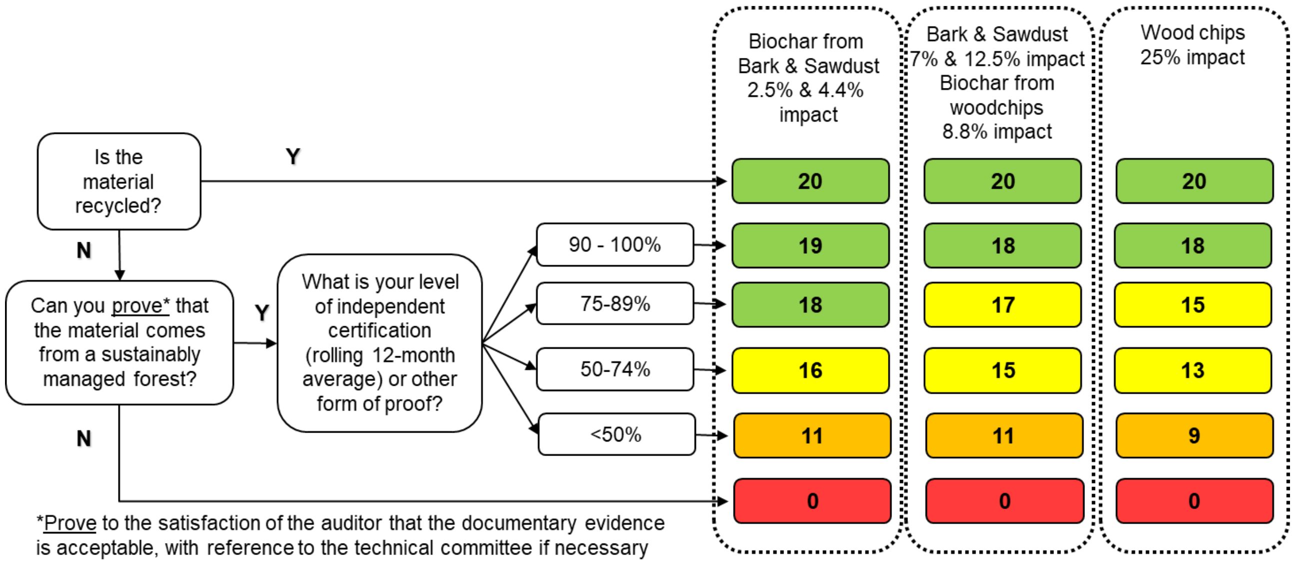


Figure 15: Habitat and biodiversity wood-based material decision tree (2.5, 4.4, 7, 8.8, 12.5 and 25% allocated impact)

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest	× Transport × Processing and production × Bagging (including packaging) × Office/Production plant × Use/disposal by consumer × Re-use/recycling of waste
Wood	✓ Softwood (virgin or recycled) ✓ Hardwood (virgin or recycled)	

As per Table 4, a proxy approach is used for wood-based materials because it is not always possible to trace material back to the proposed starting point for assessment.

Sustainable forest management is used as a proxy for habitat and biodiversity performance. Whilst many forest certification schemes do not directly measure habitat and biodiversity impacts, sustainably managed forests are assumed to have lower detrimental impacts on habitat and biodiversity than forests that are not sustainably managed.

As per Table 2 wood-based virgin by-products are allocated different levels of impact for different production stages. For the in-scope life cycle stage (the forest) the allocated levels of impact are 7% for bark, 12.5% for sawdust (and shavings and wood fines) and 25% for woodchips.

When wood-based products undergo pyrolysis to produce biochar there are additional products produced (bio-oil and gas), which further reduces the impact at the forest for these materials. Therefore, for Biochar (from forestry products) the allocated impacts are 2.5% for biochar from bark, 4.4% for biochar from sawdust and 8.8% for biochar from woodchips.

Figure 15 provides three score columns which reflect the different allocated impacts of wood-based materials at the forest stage. These take into account the different allocated levels of impacts. Biochar from bark and sawdust should use the first column of scores (left), Bark and sawdust-based products and biochar from woodchips should use the second column of scores (middle) and wood chip-based products should use the third column (right).

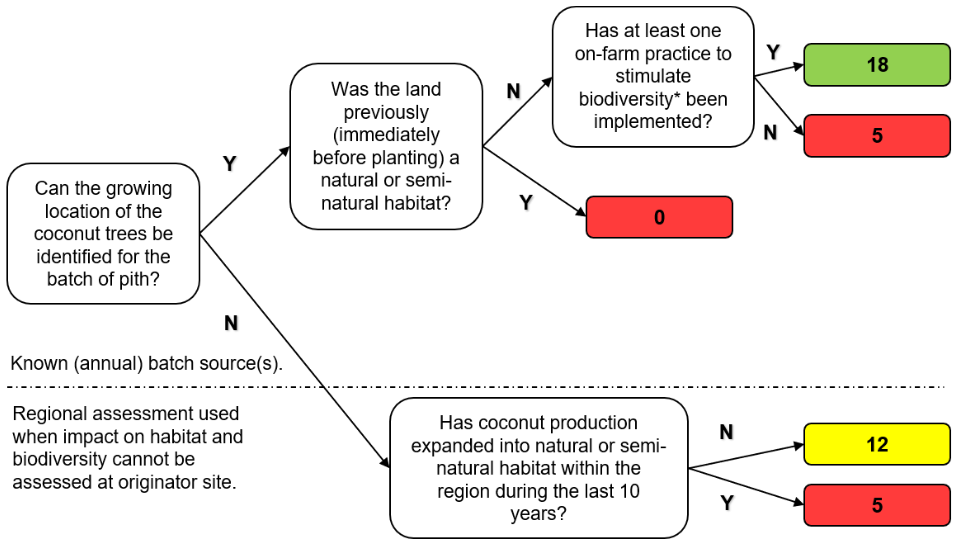
Documentary evidence required

- Supply chain map including sources of wood-based materials.
- The source of material (virgin by-products and recycled material).
- That material comes from a sustainably managed forest. Could include:
    - Independent third-party certification.
    - Recognised national/retailer schemes.
    - Recognised country of origin risk assessment (low risk) (e.g., FSC Controlled Wood National Risk Assessment) **(material relying on this proof alone should not be included in % calculation)**.
- Membership/certification to appropriate scheme.
- Total amount of material handled, detailing level of certification or other qualifying proof (i.e., not country of origin risk assessment).

Improvement process

- Increase the level of qualifying proof (i.e., excluding country of origin risk assessment).

Coir pith



* Examples of such practices taken from The Sustainable Coconut Charter's Assurance Scheme (2024) include 1) wildflower meadows, 2) wildlife corridors and strips, 3) bird nest boxes, 4) wetland creation, 5) establishing pasture, 6) creation of landscape elements (ponds, terraces, windbreaks, etc.).

Figure 16: Habitat and biodiversity coir pith decision tree (5% allocated impact)

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest	× Transport × Processing and production × Bagging (including packaging) × Office/Production plant × Use/disposal by consumer × Re-use/recycling of waste

Coir (recycled)	✓ Treat as recycled material	× Habitat and biodiversity impacts associated with original coconut production and coir processing

As set out in Table 4, it is not always possible to trace coir pith back to the specific growing location of the coconuts from which it was derived. For the habitat and biodiversity criterion, a regional assessment approach may therefore be used where the exact growing location cannot be identified.

As per Table 3 virgin by-products (including coir pith) are allocated different levels of impact for different production stages. For the in-scope life cycle stage (coconut production) the allocated level of impact is 5%. Figure 16 takes the 5% level of impact into account.

Documentary evidence required

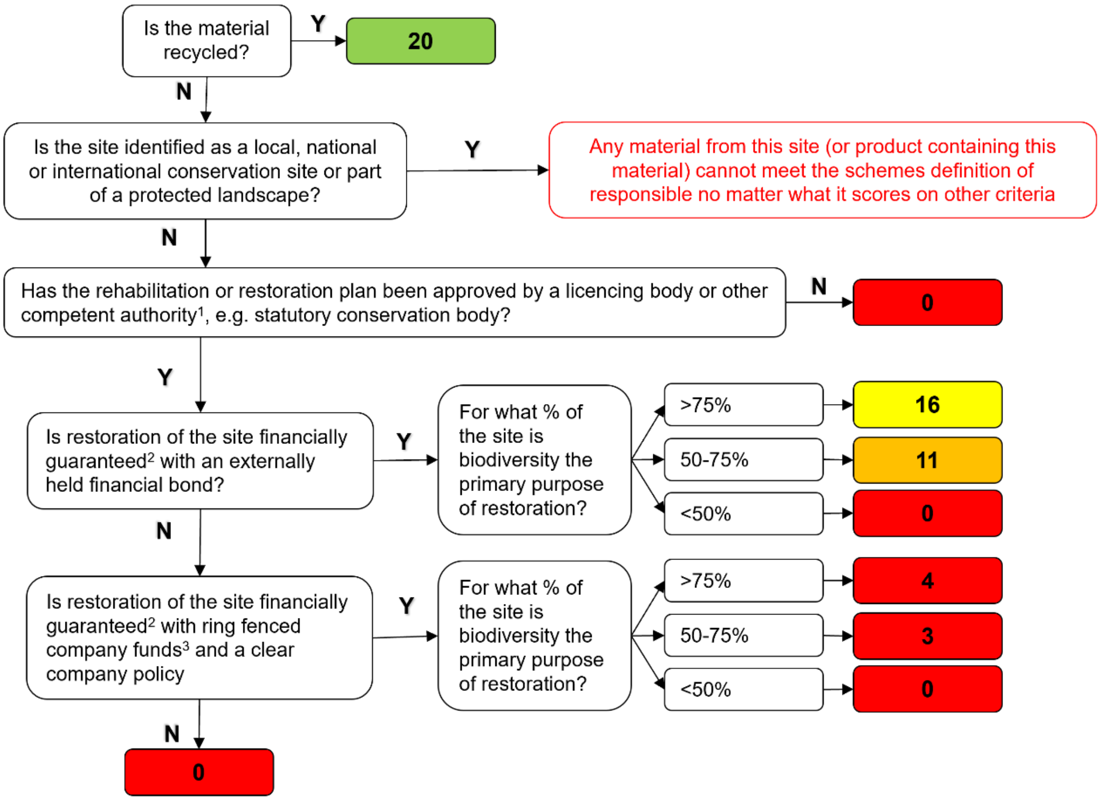
- Supply chain map including sources of coir pith/coconuts.
- Documentary evidence of the source of material.
- For known specific location sourced materials:
    - Evidence of previous land use.
    - Evidence of first cultivation date for coconuts.
    - Evidence of on-farm practices to stimulate biodiversity. Examples include 1) wildflower meadows, 2) wildlife corridors and strips, 3) bird nest boxes, 4) wetland creation, 5) establishing pasture, 6) creation of landscape elements (ponds, terraces, windbreaks, etc.). Evidence could include audit of The Sustainable Coconut Charter's Assurance Scheme[4].
- For regional assessment:
    - Evidence of whether expansion of coconut production within the region has resulted in the conversion of natural or semi-natural habitat within the last 10 years.

Improvement process

- Source from known small holdings / plantations.
- Source from known small holdings / plantations that have implemented on-farm practices to stimulate biodiversity.
- Source from areas which have not expanded coconut production into natural or semi-natural habitat in the last 10 years.
- Consider opportunities to use recycled coir where technically suitable and auditable as a recycled material. Recycled coir is outside the scope of the coir habitat and biodiversity assessment (treat as recycled material), but its use may reduce reliance on newly sourced coir pith.

[4] https://www.coconutpartnership.org/assurance-system#:~:text=The%20Sustainable%20Coconut%20Charter's%20Assurance,change%20and%20sustainable%20trade%20partners .

Minerals



[1] Where there is no Competent Authority an alternative external reviewer must be agreed with the Technical Committee
[2] that guarantees sufficient resource for restoration of the site
[3] published in company's public accounts NB: Company track record of restoration is not sufficient

Figure 17: Habitat and biodiversity mineral-based material decision tree (100% allocated impact)

	In scope	Out of scope
Life cycle stages	✓ Extraction	× Transport × Processing and production × Bagging (including packaging) × Office/Production plant × Use/disposal by consumer × Re-use/recycling of waste

Minerals extracted from sites identified as a local, national or international conservation site or part of a protected landscape are excluded from this scheme. Any material from these sites (or product containing this material) cannot meet the scheme definition of responsible no matter what it scores on other criteria. Sites that are local, national and international conservation sites or protected landscapes will be those identified by statutory conservation bodies or regulating authorities and where formal notification has been given or is underway.

The guaranteed funding for the restoration/rehabilitation of the site after extraction ceases must be sufficient for the restoration of the site.

Acceptable mechanisms include externally held financial bonds and ring-fenced company funds. Where ring fenced company funds are used, this must be published in company's public accounts and there needs to be a clearly stated and published company policy. A track record of restoration on other sites is not accepted as a guarantee. Biodiversity offsetting cannot be used in place of guaranteed funding for restoration of the extraction site.

If the planned restoration for the site is not for a biodiversity primary purpose across at least 50% of the site it does not achieve a score above zero for habitat and biodiversity.

Documentary evidence required (each site)

- Supply chain map including sources of minerals.
- Evidence that the site has not been identified as a local, national or international conservation site or part of a protected landscape.
- Restoration/rehabilitation plan – including proof that this has been approved by a licencing body or other competent authority, e.g., statutory conservation body.
- Proof of provision to guarantee the financing of restoration – including documentation of the method of guarantee (and associated policy where relevant) and that the funds will be sufficient to deliver the restoration plan.
- Proof of source of recycled minerals.

Improvement process

- Ensure that there is financial provision to fund restoration and increase the level of guarantee of this funding.
- Increase the area of the site which has biodiversity as the primary purpose of restoration.
- Gain approval of restoration plans.

Recycled materials

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest	× Transport × Processing and production × Bagging (including packaging) × Office/Production plant × Use/disposal by consumer × Re-use/recycling of waste

As set out in Table 1, the starting point for recycled materials is the point at which the volume becomes commercially viable to transport rather than the point of extraction, growing or harvest. As the extraction/growing and harvest stage falls outside the assessment boundary, recycled materials score 20 for habitat and biodiversity.

Improvement process

None.

Agricultural crops

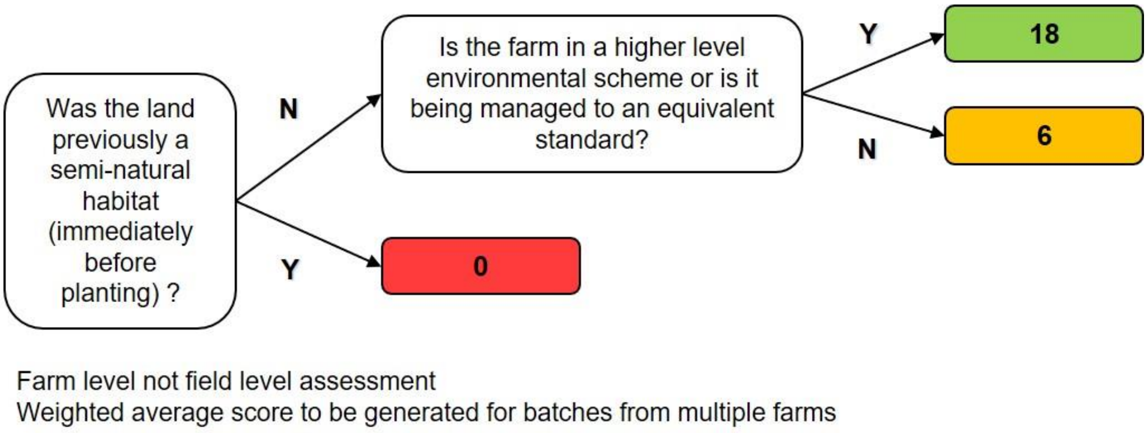


Figure 18: Habitat and biodiversity agricultural crops decision tree (6-10% allocated impact)

This decision tree should be used for all agricultural crops. This category also includes:
- Farmed Sphagnum
- Loam co-extracted with root vegetables
- SRC willow

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest	× Transport × Processing and production × Bagging (including packaging) × Office/Production plant × Use/disposal by consumer × Re-use/recycling of waste
Sphagnum	✓ Sphagnum (farmed) ✓ Source material is from micropropagation, use of a bioreactor or other method that utilises small amounts of starting material for upscaling	× Wild harvested Sphagnum (both as a bulk material for growing media and as a source material for Sphagnum farming)
Loam	✓ Co-extracted with root vegetables	× Loam not co-extracted with root vegetables. (Figure 19)

As per Table 4, the effort to collect specific data from the proposed starting point is not always justified for agricultural crops. However, the starting point for agricultural crops is not modified for the habitat and biodiversity criterion and a weighted average farm approach is applied for agricultural crops.

As per Table 3 virgin by-products are allocated different levels of impact for different production stages. Figure 18 takes the level of impact of the different agricultural crops into account.

At this stage of scheme development, farmed Sphagnum is assessed using the agricultural crops decision tree despite having 100% of the allocated impact at the farm. This approach will be kept under review.

Where crops are sourced from multiple farms an individual score should be generated for each farm. The annual volume of materials supplied by each farm should be used to generate a weighted average score for the crop.

A higher-level environmental scheme is one that includes in-depth, tailored and complex management plans, often involving habitat creation and restoration with longer agreements (5-10 years), e.g. Higher Level Stewardship and Countryside Stewardship Higher Tier.

Documentary evidence required

- Supply chain map including sources of agricultural crops.
- Documentary evidence of the source of material:
  - Evidence of previous land use.
  - Evidence of first cultivation date for agricultural crops.
- Documentary evidence that the farm is in a higher-level environmental scheme (applicable scheme to the country of origin) or is being managed to an equivalent standard.

Improvement process

- Source from farms where land use change from semi-natural habitat has not occurred immediately prior to the commencement of agricultural crop production.
- Source from farms which are able to demonstrate high levels of environmental management.

Loam

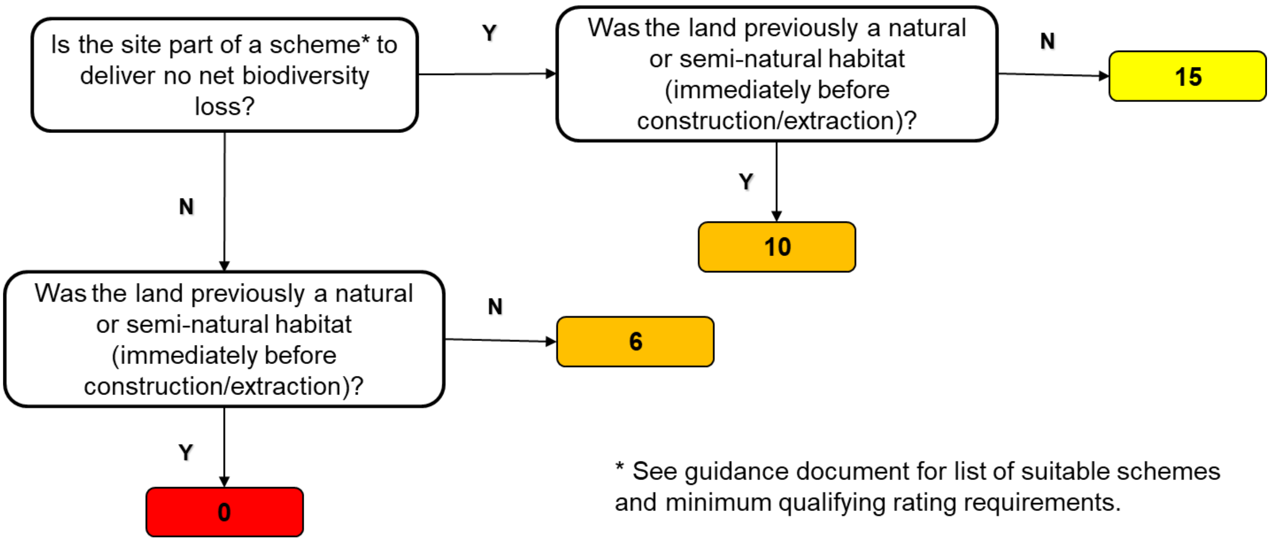


Figure 19: Habitat and biodiversity loam decision tree (3% allocated impact)

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest	× Transport × Processing and production × Bagging (including packaging) × Office/Production plant × Use/disposal by consumer × Re-use/recycling of waste
Loam	✓ Loam extracted from *in situ* location in which it was formed	× Loam co-extracted with root vegetables. (Figure 18) × Material with >85% sand or 60% clay – treat as mineral × Material with >15% organic matter – treat as peaty soil/peat

The extraction of loam is unlikely to be the primary reason for the activity, but the sale of the removed material forms part of the business model for that activity and therefore it must at least be considered a virgin by-product (Table 1). For loam, habitat and biodiversity performance is assessed using the wider land-use outcome associated with the activity from which the loam is generated.

As per Table 3 the impact of loam at the extraction site is 3%.

Documentary evidence required

- Supply chain map including sources of loam.
- Documentary evidence that the site from which the loam has come from is part of a scheme to deliver no net biodiversity loss. Examples of schemes and minimum scoring requirements are identified as follows:
    - Biodiversity Net Gain (which exceeds requirements)
    - Building with Nature[5] (which exceeds requirements)
    - Building Research Establishment Environmental Assessment Method (BREEAM):
        - New Construction[6] – three credits for criterion Lue 03 – Managing impacts on ecology.
        - New Construction Residential[7] - at least 4 credits for Ecological change and enhancement criterion 8 - Measuring the change in ecological value.
        - Infrastructure[8] – at least twenty credits[9] for criterion 4.4.1 – Change in ecological value
- Evidence of the previous land use.

Improvement process

- Source loam from sites that are in schemes that will deliver no net biodiversity loss and meet the minimum scoring requirements.
- Source loam from sites that were not previously natural or semi-natural habitats.

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[5] https://www.buildingwithnature.org.uk/
[6] https://breeam.com/standards/new-construction
[7] https://breeam.com/breeam-uk-new-construction-residential
[8] https://breeam.com/breeam-infrastructure
[9] https://files.bregroup.com/breeam/guidancenotes/GN36-v0.0-BREEAM-CEEQUAL-HQM-Ecology-Calculation-Methodology-Route-2.pdf

Bracken

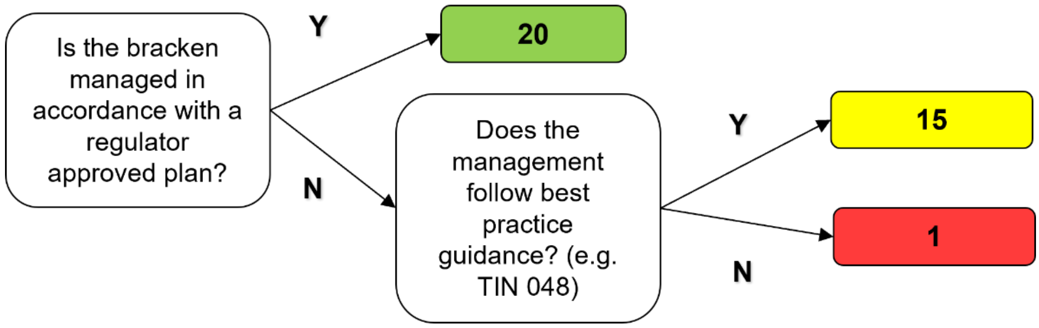


Figure 20: Habitat and biodiversity bracken decision tree (100% allocated impact)

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest	× Transport × Processing and production × Bagging (including packaging) × Office/Production plant × Use/disposal by consumer × Re-use/recycling of waste

Habitat and biodiversity impacts associated with bracken harvesting are assessed through the quality of the management regime applied to the site.

Where bracken is sourced from multiple sites an individual score should be generated for each site. The annual volume of materials supplied by each site should be used to generate a weighted average score for Bracken.

Documentary evidence required

- Supply chain map including sources of bracken.
- Documentary evidence that bracken management is carried out following a bracken management plan, that this management plan follows best practice guidance and that it has regulatory approval where required or obtained voluntarily. One example of best practice guidance is Natural England Technical Information Note TIN048 - Bracken management and control. http://publications.naturalengland.org.uk/publication/35013

Improvement process

- Source from locations which follow a bracken management plan which complies with best practice guidance.
- Source from locations that follow a bracken management plan which has had Regulator approval.

Wool (sheep only)

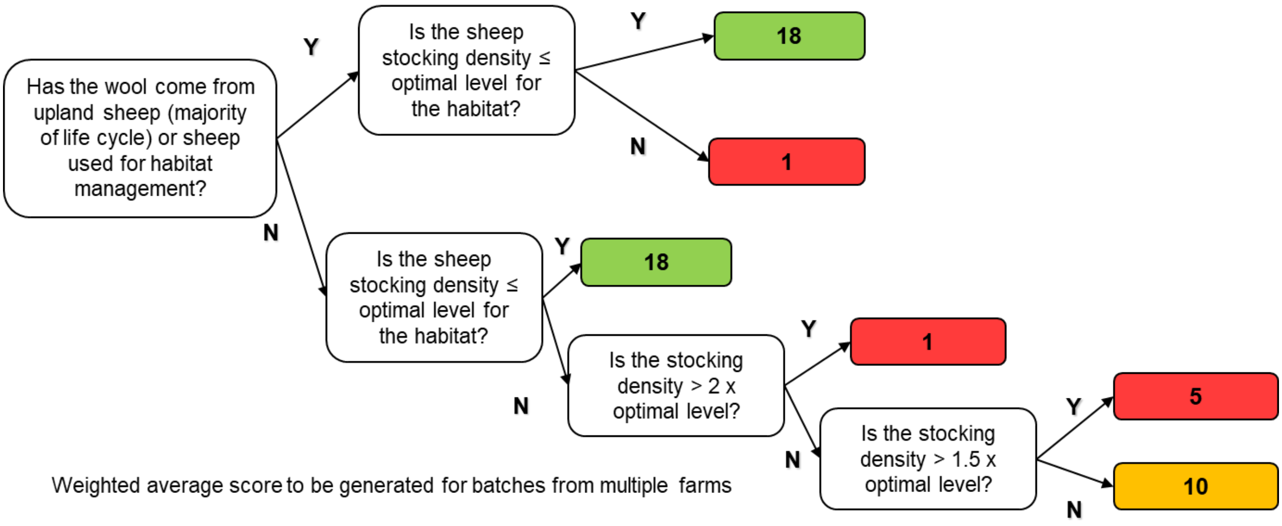


Figure 21: Habitat and biodiversity Wool (sheep only) decision tree (3% allocated impact)

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest	× Transport × Processing and production × Bagging (including packaging) × Office/Production plant × Use/disposal by consumer × Re-use/recycling of waste

As per Table 4, the effort to collect specific data from the proposed starting point is not always justified for wool. However, the starting point for wool is not modified for the habitat and biodiversity criterion and a weighted average farm approach is applied.

As per Table 3 virgin by-products (including wool) are allocated different levels of impact for different production stages. For the in-scope life cycle stage (farm) the allocated level of impact is 3%. Figure 21 takes the 3% level of impact into account.

Where wool fleeces are sourced from multiple farms an individual score should be generated for each farm. The annual volume of materials supplied by each farm should be used to generate a weighted average score for the wool.

Optimal stocking densities for sheep on different UK habitats can be found at:
https://www.fas.scot/downloads/tn686-conservation-grazing-semi-natural-habitats/

Documentary evidence required

- Supply chain map including sources of wool.
- Documentary evidence of the source of material
  - Location of farm (upland vs lowland). To meet the definition of an upland sheep farm, the sheep should spend the majority of their life cycle in an upland extensive grazing system.
  - Evidence that sheep grazing is being used as part of a habitat conservation plan if not in an upland extensive grazing system.
- Documentary evidence of the stocking density of sheep on each of the habitat types present on the farm.

Improvement process

- Source from farms where the stocking density is less than or equal to that of the optimum stocking density for the habitat being grazed.

Cork

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest	× Transport × Processing and production × Bagging (including packaging) × Office/Production plant × Use/disposal by consumer × Re-use/recycling of waste

There is agreement in the literature that the harvesting of cork is beneficial for habitat and biodiversity at the site level and that the economic value of harvested cork helps conserve and retain these valuable habitats at a landscape or national level. Therefore, all sources of cork are allocated a score of 20.

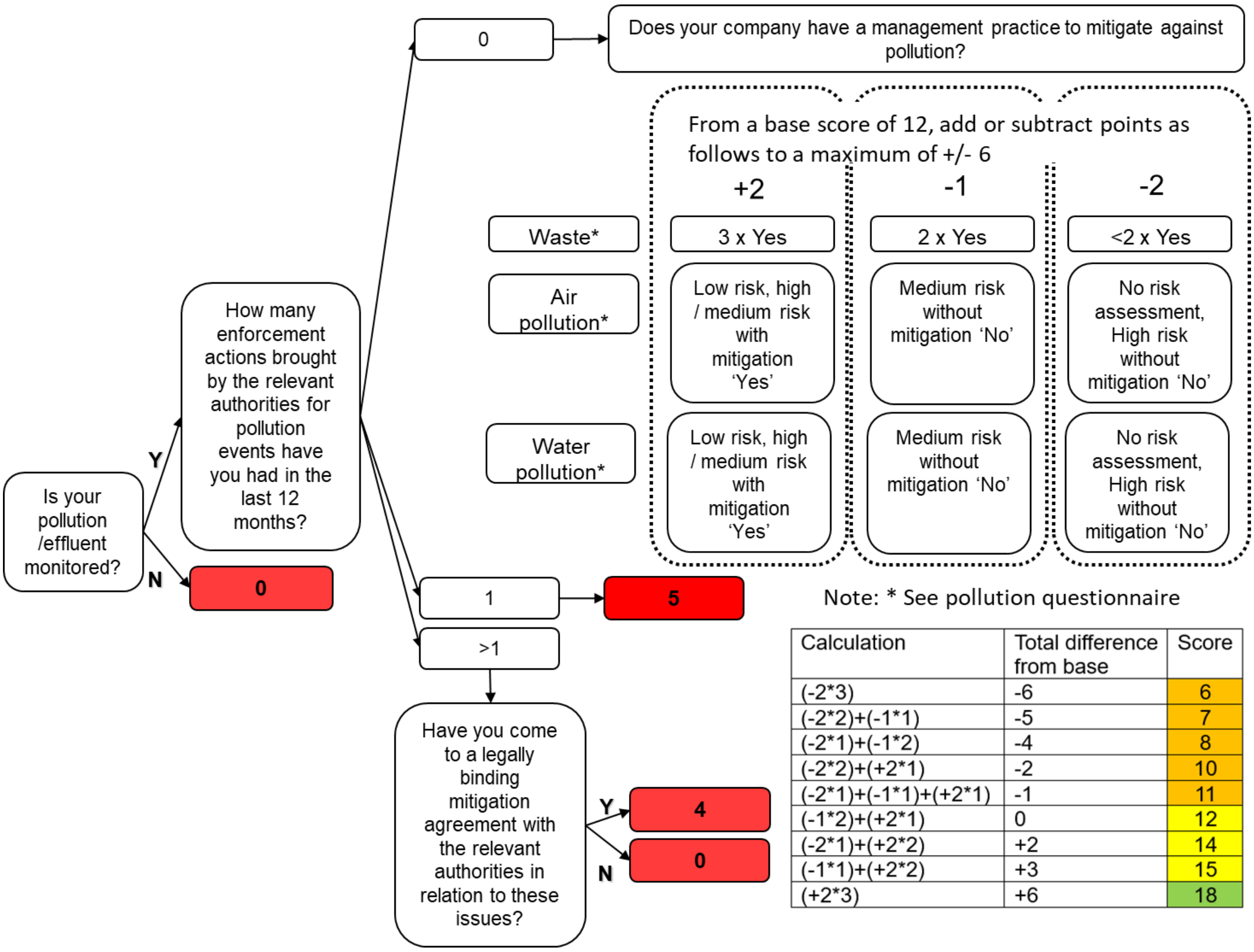
Documentary evidence required

Supply chain map.

Improvement process

None.

Pollution



Calculation	Total difference from base	Score
(-2*3)	-6	6
(-2*2)+(-1*1)	-5	7
(-2*1)+(-1*2)	-4	8
(-2*2)+(+2*1)	-2	10
(-2*1)+(-1*1)+(+2*1)	-1	11
(-1*2)+(+2*1)	0	12
(-2*1)+(+2*2)	+2	14
(-1*1)+(+2*2)	+3	15
(+2*3)	+6	18

Figure 22: Pollution scoring decision tree

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest ✓ Processing and Production ✓ Up to start of mixing system	× Mixing system × Bagging (including packaging) × Transport to manufacturer × Transport from manufacturer to consumer × Use/disposal by consumer
Pollutants (which can impact on human health and/or the environment)	✓ Solid (including dust) ✓ Liquid (including spillage of fuel used by handling machinery) ✓ Gaseous (including odour)	× Those arising from energy/fuel use by handling machinery × Greenhouse gases × Those for which there are no current legal targets for individual businesses to comply with
Coir pith	✓ Starting point is Fibre Mill (Table 4)	× Coconut small holding/plantation × Husk traders
Cork	✓ Starting point is the processor (Table 4)	× Forest/Farm
Wood based materials	✓ Starting point is Sawmill (Table 4)	× Forest operations
Anaerobic digestate (from energy crops)	✓ Starting point is the AD facility (Table 4)	× Farm (digestate responsible for 6% of impact)

	In scope	Out of scope
Oilseed rape straw	✓ Starting point is the farm (Table 4)	
All other materials	✓ Starting point is as set out in Table 1	

Potential pollution hotspots throughout the supply chain need to be identified (Figure 23). If no one is monitoring effluent or emissions at a site, be it the company or the regulator, then no control of harmful pollution can be assumed and a score of zero is given. The number of enforcement actions from regulators over the last 12 months for each supplier needs to be determined. If a supplier has no enforcement actions over the last 12 months, then a higher score can be generated using the Pollution Questionnaire tool (Figure 24). Evidence is required that appropriate pollution controls and mitigations are in place.

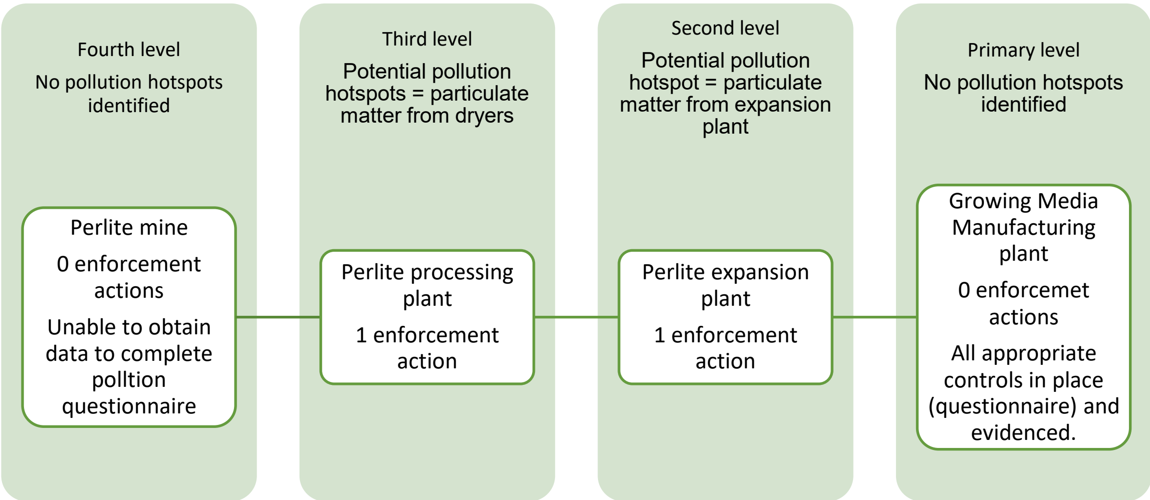


Figure 23: Example pollution calculation

Figure 24: Pollution questionnaire example

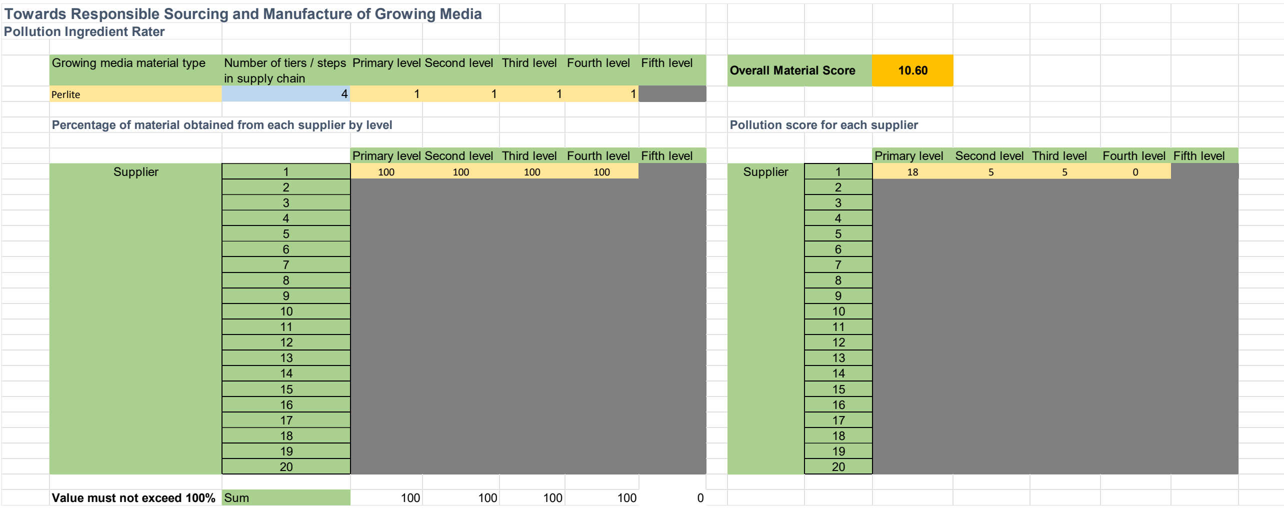
		Answer	
Waste		Yes/No	Change Score
Are you collecting, appropriately storing and disposing of waste?	Plastics (stored under cover or collated for collection)	Yes	2
	Engineering consumables waste (e.g. belts) (stored in a designated area with appropriate controls)	Yes	
	Waste created in the processing of materials (stored in a designated area with appropriate controls)	Yes	
Air pollution			
Are you mitigating the risk of air pollution from your bulk raw materials?	Have you conducted a risk assessment for air pollution?	Yes	2
	Is your air pollution risk high, medium or low?	Low	
	Do you have appropriate mitigation to limit air pollution? **(Not required for low risk)**		
Water pollution			
Are you mitigating the risk of water pollution from your bulk raw materials and processes?	Have you conducted a risk assessment for water pollution?	Yes	2
	Is your water pollution risk high, medium or low?	Low	
	Do you have appropriate mitigation to limit water pollution? **(Not required for low risk)**		
	Change from base score of 12 (zero enforcement actions)		6
	Score		18

The total level of pollution control is assessed across the supply chain with different weighting applied to each tier according to the length of the supply chain (Table 13); the further back along the supply chain the smaller contribution each tier makes to the score (this is the approach for the Social Compliance criteria). The percentage allocated impact at each stage of production for virgin by-products (Table 2 and Table 3) is not currently applied. The level of pollution control at each tier is weighted by the volume of material supplied by each supplier in that tier. A tool has been developed which can be used to undertake this calculation (Figure 25). Documentary evidence is required. See Part 3: Worked examples. 100% coverage of all the in-scope tiers of the supply chain is not a requirement as excluding low volume material suppliers will not significantly affect the outcome.

Table 13: Contribution of each tier of the supply chain to the overall level of pollution

Number of tiers	Primary level (manufacturer)	Second level	Third level	Fourth level	Fifth level
1	100%				
2	60%	40%			
3	50%	30%	20%		
4	45%	30%	20%	5%	
5	44%	30%	20%	5%	1%

Figure 25: Pollution rater tool



If extraction only occurs for part of the year consideration of the impact of extraction should not be limited to the period of active extraction but should also consider the extraction site during its inactive phase.

Documentary evidence required

- Supply chain map including sources of all materials and known potential pollutant hotspots.
- Records of enforcement actions.
- Details of legally binding mitigation agreement.
- Monitoring records.
- Completed pollution questionnaires and supporting documentation of the measures recorded (e.g. risk assessments for air and water pollution). See Annex 3 for an example of how risk assessments for air and water pollution could be carried out.
- Pollution rater records.

Improvement process

- Put in place appropriate pollution control measures as identified in the pollution questionnaire.

Renewability

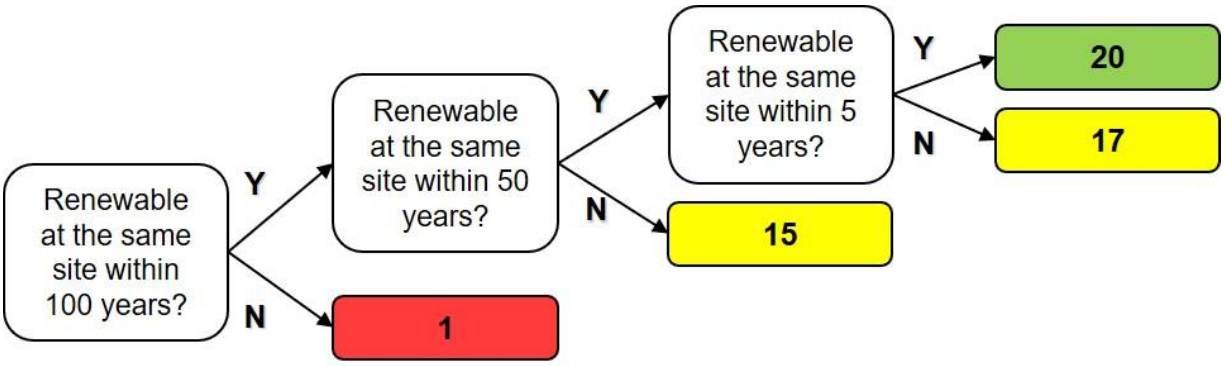


Figure 26: Renewability decision tree

	In scope	Out of scope
Life cycle stages	✓ Formation of virgin deposits ✓ Growth of virgin materials	× Extraction/harvest × Transport × Manufacturing × Use/disposal by consumer
Recycled materials	✓ Formation/growth of virgin material being generated at a site	× Rate at which waste is generated
Renewability	✓ Replacement time of the material within living cycles at the same site.	× Global replacement rates × National replacement rates × Company replacement rates

Table 14: Renewability decision tree: expected scores for materials

Material [a], [b]	Comment	Score
Husks and shells from food crops (includes coir pith, and recycled coir)	Plant based material which is renewable within five years (annually) at same site	20
Green compost (including worm compost and composted bracken) and anaerobic digestate	Plant based material which is renewable within five years (annually) at same site	20
Bracken, oilseed rape straw, Sphagnum (farmed)	Plant based material which is renewable within five years at same site	20
Wool	Animal by-product which is renewable within five years (annually) at same site	20
Cork	Usually derived from the cork oak (*Quercus suber*) with repeat harvest from the same tree every 9-12 years. Therefore, is renewable within 50 years, but not within five years at the same site	17
Softwoods (wood-based material, including wood fibre, bark and biochar (from forestry products))	Usually derived from conifers which are renewable within 50 years, but not within five years at the same site	17
Hardwoods including biochar (from forestry products)	Renewable within 100 years at the same site	15
Minerals including vermiculite, perlite, rockwool, sand, grit, loam, clay granules	Not renewable within 100 years at the same site	1

Material [a, b]	Comment	Score
Peat	Not normally considered renewable within 100 years at the extraction site, unless demonstrated otherwise on a site-by-site basis	1
Plastics and petrochemical derived products	Not renewable within 100 years at the same site	1

Notes:

a. If a recycled material is composed of a number of materials which would have different scores a weighted average should be calculated.

b. Biochar may be created from a range of materials. The score allocated should be for the material(s) which has undergone the pyrolysis process.

Documentary evidence required

- Evidence of materials used.
- Proportion of each material used in final product.
- For wood-based material – species used, differentiating between hardwood/softwood.
- For peat, where potentially renewable within 100 years, documented:
    - evidence of peat type (sphagnum/sedge).
    - peat extraction plan including depth excavated annually.
    - site restoration plan including timescales.

Improvement process

- There is limited potential for an improvement process for most materials within this criterion as a material cannot be made more renewable. Improvement is achieved by replacement of non- or less-renewable materials with more renewable materials or, for example, by switching from hardwood to softwood.

Resource use efficiency

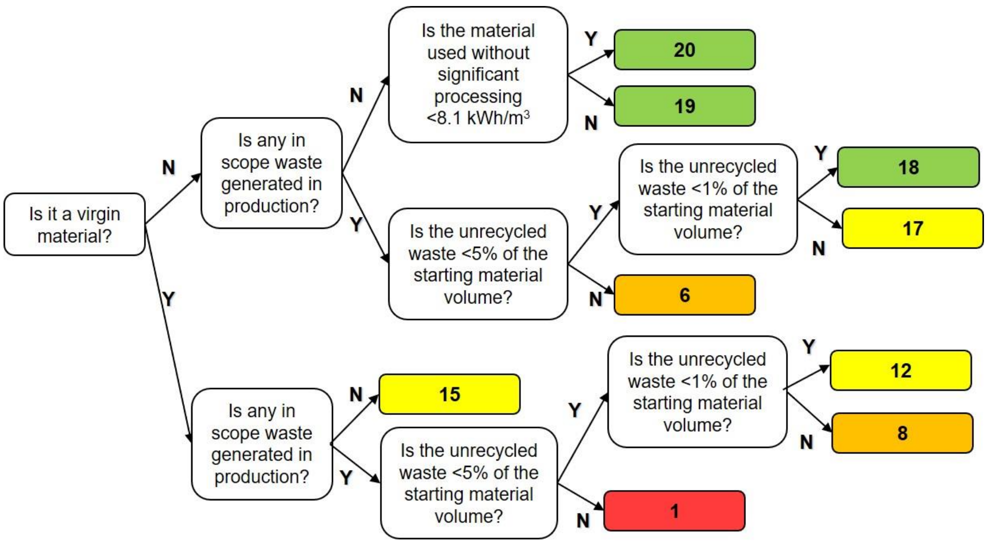


Figure 27: Resource use efficiency scoring decision tree

	In scope	Out of scope
Life cycle stages	✓ Extraction/growing and harvest ✓ Processing and Production	× Mixing system × Bagging (including packaging)

	✓ To start of the mixing system	× Use/disposal by consumer
Generated waste sources	✓ Unwanted material from production disposed of to landfill ✓ Physical contaminants screened out of input materials	× Material which is used to produce a by-product × Packaging materials used to transport materials between companies in the supply chain
Recycled materials processing energy	✓ Processing and Production	× Transport × Offices
Coir pith	✓ Starting point is Fibre Mill (Table 4)	× Coconut small holding/plantation × Husk traders
Cork	✓ Starting point is the processor (Table 4)	× Forest/Farm
Wood-based materials	✓ Starting point is Sawmill (Table 4)	× Forest operations
Anaerobic digestate (from energy crops)	✓ Starting point is AD facility (Table 4)	× Farm (digestate responsible for 6% of impact)
Oilseed rape straw	✓ Starting point is Growing media manufacturer (Table 4)	× Farm (oilseed rape straw responsible for 10% of impact)
All other materials	✓ Starting point is as set out in Table 1	

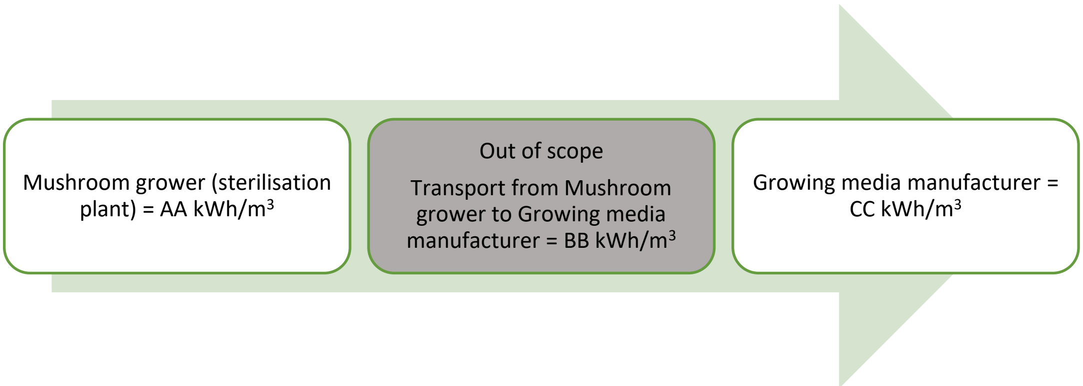


Figure 28: Example calculation of processing energy for a recycled material with no in-scope waste generated

Where the material is recycled with no in-scope waste generated, the calculations used for the greenhouse gas emissions criterion should be used to calculate processing energy use. Only the energy-use component of the calculation is required; greenhouse gas conversion factors should not be applied. Transport energy use is out of scope so should be excluded from the total. Therefore, processing energy use in the example shown in Figure 28 is AA+CC kWh/m^3. The score is dependent on whether this value is < or > 8.1 kWh/m^3. See Part 3: Worked examples.

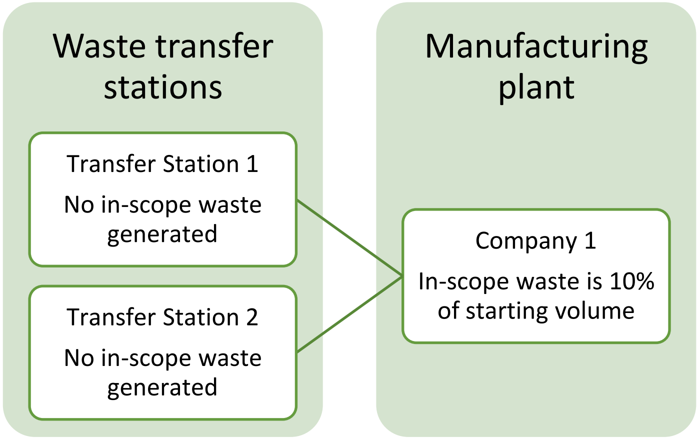


Figure 29: Example calculation for resource use efficiency

The score for the supply chain is based on the total volume of unrecycled waste as a proportion of the input materials. Identify the volume of in-scope waste generated for each part of the supply chain; then calculate the proportion of unrecycled waste as a % of input materials. Average the % unrecycled waste for each tier of the supply chain based on the proportion of the material supplied by each company, then add together the % unrecycled waste for all of the tiers. Documentary evidence is required. See Part 3: Worked examples.

Documentary evidence required

- Evidence of materials used.
- Energy records - use during processing for recycled materials (kWh/m^3).
- Volume of input materials (m^3).
- Volume of in-scope waste generated during production (m^3).
- In-scope waste as a proportion of input material (%).

Improvement process

- There may be limited opportunity for a material to improve its score unless the amount of waste generated can be reduced.
- Improvement is achieved by replacement of materials by others which have a better resource efficiency profile.

Part 3: Worked examples

The following worked examples are designed to demonstrate the thought processes, data requirements and calculations used to generate scores under this scheme. They are illustrative only and are not intended to represent real supply chains or actual company performance.

Worked examples are provided in two formats. **Full worked examples** demonstrate the assessment process for a material across all seven criteria and include detailed calculations. **Partial worked examples** focus on specific criteria, calculation methods or supply-chain scenarios where additional explanation is helpful, rather than repeating the full assessment process for every criterion.

Where a partial worked example is provided, the remaining criteria should be assessed using the methodologies described in Part 2 of this document. The worked examples are intended to complement, not replace, the criterion guidance.

The worked examples included in this section are:

- **Material 1: Coir pith produced by Company 1** – full worked example.
- **Material 2: Anaerobic digestate produced by Company 2** – full worked example, including weighted averaging between feedstock categories.
- **Material 3: Bark produced by Company 2** – partial worked example focused on social compliance and pollution across multiple suppliers.
- **Material 4: Peat produced by Company 2** – partial worked example focused on greenhouse gas emissions and habitat and biodiversity.

Except where standard data from Parts 1 and 2 of this document are used, the values presented should not be treated as standard data. These values should be replaced with actual data specific to the material and supply chain being assessed.

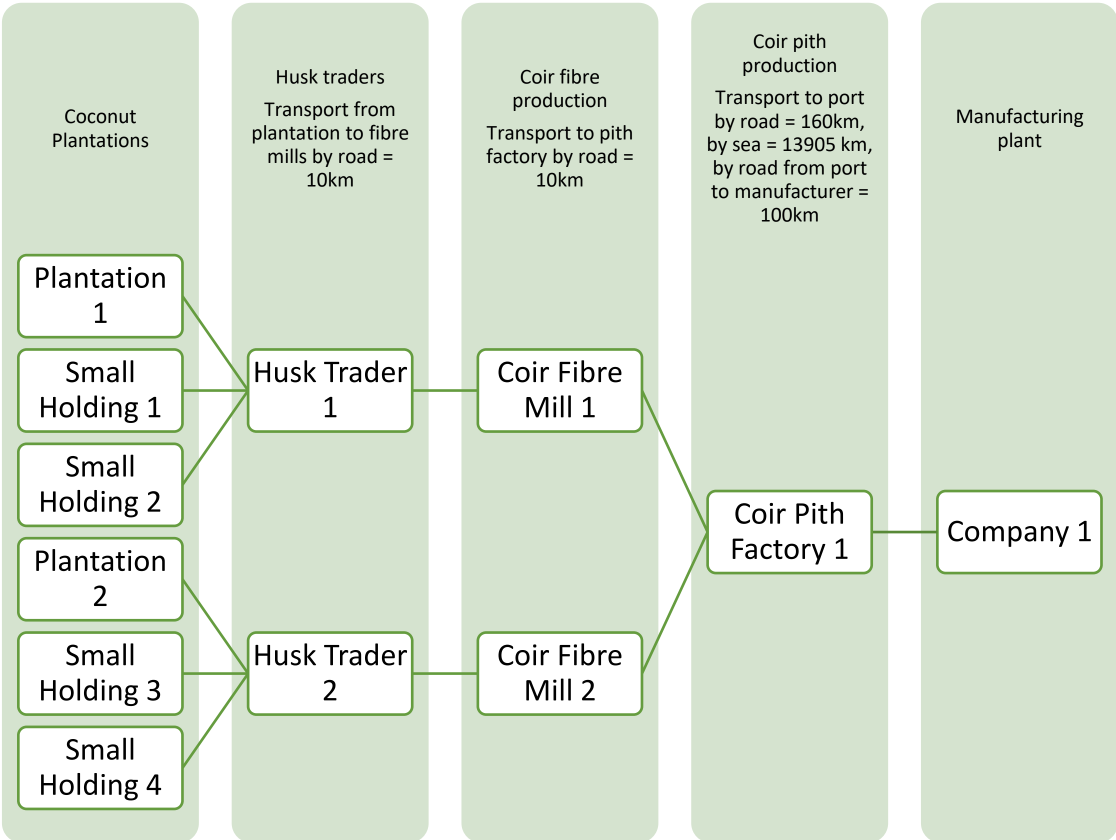
Material 1: Coir pith produced by Company 1

This is manufactured from a virgin material (by-product) (Table 1); therefore, the starting point for this material is the plantation or small holding. However, as set out in Table 4, generic data should be used for the greenhouse gas emissions and water use criteria at the plantation or small holding and for transport to the fibre mill, unless site-specific data are available. For social compliance, pollution and resource use efficiency, the starting point for assessment is the fibre mill. The end point is the start of the mixing system (Table 1).

The material is produced from the outer husk of the coconut. As set out in Table 3, coir pith is responsible for 5% of the impact at the plantation or small holding, 50% of the impact at the fibre mill and 100% of the impact from the pith factory up to the mixing system.

One tonne of coconuts produces 1.9 m^3 of coir pith (Table 9). Four cubic metres of coconut husks produces 1 m^3 of coir pith (Table 8).

Supply chain map for Company 1 coir pith



The small holdings and plantations that supply the fibre mills in the Tamil Nadu region of India are numerous and are not all shown in the supply chain map.

Husk traders act as intermediaries between the coconut growers and the fibre mills, collecting and transporting the husks.

Defra project SP1214 found that coir pith is generally collected from fibre mills within a 20 km radius of the pith processing unit, due to the rising cost of fossil fuels in India. It is assumed here that 20 km is also the maximum economic distance for collection of coconut husks from small holdings or plantations. An average distance of 10 km is used in each case.

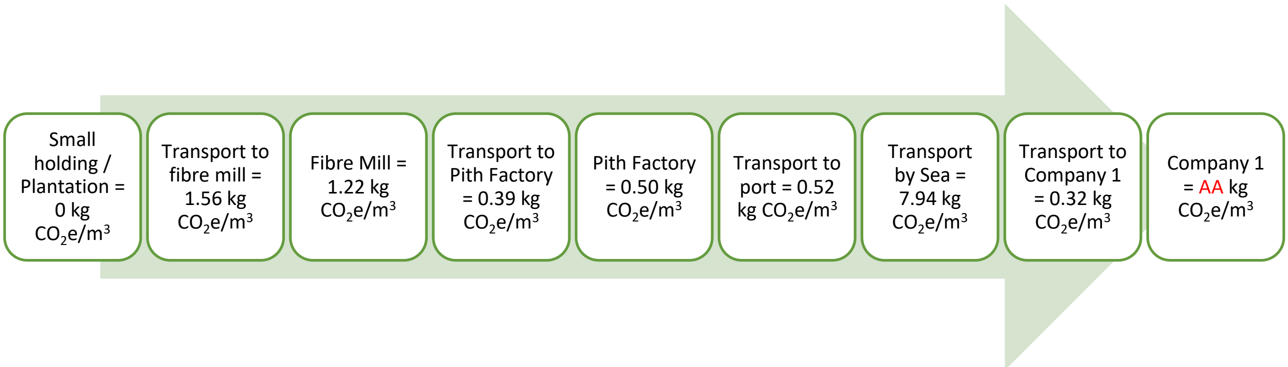
Coir Pith Factory 1 is 160 km from the port of Tuticorin, which is 13,905 km from Felixstowe (Table 7). Company 1 is located 100 km from Felixstowe. The coir pith is shipped in compressed blocks and reconstituted by Company 1.

40% of the coir pith purchased by Coir Pith Factory 1 comes from Fibre Mill 1 and the remaining 60% from Fibre Mill 2.

Greenhouse gas emissions (in extraction, transport and production)

This worked example demonstrates **Route 1: energy-based greenhouse gas calculation**. Under this route, energy-use calculations prepared under Version 10 of the scheme can be carried forward, but they should not be reused without checking. Before conversion to greenhouse gas emissions, the calculation should be checked against the current greenhouse gas conversion factor workbook and any source worksheets used to derive energy values, including fuel properties and transport factors. Where source values have changed, or where a previous value has been selected incorrectly, the energy-use calculation should be updated before converting to kg CO_2e/m^3. The source, year, worksheet and factor used should be recorded so the calculation can be audited and updated in future.

The following worked example first checks and updates the energy-use calculation for coir pith, then converts the relevant energy-use values to greenhouse gas emissions.



As set out in Table 4, generic data are used for operations at the plantation or small holding and for transport of material to the fibre mill.

According to SP1214, the main use of fossil fuels on coconut plantations is for pumps to abstract water from boreholes and wells. The amount of energy used has not been calculated, but as coir pith is responsible for 5% of the impact at the plantation (Table 3), this fossil fuel energy use is assumed to be negligible. It is therefore treated as 0 kWh/m^3 in the energy-use calculation and 0 kg CO_2e/m^3 after conversion to greenhouse gas emissions.

The husk traders transport coconut husks by road an average of 10 km to the fibre mill (20 km for the round trip as the return journey for empty vehicles is in scope). A typical load is 16 m^3. The truck (medium commercial vehicle) uses diesel and travels 4.3 km per litre of fuel (Table 8). One litre of diesel (100% mineral) is equivalent to 9.93 kWh (Net CV); this value has been checked against the 2026 Fuel Properties worksheet. Coir pith is responsible for 50% of the energy use from transport of the coconut husk (Table 3). Four cubic metres of coconut husks produces 1 m^3 of coir pith (Table 8). Therefore, the fossil fuel energy use for transport of the coconut husks to the fibre mill that the pith is responsible for is a maximum of (((20/4.3) × 9.93) / 16) × 0.5 × 4 = 5.78 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 5.78 × 0.27 = 1.56 kg CO_2e/m^3.

Fibre Mill 1 uses 3.35 kWh of electricity per m^3 of husk in crushing the husks and fibre extraction. Coir pith is responsible for 50% of the energy use at the fibre mill and 4 m^3 of coconut husks produces 1 m^3 of coir pith (Table 8), therefore coir pith is responsible for 3.35 × 0.5 × 4 = 6.7 kWh/m^3 (Mill 1). For the purposes of this worked example only, the UK electricity conversion factor is used because overseas electricity factors are not provided in the source workbook. Using the 2026 UK electricity factor of 0.18 kg CO_2e/kWh, Fibre Mill 1 contributes 6.7 × 0.18 = 1.21 kg CO_2e/m^3.

Fibre Mill 2 uses 3.40 kWh of electricity per m^3 of husk in crushing the husks and fibre extraction. Coir pith is responsible for 50% of the energy use at the fibre mill and 4 m^3 of coconut husks produces 1 m^3 of coir pith (Table 8), therefore coir pith is responsible for 3.40 × 0.5 × 4 = 6.8 kWh/m^3 (Mill 2). For the purposes of this worked example only, the UK electricity conversion factor is used because overseas electricity factors are not provided in the source workbook. Using the 2026 UK electricity factor of 0.18 kg CO_2e/kWh, Fibre Mill 2 contributes 6.8 × 0.18 = 1.22 kg CO_2e/m^3.

Forty percent of the coir pith purchased by Coir Pith Factory 1 comes from Fibre Mill 1 and the remaining 60% comes from Fibre Mill 2. The average greenhouse gas emissions from the fibre mill stage are 1.21 × 0.4 + 1.22 × 0.6 = 1.22 kg CO_2e/m^3.

The coir pith is transported by road a maximum of 10 km to the factory from both mills (the return journey for empty vehicles is out of scope because this is third-party haulage). A typical load is 16 m^3. The truck (medium commercial vehicle) uses diesel and travels 4.3 km per litre of fuel (Table 8). One litre of diesel (100% mineral) is equivalent to 9.93 kWh (Net CV); this value has been checked against the 2026 Fuel Properties worksheet. Coir pith is responsible for 100% of the energy use from transport of the coir pith (Table 3). Therefore, the fossil fuel energy use for transport of the coir pith to the factory is ((10/4.3) × 9.93) / 16 = 1.44 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 1.44 × 0.27 = 0.39 kg CO_2e/m^3.

Coir Pith Factory 1 uses 3.1 kWh of electricity per m^3 for transporting the material around the factory, sieving and grading, and compressing it into blocks. Ten percent of this electricity is supplied by wind power. Therefore, the non-renewable electricity use is 3.1 × 0.9 = 2.79 kWh/m^3. For the purposes of this worked example only, the UK electricity conversion factor is used because overseas electricity factors are not provided in the source workbook. Using the 2026 UK electricity factor of 0.18 kg CO_2e/kWh, this stage contributes 2.79 × 0.18 = 0.50 kg CO_2e/m^3.

The compressed coir pith blocks are transported 160 km by road to the port of Tuticorin (the return journey for empty vehicles is out of scope because this is third-party haulage). A typical load is 300 m^3 (reconstituted volume). The articulated lorry (>33 tonnes) uses 3.58 kWh of diesel per kilometre; this value has been checked against the 2026 SECR kWh passenger and delivery vehicles worksheet (in same workbook as reference for Table 5). The source category is now described as HGV (non-refrigerated, all diesel), which replaces the previous HGV (all diesel) wording and distinguishes it from the refrigerated HGV category. Coir pith is responsible for 100% of the energy use from this transport stage (Table 3). Therefore, the fossil fuel energy use for transport of the coir pith to the port is (160 × 3.58) / 300 = 1.91 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 1.91 × 0.27 = 0.52 kg CO_2e/m^3.

The compressed coir pith blocks are transported by sea to Felixstowe, a distance of 13,905 km (the return journey is out of scope because it is not by road). The typical load is 300 m^3 (reconstituted volume) and is shipped in a 40-foot container (2 TEU). The 9,300 TEU ship uses 250 tonnes of marine gas oil per day travelling at 24 knots (44.4 km/hour). One tonne of marine gas oil is equivalent to 12,579 kWh (Net CV); this value has been checked against the 2026 Fuel Properties worksheet, using the gas oil row. Therefore, the fossil fuel energy use for transport of the coir pith by sea is (((((13,905/44.4)/24) × 250) × 12,579) × (2/9,300)) / 300 = 29.42 kWh/m^3. The greenhouse gas conversion factor for marine gas oil is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 29.42 × 0.27 = 7.94 kg CO_2e/m^3.

The compressed coir pith blocks are transported 100 km by road from Felixstowe to Company 1 (the return journey for empty vehicles is out of scope because this is third-party haulage). A typical load is 300 m^3 (reconstituted volume). The articulated lorry (>33 tonnes) uses 3.58 kWh of diesel per kilometre; this value has been checked against the 2026 SECR kWh passenger and delivery vehicles worksheet (in same workbook as reference for Table 5). The source category is now described as HGV (non-refrigerated, all diesel), which replaces the previous HGV (all diesel) wording and distinguishes it from the refrigerated HGV category. Coir pith is responsible for 100% of the energy use from this transport stage (Table 3). Therefore, the fossil fuel energy use for transport of the coir pith from the port to Company 1 is (100 × 3.58) / 300 = 1.19 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 1.19 × 0.27 = 0.32 kg CO_2e/m^3.

Company 1 uses X litres of diesel per m^3 of coir pith reconstituted before the start of the mixing system. One litre of diesel (100% mineral) is equivalent to 9.93 kWh (Net CV); this value has been checked against the 2026 Fuel Properties worksheet. Therefore, the fossil fuel energy use at Company 1 is X × 9.93 = AA kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes AA × 0.27 kg CO_2e/m^3.

Therefore, the total greenhouse gas emissions from plantation to the mixing system are 0 + 1.56 + 1.22 + 0.39 + 0.50 + 0.52 + 7.94 + 0.32 + (AA × 0.27) kg CO_2e/m^3 = 12.45 + (AA × 0.27) kg CO_2e/m^3. Before the contribution from Company 1 diesel use is added, the material falls within the score 12 band in Figure 5 (12.01–22.00 kg CO_2e/m^3). The final score remains 12 provided AA × 0.27 ≤ 9.55 kg CO_2e/m^3 (equivalent to AA ≤ 35.37 kWh/m^3).

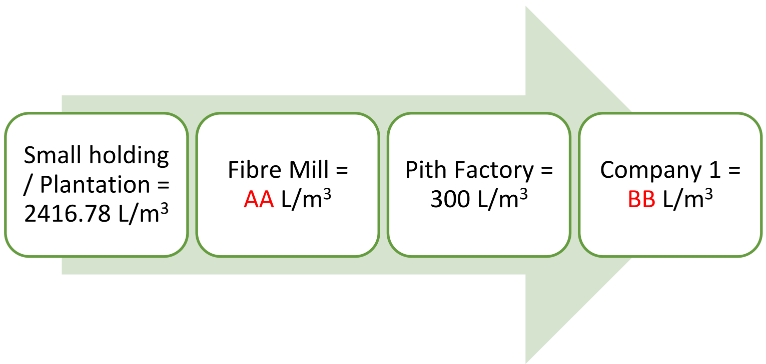
This worked example is incomplete because the value for Company 1 diesel use is not provided. This illustrates a situation that users may encounter when reviewing existing calculations. There are two ways to proceed:

- Calculate the correct value for X using Company 1 diesel-use records, then calculate AA and add AA × 0.27 to the greenhouse gas total.

- If the purpose is only to confirm whether the material remains within the score 12 band, calculate the maximum allowable Company 1 energy use. In this example, the final score remains 12 provided AA ≤ 35.37 kWh/m^3. Multiplying 35.37 kWh/m^3 by the total annual volume of coir pith reconstituted before the start of the mixing system gives the maximum annual diesel energy use consistent with score 12. This can be compared with actual annual diesel energy use to confirm whether the score remains 12.

If actual annual diesel energy use is higher than this maximum, the Company 1 contribution should be calculated directly, and the final score rechecked against Figure 5.

Water use (in extraction and production)



As set out in Table 4, generic data are used for operations at the plantation or small holding.

According to Mekonnen and Hoekstra (2010), the global average water footprint (blue and green water) for coconuts (1996–2005) was 2,669 m^3 of water per tonne (Table 9), with a regional assessment for Tamil Nadu of 2,449 m^3/tonne (Table 10). At a conversion rate of 1 m^3 = 1,000 L, this is 2,449,000 L/tonne. Both the global average and Tamil Nadu assessment assume all of this water is supplied by rainwater. However, SP1214 noted the requirement for irrigation of the coconut palm, particularly in the water-stressed areas of Tamil Nadu. An estimated 25% of coconut plantations are irrigated in Tamil Nadu; therefore, it is assumed that one in four of the plantations supplying the fibre mills (both 1 and 2) are irrigated. It is assumed that on irrigated plantations only half of the water is supplied by irrigation (the remainder by direct rainfall); 60% of the irrigation water comes from rainwater storage lagoons, 10% of the irrigation water comes from the pith factory (recycling) and the remainder from a private borehole. Therefore, 30% of the water used for irrigation needs to be accounted for. Coir pith is responsible for 5% of the water use at the plantation or small holding (Table 3). One tonne of coconuts produces 1.9 m^3 of coir pith (Table 9). Therefore, the potable or abstracted water use at the plantation or small holding that the pith is responsible for is ((((2,449,000 × 0.5) × 0.3) × 0.05) / 4) / 1.9 = 2,416.78 L/m^3.

Fibre Mill 1 uses S L of water per m^3 of husk for wetting crushed husks for 2 days before placing in the decorticator (i.e. mechanical system with no retting). Coir pith is responsible for 50% of the water use at the fibre mill and 4 m^3 of coconut husks produces 1 m^3 of coir pith (Table 8), therefore coir pith is responsible for S × 0.5 × 4 = SS L/m^3 (Mill 1).

Fibre Mill 2 uses T L of water per m^3 of husk for wetting crushed husks for 5 days before placing in the decorticator (i.e. mechanical system with no retting). Coir pith is responsible for 50% of the water use at the fibre mill and 4 m^3 of coconut husks produces 1 m^3 of coir pith (Table 8), therefore coir pith is responsible for T × 0.5 × 4 = TT L/m^3 (Mill 2).

Forty percent of the coir pith purchased by Coir Pith Factory 1 comes from Fibre Mill 1 and the remaining 60% comes from Fibre Mill 2. Therefore, the average water use at the fibre mill is SS × 0.4 + TT × 0.6 = AA L/m^3.

Coir Pith Factory 1 uses 300 L/m^3 to wash and buffer coir pith in a controlled, tanked environment. The wastewater is treated and used to irrigate coconuts (this recycling is already taken into account above).

Company 1 uses BB L/m^3 of potable water to reconstitute compressed coir blocks. The remainder of the water used is rainwater.

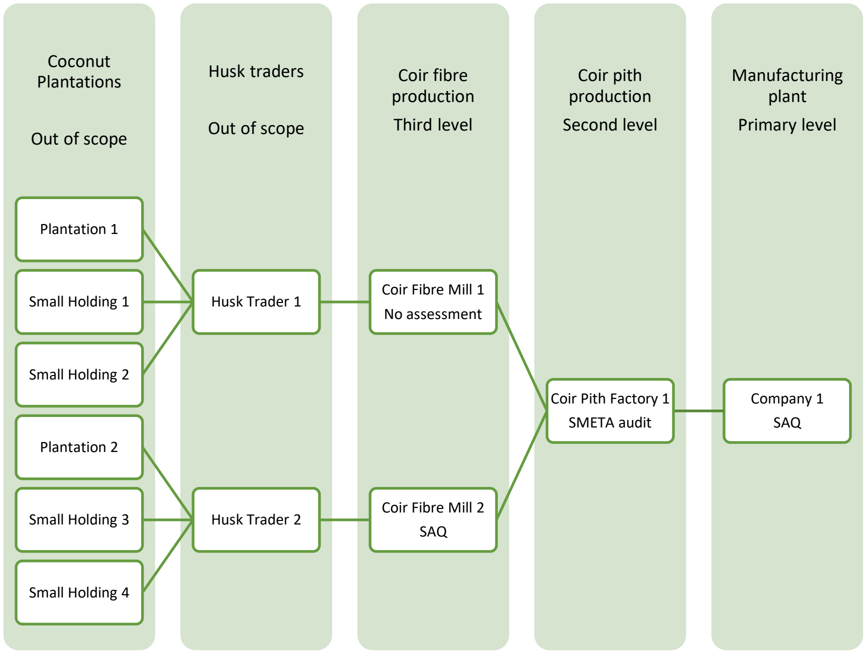
Therefore, the total potable or abstracted water used from plantation to the mixing system is 2,416.78 + AA + 300 + BB L/m^3 = 2,716.78 + AA + BB L/m^3. Before the fibre mill and Company 1 water use are added, the material falls within the score 6 band in Figure 7 (2,501–3,000 L/m^3). The final score remains 6 provided AA + BB ≤ 283.22 L/m^3. If AA + BB is greater than 283.22 L/m^3 but no more than 783.22 L/m^3, the material scores 5.

This worked example is incomplete because the fibre mill water use and Company 1 water use values are not provided. This illustrates a situation that users may encounter when reviewing existing calculations. There are two ways to proceed:

- Calculate the correct values for S, T and BB using site-specific water-use records, then calculate SS, TT and AA and add AA + BB to the water-use total.
- If the purpose is only to confirm whether the material remains within the score 6 band, first compare Company 1 water use with the maximum allowable additional water use. In this example, the final score remains 6 provided AA + BB ≤ 283.22 L/m^3. Multiplying 283.22 L/m^3 by the total annual volume of coir pith reconstituted before the start of the mixing system gives the maximum annual combined water use for the missing fibre mill and Company 1 stages that is consistent with score 6. If Company 1 water use alone exceeds this value, the material cannot remain in the score 6 band. If Company 1 water use is below this value, the remaining allowance can be checked with the fibre mill suppliers, taking account of coir pith's 50% responsibility for fibre mill water use and the 40:60 supply split from Fibre Mill 1 and Fibre Mill 2.

If the combined fibre mill and Company 1 water use is higher than this maximum, the missing contributions should be calculated directly, and the final score rechecked against Figure 7.

Social compliance



The social compliance assessment for coir pith begins at the fibre mill (Table 4). Company 1 and Fibre Mill 2 have completed self-assessment questionnaires to demonstrate social compliance. As set out in Table 11, this is valued at 0.5 of a third-party audited assessment. The SAQ is only counted as proof where it has been passed, i.e. it has achieved no more than 2 major and/or 5 minor failures. Coir Pith Factory 1 has undergone a SMETA audit. Fibre Mill 1 has not undertaken any form of assessment and has no proof of its social compliance.

The weighted level of proof of social compliance, as calculated using the social compliance calculator, is 61% and the material scores 12 (Figure 10).

Towards Responsible Sourcing and Manufacture of Growing Media
Social Compliance Ingredient Rater

Growing media material type	Number of tiers / steps in supply chain	Primary level	Second level	Third level	Fourth level	Fifth level
Coir	3	1	1	2		

	Percentage
Overall Material Score	**61.00**

Percentage of material obtained from each supplier by level

Supplier	Primary level	Second level	Third level	Fourth level	Fifth level
1	100	100	40		
2			60		
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
Value must not exceed 100% Sum	100	100	100	0	0

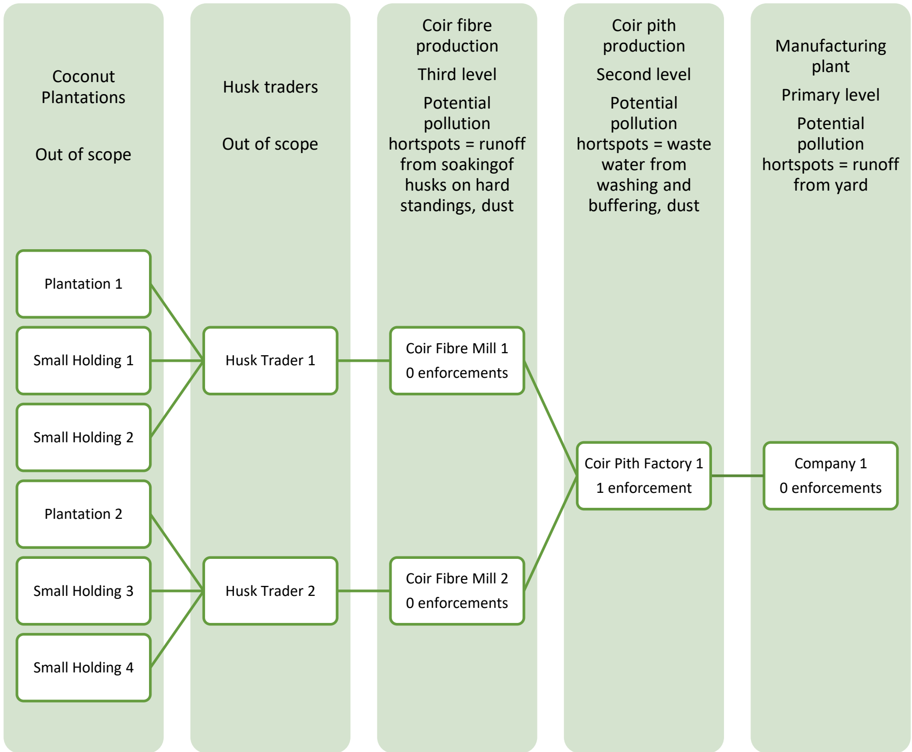
SAQ or Audit

Supplier	Primary level	Second level	Third level	Fourth level	Fifth level
1	SAQ	Audit	None		
2			SAQ		
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Habitat and biodiversity

The small holdings and plantations that supply the fibre mills in the Tamil Nadu region of India are numerous. Due to the use of husk traders, it is not possible to trace all coconut suppliers back to the exact growing location; therefore, the regional assessment approach is used. The region has not been subject to expansion of coconut production into natural or semi-natural habitat in the last 10 years; therefore, the habitat and biodiversity score for this material is 12 (Figure 16).

Pollution



The pollution assessment for coir pith begins at the fibre mill (Table 4). Newleaf (2012) identifies the potential pollution hotspots at the fibre mill as run-off from hard standings and dust and at the pith factory as wastewater from washing and buffering and dust.

Relevant wastewater discharges, run-off and emissions from Fibre Mill 1, Fibre Mill 2 and Coir Pith Factory 1 are monitored by the Tamil Nadu Pollution Control Board (TNPCB). Fibre Mill 1 and Fibre Mill 2 have had no enforcement actions brought against them in the last 12 months. Coir Pith Factory 1 had a significant pollution event six months ago and the TNPCB took action against it. The issue has now been resolved, and this is the only enforcement action in the last 12 months. Therefore, Coir Pith Factory 1 has a score of 5 (Figure 22).

The wastewater discharges by Company 1 are monitored by the Environment Agency. They have brought no enforcement actions against Company 1.

As Fibre Mill 1, Fibre Mill 2 and Company 1 have no enforcement actions against them, the pollution questionnaire is used to determine the score (Figure 22).

Fibre Mill 1 and Company 1 have completed a pollution questionnaire. Fibre Mill 2 has not completed a questionnaire, so it is assumed that all questionnaire answers are “no”, resulting in a score of 6. The pollution score for Fibre Mill 1 is 10, and for Company 1 is 18.

Towards Responsible Sourcing and Manufacture of Growing Media
Pollution questionnaire

Company	Fibre Mill 1		
		Answer	
Waste		Yes/No	Change Score
Are you collecting, appropriately storing and disposing of waste?	Plastics (stored under cover or collated for collection)	Yes	-2
	Engineering consumables waste (e.g. belts) (stored in a designated area with appropriate controls)	No	
	Waste created in the processing of materials (stored in a designated area with appropriate controls)	No	
Air pollution			
Are you mitigating the risk of air pollution from your bulk raw materials?	Have you conducted a risk assessment for air pollution?	Yes	2
	Is your air pollution risk high, medium or low?	Medium	
	Do you have appropriate mitigation to limit air pollution? **(Not required for low risk)**	Yes	
Water pollution			
Are you mitigating the risk of water pollution from your bulk raw materials and processes?	Have you conducted a risk assessment for water pollution?	No	-2
	Is your water pollution risk high, medium or low?		
	Do you have appropriate mitigation to limit water pollution? **(Not required for low risk)**		
	Change from base score of 12 (zero enforcement actions)		-2
	Score		10

Towards Responsible Sourcing and Manufacture of Growing Media
Pollution questionnaire

Company	Company 1		
		Answer	
Waste		Yes/No	Change Score
Are you collecting, appropriately storing and disposing of waste?	Plastics (stored under cover or collated for collection)	Yes	2
	Engineering consumables waste (e.g. belts) (stored in a designated area with appropriate controls)	Yes	
	Waste created in the processing of materials (stored in a designated area with appropriate controls)	Yes	
Air pollution			
Are you mitigating the risk of air pollution from your bulk raw materials?	Have you conducted a risk assessment for air pollution?	Yes	2
	Is your air pollution risk high, medium or low?	Medium	
	Do you have appropriate mitigation to limit air pollution? **(Not required for low risk)**	Yes	
Water pollution			
Are you mitigating the risk of water pollution from your bulk raw materials and processes?	Have you conducted a risk assessment for water pollution?	Yes	2
	Is your water pollution risk high, medium or low?	Low	
	Do you have appropriate mitigation to limit water pollution? **(Not required for low risk)**		
	Change from base score of 12 (zero enforcement actions)		6
	Score		18

The pollution ingredient rater has been used to generate an overall score using the weighting in Table 13. Forty percent of the coir pith purchased by Coir Pith Factory 1 comes from Fibre Mill 1 and the remaining 60% comes from Fibre Mill 2. The overall pollution score is 12.02.

Towards Responsible Sourcing and Manufacture of Growing Media
Pollution Ingredient Rater

Growing media material type	Number of tiers / steps in supply chain	Primary level	Second level	Third level	Fourth level	Fifth level
Coir	3	1	1	2		

Overall Material Score	12.02

Percentage of material obtained from each supplier by level

		Primary level	Second level	Third level	Fourth level	Fifth level
Supplier	1	100	100	40		
	2			60		
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
Value must not exceed 100%	Sum	100	100	100	0	0

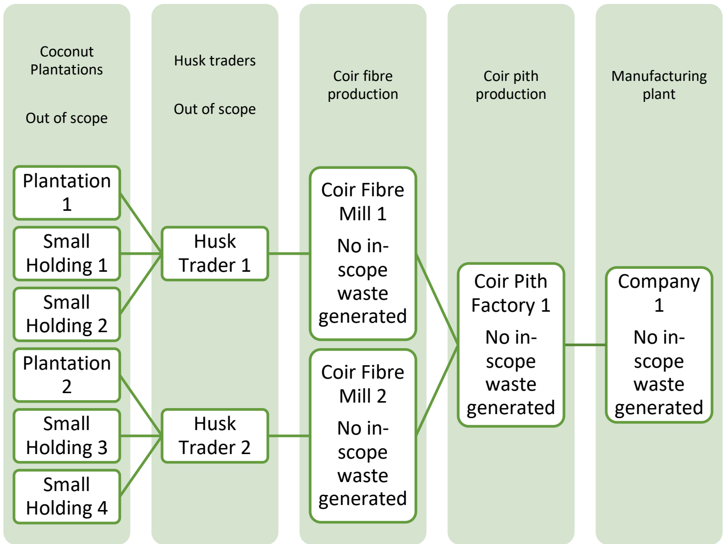
Pollution score for each supplier

		Primary level	Second level	Third level	Fourth level	Fifth level
Supplier	1	18	5	10		
	2			6		
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					

Renewability

The material is produced annually at each site and is renewable within five years (Table 14). Therefore, the material score is 20 (Figure 26).

Resource use efficiency



The resource use efficiency assessment for coir pith begins at the fibre mill (Table 4). Coir pith is a virgin by-product (Table 1), and no in-scope waste is generated in its production. Therefore, the material score is 15 (Figure 27).

Summary: material score

The material score is:

Criteria	Score
Greenhouse gas emissions	12
Water	6
Social compliance	12
Habitat and biodiversity	12
Pollution	12.02
Renewability	20
Resource use efficiency	15
Material score	89.02

References

ICRA Management Consulting Services Limited (IMaCS)(2013): Market Survey leading to Fuel Consumption norms for Diesel (Engine Driven) Trucks & Buses in India. Final Report for the Petroleum Conservation Research Association

Newleaf (2012): Coir: a sustainability assessment. Final report for Defra project SP1214. http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18114&FromSearch=Y&Publisher=1&SearchText=sp1214&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description

Mekonnen, M.M. and Hoekstra, A.Y. (2010) The green, blue and grey water footprint of crops and derived crop products, Value of Water Research Report Series No. 47, UNESCO-IHE, Delft, the Netherlands.

https://research.utwente.nl/en/publications/the-green-blue-and-grey-water-footprint-of-crops-and-derived-crop-3

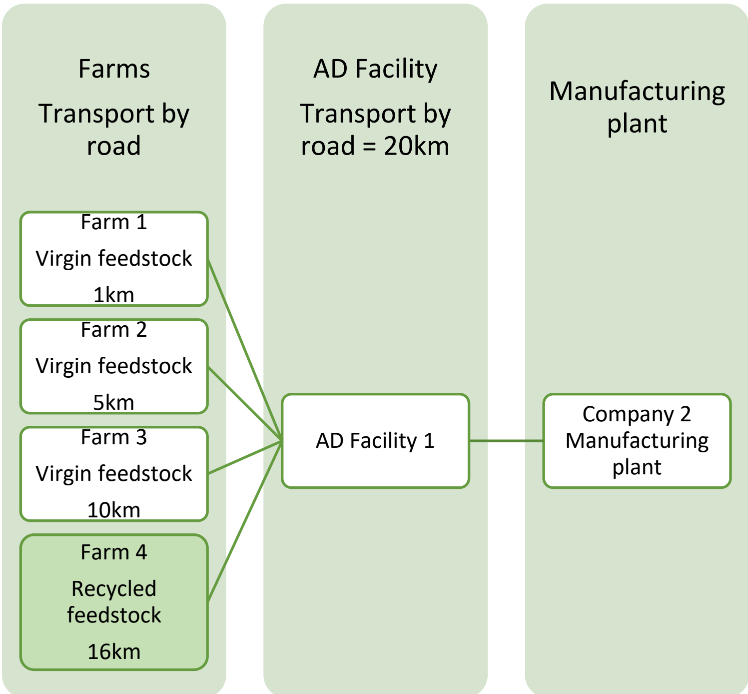
Material 2: Anaerobic digestate produced by Company 2

Company 2 is supplied with solid anaerobic digestate fibre from a single AD facility. The feedstock used by the AD facility is 70% energy crops (a virgin material) and 30% poultry manure (a recycled material).

As set out in Table 1, anaerobic digestate should be treated as a virgin material or a recycled material depending on the source material. Where digestate is a blend of sources, the material score should be calculated as the weighted average of the scores for each source category, based on the annual proportion of each source in the blend. The weighting should be applied after the individual score is generated for each source category, even though the feedstocks are blended during parts of the production process. Therefore, individual scores are generated for each category of feedstock, based on anaerobic digestate being produced 100% from each feedstock, before the weighted score for the blended digestate is derived.

The worked example first assesses the energy crop feedstock pathway, working through each criterion in turn. It then assesses the waste material feedstock pathway. The two sets of results are then combined in the weighted average score for the blended digestate.

Supply chain map for Company 2 digestate



Company 2 is supplied with anaerobic digestate from AD Facility 1, a single AD facility 20 km away. AD Facility 1 is part of a farming operation (Farm 1) with an on-farm digester. Seventy-five percent of the energy crop feedstock (maize silage) is produced on Farm 1. The remaining 25% comes from two neighbouring farms: Farm 2 and Farm 3. Farm 2 is rented land managed by Farm 1, is 5 km away, and supplies 15% of the energy crop feedstock. Farm 3 is 10 km away and supplies 10% of the energy crop feedstock. All farm operations at Farm 3 are carried out by Farm 3, except for maize harvesting and transport of the silage to Farm 1, which are carried out by Farm 1.

Poultry manure comes from a poultry farm (Farm 4) that is 16 km away and is transported to AD Facility 1 by specialist contractors.

Energy crop feedstock

This is a virgin material (by-product) (Table 1); therefore, the starting point for this material is the field. However, as set out in Table 4, generic data should be used for the greenhouse gas emissions and water use criteria at the farm and for transport to the AD facility, unless site-specific data are available. For social compliance, the starting point for assessment is the farm. For pollution and resource use efficiency, the starting point for assessment is the AD facility. The end point is the start of the mixing system (Table 1).

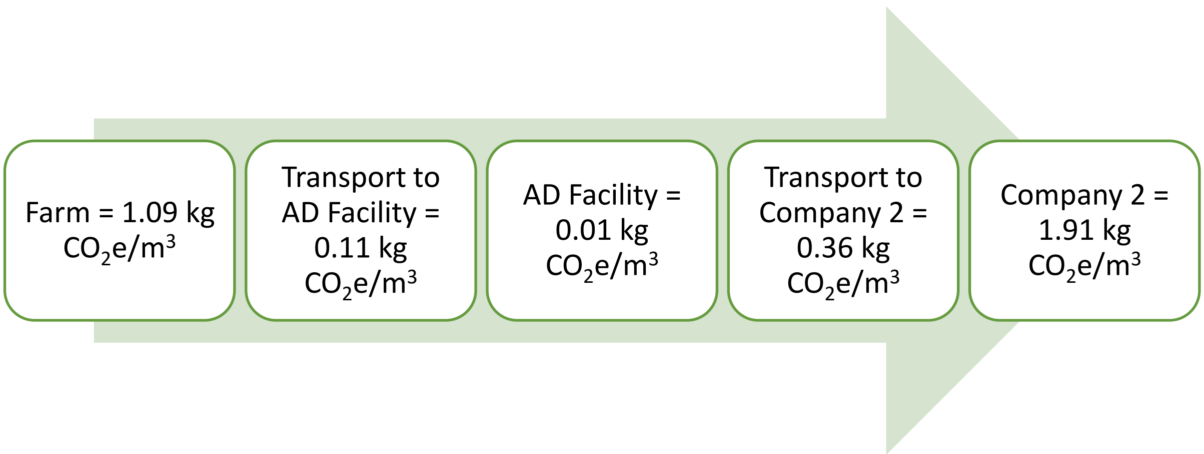
The material is solid digestate. As set out in Table 3, it is responsible for 6% of the impact at the farm, 6% of the impact at the digester, 67% of the impact at the separator and 100% of the impact after the separator up to the mixing system.

As set out in Table 8, it is assumed that there is 10% recoverable fibre by weight of input material and that 1 tonne of fibre has a volume of 2.7 m^3.

Greenhouse gas emissions (in extraction, transport and production)

This worked example demonstrates **Route 1: energy-based greenhouse gas calculation**. Under this route, energy-use calculations prepared under Version 10 of the scheme can be carried forward, but they should not be reused without checking. Before conversion to greenhouse gas emissions, the calculation should be checked against the current greenhouse gas conversion factor workbook and any source worksheets used to derive energy values, including fuel properties and transport factors. Where source values have changed, or where a previous value has been selected incorrectly, the energy-use calculation should be updated before converting to kg CO_2e/m^3. The source, year, worksheet and factor used should be recorded so the calculation can be audited and updated in future.

The following worked example first checks and updates the energy-use calculation for anaerobic digestate from energy crop feedstock, then converts the relevant energy-use values to greenhouse gas emissions.



As set out in Table 4, generic data should be used for operations at the farm and for transport to the anaerobic digestion facility, unless real data are available.

As set out in Table 8, typical energy-use data for farm practices associated with energy crops are available from a range of sources. One example is the AD tool produced by the Bioenergy and Organic Resources Research Group at the University of Southampton. This is used to generate generic energy-use data in this worked example before the relevant energy-use values are converted to greenhouse gas emissions.

Using the tool, the average UK yield of maize silage is 45 tonnes/ha and the total energy use in crop production (excluding fertiliser applications) is 82 L/ha (including average 1 km transport on farm). One litre of diesel (100% mineral) is equivalent to 9.93 kWh (Net CV); this value has been checked against the 2026 Fuel Properties worksheet. Anaerobic digestate (from energy crops) is responsible for 6% of the impact at the farm (Table 3). As set out in Table 8, it is assumed that there is 10% recoverable fibre by weight of input material and that 1 tonne of fibre has a volume of 2.7 m^3. Therefore, the energy use at the farm that the anaerobic digestate (from energy crops) is responsible for is ((82 × 9.93) / (45 × 0.1 × 2.7)) × 0.06 = 4.02 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 4.02 × 0.27 = 1.09 kg CO_2e/m^3.

There is no additional energy use or greenhouse gas emissions from transport of maize silage from Farm 1 to AD Facility 1, as this is covered by the average 1 km on-farm transport included in the crop production calculation above.

Maize silage is transported 5 km by road from Farm 2 to AD Facility 1 (10 km for the round trip as the return journey for empty vehicles is in scope). An average load is 16 tonnes. The tractor and trailer use 25 litres of diesel per hour. One litre of diesel (100% mineral) is equivalent to 9.93 kWh (Net CV); this value has been checked against the 2026 Fuel Properties worksheet. It is assumed that 6 km of the return journey is made at the maximum speed limit for agricultural tractors and trailers of 40 kph and the rest of the journey is made at an average speed of 20 kph; therefore, the 10 km round trip has a drive time of 21 minutes. As set out in Table 8, it is assumed that there is 10% recoverable fibre by weight of input material and that 1 tonne of fibre has a volume of 2.7 m^3. Anaerobic digestate (from energy crops) is responsible for 6% of the impact of transport from the farm to the AD facility (Table 3). Therefore, the fossil fuel energy use for transport of the maize silage to AD Facility 1 is (((21/60) × 25 × 9.93) / (16 × 0.1 × 2.7)) × 0.06 = 1.21 kWh/m^3 (Farm 2). The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 1.21 × 0.27 = 0.33 kg CO_2e/m^3.

Maize silage is transported 10 km by road from Farm 3 to the AD Facility 1 (20 km for the round trip as the return journey for empty vehicles is in scope). It is assumed that 16 km of the return journey is made at the maximum speed limit for agricultural tractors and trailer of 40 kph and the rest of the journey is made at an average speed of 20 kph, therefore the 20 km round trip has a drive time of 36 minutes.

Farm	Energy use in transport to AD Facility (kWh/m^3)	GHG emissions from transport to AD Facility (kg CO_2e/m^3)	% of Company 2 volume (virgin material only)	Weighted GHG emissions by volume (kg CO_2e/m^3)
1	0 (fully covered in crop production)	0	75	0
2	(((21/60) × 25 × 9.93) / (16 × 0.1 × 2.7)) × 0.06 = 1.21	1.21 × 0.27 = 0.33	15	0.33 × 0.15 = 0.05
3	(((36/60) × 25 × 9.93) / (16 × 0.1 × 2.7)) × 0.06 = 2.07	2.07 × 0.27 = 0.56	10	0.56 × 0.10 = 0.06
		Average annual greenhouse gas emissions		0.11

Under Route 1, only energy use from fossil fuels is converted for this stage because renewable energy produced and used on site is out of scope. AD Facility 1 is powered by the renewable energy produced by the facility itself, as are the separator and drying operations. However, AD Facility 1 uses a diesel-fuelled telehandler/Manitou-type machine to load the digester. This consumes 3 litres of diesel per hour and is run for one hour per day. The volume of maize silage loaded per day is 200 tonnes. One litre of diesel (100% mineral) is equivalent to 9.93 kWh (Net CV); this value has been checked against the 2026

Fuel Properties worksheet. As set out in Table 8, it is assumed that there is 10% recoverable fibre by weight of input material and that 1 tonne of fibre has a volume of 2.7 m^3. Anaerobic digestate (from energy crops) is responsible for 6% of the impact at the AD facility (Table 3). Therefore, the fossil fuel use by AD Facility 1 is ((3 × 1 × 9.93) / (200 × 0.1 × 2.7)) × 0.06 = 0.03 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 0.03 × 0.27 = 0.01 kg CO_2e/m^3.

Solid anaerobic digestate is transported 20 km by road from AD Facility 1 to Company 2 (the return journey for empty vehicles is out of scope because this is third-party haulage). An average load is 20 tonnes. The articulated lorry (>33 tonnes) uses 3.58 kWh of diesel per kilometre; this value has been checked against the 2026 SECR kWh passenger and delivery vehicles worksheet (in same workbook as reference for Table 5). The source category is now described as HGV (non-refrigerated, all diesel), which replaces the previous HGV (all diesel) wording and distinguishes it from the refrigerated HGV category. As set out in Table 8, it is assumed that 1 tonne of fibre has a volume of 2.7 m^3. Anaerobic digestate (from energy crops) is responsible for 100% of the impact of transport from the AD facility to Company 2 (Table 3). Therefore, the fossil fuel energy use for transport of the fibre to Company 2 is (20 × 3.58) / (20 × 2.7) = 1.33 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 1.33 × 0.27 = 0.36 kg CO_2e/m^3.

No site-specific split between diesel and electricity use is available for Company 2 in this worked example. For illustrative purposes, Company 2 processing energy use is assumed to be 8.5 kWh/m^3, split equally between electricity and diesel. The electricity component is converted using the 2026 UK electricity factor of 0.18 kg CO_2e/kWh and the diesel component is converted using the diesel (100% mineral) factor of 0.27 kg CO_2e/kWh (Table 5). Therefore, Company 2 contributes ((8.5/2) × 0.18) + ((8.5/2) × 0.27) = 1.91 kg CO_2e/m^3.

Therefore, the total greenhouse gas emissions from farm to the mixing system are 1.09 + 0.11 + 0.01 + 0.36 + 1.91 = 3.48 kg CO_2e/m^3. The material scores 16 (Figure 5).

Water use (in extraction and production)

As set out in Table 4, generic data should be used for crop production.

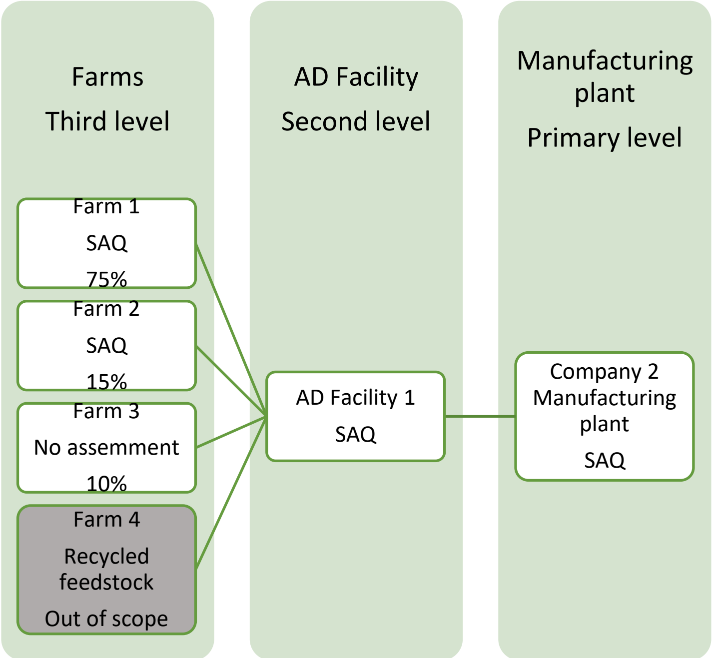
As set out in Table 9, energy crops, including maize silage, used to supply AD facilities are typically unirrigated in the UK, so no potable or abstracted water is used.

AD Facility 1 uses stored rainwater harvested from the site, so no potable or abstracted water is used.

No water is used by Company 2 to manufacture the material before the start of the mixing system.

Therefore, no potable or abstracted water is used from the farm to the mixing system, and the material scores 20 (Figure 7).

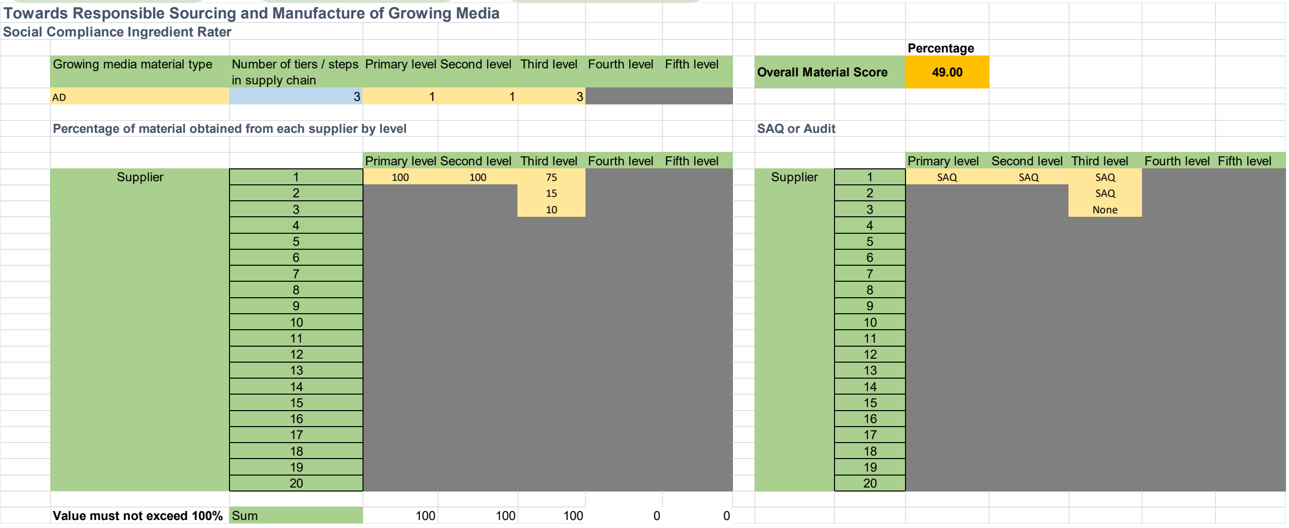
Social compliance



Company 2, AD Facility 1 and Farm 1, including the rented land at Farm 2 managed by Farm 1, have completed and passed self-assessment questionnaires to demonstrate social compliance. As set out in Table 11, this is valued at 0.5 of a third-party audited assessment.

Farm 3 has not undertaken any form of assessment and has no proof of its social compliance.

The weighted level of proof of social compliance, as calculated using the social compliance calculator, is 49% and the material scores 9 (Figure 10).



Towards Responsible Sourcing and Manufacture of Growing Media

Social Compliance Ingredient Rater

Growing media material type	Number of tiers / steps in supply chain	Primary level	Second level	Third level	Fourth level	Fifth level
AD	3	1	1	3		

Overall Material Score	Percentage
	49.00

Percentage of material obtained from each supplier by level

Supplier		Primary level	Second level	Third level	Fourth level	Fifth level
	1	100	100	75		
	2			15		
	3			10		
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
Value must not exceed 100%	Sum	100	100	100	0	0

SAQ or Audit

Supplier		Primary level	Second level	Third level	Fourth level	Fifth level
	1	SAQ	SAQ	SAQ		
	2			SAQ		
	3			None		
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					

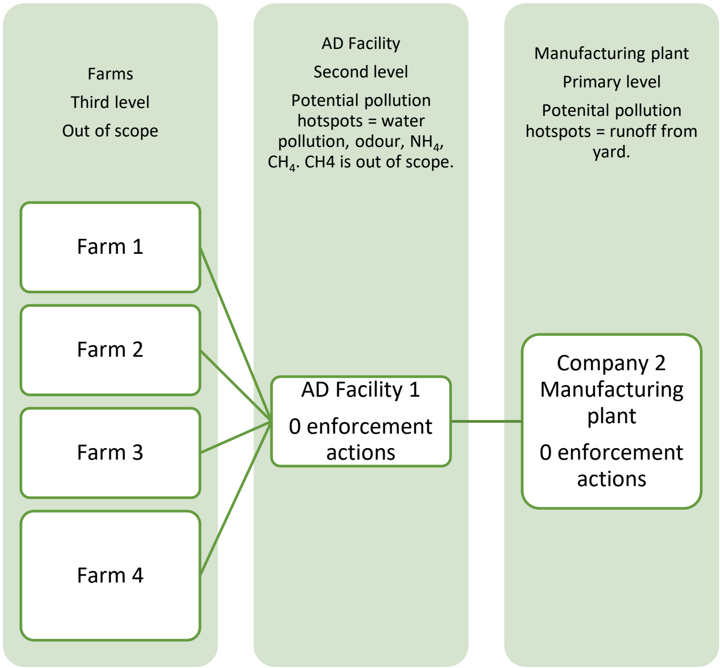
Habitat and biodiversity

The land on Farms 1, 2 and 3 used to grow maize was not natural or semi-natural habitat immediately before planting and has been in agricultural use for decades. Farms 2 and 3 are not in a higher-level environmental scheme and are not being managed to a similar standard. Farm 1 is covered by a Countryside Stewardship Higher Tier agreement. Farm 4 is out of scope as it provides a recycled feedstock.

Therefore, Farms 2 and 3 score 6 and Farm 1 scores 18. As set out in Figure 18, a weighted average score needs to be generated for batches from multiple farms.

Farm	Habitat and biodiversity score	% of Company 2 volume (virgin material only)	Weighted habitat score by volume
1	18	75	18 × 0.75 = 13.5
2	6	15	6 × 0.15 = 0.9
3	6	10	6 × 0.10 = 0.6
		Average habitat and biodiversity score	15

Pollution



As set out in Table 4, the starting point for the pollution assessment for anaerobic digestate from energy crops is AD Facility 1.

The potential pollution hotspots at AD Facility 1 are water pollution from storage of feedstock or digestate, run-off from the yard, odour, dust and ammonia. Loss of biogas is not included in the pollution score because methane is assessed through the greenhouse gas emissions criterion.

The potential pollution hotspot at the growing media manufacturer (Company 2) is run-off from the yard.

The Environment Agency monitors emissions to air and water from AD Facility 1 and Company 2. It has brought no enforcement actions against either company. Therefore, the pollution questionnaire is used to determine the score (Figure 22).

Company 2 completed separate pollution questionnaires for its manufacturing site and two bark processing sites, then combined them into a single questionnaire for the bark assessment. One issue was identified at one bark processing site, so the combined questionnaire for bark includes a “no” answer for that question. This approach is demonstrated in Material 3: Bark produced by Company 2.

The bark processing sites are not involved in the production of the anaerobic digestate material and are therefore excluded when calculating the anaerobic digestate pollution score. The anaerobic digestate pollution score uses only the questionnaire responses relevant to Company 2’s manufacturing site.

The pollution score for each company in the supply chain is:

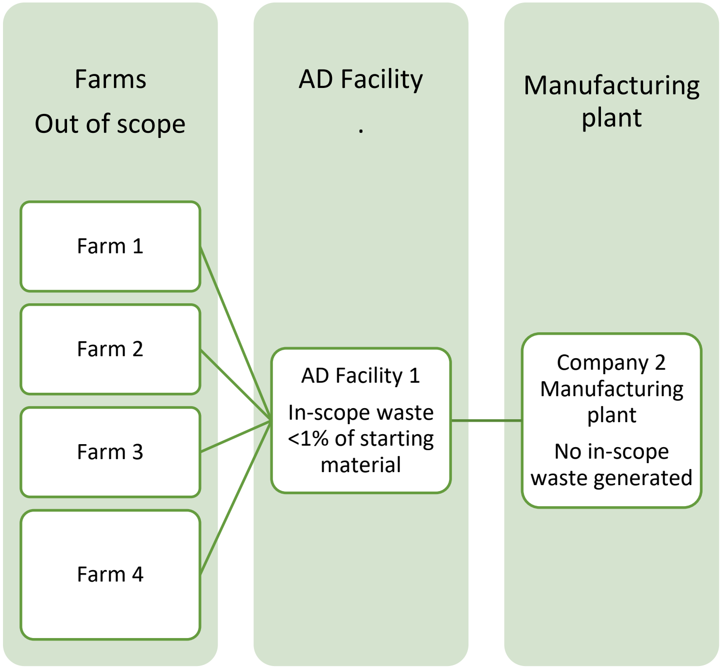
Company	Pollution Score	% material supply	Level
Company 2	18	100	Primary
AD Facility 1	18	100	Second

The pollution ingredient rater has been used to generate an overall score using the weighting in Table 13. The overall pollution score is 18.

Renewability

Maize is renewable within 5 years at a single site (Table 14), therefore, the material score is 20 (Figure 26).

Resource use efficiency



As set out in Table 4, the starting point for the resource use efficiency assessment for anaerobic digestate from energy crops is AD Facility 1.

As set out in Table 1, anaerobic digestate from energy crops is a virgin by-product. A small volume of in-scope waste is generated in its production: non-biodegradable plastic sheeting used over silage stores, which is disposed of to landfill. The volume of unrecycled waste is less than 1% of the volume of the input material. Therefore, the material score is 12 (Figure 27: Resource use efficiency scoring decision tree).

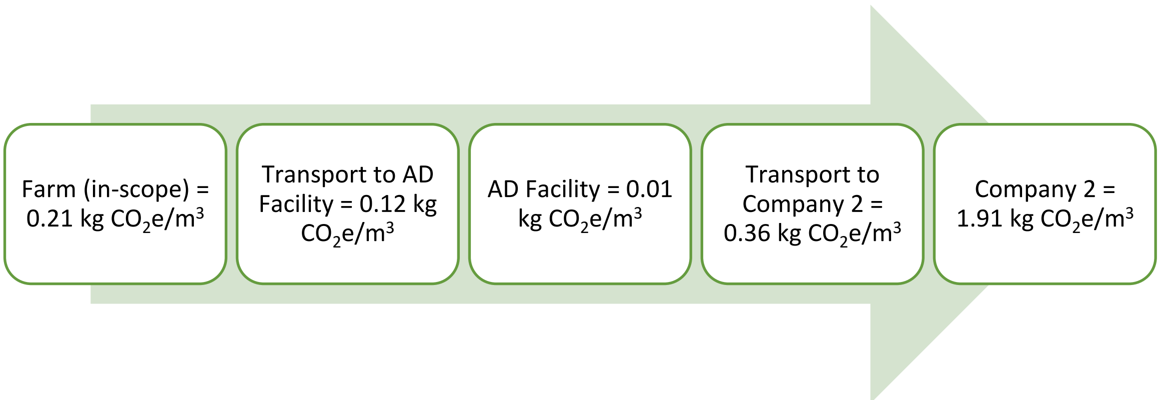
Waste material feedstock

The poultry manure is a recycled material (Table 1); therefore, the starting point for this material is the point at which transport is commercially viable, which is the poultry farm. Removal of manure from the poultry houses is carried out by contractors who remove the material, load it onto lorries and deliver it to AD Facility 1. The end point is the start of the mixing system (Table 1).

As set out in Table 8, it is assumed that there is 10% recoverable fibre by weight of input material and that 1 tonne of fibre has a volume of 2.7 m^3.

Greenhouse gas emissions (in extraction, transport and production)

This worked example demonstrates Route 1: energy-based greenhouse gas calculation. It first checks and updates the energy-use calculation for anaerobic digestate from waste material feedstock, then converts the relevant energy-use values to greenhouse gas emissions.



In-scope fuel use at Farm 4 is from loading lorries for transport. The telehandler uses 10 litres of diesel per hour, and it takes one hour to load each lorry, so 10 L/load. An average load is 28 tonnes. One litre of diesel (100% mineral) is equivalent to 9.93 kWh (Net CV); this value has been checked against the 2026 Fuel Properties worksheet. As set out in Table 8, it is assumed that there is 10% recoverable fibre by weight of input material and that 1 tonne of fibre has a volume of 2.7 m^3. It is assumed that anaerobic digestate from waste materials has the same distribution of impacts as anaerobic digestate from energy crops and is therefore responsible for 6% of the impact before the AD facility from the point that transport is commercially viable (Table 3). Therefore, the in-scope fossil fuel energy use at Farm 4 that the anaerobic digestate is responsible for is ((10 × 9.93) / (28 × 0.1 × 2.7)) × 0.06 = 0.79 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 0.79 × 0.27 = 0.21 kg CO_2e/m^3.

Poultry manure is transported 16 km by road from Farm 4 to AD Facility 1 (the return journey for the empty vehicle is out of scope because it will not return to Farm 4 but go on to a different poultry farm). An average load is 28 tonnes. The articulated lorry (>33 tonnes) uses 3.58 kWh of diesel per kilometre; this value has been checked against the 2026 SECR kWh passenger and delivery vehicles worksheet (in same workbook as reference for Table 5). The source category is now described as HGV (non-refrigerated, all diesel), which replaces the previous HGV (all diesel) wording and distinguishes it from the refrigerated HGV category. As set out in Table 8, it is assumed that there is 10% recoverable fibre by weight of input material and that 1 tonne of fibre has a volume of 2.7 m^3. Anaerobic digestate from waste materials is responsible for 6% of the impact of transport from Farm 4 to the AD facility (Table 3). Therefore, the fossil fuel energy use for transport of the poultry manure to AD Facility 1 is ((16 × 3.58) / (28 × 0.1 × 2.7)) × 0.06 = 0.45 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 0.45 × 0.27 = 0.12 kg CO_2e/m^3.

Under Route 1, only energy use from fossil fuels is converted for this stage because renewable energy produced and used on site is out of scope. AD Facility 1 is powered by the renewable energy produced by the facility itself, as are the separator and drying operations. However, AD Facility 1 uses a diesel-fuelled telehandler/Manitou-type machine to load the digester. This consumes 3 litres of diesel per hour and is run for one hour per day. The volume of poultry manure loaded per day is 200 tonnes. One litre of diesel (100% mineral) is equivalent to 9.93 kWh (Net CV); this value has been checked against the 2026 Fuel Properties worksheet. As set out in Table 8, it is assumed that there is 10% recoverable fibre by weight of input material and that 1 tonne of fibre has a volume of 2.7 m^3. Anaerobic digestate from waste materials is responsible for 6% of the impact at the AD facility (Table 3). Therefore, the fossil fuel use by AD Facility 1 is ((3 × 1 × 9.93) / (200 × 0.1 × 2.7)) × 0.06 = 0.03 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 0.03 × 0.27 = 0.01 kg CO_2e/m^3.

Solid anaerobic digestate is transported 20 km by road from AD Facility 1 to Company 2 (the return journey for empty vehicles is out of scope because this is third-party haulage). An average load is 20 tonnes. The articulated lorry (>33 tonnes) uses 3.58 kWh of diesel per kilometre; this value has been checked against the 2026 SECR kWh passenger and delivery vehicles worksheet (in same workbook as reference for Table 5). The source category is now described as HGV (non-refrigerated, all diesel), which replaces the previous HGV (all diesel) wording and distinguishes it from the refrigerated HGV category. As set out in Table 8, it is assumed that 1 tonne of fibre has a volume of 2.7 m^3. Anaerobic digestate from waste materials is responsible for 100% of the impact of transport from the AD facility to Company 2 (Table 3). Therefore, the fossil fuel energy use for transport of the fibre to Company 2 is (20 × 3.58) / (20 × 2.7) = 1.33 kWh/m^3. The greenhouse gas conversion factor for diesel (100% mineral) is 0.27 kg CO_2e/kWh (Table 5), so this stage contributes 1.33 × 0.27 = 0.36 kg CO_2e/m^3.

No site-specific split between diesel and electricity use is available for Company 2 in this worked example. For illustrative purposes, Company 2 processing energy use is assumed to be 8.5 kWh/m^3, split equally between electricity and diesel. The electricity component is converted using the 2026 UK electricity factor of 0.18 kg CO_2e/kWh and the diesel component is converted using the diesel (100% mineral) factor of 0.27 kg CO_2e/kWh (Table 5). Therefore, Company 2 contributes ((8.5/2) × 0.18) + ((8.5/2) × 0.27) = 1.91 kg CO_2e/m^3.

Therefore, the total greenhouse gas emissions from the start of commercially viable transport to the mixing system are 0.21 + 0.12 + 0.01 + 0.36 + 1.91 = 2.61 kg CO_2e/m^3. The material scores 16 (Figure 5).

Water use (in extraction and production)

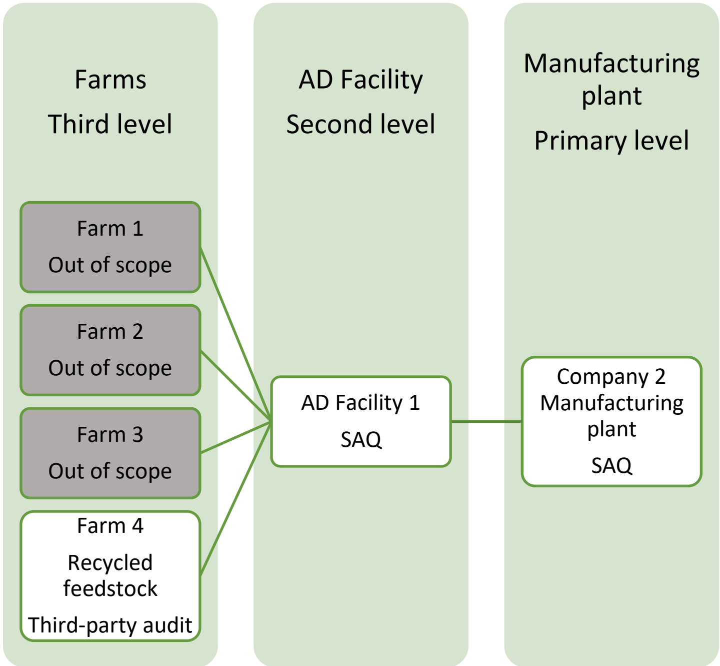
There is no potable or abstracted water use attributable to anaerobic digestate from waste materials at Farm 4.

AD Facility 1 uses stored rainwater harvested from the site, so no potable or abstracted water is used.

No water is used by Company 2 to manufacture the material before the start of the mixing system.

Therefore, no potable or abstracted water is used from the point at which transport is commercially viable to the mixing system, and the material scores 20 (Figure 7).

Social compliance



Company 2 and AD Facility 1 have completed and passed self-assessment questionnaires to demonstrate social compliance. As set out in Table 11, this is valued at 0.5 of a third-party audited assessment. The poultry farm (Farm 4) has had a third-party audit.

The weighted level of proof of social compliance, as calculated using the social compliance calculator, is 60% and the material scores 12 (Figure 10).

Towards Responsible Sourcing and Manufacture of Growing Media

Social Compliance Ingredient Rater

Growing media material type	Number of tiers / steps in supply chain	Primary level	Second level	Third level	Fourth level	Fifth level
AD from waste	3	1	1	1		

	Percentage
Overall Material Score	60.00

Percentage of material obtained from each supplier by level

		Primary level	Second level	Third level	Fourth level	Fifth level
Supplier	1	100	100	100		
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
Value must not exceed 100%	Sum	100	100	100	0	0

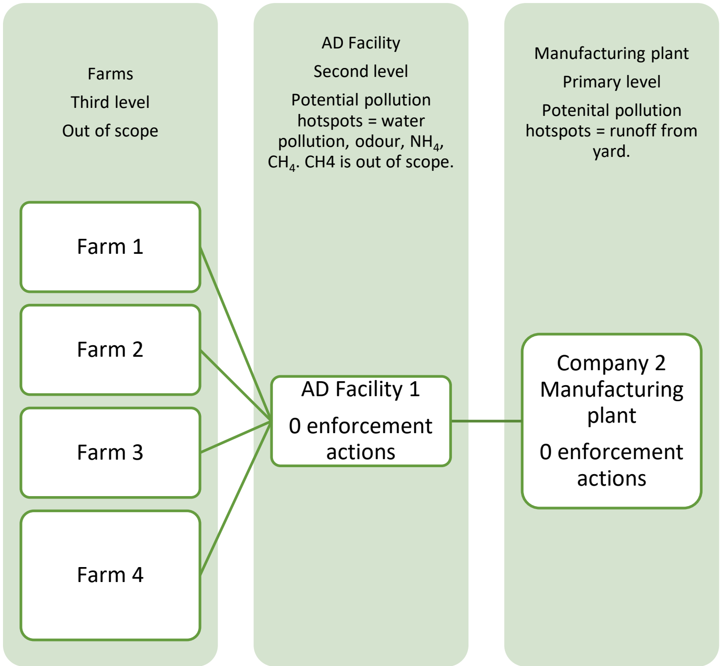
SAQ or Audit

		Primary level	Second level	Third level	Fourth level	Fifth level
Supplier	1	SAQ	SAQ	Audit		
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					

Habitat and biodiversity

The material is a recycled material, therefore, the habitat and biodiversity score for this material is 20.

Pollution



As set out in Table 4, the starting point for the pollution assessment for anaerobic digestate from waste materials is AD Facility 1.

The potential pollution hotspots at AD Facility 1 are water pollution from storage of feedstock or digestate, run-off from the yard, odour, dust and ammonia. Loss of biogas is not included in the pollution score because methane is assessed through the greenhouse gas emissions criterion.

The potential pollution hotspot at the growing media manufacturer (Company 2) is run-off from the yard.

The Environment Agency monitors emissions to air and water from AD Facility 1 and Company 2. It has brought no enforcement actions against either company. Therefore, the pollution questionnaire is used to determine the score (Figure 22).

Company 2 completed separate pollution questionnaires for its manufacturing site and two bark processing sites, then combined them into a single questionnaire for the bark assessment. One issue was identified at one bark processing site, so the combined questionnaire for bark includes a “no” answer for that question. This approach is demonstrated in Material 3: Bark produced by Company 2.

The bark processing sites are not involved in the production of the anaerobic digestate material and are therefore excluded when calculating the anaerobic digestate pollution score. The anaerobic digestate pollution score uses only the questionnaire responses relevant to Company 2’s manufacturing site.

The pollution score for each company in the supply chain is:

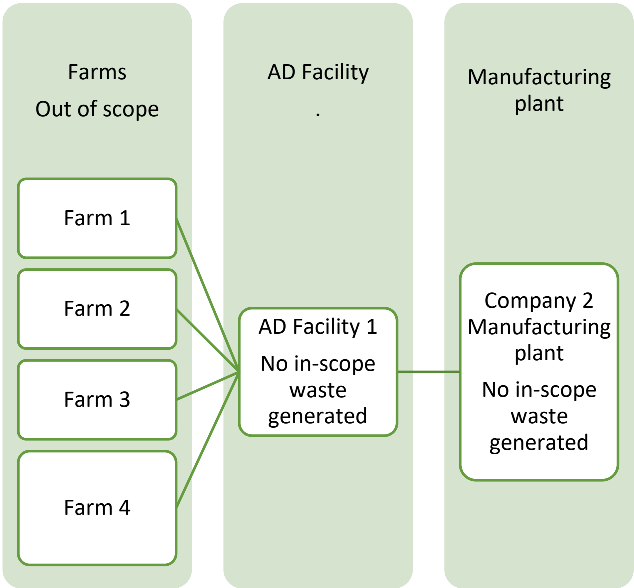
Company	Pollution Score	% material supply	Level
Company 2	18	100	Primary
AD Facility 1	18	100	Second

The pollution ingredient rater has been used to generate an overall score using the weighting in Table 13. The overall pollution score is 18.

Renewability

For recycled materials, only the formation or growth of the original virgin material that is being recycled is in scope. The material is manufactured from poultry manure, which results from the consumption of mainly plant material by poultry. This is renewable at a single site within five years (Table 14). Therefore, the material score is 20 (Figure 26).

Resource use efficiency



As set out in Table 1, anaerobic digestate from waste materials is a recycled material, with a starting point at the point where transport is commercially viable. No in-scope waste is generated in its production.

Therefore, as set out in Figure 27, it is necessary to determine the processing energy used for the recovery of this material before a score can be assigned.

The energy-use component of the greenhouse gas emissions calculation should be used here. Transport energy use is out of scope and should be excluded from the total. Processing energy use at Company 2 is 8.5 kWh/m^3. As this value is greater than 8.1 kWh/m^3, the material score is 19 (Figure 27).

Anaerobic digestate weighted average product score

Company 2 is supplied with solid anaerobic digestate fibre produced from a blend of feedstocks: 70% energy crops and 30% poultry manure. The final material score is calculated by combining the results for the energy crop feedstock pathway and the waste material feedstock pathway according to their annual proportions in the blend.

Where criterion scores are derived from quantified values, such as kg CO_2e/m^3, L/m^3 or percentage demonstrated social compliance, it is more accurate to weight the quantified values first and then determine the final score from the relevant decision tree. This approach is used for greenhouse gas emissions, water use and social compliance.

Greenhouse gas emissions

Material	Kg CO_2e/m^3	% material	Weighted average
AD from energy crops	3.48	70	3.48 × 0.70 = 2.44
AD from waste	2.61	30	2.61 × 0.30 = 0.78
		Average annual energy use	3.22

Therefore, the material score is 16 (Figure 5).

Water use

Material	L/m^3	% material	Weighted average
AD from energy crops	0	70	0
AD from waste	0	30	0
		Average annual water use	0

Therefore, the material score is 20 (Figure 7).

Social compliance

Material	% compliance	% material	Weighted average
AD from energy crops	49	70	49 × 0.7 = 34.3

AD from waste	60	30	60 × 0.3 = 18
		Average social compliance	52.3

Therefore, the material score is 10 (Figure 10).

Habitat and biodiversity

Material	Score	% material	Weighted average
AD from energy crops	15	70	15 × 0.7 = 10.5
AD from waste	20	30	20 × 0.3 = 6
		Average score	16.5

Pollution

Material	Score	% material	Weighted average
AD from energy crops	18	70	18 × 0.7 = 12.6
AD from waste	18	30	18 × 0.3 = 5.4
		Average score	18

Renewability

Material	Score	% material	Weighted average
AD from energy crops	20	70	20 × 0.7 = 14
AD from waste	20	30	20 × 0.3 = 6
		Average score	20

Resource use efficiency

Material	Score	% material	Weighted average
AD from energy crops	12	70	12 × 0.7 = 8.4
AD from waste	20	30	19 × 0.3 = 5.7
		Average score	14.1

Summary: material score

The material score is:

Criteria	Score
Greenhouse gas emissions	16
Water	20
Social compliance	10
Habitat and biodiversity	16.5
Pollution	18
Renewability	20
Resource use efficiency	14.1
Material score	114.6

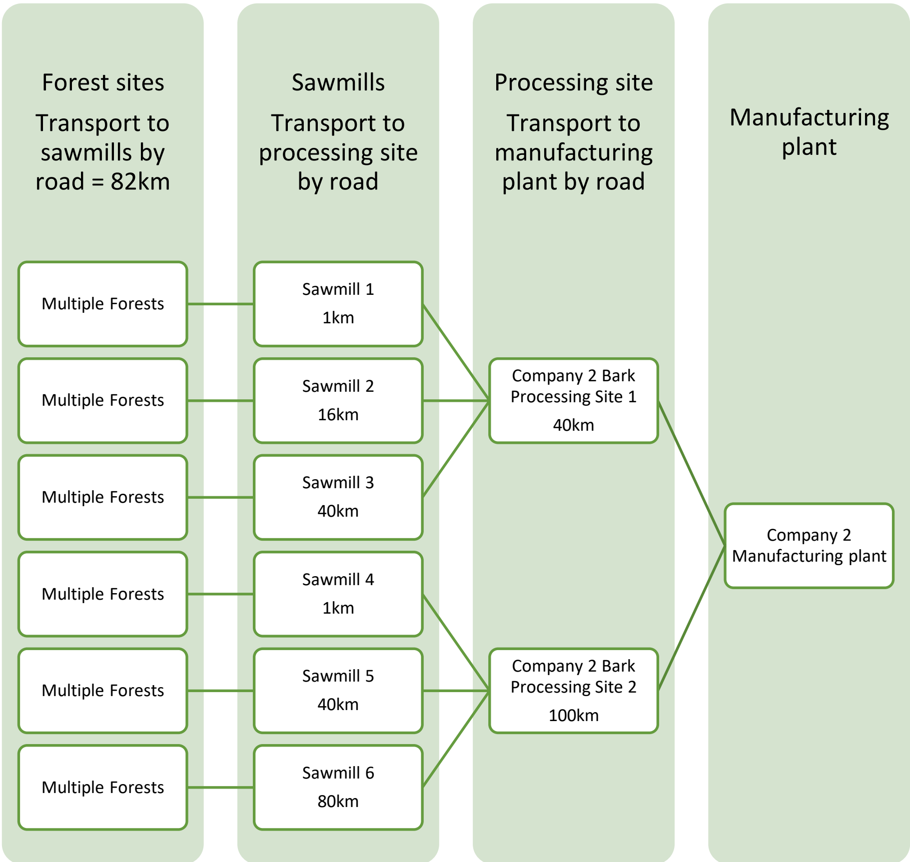
Material 3: Bark produced by Company 2

This is a partial worked example focused on social compliance and pollution for a wood-based material supplied through multiple sawmills and processing sites. It demonstrates how supply-chain weighting is applied where different suppliers have different levels of social compliance evidence or different pollution scores.

The material is bark, which is manufactured from a virgin by-product (Table 1). As set out in Table 2, bark is responsible for 7% of the impact at the forest, 7% of the impact at the sawmill and 100% of the impact after the sawmill up to the mixing system.

The remaining criteria are assessed using the methodologies described elsewhere in this guidance and are not reproduced in full because they do not differ materially from the approach used for other materials.

Supply chain map for Company 2 bark



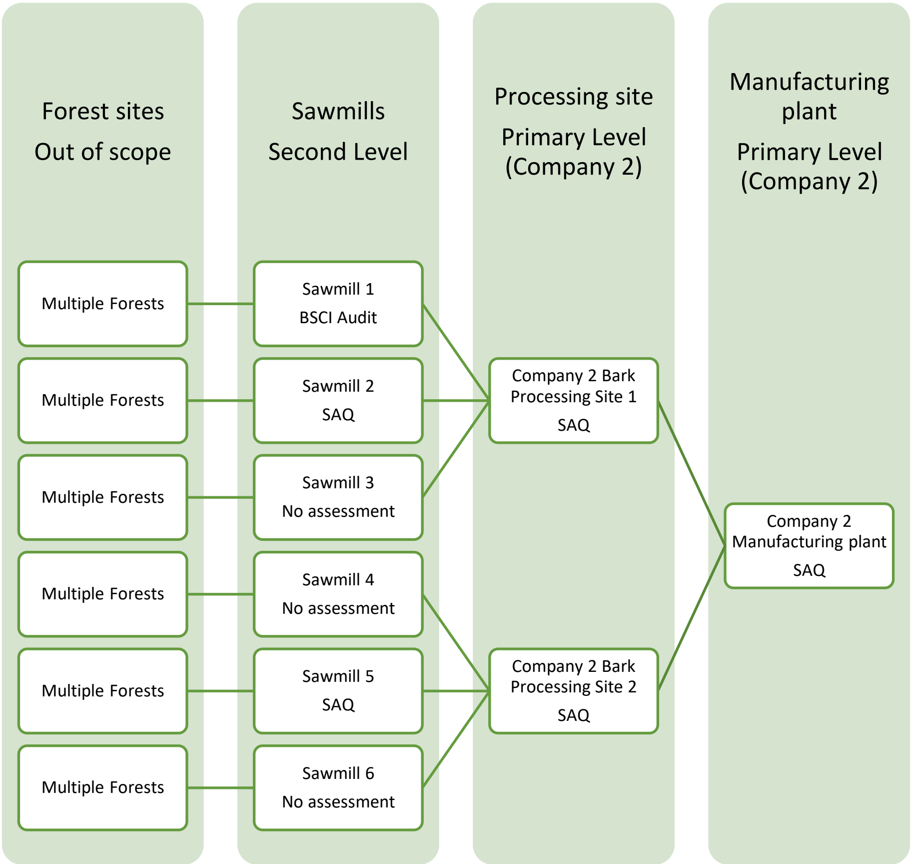
The UK forests that supply the sawmills are numerous and change over time.

The average timber haulage distance from forest to sawmill is 82 km (Table 8).

Company 2 is supplied by six sawmills. Sawmill 1 is 1 km away, Sawmill 2 is 16 km away, Sawmill 3 is 40 km away, Sawmill 4 is 1 km away, Sawmill 5 is 40 km away and Sawmill 6 is 80 km away from one of the two bark processing sites. The company's two processing sites are 40 km and 100 km away from its manufacturing site. Sawmills 1–3 supply processing site 1 and Sawmills 4–6 supply processing site 2.

Seventy-five percent of the bark purchased by Company 2 comes from Sawmills 1–3 (25% each), 10% each comes from Sawmills 4 and 5, and Sawmill 6 supplies 5%.

Social compliance



The social compliance assessment for wood-based materials begins at the sawmill (Table 4). Company 2 has completed and passed a self-assessment questionnaire to demonstrate social compliance. As set out in Table 11, this is valued at 0.5 of a third-party audited assessment.

Sawmill 1 has undergone a BSCI audit and supplies 25% of the volume. Sawmills 2 and 5 have completed self-assessments and supply 25% and 10% of the volume respectively. Sawmills 3, 4 and 6 have no proof of their social compliance and supply 25%, 10% and 5% of the volume respectively.

The weighted level of proof of social compliance, as calculated using the social compliance calculator, is 47% and the material scores 9 (Figure 10).

Towards Responsible Sourcing and Manufacture of Growing Media
Social Compliance Ingredient Rater

Growing media material type	Number of tiers / steps in supply chain	Primary level	Second level	Third level	Fourth level	Fifth level
Bark	2	1	6			

	Percentage
Overall Material Score	**47.00**

Percentage of material obtained from each supplier by level

		Primary level	Second level	Third level	Fourth level	Fifth level
Supplier	1	100	25			
	2		25			
	3		25			
	4		10			
	5		10			
	6		5			
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
Value must not exceed 100%	Sum	100	100	0	0	0

SAQ or Audit

		Primary level	Second level	Third level	Fourth level	Fifth level
Supplier	1	SAQ	Audit			
	2		SAQ			
	3		None			
	4		None			
	5		SAQ			
	6		None			
	7					
	8					
	9					
	10					
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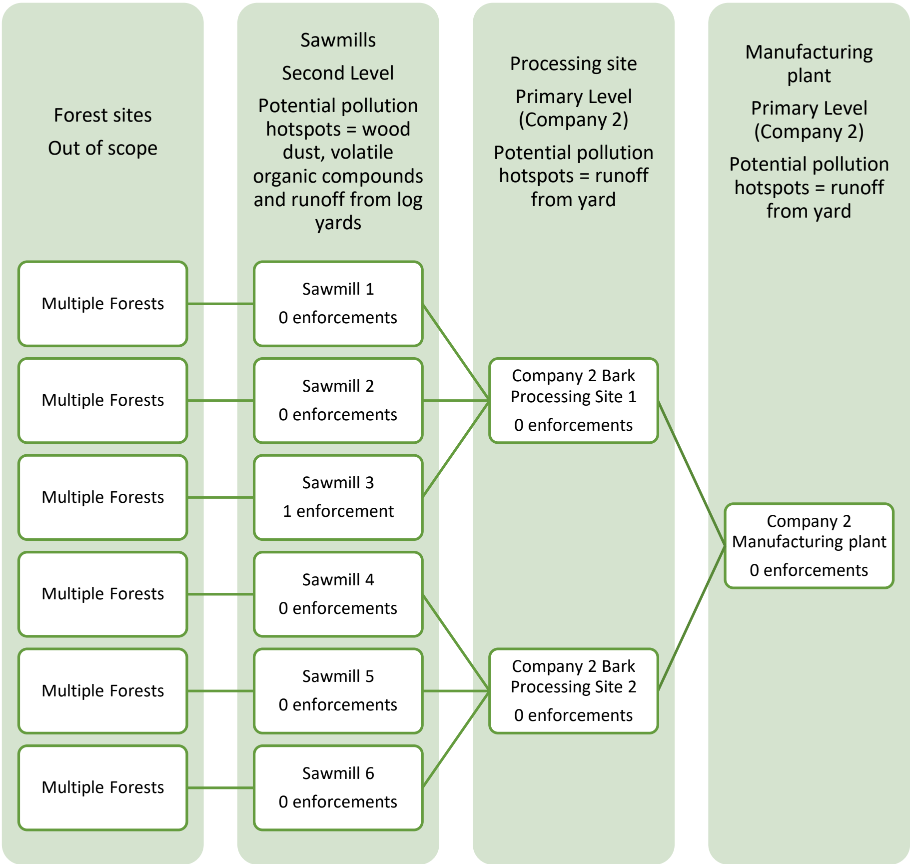
	19					
	20					

Pollution



The pollution assessment for wood-based materials begins at the sawmill (Table 4). The IFC (2007) identifies potential pollution hotspots from sawmills as wood dust, volatile organic compounds and wastewater effluent generated from run-off from irrigated storage areas known as log yards.

The Environment Agency monitors emissions to air and water from each of the sawmills and Company 2, including its bark processing sites. It has brought an enforcement action against one of the sawmills (Sawmill 3) due to a serious water pollution incident. Suitable pollution controls and mitigation are now in place. All other sawmills and Company 2 have no enforcement actions.

For the sawmills other than Sawmill 3, and for Company 2, no enforcement actions have been brought. Therefore, the pollution questionnaire is used to determine the score (Figure 22).

All sawmills except Sawmill 6 (and Sawmill 3, as above) and Company 2 have completed a pollution questionnaire. As Sawmill 6 has not completed a questionnaire, it is assumed that all questionnaire answers are “no”, resulting in a score of 6.

Company 2 completed separate questionnaires for each of the three sites (the manufacturing site and two bark processing sites) and then combined them into a single questionnaire. All appropriate pollution controls were in place at the manufacturing site and one of the bark processing sites. One issue was identified at the second bark processing site. Therefore, the combined questionnaire for Company 2 has a “no” answer for that question because, for one of the sites, the answer was “no”.

Towards Responsible Sourcing and Manufacture of Growing Media
Pollution questionnaire

Company	Company 2		
		Answer	
Waste		Yes/No	Change Score
Are you collecting, appropriately storing and disposing of waste?	Plastics (stored under cover or collated for collection)	No	-1
	Engineering consumables waste (e.g. belts) (stored in a designated area with appropriate controls)	Yes	
	Waste created in the processing of materials (stored in a designated area with appropriate controls)	Yes	
Air pollution			
Are you mitigating the risk of air pollution from your bulk raw materials?	Have you conducted a risk assessment for air pollution?	Yes	2
	Is your air pollution risk high, medium or low?	Medium	
	Do you have appropriate mitigation to limit air pollution? **(Not required for low risk)**	Yes	
Water pollution			
Are you mitigating the risk of water pollution from your bulk raw materials and processes?	Have you conducted a risk assessment for water pollution?	Yes	2
	Is your water pollution risk high, medium or low?	Low	
	Do you have appropriate mitigation to limit water pollution? **(Not required for low risk)**		
	Change from base score of 12 (zero enforcement actions)		3
	Score		15

The pollution score for each company in the supply chain is:

Company	Pollution Score	% material supply	Level
Company 2	15	100	Primary
Sawmill 1	18	25	Second
Sawmill 2	18	25	
Sawmill 3	5	25	
Sawmill 4	12	10	
Sawmill 5	18	10	
Sawmill 6	6	5	

The pollution ingredient rater has been used to generate an overall score (using the weighting in Table 13). The overall pollution score is 14.42.

Towards Responsible Sourcing and Manufacture of Growing Media
Pollution Ingredient Rater

Growing media material type	Number of tiers / steps in supply chain	Primary level	Second level	Third level	Fourth level	Fifth level
Bark	2	1	6			

Overall Material Score	**14.42**

Percentage of material obtained from each supplier by level

	Supplier	Primary level	Second level	Third level	Fourth level	Fifth level
Supplier	1	100	25			
	2		25			
	3		25			
	4		10			
	5		10			
	6		5			
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
Value must not exceed 100%	Sum	100	100	0	0	0

Pollution score for each supplier

	Supplier	Primary level	Second level	Third level	Fourth level	Fifth level
Supplier	1	15	18			
	2		18			
	3		5			
	4		12			
	5		18			
	6		6			
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					

References

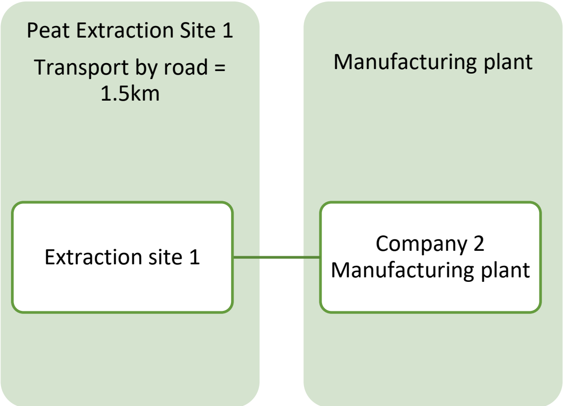
IFC (2007). Environmental, Health, and Safety Guidelines for Sawmilling and Manufactured Wood Products. International Finance Corporation, World Bank Group

Material 4: Peat produced by Company 2

This is a partial worked example focused on the two criteria where peat is assessed differently from most other materials: greenhouse gas emissions and habitat and biodiversity. The remaining criteria should be assessed using the methodologies described in Part 2 and are not reproduced here.

For greenhouse gas emissions, this example uses **Route 2: direct greenhouse gas emissions**. It follows the same assessment boundary as the greenhouse gas emissions criterion: transport and processing emissions are calculated first, then the additional peat-specific on-site and off-site emissions are added. Unlike Route 1, the calculation does not first generate intermediate energy-use values in kWh/m^3; instead, the relevant transport, processing and peat emission factors are applied directly to generate kg CO_2e/m^3 values.

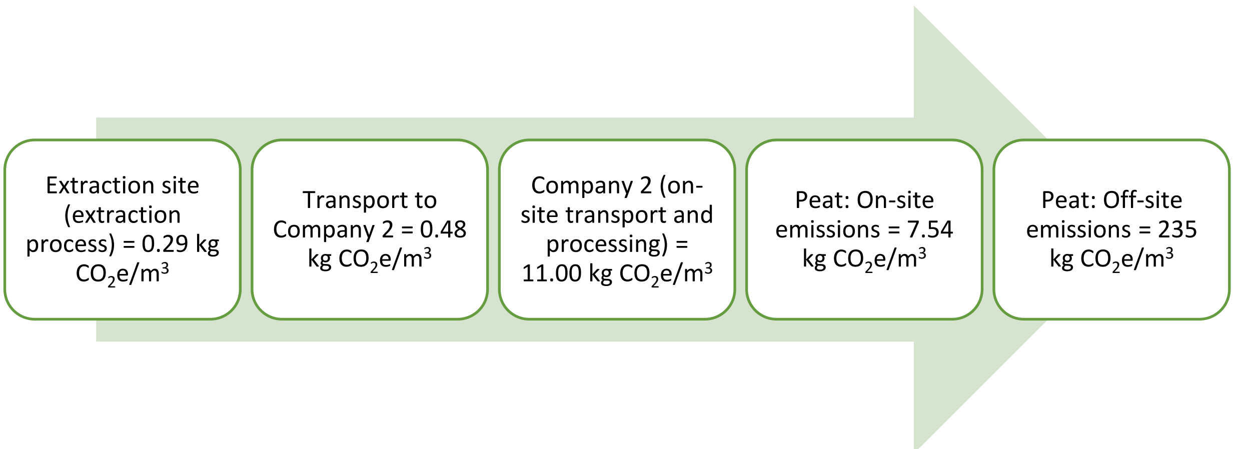
Supply chain map and scenario for Company 2 peat



Company 2 owns Peat Extraction Site 1 and is supplied with peat from that site. The site is drained peatland managed for peat extraction and is 1.5 km from Company 2's production facility. The annual extraction volume is assumed to be 2,500 m^3 of peat per hectare per year. As set out in Table 1 peat is a virgin material; as it is not a by-product it is responsible for 100% of the impact throughout the supply chain.

Transport is by tractor-towed trailer over the 1.5 km distance between Peat Extraction Site 1 and Company 2's production facility. Processing emissions at Company 2 are based on the illustrative processing value reported by Stichnothe (2022), as set out below.

Greenhouse gas emissions



Stichnothe (2022) provides a life cycle assessment of peat for growing media and reports generic data for peat extraction, processing and transport. The study notes that environmental impacts from peat extraction, processing and transport vary by site and assumptions, and emphasises the importance of transparent, reproducible and verifiable assumptions. It is used here to provide illustrative extraction-operation and processing values for this worked example.

The Stichnothe (2022) values are used only for the operational extraction and processing assumptions in this worked example; the example does not require peat to be classified as white or black peat because the peat-specific on-site and off-site emission factors are taken from the UK Greenhouse Gas Inventory.

Peat extraction itself uses diesel-powered machinery. Stichnothe (2022) reports diesel use for white peat extraction of 284 L/ha. Using the annual extraction volume of 2,500 m^3/ha/year gives 284 / 2,500 = 0.1136 L diesel/m^3. Using the average biofuel blend diesel conversion factor of 2.58 kg CO_2e/L (Table 5), emissions from peat extraction operations are 0.1136 × 2.58 = 0.29 kg CO_2e/m^3.

Peat is transported 1.5 km from Peat Extraction Site 1 to Company 2's production facility using a tractor-towed trailer. The return journey is included because this is an internal site movement, giving a round-trip distance of 3 km. For this worked example, the tractor and trailer are assumed to travel at an average speed of 20 km/hour and use 25 L of diesel per hour. This gives 3 / 20 × 25 = 3.75 L diesel per round trip. Assuming a trailer load of 20 m^3, diesel use is 3.75 / 20 = 0.1875 L/m^3. Using the average biofuel blend diesel conversion factor of 2.58 kg CO_2e/L (Table 5), transport emissions are 0.1875 × 2.58 = 0.48 kg CO_2e/m^3.

Processing emissions at Company 2 are assumed to be 11 kg CO_2e/m^3, based on the peat processing value reported for white peat in Stichnothe (2022).

Peat requires additional greenhouse gas emissions steps because it contains near-fossil carbon. The extraction, transport and processing calculations above account only for operational emissions from fuel and electricity use. For peat, the assessment must also include emissions associated with the drained state of the peatland that enables extraction to take place and the eventual oxidation of the extracted peat following use. These additional emissions are calculated using the UK Greenhouse Gas Inventory factors below.

The UK Greenhouse Gas Inventory on-site emission factor for peatland managed for extraction is 18.85 t CO_2e ha^{-1} yr^{-1}, equivalent to 18,850 kg CO_2e ha^{-1} yr^{-1}. Using an annual extraction volume of 2,500 m^3/ha/year gives: 18,850 / 2,500 = 7.54 kg CO_2e/m^3.

The UK Greenhouse Gas Inventory off-site emission factor for oxidation of extracted peat following use is 0.235 t CO_2e/m^3, equivalent to 235 kg CO_2e/m^3.

Therefore, the total greenhouse gas emissions are 0.29 + 0.48 + 11.00 + 7.54 + 235 = 254.31 kg CO_2e/m^3. The material scores 1 (Figure 5).

Habitat and biodiversity

Peat Extraction Site 1 is not identified as a local, national or international conservation site and is not within a protected landscape. The site was drained and developed for peat extraction before 2011 (the threshold year used in Figure 14).

Company 2 has ring-fenced funds for restoration of Peat Extraction Site 1 to wetland habitat. The restoration plan includes some peat-forming habitat, but peat-forming habitat will not occupy more than 65% of the site. The ring-fenced sum is identified in the company's published accounts as a provision for restoration liabilities for that site, and the company has a published policy explaining how restoration funds are held and used. The provision is supported by a site-specific costed restoration plan demonstrating that the allocated funds are sufficient. The plan includes the area to be restored, establishment costs, any water management or infrastructure works required to deliver the approved restoration plan, and ongoing maintenance and management costs after restoration. The budget shows the assumptions used, the expected timing of expenditure and how costs will be reviewed or updated over time.

The restoration plan has been approved by the relevant regulator, in this case the local Natural England office.

The habitat and biodiversity score for this material is 3 (Figure 14).

References

Stichnothe, H. (2022). Life cycle assessment of peat for growing media and evaluation of the suitability of using the Product Environmental Footprint methodology for peat. *The International Journal of Life Cycle Assessment*, 27, 1270–1282. https://doi.org/10.1007/s11367-022-02106-0

Annex 1: Glossary

Abstracted water	Water taken out of a watercourse or water body, other than where that water body was constructed by the user specifically for the collection of water for that use and the water collected is entirely rainwater or surface run-off during flood conditions.
Active carbon cycle	The movement of carbon between the atmosphere, living organisms, soils and surface waters over relatively short timescales ranging from days to centuries.
Agricultural land	Land currently used, or if unused most recently used, for agricultural or horticultural production.
Anaerobic digestate (fibre)	The fibrous material remaining after the anaerobic digestion of a biodegradable feedstock.
Anaerobic digestate (from energy crops)	Anaerobic digestate which has been produced from energy crops which have been specifically grown for the purpose of energy recovery.
Anaerobic digestate (from waste materials)	Anaerobic digestate which has been produced from waste organic materials.
Bark	The outer layer of a tree.
Biochar	The solid material obtained from the thermochemical conversion of biomass in an oxygen-limited environment.
Biochar (from forestry products)	Biochar which has been produced from forestry products (i.e., wood-based materials).
Biochar (from waste materials)	Biochar which has been produced from waste organic materials.
Biodiversity offsetting	This is an approach to compensate for habitats and species lost to development at one site, with the creation, enhancement or restoration of habitat at another.
Biomass	Biological material derived from living, or recently living, organisms.
Blue water	Water in freshwater lakes, rivers and aquifers.
Bracken	A tall fern with coarse lobed fronds of the genus *Pteridium*, which occurs worldwide and can cover large areas.
BSCI	Business Social Compliance Initiative
Bulk ingredients	Raw materials (>5% by volume) that make up a growing media substrate or soil improver. Specifically excluding additives such as lime and fertiliser used to alter the chemical characteristics of the substrate.
By-product/Co-product	A raw material that is a virgin product but is produced as part of a process to obtain or manufacture another, closely related, raw material. Obtaining or manufacturing the by-product/co-product alone would not normally be economically viable. A waste product would not meet the definition of a by-product/co-product.
Carbon cycling	Exchange of carbon between elements of the active carbon cycle, including vegetation, soils, surface waters and the atmosphere.
Carbon dioxide equivalent	A measure used to compare the warming impact of different greenhouse gases by expressing them as the amount of carbon dioxide that would have the same effect.
Carbon sequestration	The removal and storage of carbon dioxide from the atmosphere in vegetation, soils, geological formations or other carbon stores. For the purposes of this scheme, carbon sequestration is not credited within the greenhouse gas emissions criterion unless explicitly stated.
Carbon sink	A natural or artificial store that removes and holds more carbon than it releases over a relevant timescale, for example a peat bog, forest or soil.
Coir	The fibre and pith of the coconut husk.

Coir fibre	The fibre of the coconut husk.
Coir pith	Corky substance found between the fibres of the coconut husk.
Conservation designation	A label that denotes that an area is being protected for conservation purposes. They may be statutory or non-statutory.
Cork	Cork is an impermeable buoyant material, the phellem layer of bark tissue that is harvested for commercial use primarily from *Quercus suber* (the cork oak), which is native to southwest Europe and northwest Africa.
Cork (recycled)	Used cork that has been through a recovery process. This does not include post-industrial cork which is still part of the business model for virgin cork.
Decorticator	A machine that tears apart the husk of the coconut; separating fibre from pith.
Embedded water	Water that is an integral requirement of the growing/manufacturing process, but is not normally part of the final product, for example, water used in the washing of coir at the fibre mill.
Emission factor	A value used to convert an activity, fuel use, transport distance or material quantity into greenhouse gas emissions, usually expressed as kg CO_2e per unit.
Enforcement action	Legally authorised action undertaken by the relevant regulator within that jurisdiction to require a breach of planning, environmental or other legal controls to be rectified.
Environmental impact assessment (EIA)	Environmental Impact Assessment (EIA) is a tool used to assess the significant effects of a project or development proposal on the environment. EIAs make sure that project decision makers think about the likely effects on the environment at the earliest possible time and aim to avoid, reduce or offset those effects. This ensures that proposals are understood properly before decisions are made.
Extraction	To remove a raw material from the ground. If extraction only occurs for part of the year consideration of the impact of extraction should not be limited to the period of active extraction but should also consider the extraction site during its inactive phase.
Fibre mill	A facility for separating the fibre from the coconut husk.
Finished product	Product ready for use for its intended purpose, i.e., no further manufacturing needs to take place. This could include growing media or soil improver ingredient(s) that are sold separately.
Forest	An area covered by trees and other woodland species.
Forest land	Land where the primary historic land use was forest, even where the forest cover has been removed.
Fossil carbon	Carbon contained within fossil fuels and other geological deposits that has been stored outside the active carbon cycle for millions of years. The release of fossil carbon to the atmosphere contributes to climate change.
Fossil fuel	A carbon-based fuel, such as coal, oil or natural gas, formed from geological deposits over millions of years.
Gaseous effluent	Emissions in the form of gas (as opposed to a liquid or solid) to the atmosphere from a raw material or process.
Green compost	The output of the 'composting' of waste organic matter, typically plant residues, derived from domestic, landscape and municipal sources. In the UK PAS100 is the minimum standard that must be met for the material to be 'recovered waste'.
Greenhouse gas (GHG)	A gas that traps heat in the atmosphere by absorbing and re-emitting infrared radiation, contributing to climate change.
Green water	The precipitation on land that does not run off or recharge the groundwater but is stored in the soil or temporarily stays on top of

	the soil or vegetation. Eventually, this part of precipitation evaporates or transpires through plants.
Grit	Particles of aggregate less than approximately 15 mm in size.
Handling machinery	Machinery used to process and transport material around a site.
Hardwood	Wood from deciduous trees and broad-leaf evergreen trees.
Higher-level environmental schemes	Environmental schemes that include in-depth, tailored and complex management plans, often involving habitat creation and restoration with longer agreements, usually five to ten years. Examples include Higher Level Stewardship and Countryside Stewardship Higher Tier.
International conservation designation	An area of habitat, species or biodiversity value formally recognised as such by national governments under a scheme that operates to an agreed standard across national frontiers. Such recognition normally confers a high degree of protection to the designated interest.
In-scope waste	Waste that is in-scope of the assessment. Including: • Unwanted material from production disposed of to landfill • Physical contaminants screened out of input materials Excluding: • Material which is used to produce a by-product • Packaging materials used to transport materials between companies in the supply chain
ISO9001	The ISO 9000 family of quality management systems standards is designed to help organizations ensure that they meet the needs of customers and other stakeholders while meeting statutory and regulatory requirements related to a product. ISO 9000 deals with the fundamentals of quality management systems, including the eight management principles upon which the family of standards is based. ISO 9001 deals with the requirements that organizations wishing to meet the standard must fulfil.
ISO14001	An internationally accepted standard that provides an outline for effective environmental management systems within businesses.
Legally binding mitigation agreement	An agreement with the relevant regulator within that jurisdiction that the regulator can require to be implemented, by recourse to legal action if necessary, to reduce, prevent or compensate for an adverse impact by carrying out specified works or measures.
Liquid effluent	Emissions from a raw material or process in the form of liquid (as opposed to a gas or solid).
Loam	Soil (upper layer of the soil, typically 0.15 to 0.30 metres deep) removed from *in situ* location where formed and which has undergone a process. Maximum content of sand is 85% and clay is 60%. Maximum organic matter content is 15%. Beyond maxima for sand and clay material should be considered a mineral. Beyond the maximum for organic matter content material should be considered a peat/peaty soil.
Loam co-extracted with root vegetables	Loam can be co-extracted on the roots of crops. Significant amounts of loam may be removed from fields during the harvest of crops such as sugar beet, potato, carrot and chicory root.
Minerals	An inorganic natural substance, but for the purposes of both legislation in the UK and this scheme taken to include any raw material extracted from the ground other than loam. However, for the purposes of the habitat and biodiversity criterion peat is treated separately from other minerals.

Mixing system (mixing belt)	That part of the growing media or soil improver manufacturing process where bulk substrates are combined and additives introduced to the mix. The 'mixing belt' is the first part of that process where only bulk substrates are combined. At the 'mixing belt' all raw materials must be in a ready to manufacture form – for example, coir pith must be re-wet, bark fines must be screened etc. – even if further screening is carried out as part of the manufacturing process.
Monocrop	Monocropping is the agricultural practice of growing a single crop year after year on the same land, in the absence of rotation through other crops or growing multiple crops on the same land (polyculture).
Monocrop plantation	A plantation (see below), or part of a plantation, where cultivation is limited exclusively to a single crop.
Mushroom substrate	Growing media used in production of mushrooms.
National conservation designation	An area of habitat, species or biodiversity value formally recognised as such by a national government under a scheme that operates to an agreed standard within that country. Such recognition normally confers a high degree of protection to the designated interest.
Natural habitat	Natural habitats are ecosystems that have developed through natural processes, with minimal or no direct human modification, and that support native species and ecological functions characteristic of their region. These habitats maintain: • Native vegetation and fauna • Natural hydrology and soil structure • Ecological processes such as succession, nutrient cycling, and species interactions In many parts of the world, such habitats may still exist in wilderness areas, primary forests, undisturbed wetlands, or remote marine environments.
Near-fossil carbon	Carbon stored in peat that has accumulated over thousands of years and is effectively removed from the active carbon cycle over timescales relevant to climate change policy. For the purposes of this scheme, emissions from the drained state of peatland used for extraction and the oxidation of extracted peat following use are treated as the release of near-fossil carbon.
NetCV; Net calorific value	The amount of usable energy released when a fuel is burned, excluding the energy used to evaporate any water produced during combustion. Also known as lower heating value.
Off-site peat emissions	Greenhouse gas emissions associated with oxidation of extracted peat following use, calculated for this scheme using the UK Greenhouse Gas Inventory off-site emission factor.
OHSAS18001	Occupational Health and Safety Management Systems—Requirements is an internationally applied British Standard for occupational health and safety management systems. It exists to help all kinds of organizations put in place demonstrably sound occupational health and safety performance.
Oilseed rape straw	Straw obtained from the cultivation of oilseed rape.
On-site peat emissions	Greenhouse gas emissions associated with the drained state of peatland managed for extraction, calculated for this scheme using the UK Greenhouse Gas Inventory factor for peatland managed for extraction.
Optimal stocking density	The stocking density judged to be appropriate for maintaining or enhancing the habitat being grazed. The optimal stocking density will

	vary between habitat types and should be determined using relevant habitat management guidance.
Oxidation	A chemical process in which a substance reacts with oxygen. In the greenhouse gas emissions criterion, oxidation is used to describe the breakdown of extracted peat following use, which releases carbon stored in the peat to the atmosphere.
PAS100	The British Standards Institution Publicly Available Specification 100 for producing quality compost.
Peat	'Peat is an organic soil formed mainly from the remains of plants that have accumulated in situ. Peat accumulates in wetland habitats, primarily because waterlogging and associated anoxia retards the decomposition of plant material' (Wheeler & Shaw, 1995).
Peat forming habitat	Wetland habitat with waterlogged conditions and plant communities capable of accumulating peat over time. Peat-forming habitats are commonly associated with Sphagnum bog mosses and cotton grasses, although other plant material such as non-Sphagnum mosses, purple moor grass, heather stems and roots can also contribute to peat formation.
Perlite	An amorphous volcanic glass mineral normally formed by the hydration of obsidian used in some, primarily specialist, growing media mixes.
Plantation	A cultivation system where the natural vegetation is cleared and replaced with planted agricultural or horticultural species, which normally remain in place and produce a crop from the same plants for two or more seasons.
Point of entry	First point at which a finished product enters the country. If materials are transported by sea this will be the port at which the product arrives. If materials are transported by road this will be where the material crosses into the country, i.e., national boundary. For finished products produced outside mainland UK, transport to the mainland needs to be taken into account.
Pollutant	A substance (solid, liquid or gaseous) introduced into the environment that has undesired effects, or adversely affects the usefulness of a resource.
Pollute (water soil or air)	To discharge emissions that have, or have the potential to have, an adverse impact on the environment.
Pollution	The discharge of a substance (solid, liquid or gaseous) that is likely to have an adverse effect on the natural environment or life.
Potable water	Water suitable for drinking under normal conditions by the population of that country in which the water is located.
Processing system	That part of the growing media or soil improver manufacturing process where individual raw materials are processed and prepared for sale. Processes may include screening, grading, reconstituting, expanding, etc.
Recovered waste	A substance that was defined as a waste material, but is no longer classified as such by the relevant regulator within that jurisdiction. Recovered waste will normally have been through a prescribed process and achieved the requisite standard.
Recycled materials	Employing materials for a useful purpose that have already been used for another purpose as a replacement for virgin materials. Recycled materials will often be 'recovered waste' but that is not necessarily the case.
Recycled peat	Peat is only considered a recycled material when it meets specific criteria; otherwise it is considered a virgin material. The specific criterion is:

	• Waste peat removed from development sites; where removal of peat is not the purpose of development, i.e. the purpose is not peat extraction (for fuel or horticulture) and where it is demonstrated that excavation and removal is unavoidable.
Regulator approved mitigation measures	Specified works or measures agreed with the relevant regulator within that jurisdiction to reduce, prevent or compensate for an adverse impact of operations.
Renewable	A resource that can be replenished through naturally occurring processes. The timescale for replenishment is normally considered to be an average human lifetime of say 75 years.
Renewable Energy Guarantees of Origin (REGO) scheme	The Renewable Energy Guarantees of Origin (REGO) scheme provides transparency to consumers about the proportion of electricity that suppliers source from renewable electricity. This scheme provides certificates called REGOs which demonstrate electricity has been generated from renewable sources.
Responsible	In the context of growing media and soil improver production, to select raw materials and to manufacture with care and forethought and to comply with environmental and social standards.
Restoration, rehabilitation or aftercare plan	A site-specific plan to ensure that worked land, such as an extraction site, is restored, rehabilitated or managed for a defined future purpose, for example biodiversity or conservation.
Retting	A process using the dual effects of water soaking and the action of micro-organisms to break down the cellular tissue of fibres facilitating the separation of fibres in the coconut husk.
Reused water	Water that is used more than once within a process or site, including water that has been collected, treated or recirculated for further use.
Ring-fenced funds	Funds identified and protected for a specific purpose, so that they cannot be used for general business expenditure. In this scheme, ring-fenced restoration funds should be linked to the relevant site and supported by evidence that the amount is sufficient to deliver the approved restoration, rehabilitation or aftercare plan.
Roundwood	Wood in its natural state as felled, with or without bark.
SA8000	Social Accountability 8000 International Standard. A voluntary standard for auditable third-party verification.
Sand	Very fine loose fragments of rock, normally created by a process involving the influence of water.
Sedex	Sedex, the Supplier Ethical Data Exchange, is a not for profit membership organisation dedicated to driving improvements in responsible and ethical business practices in global supply chains. Sedex offers a simple and effective way of managing ethical and responsible practices in the supply chain.
Semi-natural habitat	Semi-natural habitats are ecosystems that have been shaped or influenced by human activity but still retain a significant proportion of their native biodiversity, ecological structure, and functioning. These habitats: • Are often the result of traditional land management (e.g. grazing, coppicing, low-intensity farming) • Support species assemblages typical of the region • Can be restored or enhanced to improve ecological integrity In the UK and other long-inhabited landscapes, most wildlife-rich habitats fall into this category, including ancient woodlands, species-rich grasslands, heathlands, and peatlands.

Site	Land within the boundary of the licence, permit, planning consent or equivalent operational boundary.
SMETA	Sedex Members Ethical Trade Audit
Softwood	Wood from conifers.
Soil improver	Material added to soil in situ primarily to maintain or improve its physical properties, and which may improve its chemical and/or biological properties or activity. Also known as a soil conditioner.
Solid effluent	Emissions from a raw material or process in the form of solid particles (as opposed to a gas or liquid).
Spent mushroom substrate	Mushroom growing media removed from the mushroom growing trays at the end of the growing cycle.
Sphagnum (farmed)	Sphagnum (farmed) is the product of the cultivation of peat moss (Sphagnum) for the production and harvest of Sphagnum biomass. The Sphagnum is cultivated in order to gain renewable raw material for the production of horticultural growing media as an alternative to using peat soil. Wild harvested Sphagnum is not included.
Start of mixing system	The point immediately before a bulk ingredient enters the mixing system used to manufacture the growing media or soil improver product.
Substrate	A material or combination of bulk raw materials used, where required with further additives such as lime and fertiliser, to support plant growth.
Sustainable	Use of materials that meet the needs of current consumers without compromising the ability of this or future generations to meet or enjoy their social, environmental and economic needs.
Vermiculite	A hydrous silicate mineral used in some, primarily specialist, growing media mixes.
Virgin material	A material obtained or manufactured for a specific purpose that has not previously been used for another purpose.
Volume where commercial transport becomes viable	The point at which sufficient material has accumulated for transport to the next supply-chain stage. This is treated as a volume-based starting point for the assessment and is not intended to be a detailed economic test of commercial viability.
Wetland habitat	An area with the water table at, close to or above land surface level for the majority of the year, where the flora or fauna are adapted to and rely on those conditions.
Windrow composting	The production of compost by piling organic matter or biodegradable waste in long rows (windrows). These rows are generally turned to improve porosity and oxygen content, mix in or remove moisture, and redistribute cooler and hotter portions of the pile.
Wood-based material	Material derived from a tree, excluding fruits, nuts, leaves and resins.
Wood fibre	A wood-based substrate: • Where the structure is modified during the manufacturing process to mechanically separate the wood fibres and create a lighter more open product than the raw material. The manufacturing process involves more than shredding / chipping / screening to change the wood particle size and uses heat / steam / mechanical processing to alter the physical characteristics of the raw material; or • That is composed of fine composted wood residues
Wool	The fine, soft curly or wavy hair forming the coat of a sheep, goat, or similar animal. For the purposes of this scheme reference to wool should be taken to mean sheep wool.
Worm compost	Compost produced using worms

Annex 2: Social compliance self-assessment questionnaire minimum requirements

There is no requirement to use this template for undertaking a social compliance self-assessment (https://www.responsiblesourcing.org.uk/media/usvgyieo/annex-2-self-assessment-questionnaire-minimum-requirements-v7.xlsx). However, to qualify as a self-assessment questionnaire for scoring purposes it must as a minimum contain the questions set out in the 'self-assessment minimum requirements' spreadsheet and achieve no more than 2 major and/or 5 minor failures.

Towards Responsible Sourcing and Manufacture of Growing Media v10
Social compliance self-assessment questionnaire minimum requirements

Site Details		Date completed
Company		
Site Name		
Site Address		

	No. of staff
Permanent Workers	
Temporary directly employed workers - peak season total	
Temporary directly employed workers - low season total	
Agency workers (not directly employed) - peak season total	
Agency workers (not directly employed) - low season total	
Workers at subcontracting units - total	
Homeworkers/outworkers - total	

Site Contact Details	
Main Contact(s)	

		Answer Yes/No	No = (Q3 Yes =)
General			
Applicable Laws	1. Do you stay up to date with local laws/regulations and any changes to ensure that your supply chain is compliant with environmental and ethical laws?		Major
	2. Is there a system in place to ensure ongoing compliance with local laws?		Major
	3. Have there been any violations or fines related to labour laws in the past year?		Major
Supplier Management	4. Are suppliers and subcontractors required to adhere to ethical standards and local laws?		Major
	5. Do you have a written procedure to assess and address risk across your supply chain?		Major
	6. Do you regularly communicate your requirements with your suppliers?		Minor
	7. Do you check your suppliers meet ethical standards and local laws least once every 2 years?		Major
Labour			
Management Systems	8. Do you have a written policy that clearly defines your company's approach to managing human resources and labour issues?		Major
	9. Do you regularly communicate this policy with your employees?		Minor
	10. Do you have an allocated senior manager responsilble for human resources?		Minor
	11. Do you have a process to verify all workers have the legal right to work?		Major
Children and young employees/workers	12. Do you have a written policy on the prevention and elimination of child labour?		Major
	13. Do you have an age verification process for all new employees?		Major
	14. Do you have a written procedure for managing child labour if found within your supply chain?		Minor
Wages	15. Are all employees paid the legal minimum wage?		Major
	16. Are deductions clearly identified and within local laws?		Major
Working hours	17. Do you have a procedure to ensure all working hours and overtime are as according to law?		Major
	18. Is overtime voluntary?		Major
Non-discrimination	19. Do you have a written equal opportunities policy?		Minor
	20. Do you communicate your equal opportunities policy and /or procedure?		Minor
	21. Do you have a non-discrimination policy covering health related issues e.g. Tuberculosis, HIV, disability etc.		Minor
Agency Labour	22. Do you use agencies/labour providers?		Must be answered
	23. If yes, do you have any systems in place to check that the agencies/ labour providers that you use meet labour standard requirements?		Major
	24. If yes, do all agencies/ labour providers have documents proving that each employee/worker has the right to work in the country?		Major
Discipline and grievances	25. Do you have a written procedures for disciplinary, grievances and to prevent harassment or bullying in any form?		Major
	26. Do you have a confidential means for employees/workers to report any discrimination or harassment e.g. help line or whistleblowing procedure?		Minor
Health and Safety			
Health and Safety Management	27. Do you have a written Health and Safety policy?		Major
	28. Do you ensure all employees are aware of the policy?		Minor
	29. Do you have procedures to regularly check for health and safety non-compliance?		Major
	30. Do you have a dedicated senior manager and / or qualified safety officer responsible for health and safety?		Minor
Business Ethics			
Modern Slavery	31. Do you have a detailed policy on modern slavery including forced labour and involuntary prison labour, that is communicated to all workers?		Major
	32. Have you assessed if modern slavery is a risk within your workforce or the workforce of your suppliers, subcontractors or business partners?		Major
Anti-corruption	33. Do you have a written policy on prohibiting bribery, corruption and fraud within your business?		Major

Total Major failures	0
Total Minor failures	0
Unanwered questions	31
	Non compliant

Annex 3: Air and Water Pollution Risk Assessment Example Methodology

Air Pollution Risk Assessment Methodology

Purpose

This methodology enables operators to:

- Confirm “Have you conducted a risk assessment for air pollution?”
- Demonstrate “Do you have appropriate mitigation to limit air pollution?”

Scope

Assess emissions across five categories:

Category	Description
Dust & Particulates	Emissions from handling dry materials, wind-blown dust, vehicle movements
Bioaerosols	Microbial particles from composting, organic materials, or biological additives
Volatile Organic Compounds (VOCs)	Emissions from chemical additives, solvents, or organic decomposition
Odour	Nuisance smells from organic materials, composting, or additives
Combustion Emissions	Emissions from machinery, generators, or burning activities (e.g., diesel, wood)

Step 1: Baseline Risk Assessment (Before Any Mitigation)

- Identify sources (e.g., stockpiles, composting, machinery).
- Identify receptors (people, habitats, property).
- Identify pathways (wind dispersion, vehicle movement).

Scoring Approach

For each category, score four elements from 1 (Low) to 5 (High):

Element	Description
Source Strength	Volume, intensity, or frequency of pollutant generation (e.g., dust from stockpiles, VOCs from additives)
Control Measures	Effectiveness of dust suppression, containment, filtration (baseline = assume none)
Exposure Potential	Likelihood of pollutant reaching receptors (consider wind, site layout, barriers)
Receptor Sensitivity	Vulnerability of nearby receptors (homes, watercourses, habitats)

Category Score = (Source Strength + Control Measures + Exposure Potential + Receptor Sensitivity) ÷ 4
Overall Risk Score = Average of all category scores.

Scoring Guidance

Source Strength

- 1 = Minimal emissions (small enclosed mixing area, negligible dust)
- 2 = Low emissions (occasional handling of damp materials, small volumes)

- 3 = Moderate emissions (regular handling of dry materials, some wind exposure)
- 4 = Significant emissions (large open stockpiles, frequent vehicle movement)
- 5 = High emissions (continuous handling of dusty materials in open air)

Control Measures

- 1 = Fully enclosed systems with advanced filtration
- 2 = Effective dust suppression (misting, covers, sealed conveyors)
- 3 = Partial controls (covers on some stockpiles, occasional misting)
- 4 = Minimal controls (basic housekeeping only)
- 5 = No controls present (baseline)

Exposure Potential

- 1 = Fully contained (indoor operations, negative pressure ventilation)
- 2 = Mostly contained (bunded areas, windbreaks)
- 3 = Some pathways (open yard, occasional wind gusts)
- 4 = Frequent pathways (open yard, high wind exposure, no barriers)
- 5 = Direct pathway to receptors (open site, prevailing wind toward sensitive receptors)

Receptor Sensitivity

- 1 = Remote industrial zone, no sensitive receptors
- 2 = Rural area, receptors >500m away
- 3 = Mixed-use area, receptors 250–500m away
- 4 = Residential receptors within 100–250m
- 5 = Sensitive receptors (homes, schools, hospitals) within 50m

Interpretation

- 1.0–2.0 = Low
- 2.1–3.5 = Medium
- 3.6–5.0 = High

Example Table (Before Mitigation)

Category	Source Strength	Control Measures	Exposure Potential	Receptor Sensitivity	Category Score
Dust	4	5	4	3	4.0
Bioaerosols	3	5	3	4	3.75
VOCs	2	5	3	3	3.25
Odour	3	5	3	3	3.5
Combustion	4	5	4	3	4.0

Overall Risk (Before Mitigation) = (4.0 + 3.75 + 3.25 + 3.5 + 4.0) ÷ 5 = **3.7 → High Risk**

Step 2: Apply Mitigation and Reassess

Include existing mitigation measures such as:

- Dust suppression (misting, covers)
- Bioaerosol containment
- VOC capture systems
- Odour neutralisers

- Engine emission controls

Example After Mitigation:

Category	Source Strength	Control Measures	Exposure Potential	Receptor Sensitivity	Category Score
Dust	4	2	2	3	2.75
Bioaerosols	3	2	2	3	2.5
VOCs	2	2	2	3	2.25
Odour	3	2	2	3	2.5
Combustion	4	2	2	3	2.75

Overall Risk (After Mitigation) = (2.75 + 2.5 + 2.25 + 2.5 + 2.75) ÷ 5 = **2.55** → **Medium Risk**
(Further measures may be needed to reduce to Low.)

Step 3: Documenting Scores

For each category and element:

- Record the rationale for the score (e.g., “Large compost piles exposed to wind” for Source Strength = 4).
- Include site-specific evidence:
  - Photos of stockpiles, yard layout, and any dust suppression systems
  - Monitoring data (PM10/PM2.5 readings, VOC measurements, odour logs)
  - Site maps showing receptor locations and prevailing wind direction
  - Operational logs (frequency of material handling, vehicle movements)
  - Weather data (wind speed/direction, dry periods)
  - Maintenance records for dust suppression or filtration systems
- Clearly state assumptions (e.g., “No mitigation assumed for baseline scoring”).
- Keep a summary sheet showing:
  - Initial scores
  - Mitigation actions applied
  - Revised scores
  - Final overall risk level

Template for Rationale Notes

Category	Element	Score	Rationale / Evidence
Dust	Source Strength	4	Large stockpiles of dry material exposed to wind
Dust	Control Measures	5	No covers or misting in place
Dust	Exposure Potential	4	Open yard, frequent vehicle movement
Dust	Receptor Sensitivity	3	Nearest homes 200m away
Bioaerosols	Source Strength	3	Composting activity present

Water Pollution Risk Assessment Methodology

Purpose

This methodology enables operators to:

- Confirm “Have you conducted a risk assessment for water pollution?”
- Demonstrate “Do you have appropriate mitigation to limit water pollution?”

Scope

Assess emissions across six categories:

Category	Description	Examples
Leachate & Nutrient Runoff	Runoff from organic materials containing nitrogen, phosphorus, and organic matter	Leachate from compost piles during rainfall; nutrient-rich runoff from bark stockpiles
Sediment & Suspended Solids	Soil, sand, and fine particles washed into water bodies from erosion or vehicle movement	Silt-laden runoff from unpaved roads; sediment discharge from screening operations
Chemical Contaminants	Fertilisers, surfactants, wetting agents, and other additives that may leach into water	Runoff containing calcium nitrate; spills of buffering agents near drainage
Pathogens & Microbial Load	Bacteria and other microbes from composting or manure-based ingredients	E. coli presence in runoff from composting zones; pathogen-rich wash water
pH & Salinity Alteration	Changes in water chemistry due to lime, ash, coir, or buffering agents	Alkaline runoff from lime-treated coir; saline discharge from coir washing
Oil & Fuel Spills	Hydrocarbon pollution from machinery, generators, or transport vehicles	Diesel spill from generator; hydraulic fluid leak near drains

Step 1: Baseline Risk Assessment (Before Any Mitigation)

- Identify sources (e.g., compost piles, chemical storage, machinery).
- Identify receptors (watercourses, groundwater, sensitive habitats).
- Identify pathways (surface runoff, drainage systems).

Scoring Approach

For each category, score four elements from 1 (Low) to 5 (High):

Element	Description
Source Strength	Volume, intensity, or frequency of pollutant generation (e.g., size of compost piles, chemical storage)
Control Measures	Effectiveness of containment, bunding, drainage systems (baseline = assume none)
Exposure Potential	Likelihood of pollutant reaching receptors (consider slope, drainage, rainfall)
Receptor Sensitivity	Vulnerability of nearby receptors (streams, groundwater, protected habitats)

Category Score = (Source Strength + Control Measures + Exposure Potential + Receptor Sensitivity) ÷ 4
Overall Risk Score = Average of all category scores.

Full Scoring Guidance

Source Strength

- 1 = Minimal risk (small enclosed chemical storage, no exposed organic material)
- 2 = Low risk (limited exposed material, occasional runoff)
- 3 = Moderate risk (moderate volumes of exposed material, some rainfall exposure)
- 4 = Significant risk (large exposed piles, frequent rainfall)
- 5 = High risk (continuous exposure, large volumes, high rainfall area)

Control Measures

- 1 = Fully contained (bunded areas, impermeable surfaces, drainage treatment)
- 2 = Effective controls (sediment traps, covered storage, lined drains)
- 3 = Partial controls (basic bunding, some covers)
- 4 = Minimal controls (basic housekeeping only)
- 5 = No controls present (baseline)

Exposure Potential

- 1 = Fully contained (closed drainage, zero discharge)
- 2 = Mostly contained (controlled drainage, low slope)
- 3 = Some pathways (open drains, moderate slope)
- 4 = Frequent pathways (unsealed drains, steep slope)
- 5 = Direct pathway (uncontrolled runoff to watercourse)

Receptor Sensitivity

- 1 = No sensitive receptors (industrial zone, no watercourses nearby)
- 2 = Low sensitivity (minor ditch >500m away)
- 3 = Moderate sensitivity (stream within 250–500m)
- 4 = High sensitivity (stream or pond within 100–250m)
- 5 = Very high sensitivity (protected habitat or watercourse within 50m)

Interpretation

- 1.0–2.0 = Low
- 2.1–3.5 = Medium
- 3.6–5.0 = High

Example Table (Before Mitigation)

Category	Source Strength	Control Measures	Exposure Potential	Receptor Sensitivity	Category Score
Leachate & Nutrient Runoff	4	5	4	4	4.25
Sediment & Suspended Solids	3	5	4	3	3.75
Chemical Contaminants	3	5	3	3	3.5
Pathogens & Microbial Load	3	5	3	4	3.75
pH & Salinity Alteration	2	5	3	3	3.25
Oil & Fuel Spills	3	5	3	3	3.5

Overall Risk (Before Mitigation) = (4.25 + 3.75 + 3.5 + 3.75 + 3.25 + 3.5) ÷ 6 **= 3.67 → High Risk**

Step 2: Apply Mitigation and Reassess

Include existing mitigation measures such as:

- Bunding and impermeable surfaces
- Covered storage for chemicals and organic materials
- Sediment traps and drainage treatment
- Spill kits and containment for oils and fuels

Example After Mitigation:

Category	Source Strength	Control Measures	Exposure Potential	Receptor Sensitivity	Category Score
Leachate & Nutrient Runoff	4	2	2	4	3.0
Sediment & Suspended Solids	3	2	2	3	2.5
Chemical Contaminants	3	2	2	3	2.5
Pathogens & Microbial Load	3	2	2	3	2.5
pH & Salinity Alteration	2	2	2	3	2.25
Oil & Fuel Spills	3	2	2	3	2.5

Overall Risk (After Mitigation) = (3.0 + 2.5 + 2.5 + 2.5 + 2.25 + 2.5) ÷ 6 **= 2.54 → Medium Risk**
(Further measures may be needed to reduce to Low.)

Step 3: Documenting Scores

For each category and element:

- Record the rationale for the score (e.g., “Large compost piles exposed to rainfall” for Source Strength = 4).
- Include site-specific evidence:
  - Photos of storage areas, bunding, drainage systems
  - Monitoring data (water quality tests, sediment levels)
  - Site maps showing slope and watercourse proximity
  - Operational logs (frequency of handling, rainfall events)
  - Maintenance records for drainage and containment systems
- Clearly state assumptions (e.g., “No mitigation assumed for baseline scoring”).
- Keep a summary sheet showing:
  - Initial scores
  - Mitigation actions applied
  - Revised scores
  - Final overall risk level

Template for Rationale Notes

Category	Element	Score	Rationale / Evidence
Leachate & Nutrient Runoff	Source Strength	4	Large compost piles exposed to rainfall
Leachate & Nutrient Runoff	Control Measures	5	No bunding or covers in place
Leachate & Nutrient Runoff	Exposure Potential	4	Sloped site with open drains
Leachate & Nutrient Runoff	Receptor Sensitivity	4	Stream within 150m
Sediment & Suspended Solids	Source Strength	3	Unpaved access roads

Annex 4: Documentary evidence checklist

This is a summary of the documentary evidence requirements set out under each of the criteria.

Greenhouse gas emissions (in extraction, transport and production)

- Supply chain map with distances and methods of transport.
- Production/manufacturing fossil fuel and electricity use records, greenhouse gas emissions records, and supporting calculations.
- Transport calculations covering the whole supply chain, using standard distances and conversion factors where necessary.
- Evidence of the greenhouse gas conversion factors used, including the version/year of the conversion factor source and the relevant worksheets or tables used.
- Where previous energy-use calculations are reused, evidence that the latest fuel properties, transport conversion factors and vehicle classifications have been checked and calculations updated where necessary.
- Where direct greenhouse gas emissions data are used, auditable evidence of the data source, calculation method, assessment boundary, units and any allocation factors applied.
- For renewable energy generated by the company and used in processing or manufacture of material, documented evidence of energy generation and consumption.
- For energy obtained through a green tariff, documented evidence of certification of the tariff through the Renewable Energy Guarantees of Origin (REGO) scheme or equivalent.
- For peat, evidence of the UK Greenhouse Gas Inventory emission factors used for on-site and off-site emissions.
- For peat, evidence of the annual volume of peat extracted per hectare, or the value used to convert on-site emissions from ha/year to kg CO_2e/m^3.
- For peat, calculations showing the addition of transport, production, on-site and off-site emissions to generate the final kg CO_2e/m^3 value.

Where values are taken from published conversion factor workbooks or the UK Greenhouse Gas Inventory, users should record the source, year, worksheet/table and factor used so that calculations can be audited and updated when factors are revised.

Water use (in extraction and production)

- Supply chain map
- Excavation/production/manufacturing water use records for all production and manufacturing processes.
- Records of any rainwater harvesting or water recycling used.

Social compliance

- Supply chain map including sources of all materials.
- Details of the social compliance process, including any internal checks of suppliers. Certification alone does not automatically demonstrate compliance unless it covers the requirements of this criterion.
    - Transparency is obtained through the use of either an internal management system or an external management system such as Sedex or BSCI.

  - Self-assessment questionnaires may be used as proof where they meet the minimum requirements in Annex 2: Social compliance self-assessment questionnaire minimum requirements and have been passed. Self-assessment questionnaires which achieve more than 2 major and/or 5 minor failures have the same value as no assessment. They are scored at a lower value than independent audits (Table 11).
  - Neither ISO14001 nor ISO9001 are acceptable proof. OHSAS18001 only offers partial proof as it does not cover the labour standards elements required but does cover the health and safety requirements.
- Risk assessments
- Certification to confirm successful independent audits throughout the supply chain.
- Independent audits of suppliers need to be conducted using recognised approaches such as SMETA, BSCI, SA8000 or similar.

Habitat and biodiversity - Peat

- Supply chain map including sources of peat.
- Evidence that the site has not been identified as being a local, national or international conservation site or part of a protected landscape.
- Proof of development/drainage start date.
- Restoration/rehabilitation plan – including proof that this has been approved by a licencing body or other competent authority, e.g., statutory conservation body.
- Proof of provision to guarantee the financing of restoration – including documentation of the method of guarantee (and associated policy where relevant) and that the funds will be sufficient to deliver the restoration plan.
- Proof of source of recycled peat and that excavation and removal of peat at that site is unavoidable.

Habitat and biodiversity – Wood based materials

- Supply chain map including sources of wood-based materials.
- The source of material (virgin by-products and recycled material)
- That material comes from a sustainably managed forest. Could include:
  - Independent third-party certification.
  - Recognised national/retailer schemes.
  - Recognised country of origin risk assessment (low risk) (e.g., FSC Controlled Wood National Risk Assessment) (material relying on this proof alone should not be included in % calculation).
- Membership/certification to appropriate scheme.
- Total amount of material handled, detailing level of certification or other qualifying proof (i.e., not country of origin risk assessment).

Habitat and biodiversity – Coir pith

- Supply chain map including sources of coir pith/coconuts.
- Documentary evidence of the source of material.
- For known specific location sourced materials:
  - Evidence of previous land use.
  - Evidence of first cultivation date for coconuts.

    - Evidence of on-farm practices to stimulate biodiversity. Examples include: 1) wildflower meadows, 2) wildlife corridors and strips, 3) bird nest boxes, 4) wetland creation, 5) establishing pasture, 6) creation of landscape elements (ponds, terraces, windbreaks, etc.). Evidence could include audit of The Sustainable Coconut Charter's Assurance Scheme.
- For regional assessment:
    - Evidence of whether expansion of coconut production within the region has resulted in the conversion of natural or semi-natural habitat within the last 10 years.

Habitat and biodiversity – Minerals

- Supply chain map including sources of minerals.
- Evidence that the site has not been identified as a local, national or international conservation site or part of a protected landscape.
- Restoration/rehabilitation plan – including proof that this has been approved by a licencing body or other competent authority, e.g., statutory conservation body.
- Proof of provision to guarantee the financing of restoration – including documentation of the method of guarantee (and associated policy where relevant) and that the funds will be sufficient to deliver the restoration plan.
- Proof of source of recycled minerals.

Habitat and biodiversity – Recycled materials

- Supply chain map

Habitat and biodiversity – Agricultural crops

- Supply chain map including sources of agricultural crops.
- Documentary evidence of the source of material.
    - Evidence of previous land use.
    - Evidence of first cultivation date for agricultural crops.
- Documentary evidence that the farm is in a higher-level environmental scheme (applicable scheme to the country of origin) or is being managed to an equivalent standard.

Habit and biodiversity - Loam

- Supply chain map including sources of loam.
- Documentary evidence that the site from which the loam has come from is part of a scheme to deliver no net biodiversity loss. Examples of schemes and minimum scoring requirements are identified as follows:
    - Biodiversity Net Gain (which exceeds requirements)
    - Building with Nature (which exceeds requirements)
    - Building Research Establishment Environmental Assessment Method (BREEAM):
        - New Construction – three credits for criterion Lue 03 – Managing impacts on ecology.
        - New Construction Residential - at least 4 credits for Ecological change and enhancement criterion 8 - Measuring the change in ecological value.

    - Infrastructure – at least twenty credits for criterion 4.4.1 – Change in ecological value
- Evidence of the previous land use.

Habitat and biodiversity – Bracken

- Supply chain map including sources of bracken.
- Documentary evidence that bracken management is carried out following a bracken management plan, that this management plan follows best practice guidance and that it has regulatory approval (where required or as needed).

Habitat and biodiversity – Wool (sheep only)

- Supply chain map including sources of wool.
- Documentary evidence of the source of material.
    - Location of farm (upland vs lowland). To meet the definition of an upland sheep farm, the sheep should spend the majority of their life cycle in an upland extensive grazing system.
    - Evidence that sheep grazing is being used as part of a habitat conservation plan if not in an upland extensive grazing system.
- Documentary evidence of the stocking density of sheep on each of the habitat types present on the farm.

Habitat and biodiversity - cork

- Supply chain map including sources of cork.

Pollution

- Supply chain map including sources of all materials and known potential pollutant hotspots.
- Records of enforcement actions.
- Details of legally binding mitigation agreement.
- Monitoring records.
- Completed pollution questionnaires and supporting documentation of the measures recorded (e.g. risk assessments for air and water pollution). See Annex 3 for an example of how risk assessments for air and water pollution could be carried out.
- Pollution rater records.

Renewability

- Evidence of materials used.
- Proportion of each material used in final product.
- For wood-based material – species used, differentiating between hardwood/softwood.
- For peat, where potentially renewable within 100 years, documented:
    - evidence of peat type (sphagnum/sedge).
    - peat extraction plan including depth excavated annually.
    - site restoration plan including timescales.

Resource use efficiency

- Evidence of materials used.
- Energy records - use during processing for recycled materials (kWh/m^3).

- Volume of input materials (m^3).
- Volume of in-scope waste generated during production (m^3).
- In-scope waste as a proportion of input material (%).