Blackdown Hills National Landscape: A Guide to Soils and Carbon

Blackdown Hills National Landscape

Click on buttons below to follow the Guide

Soils and Carbon – the Key Points

The Soil Carbon Cycle

What type of soil do I have?

Locate your land on the map

↓

Understand the structure of the landscape

↓

Know your soils

↓

Which soil types do I have?

How should I manage my soils?

Managing different soil types

↓

Character of each soil type

Blackdown

Dunkeswell

Batcombe

Bearsted

Hense

Whimple

Evesham

Fladbury

Find out more at
blackdownhills-nl.org.uk/soils

Soil Toolkit text and project management by Fred Constantine Smith, supported by Gavin Saunders, for the Blackdown Hills National Landscape; design by The Way Design; photography © Paul Box. Thanks to Richard Smith for advice and support.

Soils and Carbon in the Blackdown Hills: Key Points

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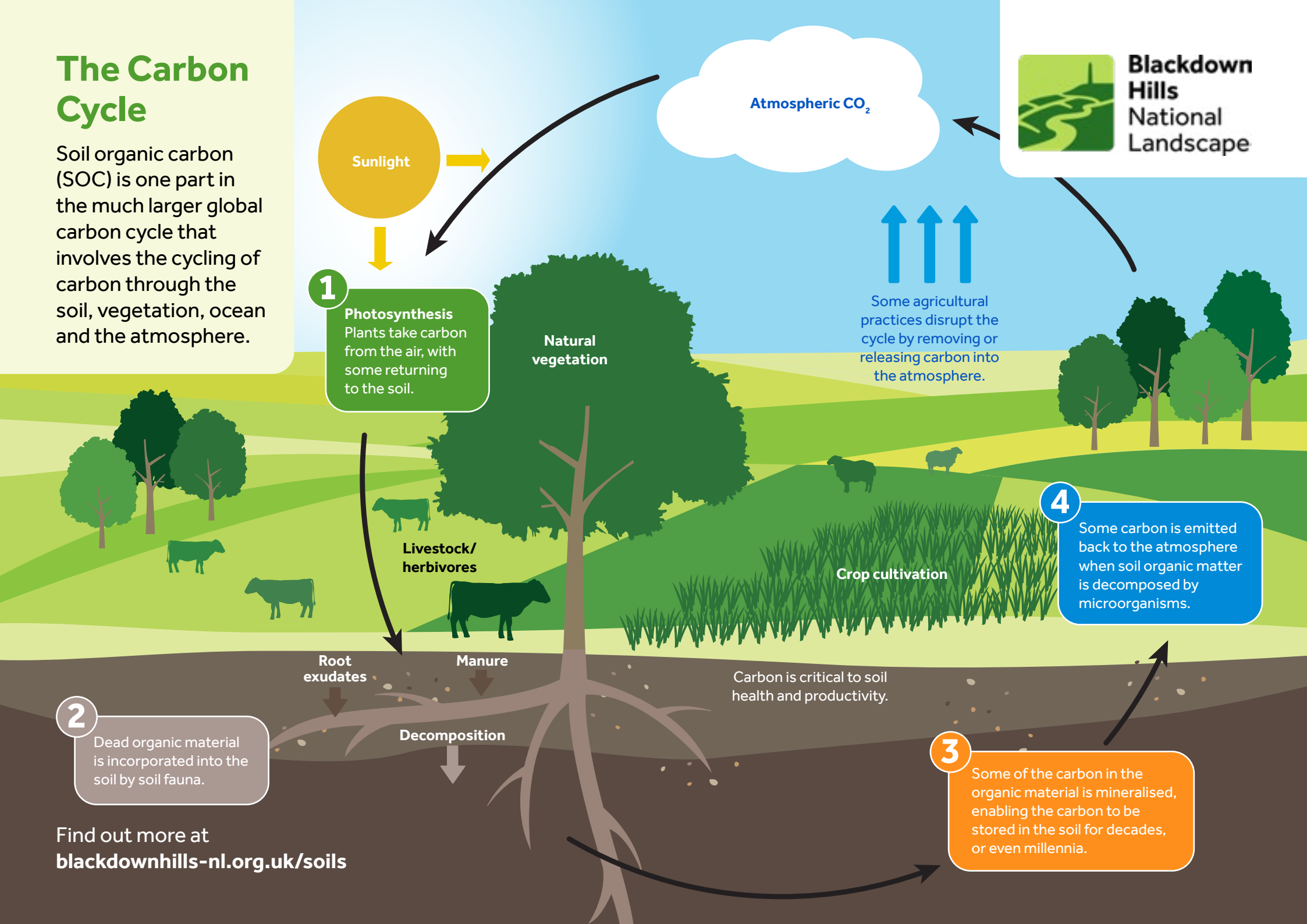
Soils across the Blackdown Hills are diverse, have different characteristics, and vary in their potential to store carbon.

- ✓ Soil carbon storage can be increased both through agricultural practices, and habitat creation or management.
- ✓ Managing productive soils to store more carbon can also improve soil health and productivity.
- ✓ Improving farming practices on medium brown soils ('Whimple' and 'Batcombe'), can increase carbon storage over a large area.
- ✓ The black, peaty 'Blackdown' and 'Hense' soil types store the most carbon per hectare.
- ✓ The soils beneath mire, heath and wet woodland store the most carbon.
- ✓ A focus on soil carbon can offer a triple-win, for carbon sequestration, soil health, and biodiversity.

Find out more at
blackdownhills-nl.org.uk/soils

The Carbon Cycle

Soil organic carbon (SOC) is one part in the much larger global carbon cycle that involves the cycling of carbon through the soil, vegetation, ocean and the atmosphere.



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The Blackdown Hills Soil Map

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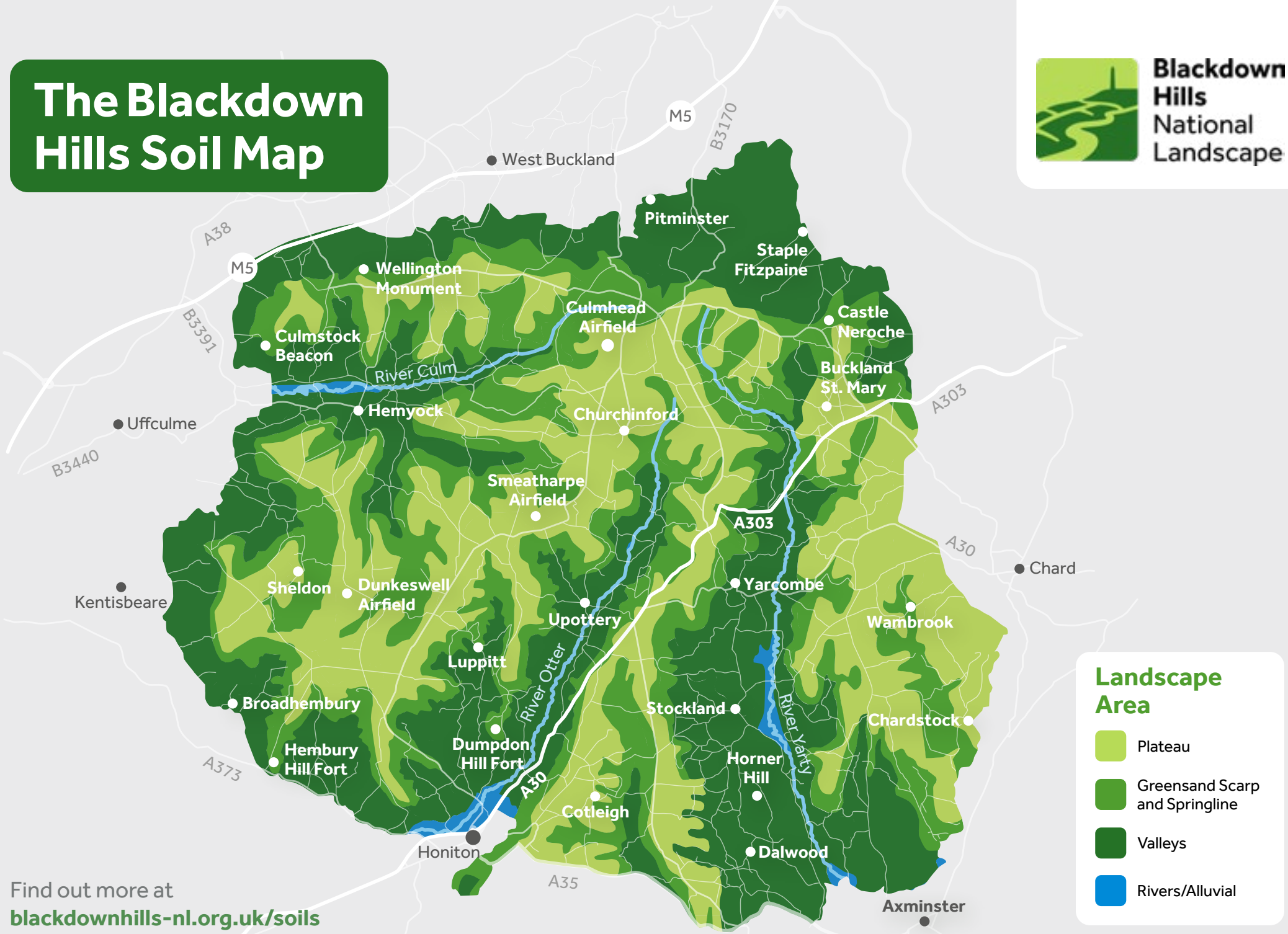

Landscape Area

- Plateau
- Greensand Scarp and Springline
- Valleys
- Rivers/Alluvial

Find out more at
blackdownhills-nl.org.uk/soils

The Blackdown Hills Soil Landscapes

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Hartridge and Luppitt valley

Plateau
Level land on the hilltop – ley, permanent pasture or arable. Soils are loamy or clayey, occasionally very stony, moderately to poorly drained, the more poorly drained soils have peaty surface horizons from former wetland and heathland.

Greensand scarp and springline
Free-draining sandy loam soils on the upper escarpment below the hilltop – permanent pasture, heath and woodland (peaty topped soils can be found under this vegetation). Very wet below the springline where greensand meets clay, with peaty soils supporting mire, rushy pasture or woodland.

Vales
Gentler slopes lower down the valley sides – more sheltered land capable of producing high yielding permanent pasture for dairying with some arable and woodland. Soils are loamy and clayey developed in different depths over red mudstone.

Flood plain
Zone of alluvial soils close to watercourses. Mosaic of loamy and clayey soils on the alluvium, with varying wetness. Mostly permanent pasture or woodland, opportunities to create riparian woodland.

Find out more at
blackdownhills-nl.org.uk/soils

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Know your soils

What are the common terms and properties of the main soil types?

Alluvial

Found only in river valleys and flood plains, typically brown or grey, with a clay topsoil affected by groundwater

Common Management Challenges
- Compaction
- Inundation

Peaty

Typically dark peaty top soil, with very high organic matter and usually wet, can be both poorly and freely draining

Common Management Challenges
- Loss of organic matter
- Erosion
- Compaction

Light

Typically brown, with a sandy topsoil and free draining, occasionally poorly drained at the base of slopes

Common Management Challenges
- Erosion (wind/rain)
- Low organic matter
- Droughty
- Steep slopes – high stone content

Medium

Typically brown or red, with either a clayey or silty top soil and moderately well drained, occasionally freely draining or poorly drained

Common Management Challenges
- Erosion
- Compaction
- Soil wetness – soil erosion on slopes

Heavy

Typically brown or grey, with a clayey topsoil and slow draining

Common Management Challenges
- Compaction
- Drainage

Find out more at **blackdownhills-nl.org.uk/soils**

Which soils do I have?

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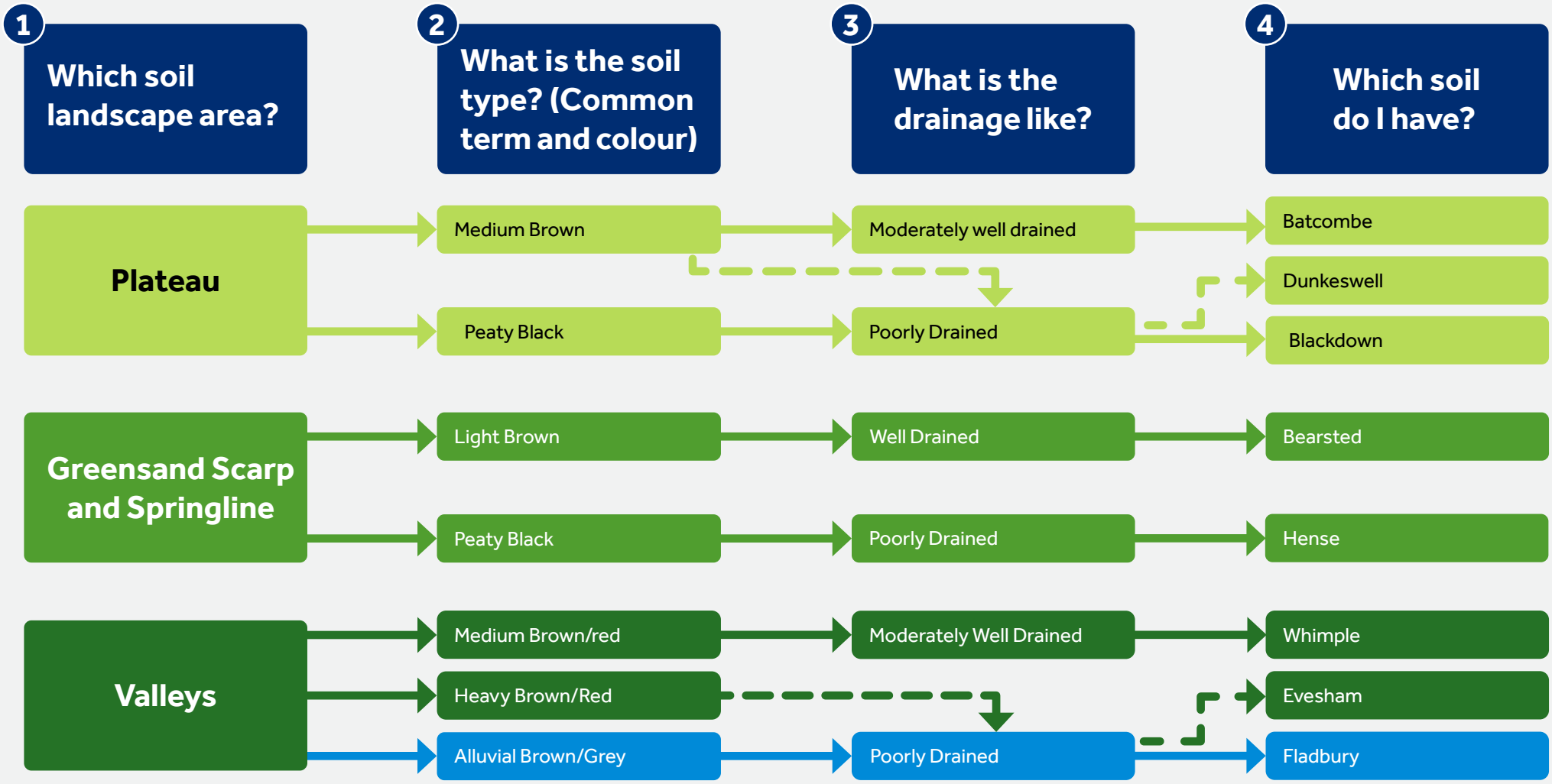

Find out more at
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The soil series and associations presented here are taken from the former Soil Survey of England and Wales and the National Soil Map.

Managing Soils For Carbon Key Points and Related Soils

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Soil type	Alluvial soils	Peaty soils	Light soils	Medium soils	Heavy soils
Key points	• Found in flood plains and frequently affected by groundwater, limiting their agricultural use to grassland. • The wetness of these soils means they need to be managed sensitively, and results suggest there is a considerable uplift in soil carbon under well managed or species rich grassland. • These soils can support riparian woodland which can hold high levels of soil carbon.	• Peaty soils store the greatest amount of carbon per ha. • These soils can create a significant uplift in carbon storage, and are a priority for habitat creation and restoration. • These soils are vulnerable to erosion and oxidation, potentially losing vital carbon stores, it is essential that they are managed sensitively.	• These soils are freely draining and are found on steeply sloping areas of the escarpment. • These soils have relatively limited agricultural capacity, largely grassland and woodland. • Under woodland or heathland these soils have dark peaty surface and can store large amounts of carbon.	• The relative dryness of these soils means they have a greater agricultural capacity. • These soils store a low amount of carbon per ha, but their large area in the landscape means they can contribute to a significant uplift in overall carbon storage. • Significant uplift in carbon when arable is converted to long term grassland.	• These soils are seasonally waterlogged and heavy, reducing their agricultural capacity largely to grassland. • The wetness of these soils means they need to be managed sensitively, and results suggest there is a considerable uplift in soil carbon under well managed or species rich grassland. • Significant uplift in carbon when arable is converted to long term grassland.
Soils	• **Fladbury soils**, found beside watercourses, affected by groundwater, wetness and weak bearing strength means they have limited agricultural capacity.	• **Blackdown soils**, found on the plateau, seasonally waterlogged and weak bearing strength, historically supported areas of wet heathland. **(Soil profile pages 1 and 2).** • **Hense soils**, found on the springline, almost permanently waterlogged, difficult to drain, associated with species-rich springline mire. **(Soil profile page 6).**	• **Bearsted soils**, found on the escarpment, can be very shallow and sandy, or stony, largely grassland and woodland. **(Soil profile page 5).**	• **Batcombe soils**, found on the plateau, driest and most productive of the plateau soils, second largest area in the landscape. **(Soil profile page 4).** • **Dunkeswell soils**, found on the plateau, poorly drained and requiring drainage to support grassland. **(Soil profile page 3).** • **Whimple soils**, found throughout the vales, driest and most productive of the vale soils, largest area in the landscape. **(Soil profile page 7).**	• **Evesham soils**, found in the vales, seasonally waterlogged, wetness and weak bearing strength means they have limited agricultural capacity.

Find out more at
blackdownhills-nl.org.uk/soils

Managing Alluvial Soils

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Positive management practices

Grazing densities should be matched to the capability of the land. Supplementary feeding should not be carried out on wet soils and flower-rich habitats.

Silage making and slurry spreading should be carried out in dry conditions to prevent soil compaction.

Grazing and vehicle use should be avoided in late autumn, winter and spring.

New scrapes can be created on alluvial soils to provide flood storage areas. Woody dams and ponds can slow down flood waters. These also capture sediment and nutrients running off the wider landscape.

In poorly drained backland, alluvial soils are most suited to grassland, hay meadows and wetland.

Negative management practices

The major limitation of these soils is poor drainage, with flooding occurring in winter, and occasionally summer.

Long periods of wetness from autumn to spring make these soils susceptible to compaction from traffic and poaching.

Spreading slurry in winter causes serious compaction when soils are wet leading to runoff from damaged fields.

Degraded structure and reduced porosity produces run-off causing soil erosion, flooding and sediment flowing into water courses.

Nutrient-rich sediment in run-off clogs gravels and prevents fish spawning and affects all wildlife.

Opportunities for carbon sequestration on Alluvial Soils

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Improved pasture on these soils should be managed sensitively by keeping stocking densities low and restricting grazing to the summer. Silage making and slurry spreading should be carried out in dry conditions to prevent soil compaction and run off.

Pasture on these soils should be managed sensitively to balance productivity with protecting carbon stores. Stocking levels should be matched to the capability of the land, and nutrient applications should be kept to a minimum.

Riparian woodland is scarce on these soils but planting woodland corridors beside water courses will increase carbon sequestration, create vital habitat for wildlife and capture sediment. Species should include Alder and Willow, and planted areas should be fenced to prevent tree damage by grazing stock.

These figures have been taken from the data collected on soils during the Blackdown Hills Soil Carbon Project. **Click to view the whole dataset.**

Managing Peaty Soils

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Positive management practices

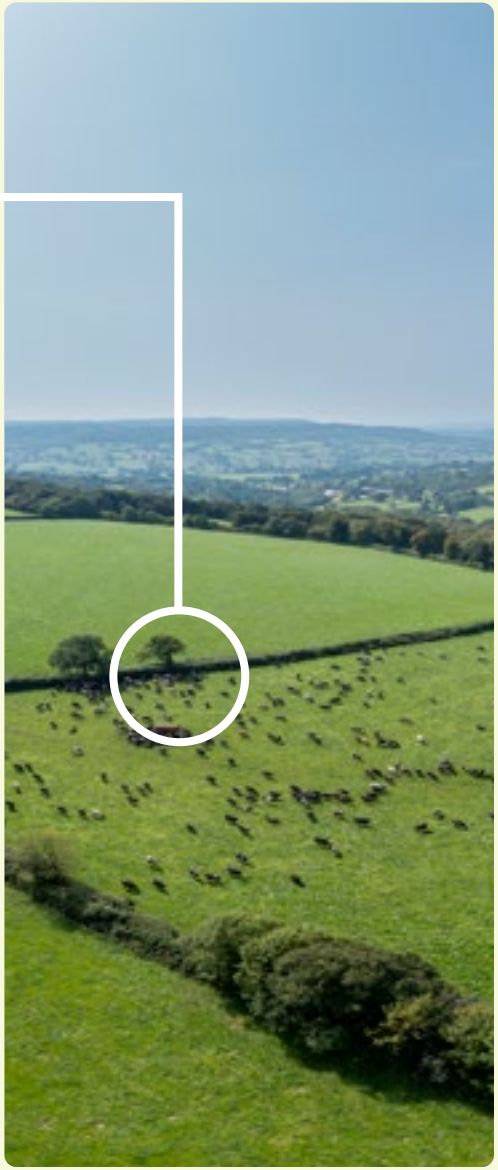
Grazing densities should be matched to the capability of the land.

Grazing and vehicle use should always be avoided in late Autumn, Winter and Spring.

If being used in arable or ley rotations, fields should be relatively level to reduce runoff, and soils should be loosened after harvest to remove compaction and reduce the risk of runoff.

Earth worms can help to restore soil structure, but their numbers are significantly reduced by the impacts of compaction and waterlogging.

Peaty soils are most suited to woodland, wetland and heathland.



Negative management practices

Grassland soils are easily compacted and poached by overgrazing, particularly in winter months, this can be equally as damaging as the use of heavy machinery.

Peaty soils have a weak structure and they are very easily degraded, reducing their productivity and carbon stocks.

When drained, over cultivated or grazed peaty soils shrink and crack leaving them at risk of wind and water erosion.

Repeated vehicle movements in fields, particularly in gateways or tracks, cause deep compaction, waterlogging and erosion which significantly reduces productivity.

When exposed via over cultivation or grazing they are at high risk of wastage due to oxidation.

In general, cultivation should be avoided on peaty soils as it allows the peat to waste away through oxidation.

Opportunities for carbon sequestration on Peaty Soils

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Management Intervention

Improved pasture on these soils should be managed sensitively to balance productivity with protecting carbon stores, by keeping stocking levels low and restricting grazing to the summer months. To increase soil carbon further, while enhancing conditions for wildlife, drained pasture on these soils can be restored to wet mire by blocking drains and avoiding any fertiliser use.

Wet, rough pasture on these soils which has not been drained or improved is the most wildlife-rich habitat on the Blackdown Hills, storing a huge quantity of carbon. It's imperative not to drain or improve such land any further, but this ground can still provide useful rough grazing, especially in drought summers. Stocking levels should be below 1 LU/ha, and stock kept off in winter/early spring.

Where these soils support willow and alder woodland they contain the largest amount of carbon. Sometimes there may be a conservation argument for clearing willow to restore flower- and insect-rich open mire, but otherwise wet woodland should be retained and looked after as a carbon sink and wildlife habitat. NB: planting trees on mire will not produce soil carbon levels like naturally-regenerated wet woodland. Never plant trees on mire.

These figures have been taken from the data collected on soils during the Blackdown Hills Soil Carbon Project. **Click to view the whole dataset.**

Managing Light Soils

Blackdown Hills National Landscape

Positive management practices

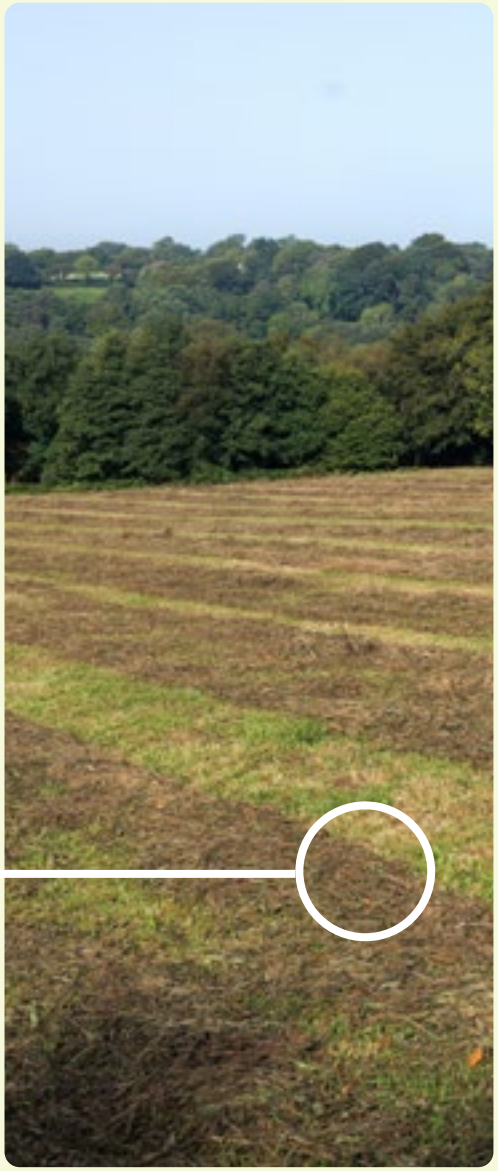
Grazing densities should be matched to the capability of the land.

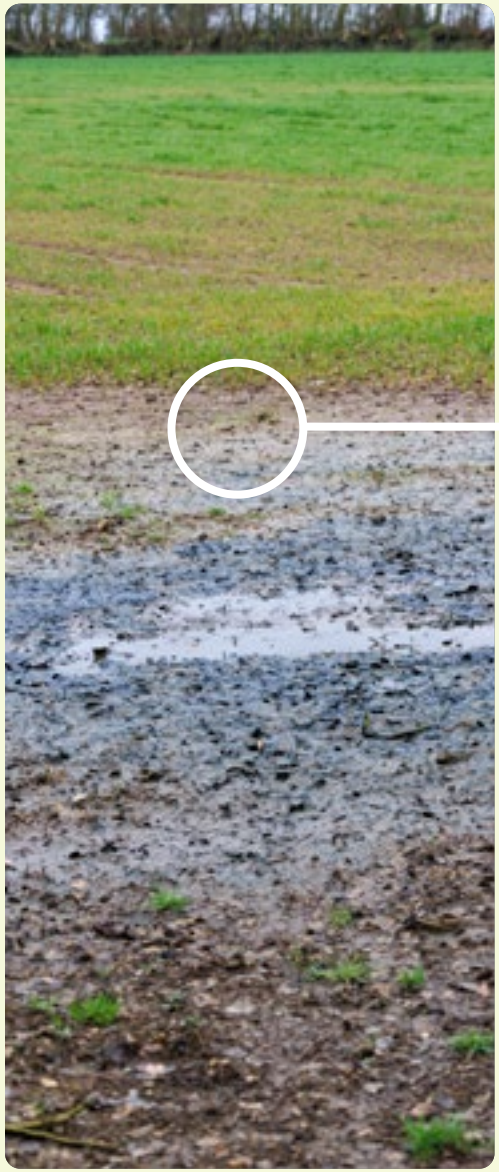
Grazing and vehicle use should be avoided in late autumn, winter and spring.

In arable or ley rotations soils should be loosened after harvest to remove compaction and reduce risk of run-off.

These soils are often shallow and stoney, making them unsuitable for cultivation. Arable and ley rotations should be focused on the foot slopes of the scarp which are not flushed by springs.

Silage making and slurry spreading should be carried out in dry conditions to prevent soil compaction.





Negative management practices

Although these sandy loam soils can readily absorb rainfall, they can create overland flow if managed badly.

Capped or compacted soils can generate serious run-off during heavy rainfall causing erosion, flooding and sediment pollution.

Vulnerable to compaction when moist. Avoid out-wintering stock or establishing seedbeds late in the year.

High risk of capping when bare soil surfaces become sealed by the battering action of heavy rainfall.

Spreading slurry in winter can cause serious compaction when soils are wet leading to run-off from damaged fields.

Opportunities for carbon sequestration on Light Soils

Blackdown Hills National Landscape

Management Intervention

These soils are frequently shallow and contain a high proportion of chert stones, making them unsuitable for cultivation. Management should be carried out sensitively with timely interventions, slurry spreading should be carried out in dry conditions to prevent soil compaction.

Pasture on these soils should be managed sensitively to balance productivity with protecting carbon stores. Grazing densities should be matched to the capability of the land, supplementary feeding should not be carried out on species rich grasslands.

Steep slopes on these freely draining soil are well suited to appropriate tree planting, and will significantly increase carbon sequestration whilst creating vital habitat for wildlife. Compacted soils should be loosened when planting to aid tree growth. Planted areas should be fenced to prevent tree damage by grazing stock.

Heathland vegetation is well suited to these freely draining soil and was once extensive on the escarpment. Heathland can be restored by controlling bracken and gorse, avoiding inputs, re-establishing heather by spreading cut material from existing heathland, and maintaining light grazing.

These figures have been taken from the data collected on soils during the Blackdown Hills Soil Carbon Project. **Click to view the whole dataset.**

Managing Medium Soils

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Positive management practices

Grazing densities should be matched to the capability of the land.

Silage making and slurry spreading should be carried out in dry conditions.

In arable or ley rotations soils should be loosened after harvest to remove compaction and reduce risk of run-off.

Very early maturing varieties of maize should be chosen to enable a September harvest to allow groundwork to be carried out in dry conditions.

Maize should not be grown on soils that lie wet for long periods.

Drainage maintenance allows better access to and more timely use of land, but wetland habitats should not be drained.

Negative management practices

High risk of compaction, poaching and waterlogging.

High risk of erosion and oxidation.

Travelling on these soils when wet will lead to compaction.

Spreading slurry in winter causes compaction when soils are wet leading to run-off.

Late drilling of crops after maize makes compaction worse. Poor crop cover through the winter causes run-off and pollution of watercourses.

Degraded soil structure and reduced porosity produces run-off and erosion. Sediment in run-off causes water pollution.

The poorly drained Dunkeswell soils are often wet for much of the year making them very vulnerable to compaction, waterlogging and erosion.

Opportunities for carbon sequestration on Medium Soils

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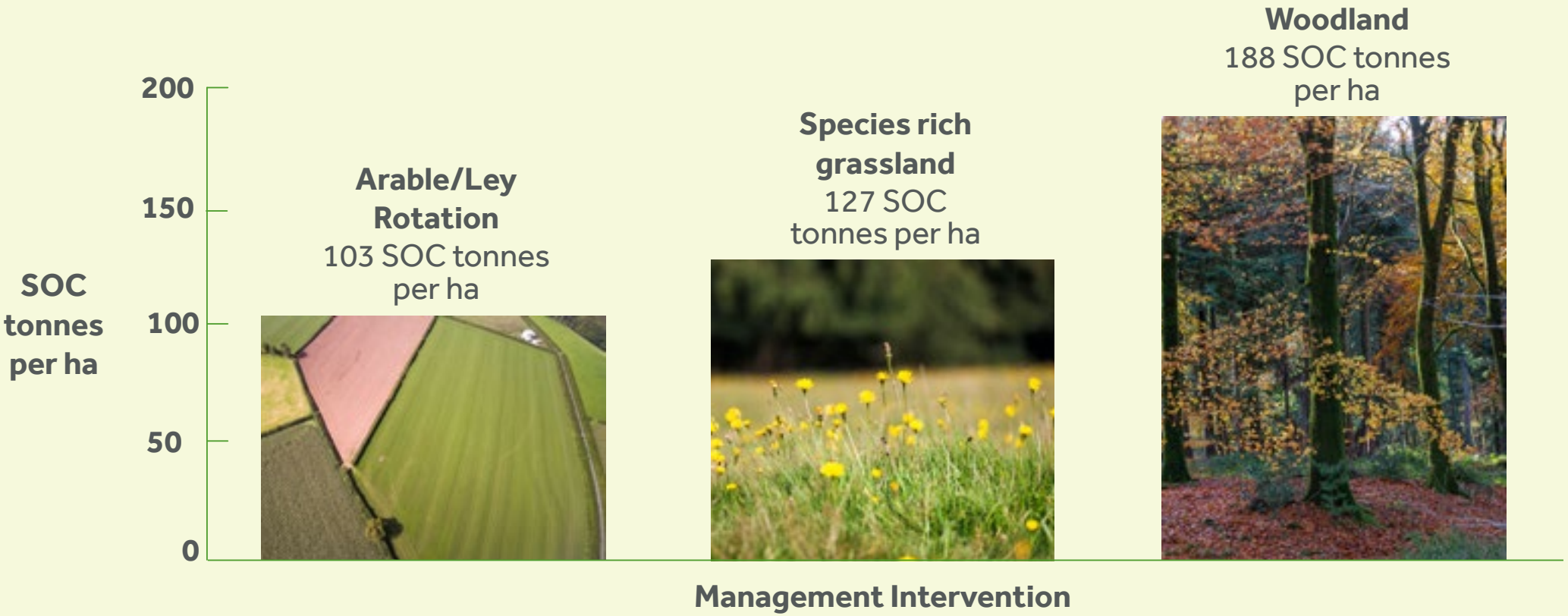

Arable crops are suited to the better drained land, cereal crops can be grown without causing damage to soil with careful and timely management. Silage making and slurry spreading should be carried out in dry conditions to prevent soil compaction. Consider using FYM and Bokashi – a fermented compost.

Pasture on these soils should be managed sensitively to balance productivity with protecting carbon stores. Stocking levels should be matched to the capability of the land.

Woodland is scarce on these soils but planting woodland on these soils will increase carbon sequestration whilst creating vital habitat for wildlife. Compacted soils should be loosened prior to planting to aid tree growth. Planted areas should be fenced to prevent tree damage by grazing stock.

These figures have been taken from the data collected on soils during the Blackdown Hills Soil Carbon Project. **Click to view the whole dataset.**

Managing Heavy Soils

Blackdown Hills National Landscape

Positive management practices

These slowly-draining soils are suited to livestock pasture but grazing densities should be matched to the capability of the land.

Grazing and vehicle use should be avoided in late autumn, winter and spring.

Slurry spreading should be carried out in dry conditions in summer to prevent soil compaction and support abundant earthworms.

Drainage measures such as subsoiling and moling above land drains covered by gravel help improve water movement through the soil and reduce risk of compaction.

Drainage maintenance allows better access to and a more timely use of land. Wetland habitats should not be drained.

Wetlands to store flood water can be constructed. This can slow down run-off, stabilise soils and improve water quality.

Negative management practices

Heavy soils are naturally surface-wet and do not absorb rainfall, especially in winter. They generate rapid run-off and erosion.

Cultivation of heavy soils in spring causes compaction because subsoils lie wet even when topsoils appear friable at the surface.

Soil compaction makes run-off worse. This can be the case even in permanent grassland whereby moderately permeable topsoils stop absorbing water.

Vulnerable to compaction when they are moist: avoid out-wintering stock or establishing seedbeds late in the year.

Maize should not be grown on heavy soils as they naturally lie wet for long periods and it is difficult to harvest without damaging the soil.

Spreading slurry in winter causes compaction when soils are wet leading to run-off from damaged fields.

Opportunities for carbon sequestration on Heavy Soils

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Arable and ley rotations on these soils must be managed sensitively to combat compaction and soil erosion. Manures, slurries, and cultivations should only be applied when the soil is suitably dry.

Pasture on these soils should be managed sensitively to balance productivity with protecting carbon stores and biodiversity. Stocking levels should be matched to the capability of the land, nutrient applications should be kept to a minimum and livestock should be turned out in spring when the soil is suitably dry.

These figures have been taken from the data collected on soils during the Blackdown Hills Soil Carbon Project. **Click to view the whole dataset.**

Soil profile 1

Blackdown

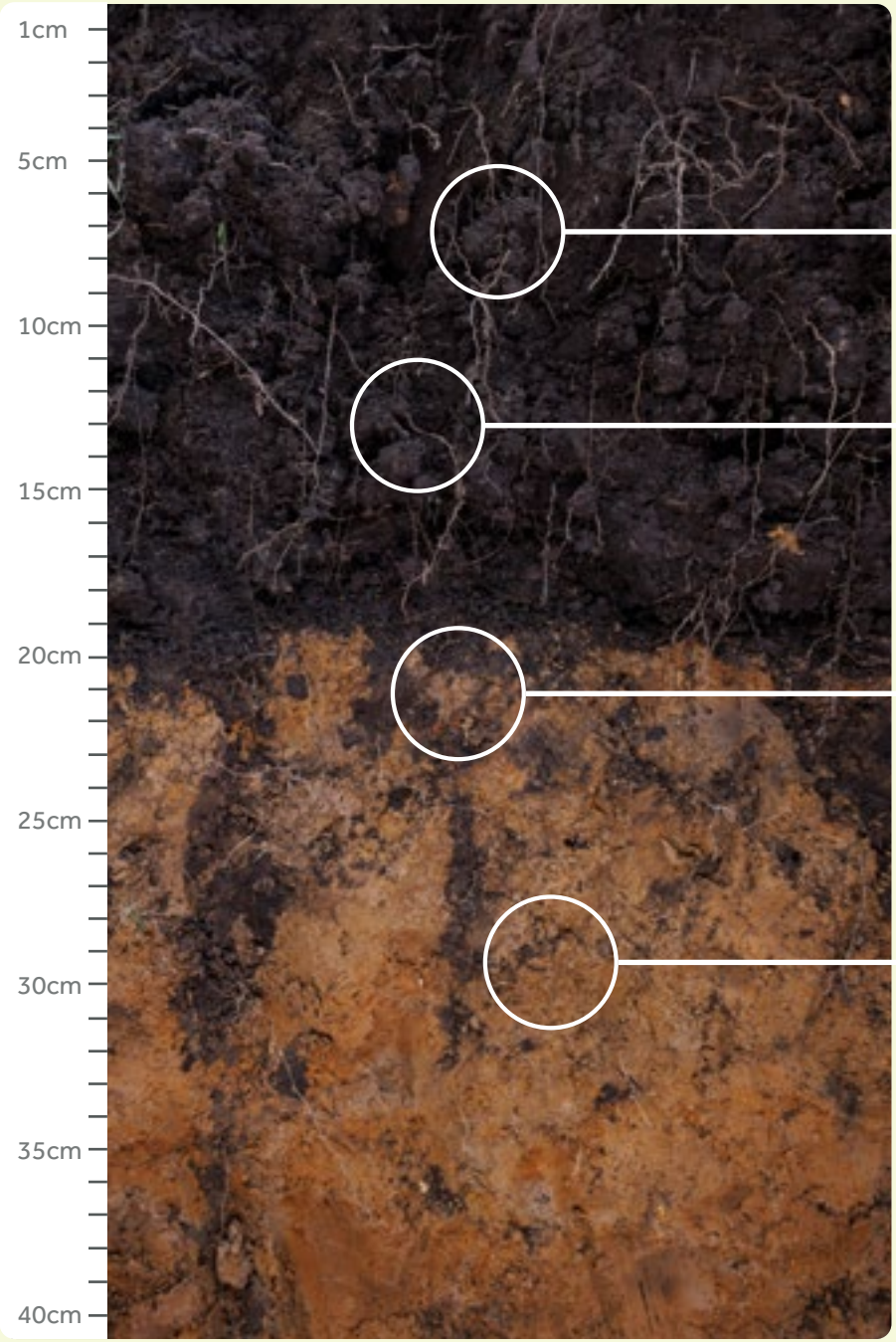
(Agricultural profile)

A poorly drained peaty soil, unique to the landscape of the Blackdown Hills and East Devon Plateau.

Characteristics and Land Use

- Seasonally waterlogged, slowly permeable soil with black peaty top soil.
- Wetness and weak bearing strength means it has limited agricultural capacity.
- Some areas of arable and grass.
- Often planted with conifer woodland.
- A few remnants of previously extensive heath and deciduous woodland.
- High potential to sequester carbon through reversion to wet heath or woodland.

192 average SOC tonnes per ha.
(taken from all existing data)



Blackdown Hills National Landscape

1 Distinctive black humose silty clay loam top soil.

2 Where the soil has been compacted or over cultivated it will have a weak blocky structure.

3 In soils that have been frequently cultivated, the strongly coloured clay subsoil approaches within 30 cm of the surface.

4 Mottled, strong brown clay subsoil with poor drainage.

Find out more at
blackdownhills-nl.org.uk/soils

Soil profile 1

Blackdown

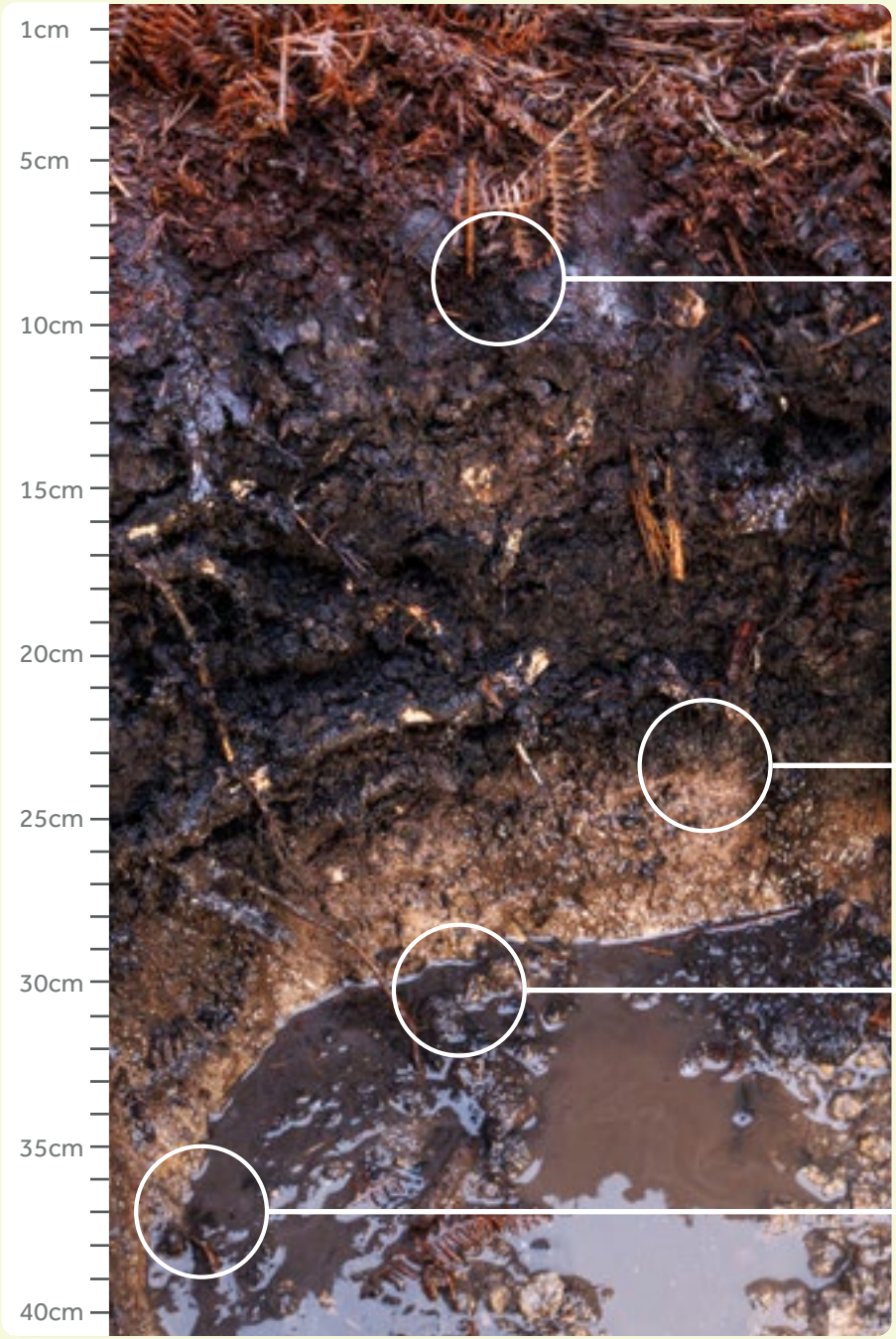
(Semi-natural profile)

A poorly drained peaty soil, unique to the landscape of the Blackdown Hills and East Devon Plateau.

Characteristics and Land Use

- Seasonally waterlogged, slowly permeable soil with black peaty top soil.
- Wetness and weak bearing strength means it has limited agricultural capacity.
- Some areas of arable and grass.
- Often planted with conifer woodland.
- A few remnants of previously extensive heath and deciduous woodland.

316 average SOC tonnes per ha.
(taken from all existing data)



1 Black peaty topsoil horizons occur in plantations and semi-natural sites, these will store much more SOC per ha.

2 Unlike agricultural profile, there is a light brownish grey silt loam horizon below the topsoil.

3 Usually waterlogged with surface water.

4 Subsoil is mottled, strong brown clay subsoil with poor drainage.

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Find out more at
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Soil profile 2

Dunkeswell

Poorly drained medium brown soil found across the plateau.

Characteristics and Land Use

- Poorly drained, slowly permeable soil, very similar to Blackdown soils but lacking the peaty surface horizon.
- Dairying on short term and permanent grassland, or cereals; some coniferous woodland and wet heath.
- Vulnerable to waterlogging, compaction, poaching and erosion.
- Very few areas of semi-natural vegetation remaining on these soils. Similarities to Blackdown soils means there is a high potential to sequester carbon through reversion to wet heath or woodland.

155 average SOC tonnes per ha.
(taken from all existing data)

Blackdown Hills National Landscape

1 Very dark greyish brown silt loam topsoil.

2 Soil structure can be damaged by over grazing, leading to weak or massive structure.

3 Stone content is variable, tending to increase near the plateau edge.

4 Light yellowish brown silt loam or brightly coloured silty clay subsoil.

Find out more at
blackdownhills-nl.org.uk/soils

Soil profile 3

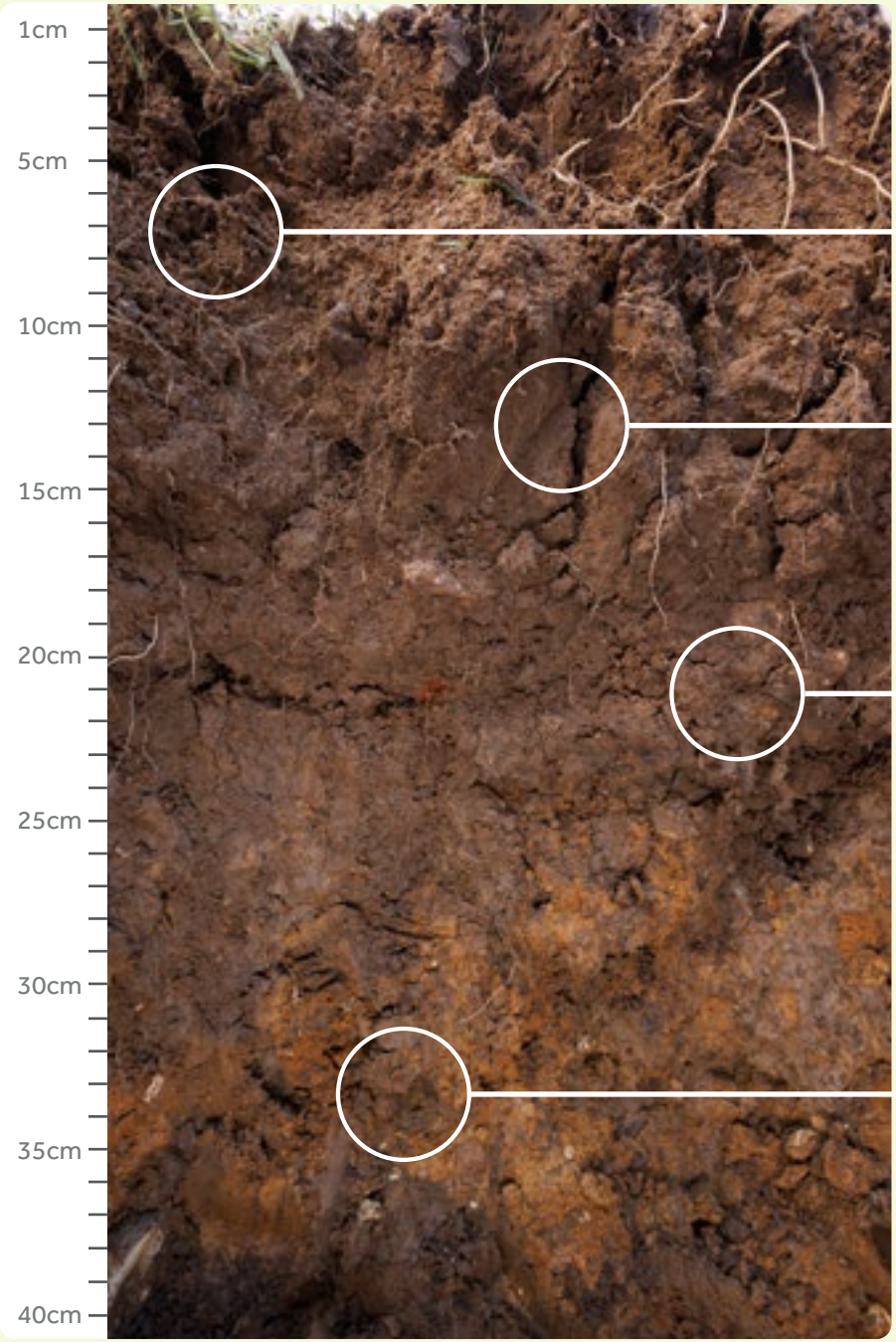
Batcombe Soil

A medium brown soil with the second largest area in the landscape, found across the plateau.

Characteristics and Land Use

- Moderately well drained, driest and most productive of the plateau soils.
- Cereals, permanent grassland and dairying.
- Weak soil structure makes it vulnerable to compaction, poaching and erosion.
- Very few areas of semi-natural vegetation remaining but woodland is common on these soils in other areas.

145 average SOC tonnes per ha.
(taken from all existing data)



Blackdown Hills National Landscape

1 Dark greyish brown silt loam top soil.

2 Soil structure can be damaged by over grazing, leading to weak or massive structure.

3 Stone content is variable, tending to increase near the plateau edge.

4 Yellowish brown silt loam or brightly coloured silty clay subsoil.

Find out more at
blackdownhills-nl.org.uk/soils

Soil profile 4

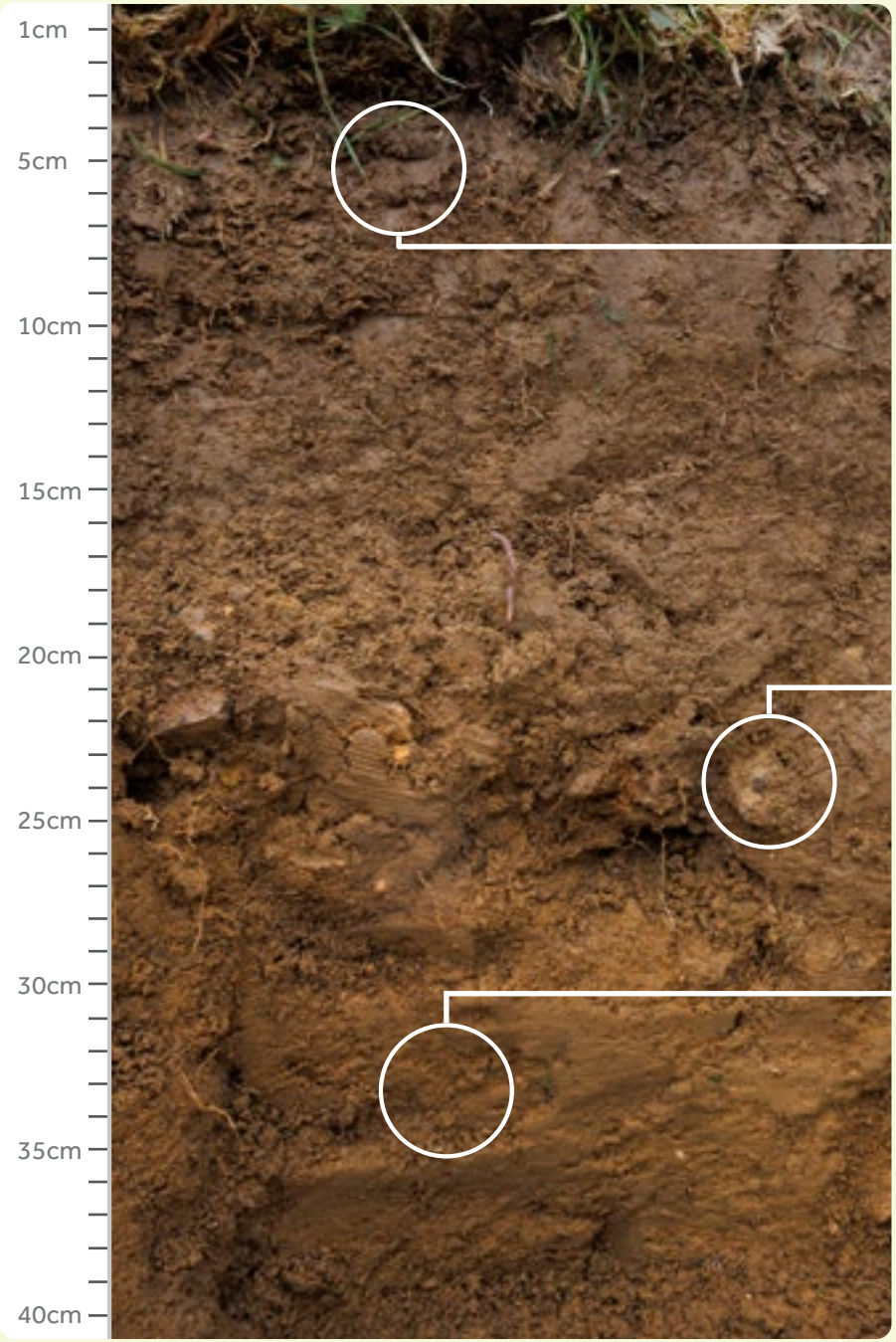
Bearsted Soil

A well-drained coarse/sandy loam soil found across the steep escarpment of the Blackdown Hills.

Characteristics and Land Use

- Freely draining, light soils with black humose top under semi-natural vegetation.
- Can be very shallow and sandy, or stony in places, meaning it has limited agricultural capacity.
- Large areas of grassland and small areas of arable.
- Some areas of woodland or heath on the steepest land.
- Under areas of historic dry heath there are humose black podzol soils, these have higher levels of soil carbon and have good potential for heathland restoration.

163 average SOC tonnes per ha.
(taken from all existing data)



Blackdown Hills National Landscape

1 Brown loamy top soil, can have a humose black top under woodland or heath.

2 Can be variably stony, stoniness is increased by over-cultivation and erosion.

3 Gradient and sandiness of the soil makes it vulnerable to erosion.

4 Brown or brownish yellow subsoil sandy subsoil.

Find out more at
blackdownhills-nl.org.uk/soils

Soil profile 5

Hense Soil

A humose or peaty soil, affected by ground water, found extensively across the springline of the landscape.

Characteristics and Land Use

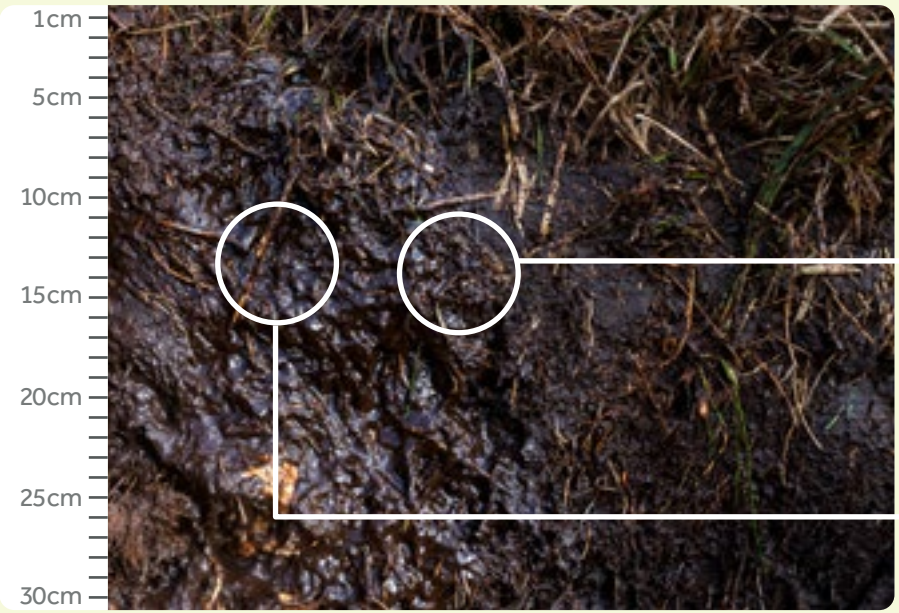
- Seasonally waterlogged by groundwater.
- Wetness and weak bearing strength means it has limited agricultural capacity.
- Where drained, used entirely as permanent pasture.
- Where undrained, supports wet heath, springline mire or wet woodland.
- Stores the most carbon per ha in the landscape.

813 average SOC tonnes per ha.
(taken from all existing data from semi-natural profiles)

180 average SOC tonnes per ha.
(taken from all existing data from agricultural profiles)

Find out more at
blackdownhills-nl.org.uk/soils

Semi-natural profile



1 Black or very dark grey fibrous peat.

2 Subsoil below 30-50 cm is greenish or bluish sand.

3 Usually waterlogged.

Agricultural profile

1 Drainage oxidises the peat over time, leaving a dark grey, or greyish brown silt loam topsoil.

2 Massive structure when mismanaged.

3 Variably stony.

Blackdown Hills National Landscape

Soil profile 6

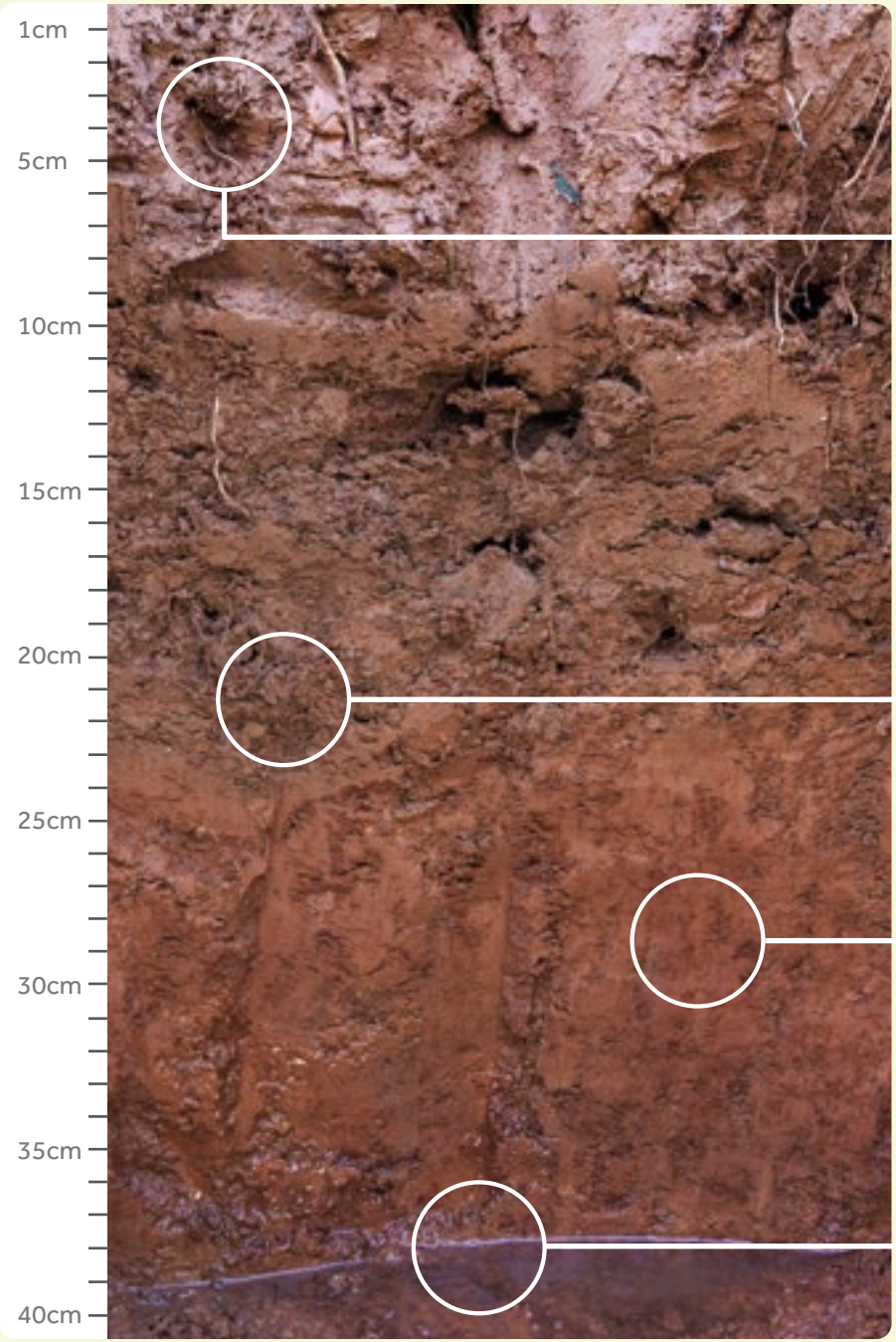
Whimple Soil

A medium reddish-brown soil with the largest area in the landscape and found across the vales.

Characteristics and Land Use

- Moderately well drained, driest and most productive of the vale soils.
- Almost entirely in agricultural use, has good nutrient reserves from underlying mudstone, mostly used for dairying with some areas of arable and ley.
- Can lie wet for long periods during winter, and so are vulnerable to compaction in spring when they have not dried out.
- Very few areas of semi-natural vegetation, but significant increases in soil carbon found under species rich grassland.

133 average SOC tonnes per ha.
(taken from all existing data)



Blackdown Hills National Landscape

1 Brown, dark brown or reddish-brown silt loam top soil.

2 Permeability is poor when structure is damaged by over grazing or cultivation, leading to waterlogging.

3 Reddish brown silt loam or reddish brown silty clay subsoil depending on intensity of management.

4 Limited permeability through the red marl clay.

Find out more at
blackdownhills-nl.org.uk/soils

Soil profile 7

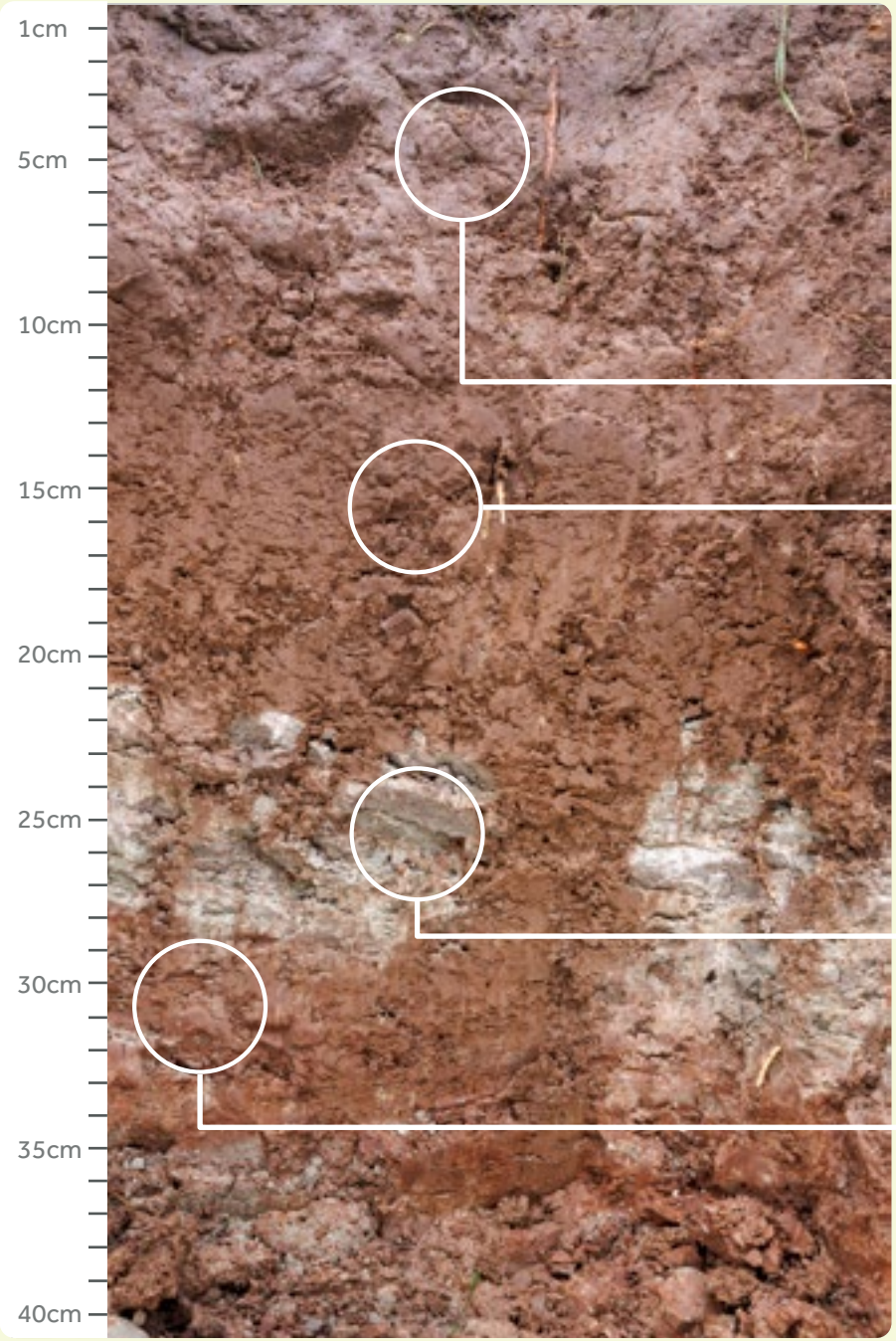
Evesham Soil

A poorly drained fine loamy soil found in the vales to the north and east of the landscape.

Characteristics and Land Use

- Seasonally waterlogged due to heavy clay subsoil.
- Wetness and weak bearing strength means it has limited agricultural capacity.
- Calcareous subsoil.
- Predominantly permanent pasture, with some areas of arable.
- Very few areas of semi-natural vegetation, but significant increases in soil carbon found under species rich grassland.

159 average SOC tonnes per ha.
(taken from all existing data)



1 Dark reddish brown, stoneless clay, topsoil

2 Top soil should be fine and loamy but when overcultivated it will be greyer and muddier.

3 Where the soil has been compacted or over cultivated it will have a weak blocky structure.

4 Clear calcareous strip of mudstone.

5 Light olive brown, stoneless clay subsoil.

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Find out more at
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Soil profile 8

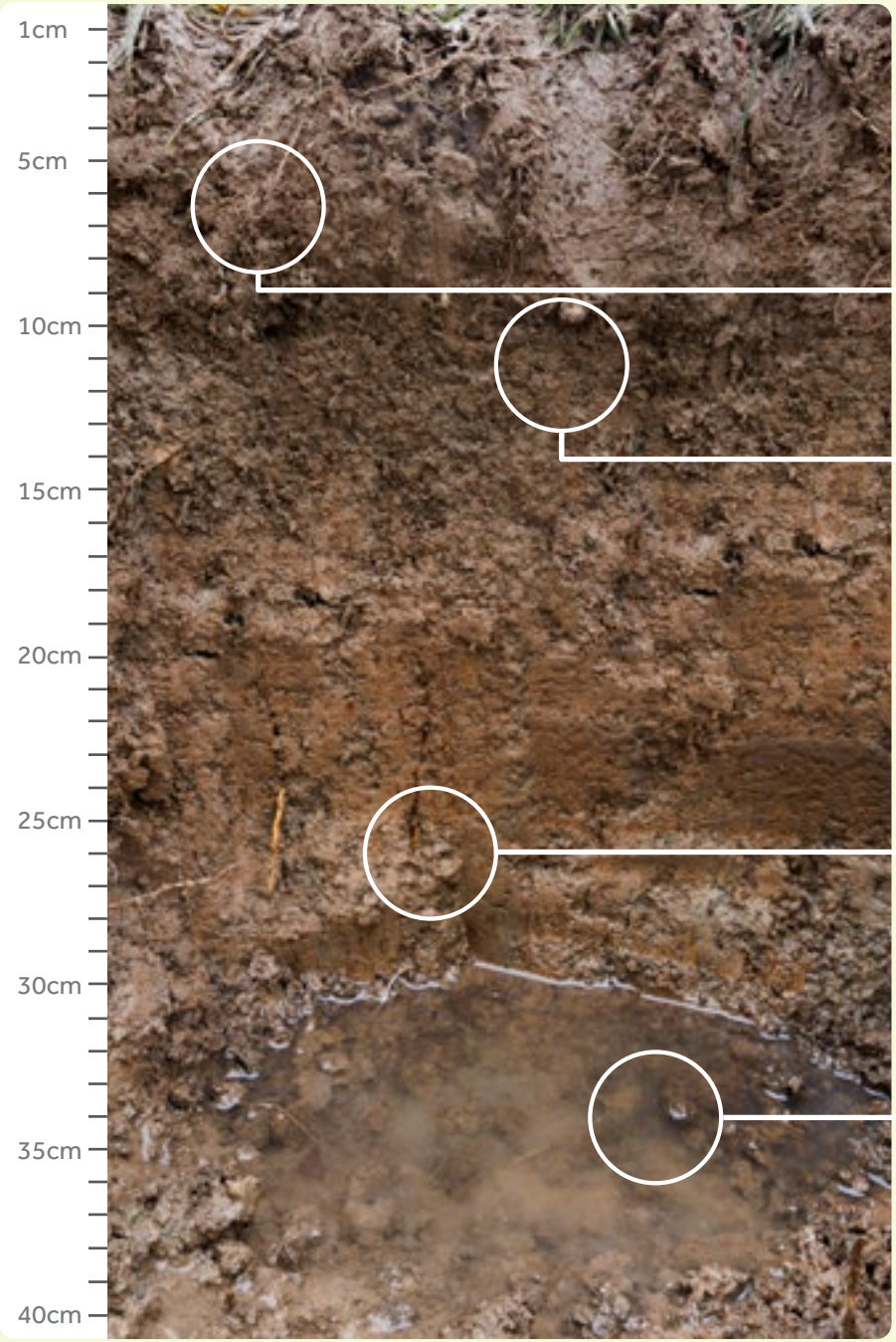
Fladbury Soil

An alluvial gley soil found throughout the flood plains adjacent to the rivers Culm, Otter and Yarty.

Characteristics and Land Use

- Slowly permeable, often seasonally waterlogged by ground water.
- The key risk is periods of inundation during winter, this limits agricultural capacity due to the wetness of the soil and risk of poaching.
- Rushes are common on the wettest sites.
- Large areas of permanent pasture or long-term leys.
- Being on the flood plain, it could support riparian woodland or wet grassland.

152 average SOC tonnes per ha.
(taken from all existing data)



1 Dark greyish brown, mottled, stoneless clay loam.

2 In some areas the top soil is distinctly grey.

3 Risk of compaction and poaching if over grazed or used over winter.

4 Greyish brown or grey clay subsoil with brightly coloured ochreous mottles.

5 Affected by a shallow groundwater table.

Blackdown Hills National Landscape

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