

Derbyshire Natural Capital Strategy – Appendix 6

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Appendix 6 – Natural Capital sub regional accounts

Overview

The appendix presents the Natural Capital Asset Accounts for the sub boundaries within Derbyshire County listed below. The sub boundary accounts are a sub-division of the Derbyshire account, applying the same methods where possible. Refer to the main report for more information on the methodology and the overall Derbyshire Account.

- Administrative boundaries:
 - o Amber Valley
 - o Bolsover
 - o Chesterfield
 - o Derbyshire Dales
 - o Erewash
 - o High Peak
 - o Northeast Derbyshire
 - o South Derbyshire
 - o Derby City
- Natural Character Areas:
 - o Dark Peak
 - o White Peak
 - o Derbyshire Peak Fringe and Lower Derwent
 - o Nottinghamshire, Derbyshire and Yorkshire Coalfield
 - o Southern Magnesian Limestone
 - o Needwood and South Derbyshire Claylands
 - o Trent Valley Washlands
 - o Melbourne Parklands
 - o Leicestershire and South Derbyshire Coalfield
 - o Mease/Sence Lowlands
- Peak District National Park

Method

The approach to developing the Derbyshire baseline account is based on the Corporate Natural Capital Account (CNCA) framework for the Natural Capital Committee in 2015 (eftec, RSPB and PWC, 2015). This framework is also the basis of BSI:8632 on Natural Capital Accounting for Organizations. The methods used to estimate physical and monetary flows of ecosystem service benefits within the account are consistent with



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government guidance and Defra's 'Enabling a Natural Capital Approach' (ENCA) (Defra, 2020a).

Table 1 summarises the coverage of ecosystem services across different services the natural capital asset accounts. Some services not quantified and valued at finer scales due to data limitations.

Key	●	◐	○	
Description	Material benefit; data received; analysis completed	Material benefit; Data received; analysis incomplete or not reflective of all benefits	Material benefit; data not received; analysis incomplete	Not assessed



Table 1: Scope of the accounts

		Derbyshire County	Administrative boundaries									Peak District National Park
ES Category	Private & Public Benefits	Derbyshire County	Amber Valley	Bolsover	Chesterfield	Derbyshire Dales	Erewash	High Peak	Northeast Derbyshire	South Derbyshire	Derby City	Peak District National Park
Provisioning services	Agricultural output	●	●	●	●	●	●	●	●	●	●	●
	Timber	●	●	●	●	●	●	●	●	●	●	●
	Water supply	●	●	●	●	●	●	●	●	●	●	
	Renewable energy	●	●	●	●	●	●	●	●	●	●	
	Minerals	●	●	●	●	●	●	●	●	●	●	●
Regulating services	Climate regulation	●	●	●	●	●	●	●	●	●	●	●
	Air quality regulation	●	●	●	●	●	●	●	●	●	●	●
Cultural services	Recreation	●	●	●	●	●	●	●	●	●	●	○
	Physical health	●	●	●	●	●	●	●	●	●	●	○
	Tourism	●	●	●	●	●	●	●	●	●	●	◐
	Education	◐	○	○	○	○	○	○	○	◐	○	◐
	Volunteering	◐	○	○	◐	○	○	○	○	◐	◐	◐
Bundled services	Water quality	●	●	●	●	●	●	●	●	●	●	○



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		National Character Areas									
ES Category	Private & Public Benefits	Dark Peak	White Peak	Derbyshire Peak Fringe and Lower Derwent	Nottinghamshire, Derbyshire and Yorkshire Coalfield	Southern Magesian Limestone	Needwood and South Derbyshire Claylands	Trent Valley Washlands	Melbourne Parklands	Leicestershire and South Derbyshire Coalfield	Mease/Sence Lowlands
Provisioning services	Agricultural output	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
	Timber	●	●	●	●	●	●	●	●	●	●
	Water supply										
	Renewable energy										
	Minerals	●	●	●	●	●	●	●	●	●	●
Regulating services	Climate regulation	●	●	●	●	●	●	●	●	●	●
	Air quality regulation	●	●	●	●	●	●	●	●	●	●
Cultural services	Recreation	●	●	●	●	●	●	●	●	●	●
	Physical health	●	●	●	●	●	●	●	●	●	●
	Tourism										
	Education										
	Volunteering										
Bundled services	Water quality	○	○	○	○	○	○	○	○	○	○



Amber Valley Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Amber Valley.

Asset Register

Figure 1 and Table 1 summarise the asset extent account for Amber Valley by UK broad habitat.

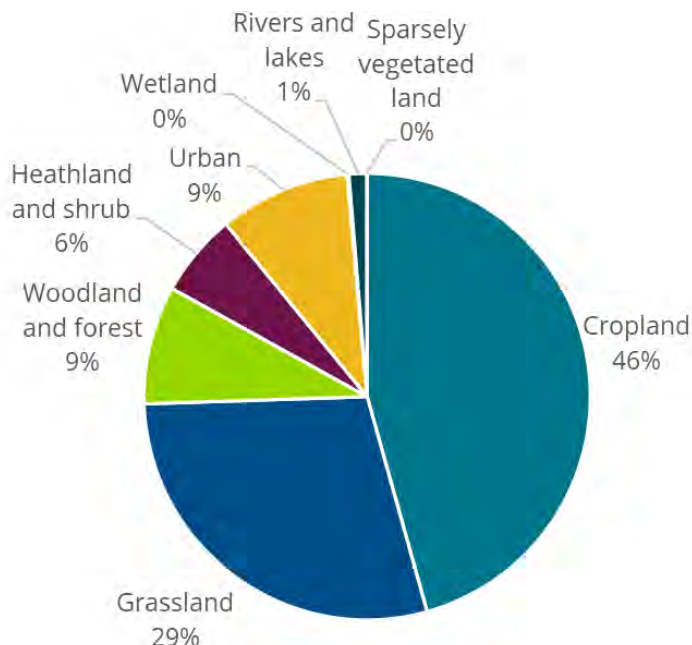


Figure 1: Amber Valley Extent

Table 1: Amber Valley extent (ha)

Habitat	Amber Valley area (ha)
Cropland	12,100
Grassland	7,700
Woodland and forest	2,300
Heathland and shrub	1,600
Urban	2,500
Wetland	30
Rivers and lakes	300
Sparsely vegetated land	4
Total	26,500

Table 2 presents the terrestrial designations and connectivity indicators within Amber Valley and the condition data on the water environment including Water Framework Directive status is presented in



Table 3.

Table 2: Condition indicators in Amber Valley

Indicator	Amber Valley		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	110	31%	16%
Unfavourable recovering condition	240	67%	81%
Unfavourable declining condition	3	1%	1%
Unfavourable no change	6	2%	2%
Part destroyed	0	0%	0.004%
Destroyed	1	0.2%	0.02%
Total	360	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	370	1%	1%
Local Nature Reserves	49	0.2%	0.3%
National Nature Reserves	0	0%	1%
Special Areas of Conservation	0	0%	10%
Special Protection Areas	0	0%	10%
Ancient Woodland	1,000	4%	3%
Green Belt	0	0%	0.1%
Parks and Gardens	410	2%	1%
Flood risk	Areas (hectares)		Areas (hectares)
Flood zone 2	1,600	6%	19,000
Flood zone 3	1,100	4%	15,000
Accessibility	Areas (hectares)		Areas (hectares)
Area of greenspace (ha)	1,300		14,000
Length of footpaths (km)	430,000		3,800,000
Connectivity	Areas (hectares)	% of total habitat area	% of total habitat area
Grassland			
Core network	180	1%	5%
Stepping stone	4	0.01%	0.1%
Remaining network	6,700	25%	42%
Outside network	20,000	74%	54%
Heathland			
Core network	4	0.02%	5%
Stepping stone	-	0%	0.02%
Remaining network	660	2%	18%
Outside network	26,000	97%	77%
Wetland			
Core network	270	1%	6%
Stepping stone	140	1%	0.4%
Remaining network	7,800	29%	34%
Outside network	18,000	69%	60%
Woodland			
Core network	1,500	6%	5%
Stepping stone	600	2%	2%
Remaining network	15,000	58%	48%
Outside network	9,200	35%	45%



Table 3: Water Framework Directive waterbodies in Amber Valley

Water Framework Directive status	Amber Valley		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	14	29%	7%
Moderate	5	10%	12%
Good	24	50%	35%
High	5	10%	45%
Total	48	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	87	100%	44%
Good	0	0%	35%
High	0	0%	18%
Total	87	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 4. The estimated annual physical and monetary values are summarised in Table 5.

Table 4: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Amber Valley. The total annual net value of ecosystem benefits and services produced within Amber Valley is £279 in 2021 prices (Table 5). Key benefit values include carbon sequestration by habitats (£213 million, 76% of total benefits), water supply (£42 million, 15% of total benefits) and recreation (£19 million, 7% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£6 million) and livestock (-£22 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Table 5: Amber Valley Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	20,947	H	Gross margin of arable crop production	2	H
	Livestock production (heads/yr)	43,953	H	Gross margin of livestock production	9	H
Timber	Volume of softwood removals (m3/yr)	1,197	M	Value of softwood removals	0.04	M
Water supply	Surface water abstraction for public water supply (m3/yr)	184,353,326	H	Resource rent value of surface water abstractions for public water supply	42	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	405,681	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	1	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	15,218	M	Resource rent value of renewable energy	0.3	M
Minerals	Volume of minerals extracted (tonnes/yr)	70,000	H	Ex-works value of mineral production	4	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	870,734	M	Value of CO2e sequestered in habitats	213	M
	CO2e emitted by habitats (tCO2e/yr)	(24,903)	M	Value of CO2e emitted by habitats	(6)	M
	CO2e emitted by livestock (tCO2e/yr)	(90,917)	M	Value of CO2e emitted by livestock	(22)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	15,037	H	Value of PM2.5 removal by woodland	2	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	5,522,855	M	Adult recreation welfare value (under 3 hours)	19	M
Physical health	Number of active visits (no. active visits/yr)	2,844,270	M	Avoided treatment medical costs	10	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	266,800	L	Domestic tourism expenditure attributed to natural capital	4	L
Water quality	Length of WFD rivers (km)	48	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	87	H	Welfare of avoiding deterioration in lakes	1	M
				Total value	279	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	358	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 6 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism equating to around £8.1 billion in present value terms. A further £1.5 billion accrues to businesses through agriculture, timber, water supply, renewable energy and minerals. Overall, Amber Valley's natural capital assets have an asset value of £9.6 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Amber Valley accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 6.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 6: Amber Valley Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	54	-	54
	Gross margin of livestock production	233	-	233
Timber	Value of softwood removals	1	-	1
Water supply	Resource rent value of Surface water abstractions for public water supply	1,112	-	1,112
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	24	-	24
Renewable energy	Resource rent value of renewable energy	7	-	7
Minerals	Ex-works value of mineral production	104	-	104
Carbon sequestration	Value of CO2e sequestered in habitats	-	7,816	7,816
	Value of CO2e emitted by habitats	-	(224)	(224)
	Value of CO2e emitted by livestock	-	(584)	(584)
Air quality regulation	Value of PM2.5 removal by woodland	-	48	48
Recreation	Adult recreation welfare value (under 3 hours)	-	516	516
Physical health	Avoided treatment medical costs	-	391	391
Tourism	Domestic tourism expenditure attributed to NC	-	96	96
Water quality	Welfare of avoiding deterioration in rivers	-	24	24
	Welfare of avoiding deterioration in lakes	-	18	18
Total gross asset value		1,532	8,088	9,620
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 358 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				



Bolsover Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Bolsover.

Asset Register

Figure 2 and Table 7 summarise the asset extent account for Bolsover by UK broad habitat.

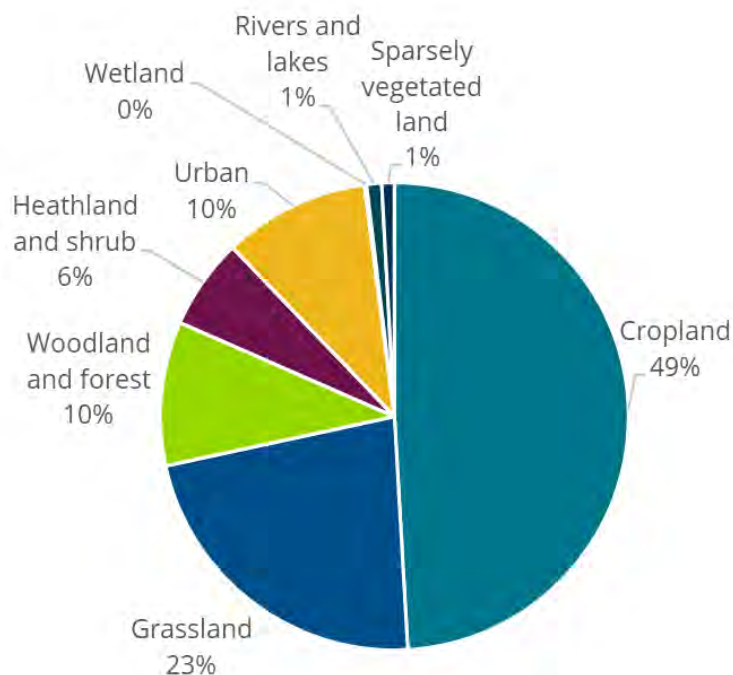


Figure 2: Bolsover Extent

Table 7: Bolsover extent (ha)

Habitat	Bolsover area (ha)
Cropland	7,900
Grassland	3,600
Woodland and forest	1,600
Heathland and shrub	1,000
Urban	1,600
Wetland	20
Rivers and lakes	200
Sparsely vegetated land	100
Total	16,000

Table 8 presents the terrestrial designations and connectivity indicators within Bolsover and the condition data on the water environment including Water Framework Directive status is presented in



Table 9.

Table 8: Condition indicators in Bolsover

Indicator	Bolsover		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	24	63%	16%
Unfavourable recovering condition	11	29%	81%
Unfavourable declining condition	3	8%	1%
Unfavourable no change	0	0%	2%
Part destroyed	0	0%	0.004%
Destroyed	0	0%	0.02%
Total	38	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	260	2%	1%
Local Nature Reserves	96	1%	0.3%
National Nature Reserves	0	0%	1%
Special Areas of Conservation	0	0%	10%
Special Protection Areas	0	0%	10%
Ancient Woodland	1,300	8%	3%
Green Belt	0	0%	0.1%
Parks and Gardens	430	3%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	250	2%	19,000
Flood zone 3	180	1%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	1,300		14,000
Length of footpaths (km)	180,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	150	1%	5%
Stepping stone	6	0.04%	0.1%
Remaining network	3,800	24%	42%
Outside network	12,000	75%	54%
Heathland			
Core network	-		5%
Stepping stone	-		0.02%
Remaining network	-		18%
Outside network	-		77%
Wetland			
Core network	150	1%	6%
Stepping stone	51	0.3%	0.4%
Remaining network	4,100	26%	34%
Outside network	12,000	73%	60%
Woodland			
Core network	1,100	7%	5%
Stepping stone	260	2%	2%
Remaining network	9,500	59%	48%
Outside network	5,100	32%	45%

Table 9: Water Framework Directive waterbodies in Bolsover

Water Framework Directive status	Bolsover		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	0	0%	7%
Moderate	16	31%	12%
Good	15	29%	35%



High	20	39%	45%
Total	51	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 10. The estimated annual physical and monetary values are summarised in Table 11.

Table 10: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Bolsover. The total annual net value of ecosystem benefits and services produced within Bolsover is £129 in 2021 prices (Table 11). Key benefit values include carbon sequestration by habitats (£98 million, 76% of total benefits), mineral production (£16 million, 12% of total benefits) and recreation (£10 million, 8% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£11 million) and livestock (-£3 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low



Table 11: Bolsover Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	35,048	H	Gross margin of arable crop production	3	H
	Livestock production (heads/yr)	4,196	H	Gross margin of livestock production	2	H
Timber	Volume of softwood removals (m3/yr)	795	M	Value of softwood removals	0.03	M
Water supply	Surface water abstraction for public water supply (m3/yr)	17,464	H	Resource rent value of surface water abstractions for public water supply	0.004	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	240,322	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	1	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	3,776	M	Resource rent value of renewable energy	0.1	M
Minerals	Volume of minerals extracted (tonnes/yr)	1,200,000	H	Ex-works value of mineral production	16	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	400,464	M	Value of CO2e sequestered in habitats	98	M
	CO2e emitted by habitats (tCO2e/yr)	(43,015)	M	Value of CO2e emitted by habitats	(11)	M
	CO2e emitted by livestock (tCO2e/yr)	(10,318)	M	Value of CO2e emitted by livestock	(3)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	10,400	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	3,248,064	M	Adult recreation welfare value (under 3 hours)	10	M
Physical health	Number of active visits (no. active visits/yr)	1,672,753	M	Avoided treatment medical costs	6	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	207,333	L	Domestic tourism expenditure attributed to natural capital	4	L
Water quality	Length of WFD rivers (km)	51	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	-	-	Welfare of avoiding deterioration in lakes	-	-
Total value					129	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	39	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 12 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £3.8 billion in present value terms. A further £0.5 billion accrues to businesses through agriculture, timber, water supply, renewable energy and minerals. Overall, Bolsover's natural capital assets have an asset value of £4.3 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Bolsover accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 12.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 12: Bolsover Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	90	-	90
	Gross margin of livestock production	44	-	44
Timber	Value of softwood removals	1	-	1
Water supply	Resource rent value of Surface water abstractions for public water supply	0.1	-	0.1
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	14	-	14
Renewable energy	Resource rent value of renewable energy	2	-	2
Minerals	Ex-works value of mineral production	408	-	408
Carbon sequestration	Value of CO2e sequestered in habitats	-	3,594	3,594
	Value of CO2e emitted by habitats	-	(386)	(386)
	Value of CO2e emitted by livestock	-	(66)	(66)
Air quality regulation	Value of PM2.5 removal by woodland	-	33	33
Recreation	Adult recreation welfare value (under 3 hours)	-	274	274
Physical health	Avoided treatment medical costs	-	230	230
Tourism	Domestic tourism expenditure attributed to NC	-	116	116
Water quality	Welfare of avoiding deterioration in rivers	-	18	18
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		559	3,808	4,366
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 39 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				



Chesterfield Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Chesterfield.

Asset Register

Figure 3 and Table 13 summarise the asset extent account for Chesterfield by UK broad habitat.

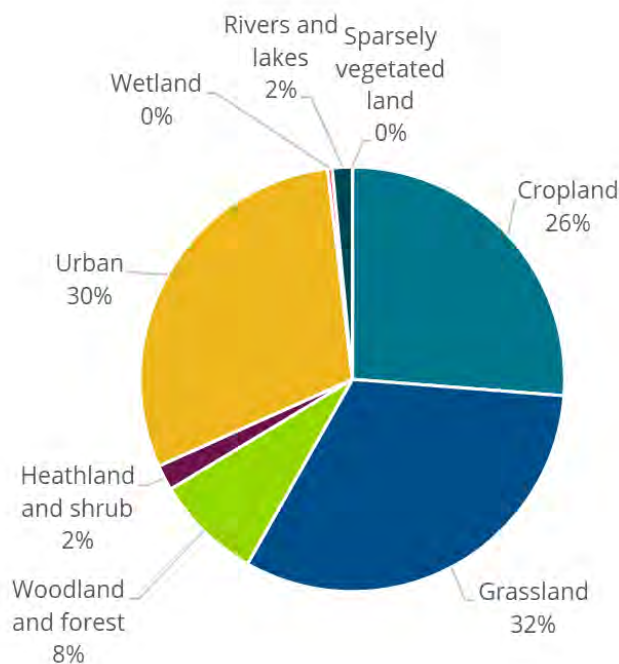


Figure 3: Chesterfield Extent

Table 13: Chesterfield extent (ha)

Habitat	Chesterfield area (ha)
Cropland	1,700
Grassland	2,100
Woodland and forest	500
Heathland and shrub	100
Urban	2,000
Wetland	20
Rivers and lakes	100
Sparsely vegetated land	-
Total	6,500

Table 14 presents the terrestrial designations and connectivity indicators within Chesterfield and the condition data on the water environment including Water Framework Directive status is presented in Table 15.

Table 14: Condition indicators in Chesterfield

Indicator	Chesterfield		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	-	-	16%
Unfavourable recovering condition	-	-	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	-	-	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	130	2%	1%
Local Nature Reserves	56	1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	140	2%	3%
Green Belt	-	-	0.1%
Parks and Gardens	9	0.1%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	680	10%	19,000
Flood zone 3	360	5%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	490		14,000
Length of footpaths (km)	55,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	100	2%	5%
Stepping stone	-	-	0.1%
Remaining network	1,500	22%	42%
Outside network	5,000	76%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	73	1%	18%
Outside network	6,500	99%	77%
Wetland			
Core network	88	1%	6%
Stepping stone	36	1%	0.4%
Remaining network	2,400	36%	34%
Outside network	4,100	62%	60%
Woodland			
Core network	290	4%	5%
Stepping stone	150	2%	2%
Remaining network	2,200	34%	48%
Outside network	4,000	60%	45%

Table 15: Water Framework Directive waterbodies in Chesterfield

Water Framework Directive status	Chesterfield		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	2	5%	7%
Moderate	22	55%	12%



Good	6	15%	35%
High	10	25%	45%
Total	40	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 16. The estimated annual physical and monetary values are summarised in Table 17.

Table 16: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Chesterfield. The total annual net value of ecosystem benefits and services produced within Chesterfield is £72 in 2021 prices (Table 17). Key benefit values include carbon sequestration by habitats (£43 million, 60% of total benefits), recreation (£12 million, 17% of total benefits) and tourism (£10 million, 14% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£2 million) and livestock (-£0.5 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Table 17: Chesterfield Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	6,824	H	Gross margin of arable crop production	1	H
	Livestock production (heads/yr)	846	H	Gross margin of livestock production	0.2	H
Timber	Volume of softwood removals (m3/yr)	224	M	Value of softwood removals	0.01	M
Water supply	Surface water abstraction for public water supply (m3/yr)	-	-	Resource rent value of surface water abstractions for public water supply	-	-
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	-	-	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	-	-
Renewable energy	Electricity generated by renewable sources (MWh/yr)	1,358	M	Resource rent value of renewable energy	0.02	M
Minerals	Volume of minerals extracted (tonnes/yr)	-	-	Ex-works value of mineral production	-	-
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	176,757	M	Value of CO2e sequestered in habitats	43	M
	CO2e emitted by habitats (tCO2e/yr)	(7,999)	M	Value of CO2e emitted by habitats	(2)	M
	CO2e emitted by livestock (tCO2e/yr)	(1,870)	M	Value of CO2e emitted by livestock	(0.5)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	3,114	H	Value of PM2.5 removal by woodland	2	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	3,346,584	M	Adult recreation welfare value (under 3 hours)	12	M
Physical health	Number of active visits (no. active visits/yr)	1,723,491	M	Avoided treatment medical costs	6	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	535,920	L	Domestic tourism expenditure attributed to natural capital	10	L
Volunteering	Number of volunteering days (days/yr)	93	L	Value of volunteering visits	0.01	L
Water quality	Length of WFD rivers (km)	40	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	-	-	Welfare of avoiding deterioration in lakes	-	-
				Total value	72	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	-	●		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						



Natural Capital Asset Account

Table 18 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £2.4 billion in present value terms. A further £0.02 billion accrues to businesses through agriculture, timber and renewable energy. Overall, Chesterfield's natural capital assets have an asset value of £2.4 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Chesterfield accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 18.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 18: Chesterfield Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	17	-	17
	Gross margin of livestock production	6	-	6
Timber	Value of softwood removals	0.2	-	0.2
Water supply	Resource rent value of Surface water abstractions for public water supply	-	-	-
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	-	-	-
Renewable energy	Resource rent value of renewable energy	1	-	1
Minerals	Ex-works value of mineral production	-	-	-
Carbon sequestration	Value of CO2e sequestered in habitats	-	1,587	1,587
	Value of CO2e emitted by habitats	-	(72)	(72)
	Value of CO2e emitted by livestock	-	(12)	(12)
Air quality regulation	Value of PM2.5 removal by woodland	-	55	55
Recreation	Adult recreation welfare value (under 3 hours)	-	306	306
Physical health	Avoided treatment medical costs	-	235	235
Tourism	Domestic tourism expenditure attributed to NC	-	274	274
Volunteering	Value of volunteer days	-	0.01	0.01
Water quality	Welfare of avoiding deterioration in rivers	-	16	16
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		24	2,387	2,411
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 0 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				



Derbyshire Dales Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Derbyshire Dales.

Asset Register

Figure 4 and Table 19 summarise the asset extent account for Derbyshire Dales by UK broad habitat.

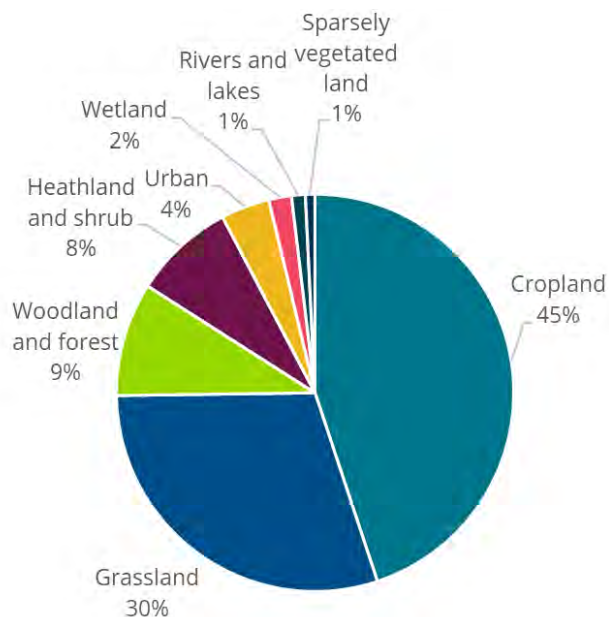


Figure 4: Derbyshire Dales Extent

Table 19: Derbyshire Dales extent (ha)

Habitat	Derbyshire Dales area (ha)
Cropland	35,700
Grassland	23,800
Woodland and forest	7,400
Heathland and shrub	6,600
Urban	3,200
Wetland	1,500
Rivers and lakes	900
Sparsely vegetated land	600
Total	79,700

Table 20 presents the terrestrial designations and connectivity indicators within Derbyshire Dales and the condition data on the water environment including Water Framework Directive status is presented in

Table 21.

Table 20: Condition indicators in Derbyshire Dales

Indicator	Derbyshire Dales		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	2,400	38%	16%
Unfavourable recovering condition	3,600	58%	81%
Unfavourable declining condition	130	2%	1%
Unfavourable no change	120	2%	2%
Part destroyed	1	0.02%	0.004%
Destroyed	-	-	0.02%
Total	6,251	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	660	1%	1%
Local Nature Reserves	32	0.04%	0.3%
National Nature Reserves	850	1%	1%
Special Areas of Conservation	4,800	6%	10%
Special Protection Areas	3,200	4%	10%
Ancient Woodland	3,300	4%	3%
Green Belt	-	-	0.1%
Parks and Gardens	1,300	2%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	4,100	5%	19,000
Flood zone 3	3,300	4%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	3,800		14,000
Length of footpaths (km)	1,300,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	4,700	6%	5%
Stepping stone	110	0.1%	0.1%
Remaining network	45,000	57%	42%
Outside network	29,000	37%	54%
Heathland			
Core network	2,300	3%	5%
Stepping stone	11	0.01%	0.02%
Remaining network	10,000	13%	18%
Outside network	67,000	84%	77%
Wetland			
Core network	2,000	3%	6%
Stepping stone	260	0.3%	0.4%
Remaining network	20,000	25%	34%
Outside network	57,000	72%	60%
Woodland			
Core network	4,600	6%	5%
Stepping stone	1,200	2%	2%
Remaining network	41,000	52%	48%
Outside network	32,000	41%	45%



Table 21: Water Framework Directive waterbodies in Derbyshire Dales

Water Framework Directive status	Derbyshire Dales		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	13	8%	7%
Moderate	6	4%	12%
Good	56	35%	35%
High	84	53%	45%
Total	159	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	2,853	100%	44%
Good	0	0%	35%
High	0	0%	18%
Total	2,853	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 22. The estimated annual physical and monetary values are summarised in Table 21.

Table 22: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Derbyshire Dales. The total annual net value of ecosystem benefits and services produced within Derbyshire Dales is £726 in 2021 prices (**Error! Not a valid bookmark self-reference.**). Key benefit values include carbon sequestration by habitats (£656 million, 90% of total benefits), livestock production (£39 million, 5% of total benefits) and tourism (£27 million, 4% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£17 million) and livestock (-£122 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Table 23: Derbyshire Dales Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	53,879	H	Gross margin of arable crop production	5	H
	Livestock production (heads/yr)	251,128	H	Gross margin of livestock production	39	H
Timber	Volume of softwood removals (m3/yr)	9,564	M	Value of softwood removals	0.3	M
Water supply	Surface water abstraction for public water supply (m3/yr)	120,825,383	H	Resource rent value of surface water abstractions for public water supply	28	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	817,222	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	2	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	43,408	M	Resource rent value of renewable energy	1	M
Minerals	Volume of minerals extracted (tonnes/yr)	2,820,750	H	Ex-works value of mineral production	37	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	2,677,879	M	Value of CO2e sequestered in habitats	656	M
	CO2e emitted by habitats (tCO2e/yr)	(70,934)	M	Value of CO2e emitted by habitats	(17)	M
	CO2e emitted by livestock (tCO2e/yr)	(498,141)	M	Value of CO2e emitted by livestock	(122)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	47,896	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	7,926,396	M	Adult recreation welfare value (under 3 hours)	31	M
Physical health	Number of active visits (no. active visits/yr)	4,082,094	M	Avoided treatment medical costs	14	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	746,320	L	Domestic tourism expenditure attributed to natural capital	27	L
Water quality	Length of WFD rivers (km)	158	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	2,853	H	Welfare of avoiding deterioration in lakes	24	M
				Total value	726	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	6,202	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 24 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £21.7 billion in present value terms. A further £2.9 billion accrues to businesses through agriculture, timber, water supply, renewable energy and minerals. Overall, Derbyshire Dales's natural capital assets have an asset value of £24.6 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Derbyshire Dales accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 24.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 24: Derbyshire Dales Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	138	-	138
	Gross margin of livestock production	1,046	-	1,046
Timber	Value of softwood removals	8	-	8
Water supply	Resource rent value of Surface water abstractions for public water supply	729	-	729
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	47	-	47
Renewable energy	Resource rent value of renewable energy	19	-	19
Minerals	Ex-works value of mineral production	960	-	960
Carbon sequestration	Value of CO2e sequestered in habitats	-	24,036	24,036
	Value of CO2e emitted by habitats	-	(637)	(637)
	Value of CO2e emitted by livestock	-	(4,471)	(4,471)
Air quality regulation	Value of PM2.5 removal by woodland	-	21	21
Recreation	Adult recreation welfare value (under 3 hours)	-	805	805
Physical health	Avoided treatment medical costs	-	555	555
Tourism	Domestic tourism expenditure attributed to NC	-	700	700
Water quality	Welfare of avoiding deterioration in rivers	-	44	44
	Welfare of avoiding deterioration in lakes	-	623	623
Total gross asset value		2,936	21,676	24,612
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 6,202 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Erewash Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Erewash.

Asset Register

Figure 5 and Table 25 summarise the asset extent account for Erewash by UK broad habitat.

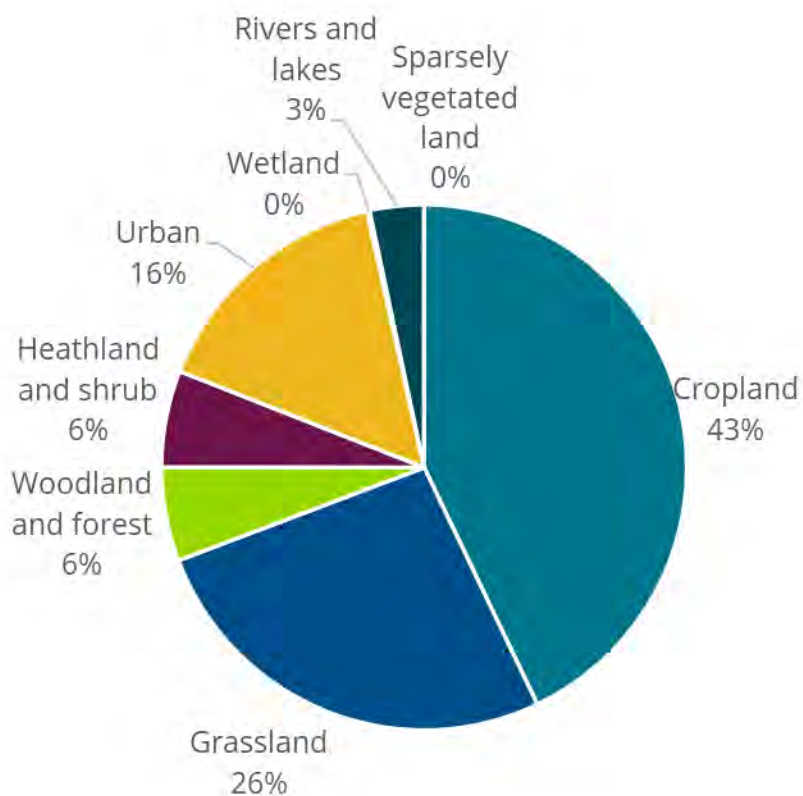


Figure 5: Erewash Extent

Table 25: Erewash extent (ha)

Habitat	Erewash area (ha)
Cropland	4,700
Grassland	2,900
Woodland and forest	600
Heathland and shrub	700
Urban	1,700
Wetland	20
Rivers and lakes	400
Sparsely vegetated land	-
Total	11,000



Table 26 presents the terrestrial designations and connectivity indicators within Erewash and the condition data on the water environment including Water Framework Directive status is presented in

Table 27.

Table 26: Condition indicators in Erewash

Indicator	Erewash		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	3	49%	16%
Unfavourable recovering condition	4	51%	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	7	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	3	0.03%	1%
Local Nature Reserves	110	1%	0.3%
National Nature Reserves	880	8%	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	190	2%	3%
Green Belt	-	-	0.1%
Parks and Gardens	160	1%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	2,500	23%	19,000
Flood zone 3	1,800	16%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	770		14,000
Length of footpaths (km)	150,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	89	1%	5%
Stepping stone	2	0.02%	0.1%
Remaining network	2,800	25%	42%
Outside network	8,100	74%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	-	-	77%
Wetland			
Core network	340	3%	6%
Stepping stone	56	1%	0.4%
Remaining network	3,300	30%	34%
Outside network	7,300	66%	60%
Woodland			
Core network	400	4%	5%
Stepping stone	180	2%	2%
Remaining network	5,700	52%	48%
Outside network	4,700	43%	45%

Table 27: Water Framework Directive waterbodies in Erewash

Water Framework Directive status	Erewash		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length



Poor	0	0%	7%
Moderate	1	5%	12%
Good	2	11%	35%
High	16	84%	45%
Total	19	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	295	65%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	159	35%	18%
Total	454	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 28. The estimated annual physical and monetary values are summarised in The total annual net value of ecosystem benefits and services produced within Erewash is £109 in 2021 prices (**Error! Not a valid bookmark self-reference.**). Key benefit values include carbon sequestration by habitats (£68 million, 62% of total benefits), recreation (£18 million, 17% of total benefits) and water supply (£11 million, 10% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£4 million) and livestock (-£2 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Table 30.

Table 28: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Erewash. The total annual net value of ecosystem benefits and services produced within Erewash is £109 in 2021 prices (**Error! Not a valid bookmark self-reference.**). Key benefit values include carbon sequestration by habitats (£68 million, 62% of total benefits), recreation (£18 million, 17% of total benefits) and water supply (£11 million, 10% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£4 million) and livestock (-£2 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Table 29: Erewash Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	13,090	H	Gross margin of arable crop production	1	H
	Livestock production (heads/yr)	4,270	H	Gross margin of livestock production	1	H
Timber	Volume of softwood removals (m3/yr)	252	M	Value of softwood removals	0.01	M
Water supply	Surface water abstraction for public water supply (m3/yr)	46,156,777	H	Resource rent value of surface water abstractions for public water supply	11	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	4,300	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	0.01	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	122	M	Resource rent value of renewable energy	1	M
Minerals	Volume of minerals extracted (tonnes/yr)	-	●	Ex-works value of mineral production	-	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	278,119	M	Value of CO2e sequestered in habitats	68	M
	CO2e emitted by habitats (tCO2e/yr)	(15,346)	M	Value of CO2e emitted by habitats	(4)	M
	CO2e emitted by livestock (tCO2e/yr)	(10,006)	M	Value of CO2e emitted by livestock	(2)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	4,186	H	Value of PM2.5 removal by woodland	2	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	4,886,017	M	Adult recreation welfare value (under 3 hours)	18	M
Physical health	Number of active visits (no. active visits/yr)	2,516,299	M	Avoided treatment medical costs	8	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	223,547	L	Domestic tourism expenditure attributed to natural capital	3	L
Water quality	Length of WFD rivers (km)	19	H	Welfare of avoiding deterioration in rivers	0.06	M
	Area of WFD lakes (km2)	455	H	Welfare of avoiding deterioration in lakes	2	M
				Total value	109	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	7	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 30 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £3.3 billion in present value terms. A further £0.4 billion accrues to businesses through agriculture, timber, water supply and renewable energy. Overall, Erewash's natural capital assets have an asset value of £3.6 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Erewash accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 30.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 30: Erewash Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	33	-	33
	Gross margin of livestock production	38	-	38
Timber	Value of softwood removals	0.2	-	0.2
Water supply	Resource rent value of Surface water abstractions for public water supply	278	-	278
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	0.2	-	0.2
Renewable energy	Resource rent value of renewable energy	33	-	33
Minerals	Ex-works value of mineral production	-	-	-
Carbon sequestration	Value of CO2e sequestered in habitats	-	2,496	2,496
	Value of CO2e emitted by habitats	-	(138)	(138)
	Value of CO2e emitted by livestock	-	(64)	(64)
Air quality regulation	Value of PM2.5 removal by woodland	-	50	50
Recreation	Adult recreation welfare value (under 3 hours)	-	463	463
Physical health	Avoided treatment medical costs	-	341	341
Tourism	Domestic tourism expenditure attributed to NC	-	91	91
Water quality	Welfare of avoiding deterioration in rivers	-	2	2
	Welfare of avoiding deterioration in lakes	-	54	54
Total gross asset value		351	3,297	3,648
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 7 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

High Peak Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for High Peak.

Asset Register

Figure 6 and Table 31 summarise the asset extent account for High Peak by UK broad habitat.

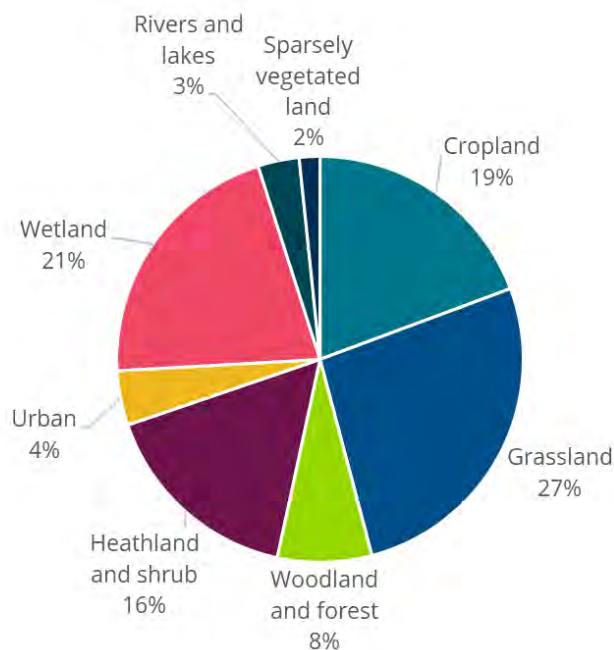


Figure 6: High Peak Extent

Table 31: High Peak extent (ha)

Habitat	High Peak area (ha)
Cropland	10,400
Grassland	14,400
Woodland and forest	4,100
Heathland and shrub	8,900
Urban	2,400
Wetland	11,300
Rivers and lakes	1,800
Sparsely vegetated land	900
Total	52,200

Table 32 presents the terrestrial designations and connectivity indicators within High Peak and the condition data on the water environment including Water Framework Directive status is presented in

Table 33.

Table 32: Condition indicators in High Peak

Indicator	High Peak		Derbyshire
	Area (hectares)	% of total SSSI area	% of total SSSI area
Designated SSSIs			
Favourable condition	2,000	9%	16%
Unfavourable recovering condition	19,000	88%	81%
Unfavourable declining condition	130	1%	1%
Unfavourable no change	390	2%	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	21,520	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	41	0.1%	1%
Local Nature Reserves	32	0.1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	20,000	37%	10%
Special Protection Areas	20,000	37%	10%
Ancient Woodland	930	2%	3%
Green Belt	-	-	0.1%
Parks and Gardens	23	0.1%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	1,500	3%	19,000
Flood zone 3	1,300	2%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	2,800		14,000
Length of footpaths (km)	970,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	6,400	12%	5%
Stepping stone	91	0.2%	0.1%
Remaining network	35,000	65%	42%
Outside network	13,000	23%	54%
Heathland			
Core network	8,100	15%	5%
Stepping stone	37	0.1%	0.02%
Remaining network	28,000	52%	18%
Outside network	18,000	33%	77%
Wetland			
Core network	10,000	19%	6%
Stepping stone	240	0.4%	0.4%
Remaining network	30,000	56%	34%
Outside network	13,000	25%	60%
Woodland			
Core network	1,500	3%	5%
Stepping stone	900	2%	2%
Remaining network	19,000	35%	48%
Outside network	33,000	61%	45%



Table 33: Water Framework Directive waterbodies in High Peak

Water Framework Directive status	High Peak		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	6	4%	7%
Moderate	12	8%	12%
Good	49	31%	35%
High	92	58%	45%
Total	159	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	771	18%	44%
Good	2,167	50%	35%
High	1,377	32%	18%
Total	4,315	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 34. The estimated annual physical and monetary values are summarised in The total annual net value of ecosystem benefits and services produced within High Peak is £671 in 2021 prices (Error! Not a valid bookmark self-reference.). Key benefit values include carbon sequestration by habitats (£406 million, 61% of total benefits) and minerals (£223 million, 33% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£24 million) and livestock (-£57 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Table 36.

Table 34: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within High Peak. The total annual net value of ecosystem benefits and services produced within High Peak is £671 in 2021 prices (Error! Not a valid bookmark self-reference.). Key benefit values include carbon sequestration by habitats (£406 million, 61% of total benefits) and minerals (£223 million, 33% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£24 million) and livestock (-£57 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Table 35: High Peak Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	7,166	H	Gross margin of arable crop production	1	H
	Livestock production (heads/yr)	125,660	H	Gross margin of livestock production	11	H
Timber	Volume of softwood removals (m3/yr)	10,260	M	Value of softwood removals	0.33	M
Water supply	Surface water abstraction for public water supply (m3/yr)	50,376,802	H	Resource rent value of surface water abstractions for public water supply	12	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	1,137,241	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	3	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	5,069	M	Resource rent value of renewable energy	0.08	M
Minerals	Volume of minerals extracted (tonnes/yr)	17,157,000	H	Ex-works value of mineral production	223	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	1,657,185	M	Value of CO2e sequestered in habitats	406	M
	CO2e emitted by habitats (tCO2e/yr)	(99,773)	M	Value of CO2e emitted by habitats	(24)	M
	CO2e emitted by livestock (tCO2e/yr)	(231,740)	M	Value of CO2e emitted by livestock	(57)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	29,581	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	8,643,162	M	Adult recreation welfare value (under 3 hours)	37	M
Physical health	Number of active visits (no. active visits/yr)	4,451,228	M	Avoided treatment medical costs	15	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	530,507	L	Domestic tourism expenditure attributed to natural capital	15	L
Water quality	Length of WFD rivers (km)	158	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	4,315	H	Welfare of avoiding deterioration in lakes	27	M
				Total value	671	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	21,563	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 36 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £14.7 billion in present value terms. A further £6.5 billion accrues to businesses through agriculture, timber, water supply, renewable energy and minerals. Overall, High Peak's natural capital assets have an asset value of £21.1 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the High Peak accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 36.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 36: High Peak Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	18	-	18
	Gross margin of livestock production	289	-	289
Timber	Value of softwood removals	9	-	9
Water supply	Resource rent value of Surface water abstractions for public water supply	304	-	304
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	66	-	66
Renewable energy	Resource rent value of renewable energy	2	-	2
Minerals	Ex-works value of mineral production	5,840	-	5,840
Carbon sequestration	Value of CO2e sequestered in habitats	-	14,875	14,875
	Value of CO2e emitted by habitats	-	(896)	(896)
	Value of CO2e emitted by livestock	-	(2,080)	(2,080)
Air quality regulation	Value of PM2.5 removal by woodland	-	19	19
Recreation	Adult recreation welfare value (under 3 hours)	-	982	982
Physical health	Avoided treatment medical costs	-	606	606
Tourism	Domestic tourism expenditure attributed to NC	-	402	402
Water quality	Welfare of avoiding deterioration in rivers	-	40	40
	Welfare of avoiding deterioration in lakes	-	720	720
Total gross asset value		6,522	14,665	21,186
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 21,563 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Northeast Derbyshire Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Northeast Derbyshire.



Asset Register

Figure 7 and Table 37 summarise the asset extent account for Northeast Derbyshire by UK broad habitat.

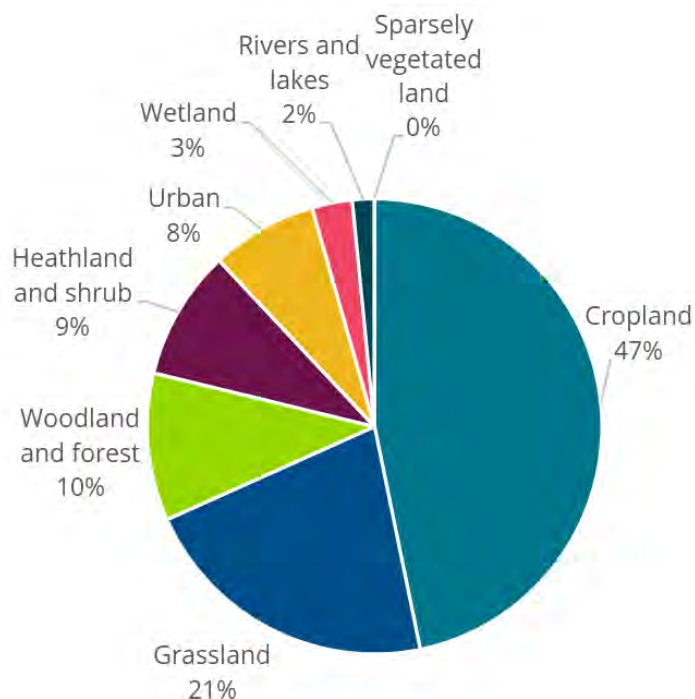


Figure 7: Northeast Derbyshire Extent

Table 37: Northeast Derbyshire extent (ha)

Habitat	Northeast Derbyshire area (ha)
Cropland	12,900
Grassland	5,900
Woodland and forest	2,900
Heathland and shrub	2,500
Urban	2,100
Wetland	800
Rivers and lakes	400
Sparsely vegetated land	-
Total	27,500

Table 38 presents the terrestrial designations and connectivity indicators within Northeast Derbyshire and the condition data on the water environment including Water Framework Directive status is presented in

Table 39.

Table 38: Condition indicators in Northeast Derbyshire

Indicator	Northeast Derbyshire		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	-	-	16%
Unfavourable recovering condition	-	-	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	-	-	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	55	0.2%	1%
Local Nature Reserves	88	0.3%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	1,600	6%	10%
Special Protection Areas	1,600	6%	10%
Ancient Woodland	-	-	3%
Green Belt	-	-	0.1%
Parks and Gardens	-	-	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	-	-	19,000
Flood zone 3	-	-	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	1,300		14,000
Length of footpaths (km)	450,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	350	1%	5%
Stepping stone	12	0.04%	0.1%
Remaining network	9,000	33%	42%
Outside network	18,000	66%	54%
Heathland			
Core network	640	2%	5%
Stepping stone	4	0.01%	0.02%
Remaining network	2,600	9%	18%
Outside network	24,000	88%	77%
Wetland			
Core network	1,100	4%	6%
Stepping stone	140	0.5%	0.4%
Remaining network	10,000	38%	34%
Outside network	16,000	58%	60%
Woodland			
Core network	1,900	7%	5%
Stepping stone	610	2%	2%
Remaining network	18,000	64%	48%
Outside network	7,500	27%	45%



Table 39: Water Framework Directive waterbodies in Northeast Derbyshire

Water Framework Directive status	Northeast Derbyshire		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	7	8%	7%
Moderate	17	20%	12%
Good	34	39%	35%
High	29	33%	45%
Total	87	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 40. The estimated annual physical and monetary values are summarised in The total annual net value of ecosystem benefits and services produced within Northeast Derbyshire is £234 in 2021 prices (**Error! Not a valid bookmark self-reference.**). Key benefit values include carbon sequestration by habitats (£210 million, 90% of total benefits) and recreation (£18 million, 8% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£10 million) and livestock (-£14 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Table 42.

Table 40: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Northeast Derbyshire. The total annual net value of ecosystem benefits and services produced within Northeast Derbyshire is £234 in 2021 prices (**Error! Not a valid bookmark self-reference.**). Key benefit values include carbon sequestration by habitats (£210 million, 90% of total benefits) and recreation (£18 million, 8% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£10 million) and livestock (-£14 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Table 41: Northeast Derbyshire Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	34,868	H	Gross margin of arable crop production	3	H
	Livestock production (heads/yr)	25,319	H	Gross margin of livestock production	7	H
Timber	Volume of softwood removals (m3/yr)	2,150	M	Value of softwood removals	0.07	M
Water supply	Surface water abstraction for public water supply (m3/yr)	16,418,492	H	Resource rent value of surface water abstractions for public water supply	4	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	-	●	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	-	●
Renewable energy	Electricity generated by renewable sources (MWh/yr)	-	●	Resource rent value of renewable energy	-	●
Minerals	Volume of minerals extracted (tonnes/yr)	10,000	H	Ex-works value of mineral production	0.1	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	858,441	M	Value of CO2e sequestered in habitats	210	M
	CO2e emitted by habitats (tCO2e/yr)	(42,165)	M	Value of CO2e emitted by habitats	(10)	M
	CO2e emitted by livestock (tCO2e/yr)	(55,395)	M	Value of CO2e emitted by livestock	(14)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	19,387	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	5,065,036	M	Adult recreation welfare value (under 3 hours)	18	M
Physical health	Number of active visits (no. active visits/yr)	2,608,494	M	Avoided treatment medical costs	9	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	320,693	L	Domestic tourism expenditure attributed to natural capital	4	L
Water quality	Length of WFD rivers (km)	88	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	234	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	-	●		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 42 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation, physical health and tourism, equating to around £8 billion in present value terms. A further £0.4 billion accrues to businesses through agriculture, timber and minerals. Overall, Northeast Derbyshire's natural capital assets have an asset value of £8.3 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Northeast Derbyshire accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 42.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 42: Northeast Derbyshire Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	89	-	89
	Gross margin of livestock production	175	-	175
Timber	Value of softwood removals	2	-	2
Water supply	Resource rent value of Surface water abstractions for public water supply	99	-	99
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	-	-	-
Renewable energy	Resource rent value of renewable energy	-	-	-
Minerals	Ex-works value of mineral production	3	-	3
Carbon sequestration	Value of CO2e sequestered in habitats	-	7,705	7,705
	Value of CO2e emitted by habitats	-	(378)	(378)
	Value of CO2e emitted by livestock	-	(356)	(356)
Air quality regulation	Value of PM2.5 removal by woodland	-	36	36
Recreation	Adult recreation welfare value (under 3 hours)	-	471	471
Physical health	Avoided treatment medical costs	-	352	352
Tourism	Domestic tourism expenditure attributed to NC	-	112	112
Water quality	Welfare of avoiding deterioration in rivers	-	33	33
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		368	7,981	8,349
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 30,000 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

South Derbyshire Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for South Derbyshire.

Asset Register

Figure 8 and Table 43 summarise the asset extent account for South Derbyshire by UK broad habitat.

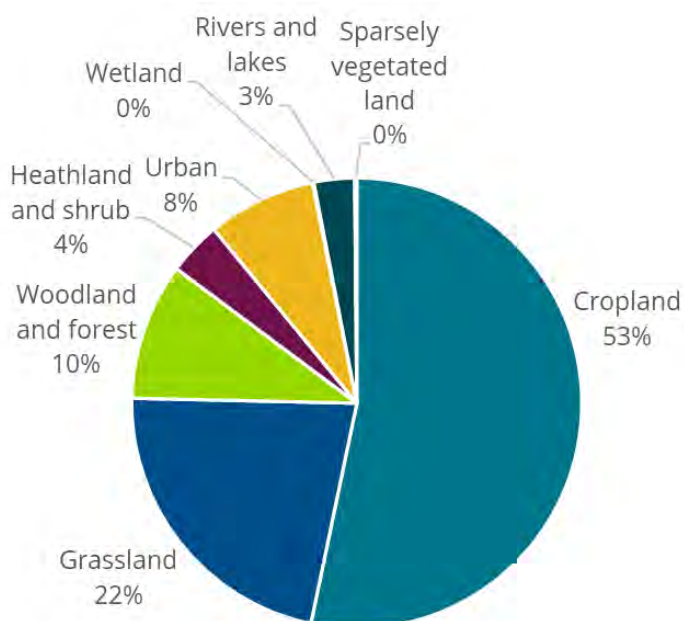


Figure 8: South Derbyshire Extent

Table 43: South Derbyshire extent (ha)

Habitat	South Derbyshire area (ha)
Cropland	18,000
Grassland	7,500
Woodland and forest	3,300
Heathland and shrub	1,300
Urban	2,600
Wetland	30
Rivers and lakes	1,000
Sparsely vegetated land	50
Total	33,800

Table 44 presents the terrestrial designations and connectivity indicators within South Derbyshire and the condition data on the water environment including Water Framework Directive status is presented in



Table 45.

Table 44: Condition indicators in South Derbyshire

Indicator	South Derbyshire		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	79	50%	16%
Unfavourable recovering condition	70	45%	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	4	2%	2%
Part destroyed	-	-	0.004%
Destroyed	5	3%	0.02%
Total	157	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	73	0.2%	1%
Local Nature Reserves	23	0.1%	0.3%
National Nature Reserves	80	0.2%	1%
Special Areas of Conservation	4	0.01%	10%
Special Protection Areas	-	-	10%
Ancient Woodland	740	2%	3%
Green Belt	-	-	0.1%
Parks and Gardens	620	2%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	6,900	20%	19,000
Flood zone 3	5,900	17%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	1,800		14,000
Length of footpaths (km)	320,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	130	0%	5%
Stepping stone	3	0.01%	0.1%
Remaining network	3,300	10%	42%
Outside network	30,000	90%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	34,000	100%	77%
Wetland			
Core network	840	2%	6%
Stepping stone	180	1%	0.4%
Remaining network	10,000	30%	34%
Outside network	23,000	67%	60%
Woodland			
Core network	2,200	7%	5%
Stepping stone	550	2%	2%
Remaining network	13,000	39%	48%
Outside network	18,000	53%	45%



Table 45: Water Framework Directive waterbodies in South Derbyshire

Water Framework Directive status	South Derbyshire		Derbyshire
	Length (kilometres)	% of total length	% of total length
Poor	5	4%	7%
Moderate	9	7%	12%
Good	59	48%	35%
High	49	40%	45%
Total	122	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	7	1%	44%
Good	880	99%	35%
High	0	0%	18%
Total	887	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 46. The estimated annual physical and monetary values are summarised in Table 47.

Table 46: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within South Derbyshire. The total annual net value of ecosystem benefits and services produced within South Derbyshire is £284 in 2021 prices (Table 47). Key benefit values include carbon sequestration by habitats (£222 million, 78% of total benefits) and water supply (£27 million, 10% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£20 million) and livestock (-£28 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Derbyshire Natural Capital Strategy

Table 47: South Derbyshire Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	68,941	H	Gross margin of arable crop production	7	H
	Livestock production (heads/yr)	57,341	H	Gross margin of livestock production	10	H
Timber	Volume of softwood removals (m3/yr)	934	M	Value of softwood removals	0.03	M
Water supply	Surface water abstraction for public water supply (m3/yr)	116,819,003	H	Resource rent value of surface water abstractions for public water supply	27	M
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	1,448,945	H	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	3	M
Renewable energy	Electricity generated by renewable sources (MWh/yr)	424	M	Resource rent value of renewable energy	0.01	M
Minerals	Volume of minerals extracted (tonnes/yr)	1,300,000	H	Ex-works value of mineral production	19	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	907,413	M	Value of CO2e sequestered in habitats	222	M
	CO2e emitted by habitats (tCO2e/yr)	(81,258)	M	Value of CO2e emitted by habitats	(20)	M
	CO2e emitted by livestock (tCO2e/yr)	(115,217)	M	Value of CO2e emitted by livestock	(28)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	24,634	H	Value of PM2.5 removal by woodland	2	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	4,826,029	M	Adult recreation welfare value (under 3 hours)	16	M
Physical health	Number of active visits (no. active visits/yr)	2,485,405	M	Avoided treatment medical costs	8	M
Volunteering	Number of volunteer days (days/yr)	149	L	Value of volunteer days	0.02	L
Education	Number of education visits (visits/yr)	5,110	L	Value of educational visits	0.02	L
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	199,893	L	Domestic tourism expenditure attributed to natural capital	8	L
Water quality	Length of WFD rivers (km)	122	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	888	H	Welfare of avoiding deterioration in lakes	8	M
				Total value	284	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	157	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						



Natural Capital Asset Account

Table 48 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £1.4 billion in present value terms. A further £7.7 billion accrues to businesses through agriculture, timber, water supply and minerals. Overall, South Derbyshire's natural capital assets have an asset value of £9.1 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the South Derbyshire accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 48.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 48: South Derbyshire Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	176	-	176
	Gross margin of livestock production	259	-	259
Timber	Value of softwood removals	1	-	1
Water supply	Resource rent value of Surface water abstractions for public water supply	705	-	705
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	84	-	84
Renewable energy	Resource rent value of renewable energy	-	-	-
Minerals	Ex-works value of mineral production	165	-	165
Carbon sequestration	Value of CO2e sequestered in habitats	-	8,145	8,145
	Value of CO2e emitted by habitats	-	(729)	(729)
	Value of CO2e emitted by livestock	-	(1,034)	(1,034)
Air quality regulation	Value of PM2.5 removal by woodland	-	60	60
Recreation	Adult recreation welfare value (under 3 hours)	-	410	410
Physical health	Avoided treatment medical costs	-	338	338
Tourism	Domestic tourism expenditure attributed to NC	-	215	215
Volunteering	Value of volunteer days	-	0.4	0.4
Education	Value of educational visits	-	0.5	0.5
Water quality	Welfare of avoiding deterioration in rivers	-	43	43
	Welfare of avoiding deterioration in lakes	-	217	217
Total gross asset value		1,387	7,666	9,053
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 157 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				



Derby City Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Derby City.

Asset Register

Figure 9 and Table 49 summarise the asset extent account for Derby City by UK broad habitat.

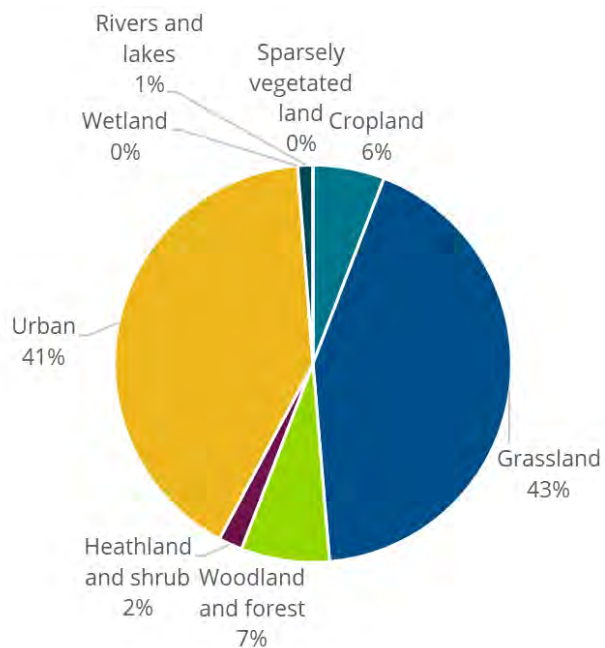


Figure 9: Derby City Extent

Table 49: Derby City extent (ha)

Habitat	Derby City area (ha)
Cropland	500
Grassland	3,300
Woodland and forest	600
Heathland and shrub	200
Urban	3,200
Wetland	-
Rivers and lakes	100
Sparsely vegetated land	-
Total	7,900

Table 50 presents the terrestrial designations and connectivity indicators within Derby City and the condition data on the water environment including Water Framework Directive status is presented in



Table 51.

Table 50: Condition indicators in Derby City

Indicator	Derby City		Derbyshire
	Area (hectares)	% of total SSSI area	% of total SSSI area
Designated SSSIs			
Favourable condition	4	100%	16%
Unfavourable recovering condition	-	-	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	4	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	-	-	1%
Local Nature Reserves	190	2%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	22	0.3%	3%
Green Belt	240	3%	0.1%
Parks and Gardens	29	0.4%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	1,500	19%	19,000
Flood zone 3	1,100	14%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	850		14,000
Length of footpaths (km)	35,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	110	1%	5%
Stepping stone	4	0.1%	0.1%
Remaining network	1,800	24%	42%
Outside network	5,900	75%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	-	-	77%
Wetland			
Core network	75	1%	6%
Stepping stone	21	0.3%	0.4%
Remaining network	1,200	16%	34%
Outside network	6,500	83%	60%
Woodland			
Core network	250	3%	5%
Stepping stone	140	2%	2%
Remaining network	2,400	31%	48%
Outside network	5,000	64%	45%



Table 51: Water Framework Directive waterbodies in Derby City

Water Framework Directive status	Derby City		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	4	20%	7%
Moderate	0	0%	12%
Good	4	20%	35%
High	12	60%	45%
Total	20	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 52. The estimated annual physical and monetary values are summarised in Table 53.

Table 52: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Derby City. The total annual net value of ecosystem benefits and services produced within Derby City is £116 in 2021 prices (Table 53). Key benefit values include carbon sequestration by habitats (£49 million, 42% of total benefits) and tourism (£28 million, 24% of total benefits). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure to nature which is low.



Table 53: Derby City Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	1,217	H	Gross margin of arable crop production	0.1	H
	Livestock production (heads/yr)	2,233	H	Gross margin of livestock production	0.01	H
Timber	Volume of softwood removals (m3/yr)	26	M	Value of softwood removals	0.001	M
Water supply	Surface water abstraction for public water supply (m3/yr)	-	●	Resource rent value of surface water abstractions for public water supply	-	●
	Groundwater abstraction for public and private water supply, spray irrigation, agriculture and fish farming (m3/yr)	-	●	Ecosystem provision value of groundwater for public and private drinking water and agriculture benefits	-	●
Renewable energy	Electricity generated by renewable sources (MWh/yr)	14,461	M	Resource rent value of renewable energy	0.2	M
Minerals	Volume of minerals extracted (tonnes/yr)	-	●	Ex-works value of mineral production	-	●
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	201,909	M	Value of CO2e sequestered in habitats	49	M
	CO2e emitted by habitats (tCO2e/yr)	(1,912)	M	Value of CO2e emitted by habitats	(0.5)	M
	CO2e emitted by livestock (tCO2e/yr)	(3,922)	M	Value of CO2e emitted by livestock	(1)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	3,990	H	Value of PM2.5 removal by woodland	8	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	6,242,193	M	Adult recreation welfare value (under 3 hours)	20	M
Physical health	Number of active visits (no. active visits/yr)	3,214,729	M	Avoided treatment medical costs	11	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	906,853	L	Domestic tourism expenditure attributed to natural capital	28	L
Volunteering	Number of volunteer days (days/yr)	3,467	L	Value of volunteer days	0.4	L
Water quality	Length of WFD rivers (km)	20	H	Welfare of avoiding deterioration in rivers	0.17	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
Total value					116	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	4	M		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						



Natural Capital Asset Account

Table 54 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £3.7 billion in present value terms. A further £0.01 billion accrues to businesses through agriculture, timber and renewable energy. Overall, Derby City's natural capital assets have an asset value of £3.7 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Derby City accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 54.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 54: Derby City Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	3	-	3
	Gross margin of livestock production	3	-	3
Timber	Value of softwood removals	0.02	-	0.02
Water supply	Resource rent value of Surface water abstractions for public water supply	-	-	-
	Ecosystem provision value of groundwater for public/private drinking water/agriculture benefits	-	-	-
Renewable energy	Resource rent value of renewable energy	6	-	6
Minerals	Ex-works value of mineral production	-	-	-
Carbon sequestration	Value of CO2e sequestered in habitats	-	1,812	1,812
	Value of CO2e emitted by habitats	-	(17)	(17)
	Value of CO2e emitted by livestock	-	(35)	(35)
Air quality regulation	Value of PM2.5 removal by woodland	--	211	211
Recreation	Adult recreation welfare value (under 3 hours)	-	521	521
Physical health	Avoided treatment medical costs	-	437	437
Tourism	Domestic tourism expenditure attributed to NC	-	737	737
Volunteering	Value of volunteering	-	10	10
Water quality	Welfare of avoiding deterioration in rivers	-	4	4
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		12	3,681	3,693
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 4 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				



Dark Peak Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Dark Peak.

Asset Register

Figure 10 and Table 55 summarise the asset extent account for Dark Peak by UK broad habitat.

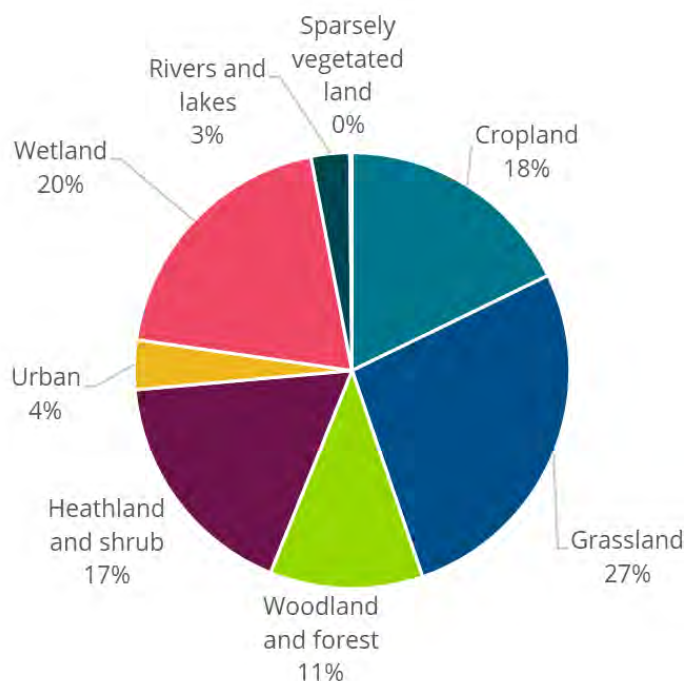


Figure 10: Dark Peak Extent

Table 55: Dark Peak extent (ha)

Habitat	Dark Peak area (ha)
Cropland	12,200
Grassland	18,400
Woodland and forest	7,800
Heathland and shrub	12,000
Urban	2,500
Wetland	13,500
Rivers and lakes	2,000
Sparsely vegetated land	100
Total	68,500



Table 56 presents the terrestrial designations and connectivity indicators within Dark Peak and the condition data on the water environment including Water Framework Directive status is presented in Table 57.

Table 56: Condition indicators in Dark Peak

Indicator	Dark Peak		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	2,500	10%	16%
Unfavourable recovering condition	23,000	88%	81%
Unfavourable declining condition	130	0%	1%
Unfavourable no change	400	2%	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	26,030	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	617	1%	1%
Local Nature Reserves	28	0%	0.3%
National Nature Reserves	857	1%	1%
Special Areas of Conservation	24,904	36%	10%
Special Protection Areas	25,158	37%	10%
Ancient Woodland	2,252	3%	3%
Countryside and Rights of Way	105	0%	12%
Green Belt	-	-	0.1%
Parks and Gardens	1,012	1%	1%
Flood risk	Areas (hectares)		Areas (hectares)
Flood zone 2	2,723	4%	19,000
Flood zone 3	2,109	3%	15,000
Accessibility	Areas (hectares)		Areas (hectares)
Area of greenspace (ha)	5,200	-	14,000
Length of footpaths (km)	1,200,000	-	3,800,000
Connectivity	Areas (hectares)	% of total habitat area	% of total habitat area
Grassland			
Core network	7,100	10%	5%
Stepping stone	110	0%	0.1%
Remaining network	51,000	75%	42%
Outside network	9,900	15%	54%
Heathland			
Core network	11,000	16%	5%
Stepping stone	49	0%	0.02%
Remaining network	47,000	69%	18%
Outside network	10,000	15%	77%
Wetland			
Core network	12,000	18%	6%
Stepping stone	310	0%	0.4%
Remaining network	54,000	79%	34%
Outside network	2,200	3%	60%
Woodland			
Core network	3,700	5%	5%
Stepping stone	1,200	2%	2%
Remaining network	36,000	53%	48%
Outside network	27,000	40%	45%

Table 57: Water Framework Directive waterbodies in Dark Peak

Water Framework Directive status	Dark Peak		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	6	3%	7%
Moderate	12	5%	12%



Good	79	35%	35%
High	130	57%	45%
Total	227	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	771	18%	44%
Good	2,167	50%	35%
High	1,377	32%	18%
Total	4,315	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 58. The estimated annual physical and monetary values are summarised in Table 59.

Table 58: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Dark Peak. The total annual net value of ecosystem benefits and services produced within Dark Peak is £648 in 2021 prices (Table 59). Key benefit values include carbon sequestration by habitats (£610 million, 94% of total benefits), recreation (£48 million, 7% of total benefits) and water quality (£27 million, 4% of total benefits). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 59: Dark Peak Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	7,271	M	Gross margin of arable crop production	1	M
	Livestock production (heads/yr)	96,071	M	Gross margin of livestock production	7	M
Timber	Volume of softwood removals (m3/yr)	17,936	M	Value of softwood removals	0.1	M
Minerals	Volume of minerals extracted (tonnes/yr)	57,750	H	Ex-works value of mineral production	1	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	2,490,142	M	Value of CO2e sequestered in habitats	610	M
	CO2e emitted by habitats (tCO2e/yr)	(107,122)	M	Value of CO2e emitted by habitats	(26)	M
	CO2e emitted by livestock (tCO2e/yr)	(175,219)	M	Value of CO2e emitted by livestock	(43)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	53,541	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	11,434,123	M	Adult recreation welfare value (under 3 hours)	48	M
Physical health	Number of active visits (no. active visits/yr)	5,888,574	M	Avoided treatment medical costs	20	M
Water quality	Length of WFD rivers (km)	225	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	4,315	H	Welfare of avoiding deterioration in lakes	27	M
					648	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	26,030	H		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 60 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £23.1 billion in present value terms. A further £0.2 billion accrues to businesses through agriculture, timber and minerals. Overall, Dark Peak's natural capital assets have an asset value of £23.3 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Dark Peak accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 60.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 60: Dark Peak Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	19	-	19
	Gross margin of livestock production	195	-	195
Timber	Value of softwood removals	3	-	3
Minerals	Ex-works value of mineral production	20	-	20
Carbon sequestration	Value of CO2e sequestered in habitats	-	22,351	22,351
	Value of CO2e emitted by habitats	-	(962)	(962)
	Value of CO2e emitted by livestock	-	(1,125)	(1,125)
Air quality regulation	Value of PM2.5 removal by woodland	-	33	33
Recreation	Adult recreation welfare value (under 3 hours)	-	1,260	1,260
Physical health	Avoided treatment medical costs	-	801	801
Water quality	Welfare of avoiding deterioration in rivers	-	59	59
	Welfare of avoiding deterioration in lakes	-	720	720
Total gross asset value		232	23,138	23,369
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 26,030			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				



White Peak Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for White Peak.

Asset Register

Figure 11 and Table 61 summarise the asset extent account for White Peak by UK broad habitat.

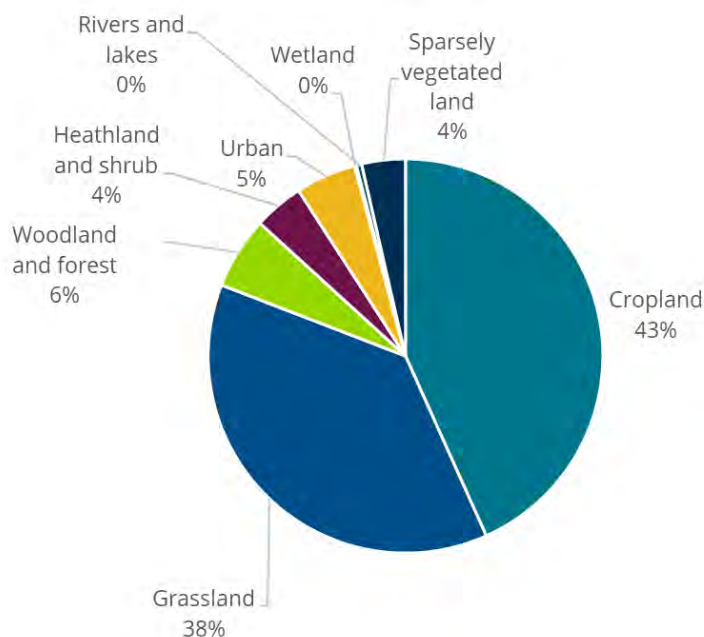


Figure 11: White Peak Extent

Table 61: White Peak extent (ha)

Habitat	White Peak area (ha)
Cropland	17,000
Grassland	14,700
Woodland and forest	2,300
Heathland and shrub	1,600
Urban	1,900
Wetland	100
Rivers and lakes	200
Sparsely vegetated land	1,400
Total	39,200

Table 62 presents the terrestrial designations and connectivity indicators within White Peak and the condition data on the water environment including Water Framework Directive status is presented in Table 63.

Table 62: Condition indicators in White Peak



Indicator	White Peak		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	2,500	70%	16%
Unfavourable recovering condition	830	23%	81%
Unfavourable declining condition	130	4%	1%
Unfavourable no change	110	3%	2%
Part destroyed	1	0%	0.004%
Destroyed	-	0%	0.02%
Total	3,571	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	82	0.2%	1%
Local Nature Reserves	34	0.1%	0.3%
National Nature Reserves	860	2%	1%
Special Areas of Conservation	1,900	5%	10%
Special Protection Areas	-	-	10%
Ancient Woodland	1,400	4%	3%
Countryside and Rights of Way	82	0.2%	12%
Green Belt	-	-	0.1%
Parks and Gardens	52	0.1%	1%
Flood risk	Areas (hectares)		Areas (hectares)
Flood zone 2	390	1%	19,000
Flood zone 3	289	1%	15,000
Accessibility	Areas (hectares)		Areas (hectares)
Area of greenspace (ha)	1,300	-	14,000
Length of footpaths (km)	700,000	-	3,800,000
Connectivity	Areas (hectares)	% of total habitat area	% of total habitat area
Grassland			
Core network			5%
Stepping stone			0.1%
Remaining network			42%
Outside network			54%
Heathland	-		
Core network	170	0.4%	5%
Stepping stone	3	0.01%	0.02%
Remaining network	4,100	10%	18%
Outside network	35,000	89%	77%
Wetland	-		
Core network	190	0.5%	6%
Stepping stone	44	0.1%	0.4%
Remaining network	5,200	13%	34%
Outside network	34,000	86%	60%
Woodland	-		
Core network	-	-	5%
Stepping stone	430	1%	2%
Remaining network	14,432	39%	48%
Outside network	22,600	60%	45%

Table 63: Water Framework Directive waterbodies in White Peak

Water Framework Directive status	White Peak		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	0	0%	7%
Moderate	0	0%	12%
Good	22	49%	35%
High	23	51%	45%
Total	45	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%



Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 64. The estimated annual physical and monetary values are summarised in Table 65.

Table 64: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within White Peak. The total annual net value of ecosystem benefits and services produced within White Peak is £520 in 2021 prices (Table 65). Key benefit values include carbon sequestration by habitats (£287 million, 55% of total benefits) and minerals (£256 million, 49% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£5 million) and livestock (-£64 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 65: White Peak Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	16,347	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	135,269	M	Gross margin of livestock production	17	M
Timber	Volume of softwood removals (m3/yr)	740	M	Value of softwood removals	0.01	M
Minerals	Volume of minerals extracted (tonnes/yr)	19,750,000	H	Ex-works value of mineral production	256	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	1,173,157	M	Value of CO2e sequestered in habitats	287	M
	CO2e emitted by habitats (tCO2e/yr)	(20,044)	M	Value of CO2e emitted by habitats	(5)	M
	CO2e emitted by livestock (tCO2e/yr)	(260,177)	M	Value of CO2e emitted by livestock	(64)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	15,374	H	Value of PM2.5 removal by woodland	0.3	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	4,387,241	M	Adult recreation welfare value (under 3 hours)	18	M
Physical health	Number of active visits (no. active visits/yr)	2,259,429	M	Avoided treatment medical costs	8	M
Water quality	Length of WFD rivers (km)	45	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	520	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	3,571	H		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 66 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £9.5 billion in present value terms. A further £7.2 billion accrues to businesses through agriculture, timber and minerals. Overall, White Peak's natural capital assets have an asset value of £16.7 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the White Peak accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 66.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 66: White Peak Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	42	-	42
	Gross margin of livestock production	454	-	454
Timber	Value of softwood removals	0.1	-	0.1
Minerals	Ex-works value of mineral production	6,722	-	6722
Carbon sequestration	Value of CO2e sequestered in habitats	-	10,530	10,530
	Value of CO2e emitted by habitats	-	(180)	(180)
	Value of CO2e emitted by livestock	-	(1,671)	(1,671)
Air quality regulation	Value of PM2.5 removal by woodland	-	7	7
Recreation	Adult recreation welfare value (under 3 hours)	-	460	460
Physical health	Avoided treatment medical costs	-	307	307
Water quality	Welfare of avoiding deterioration in rivers	-	14	14
	Welfare of avoiding deterioration in lakes	-	-	-
		7,213	9,468	16,681
Asset values (non-monetised)				
Biodiversity	Total SSSI area: 3,571			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				



Derbyshire Peak Fringe and Lower Derwent Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Derbyshire Peak Fringe and Lower Derwent.

Asset Register

Figure 12 and Table 67 summarise the asset extent account for Derbyshire Peak Fringe and Lower Derwent by UK broad habitat.

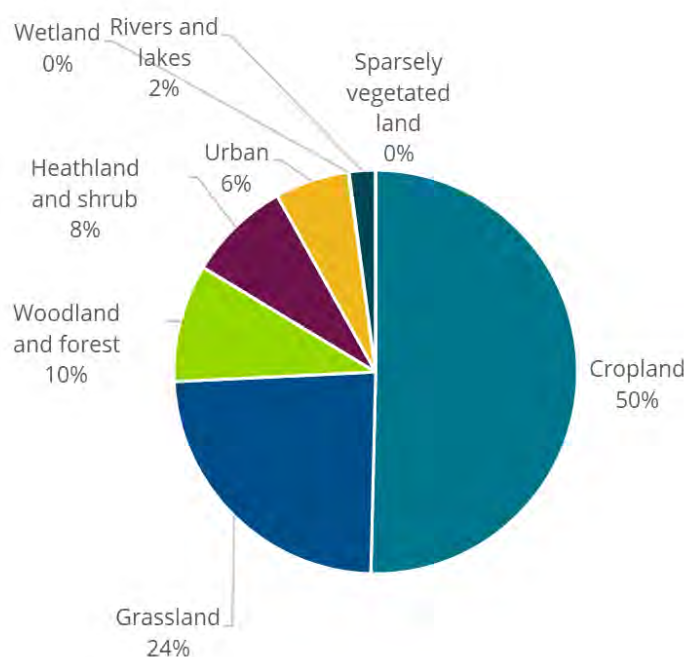


Figure 12: Derbyshire Peak Fringe and Lower Derwent Extent

Table 67: Derbyshire Peak Fringe and Lower Derwent extent (ha)

Habitat	Derbyshire Peak Fringe and Lower Derwent area (ha)
Cropland	18,700
Grassland	8,900
Woodland and forest	3,500
Heathland and shrub	3,100
Urban	2,200
Wetland	-
Rivers and lakes	800
Sparsely vegetated land	-
Total	37,200

Table 68 presents the terrestrial designations and connectivity indicators within Derbyshire Peak Fringe and Lower Derwent and the condition data on the water environment including Water Framework Directive status is presented in Table 69.

Table 68: Condition indicators in Derbyshire Peak Fringe and Lower Derwent

Indicator	Derbyshire Peak Fringe and Lower Derwent		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	94	25%	16%
Unfavourable recovering condition	280	73%	81%
Unfavourable declining condition	2	0.4%	1%
Unfavourable no change	6	2%	2%
Part destroyed	-	-	0.004%
Destroyed	1	0.2%	0.02%
Total	383	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	27	0.1%	1%
Local Nature Reserves	140	0.4%	0.3%
National Nature Reserves	10	0.03%	1%
Special Areas of Conservation	5	0.01%	10%
Special Protection Areas	-	-	10%
Ancient Woodland	2,389	6%	3%
Countryside and Rights of Way	44	0.1%	12%
Green Belt	76	0.2%	0.1%
Parks and Gardens	14	0.04%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	2,352	6%	19,000
Flood zone 3	1,774	5%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	960		14,000
Length of footpaths (km)	690,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	500	1%	5%
Stepping stone	17	0.05%	0.1%
Remaining network	14,881	40%	42%
Outside network	21,806	59%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	1,687	5%	18%
Outside network	35,000	95%	77%
Wetland			
Core network	-	-	6%
Stepping stone	185	1%	0.4%
Remaining network	12,177	33%	34%
Outside network	24,200	66%	60%
Woodland			
Core network	-	-	5%
Stepping stone	830	2%	2%
Remaining network	27,720	80%	48%
Outside network	6,000	17%	45%

Table 69: Water Framework Directive waterbodies in Derbyshire Peak Fringe and Lower Derwent

Water Framework Directive status	Derbyshire Peak Fringe and Lower Derwent	Derbyshire
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Rivers	Length (kilometres)	% of total length	% of total length
Poor	17	17%	7%
Moderate	8	8%	12%
Good	47	46%	35%
High	31	30%	45%
Total	103	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 70. The estimated annual physical and monetary values are summarised in Table 71.

Table 70: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Derbyshire Peak Fringe and Lower Derwent. The total annual net value of ecosystem benefits and services produced Derbyshire Peak Fringe and Lower Derwent is £351 in 2021 prices (Table 71). Key benefit values include carbon sequestration by habitats (£312 million, 89% of total benefits) and recreation (£19 million, 5% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£7 million) and livestock (-£23 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 71: Derbyshire Peak Fringe and Lower Derwent Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	23,691	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	48,061	M	Gross margin of livestock production	8	M
Timber	Volume of softwood removals (m3/yr)	2,538	M	Value of softwood removals	0.02	M
Minerals	Volume of minerals extracted (tonnes/yr)	190,000	H	Ex-works value of mineral production	2	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	1,274,362	M	Value of CO2e sequestered in habitats	312	M
	CO2e emitted by habitats (tCO2e/yr)	(28,164)	M	Value of CO2e emitted by habitats	(7)	M
	CO2e emitted by livestock (tCO2e/yr)	(95,740)	M	Value of CO2e emitted by livestock	(23)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	23,210	H	Value of PM2.5 removal by woodland	3	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	5,264,690	M	Adult recreation welfare value (under 3 hours)	19	M
Physical health	Number of active visits (no. active visits/yr)	2,711,315	M	Avoided treatment medical costs	9	M
Water quality	Length of WFD rivers (km)	103	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	2,853	H	Welfare of avoiding deterioration in lakes	24	M
					351	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	383	H		Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 72 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £12.1 billion in present value terms. A further £0.3 billion accrues to businesses through agriculture, timber and minerals. Overall, Derbyshire Peak Fringe and Lower Derwent's natural capital assets have an asset value of £12.5 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Derbyshire Peak Fringe and Lower Derwent accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 72.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 72: Derbyshire Peak Fringe and Lower Derwent Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	61	-	61
	Gross margin of livestock production	206	-	206
Timber	Value of softwood removals	0	-	0.5
Minerals	Ex-works value of mineral production	65	-	65
Carbon sequestration	Value of CO2e sequestered in habitats	-	11,438	11,438
	Value of CO2e emitted by habitats	-	(253)	(253)
	Value of CO2e emitted by livestock	-	(615)	(615)
Air quality regulation	Value of PM2.5 removal by woodland	-	88	88
Recreation	Adult recreation welfare value (under 3 hours)	-	497	497
Physical health	Avoided treatment medical costs	-	369	369
Water quality	Welfare of avoiding deterioration in rivers	-	42	42
	Welfare of avoiding deterioration in lakes	-	623	623
		329	12,189	12,518
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 383 ha			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				



Nottinghamshire, Derbyshire and Yorkshire Coalfield Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Nottinghamshire, Derbyshire and Yorkshire Coalfield.

Asset Register

Figure 13 and Table 73 summarise the asset extent account for Nottinghamshire, Derbyshire and Yorkshire Coalfield by UK broad habitat.

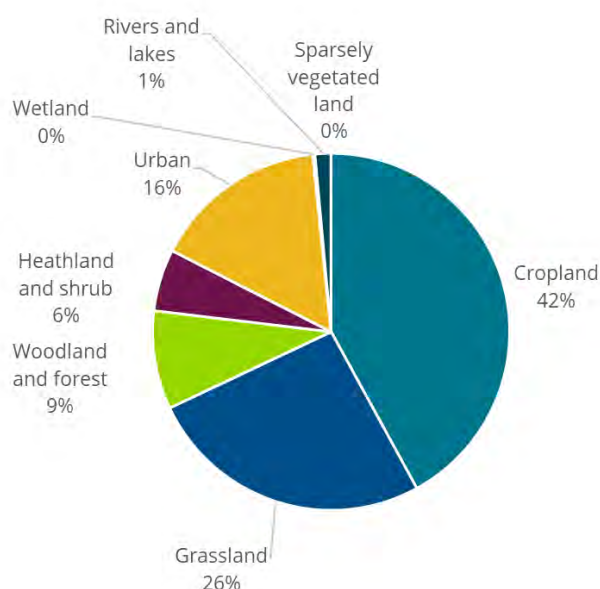


Figure 13: Nottinghamshire, Derbyshire and Yorkshire Coalfield Extent

Table 73: Nottinghamshire, Derbyshire and Yorkshire Coalfield extent (ha)

Habitat	Nottinghamshire, Derbyshire and Yorkshire Coalfield area (ha)
Cropland	17,200
Grassland	10,600
Woodland and forest	3,600
Heathland and shrub	2,300
Urban	6,500
Wetland	100
Rivers and lakes	600
Sparsely vegetated land	-
Total	40,900

Table 74 presents the terrestrial designations and connectivity indicators within Nottinghamshire, Derbyshire and Yorkshire Coalfield and the condition data on the water environment including Water Framework Directive status is presented in Table 75.

Table 74: Condition indicators in Nottinghamshire, Derbyshire and Yorkshire Coalfield

Indicator	Nottinghamshire, Derbyshire and Yorkshire Coalfield		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	27	43%	16%
Unfavourable recovering condition	28	44%	81%
Unfavourable declining condition	8	13%	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	63	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	630	2%	1%
Local Nature Reserves	240	1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	1,500	4%	3%
Countryside and Rights of Way	1	0%	12%
Green Belt	10	0%	0.1%
Parks and Gardens	400	1%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	2,257	6%	19,000
Flood zone 3	1,332	3%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	2,700		14,000
Length of footpaths (km)	580,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	300	1%	5%
Stepping stone	10	0.02%	0.1%
Remaining network	8,730	21%	42%
Outside network	31,890	78%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	146	0.4%	18%
Outside network	40,800	100%	77%
Wetland			
Core network	-	-	6%
Stepping stone	216	1%	0.4%
Remaining network	-	-	34%
Outside network	25,570	99%	60%
Woodland			
Core network	-	-	5%
Stepping stone	990	3%	2%
Remaining network	26,780	69%	48%
Outside network	11,000	28%	45%

Table 75: Water Framework Directive waterbodies in Nottinghamshire, Derbyshire and Yorkshire Coalfield

Water Framework Directive status	Nottinghamshire, Derbyshire and Yorkshire Coalfield		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length



Poor	9	7%	7%
Moderate	50	36%	12%
Good	21	15%	35%
High	59	42%	45%
Total	139	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 76. The estimated annual physical and monetary values are summarised in Table 77.

Table 76: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Nottinghamshire, Derbyshire and Yorkshire Coalfield. The total annual net value of ecosystem benefits and services produced is £343 in 2021 prices (Table 77). Key benefit values include carbon sequestration by habitats (£286 million, 83% of total benefits) and recreation (£45 million, 13% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£15 million) and livestock (-£22 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 77: Nottinghamshire, Derbyshire and Yorkshire Coalfield Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	50,429	M	Gross margin of arable crop production	5	M
	Livestock production (heads/yr)	41,915	M	Gross margin of livestock production	11	M
Timber	Volume of softwood removals (m3/yr)	1,163	M	Value of softwood removals	0.01	M
Minerals	Volume of minerals extracted (tonnes/yr)	60,000	H	Ex-works value of mineral production	4	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	1,167,948	M	Value of CO2e sequestered in habitats	286	M
	CO2e emitted by habitats (tCO2e/yr)	(60,769)	M	Value of CO2e emitted by habitats	(15)	M
	CO2e emitted by livestock (tCO2e/yr)	(91,502)	M	Value of CO2e emitted by livestock	(22)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	23,780	H	Value of PM2.5 removal by woodland	5	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	13,019,154	M	Adult recreation welfare value (under 3 hours)	45	M
Physical health	Number of active visits (no. active visits/yr)	6,704,864	M	Avoided treatment medical costs	23	M
Water quality	Length of WFD rivers (km)	139	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	343	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	63			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 78 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £11.4 billion in present value terms. A further £0.5 billion accrues to businesses through agriculture, timber and minerals. Overall, Nottinghamshire, Derbyshire and Yorkshire Coalfield's natural capital assets have an asset value of £11.9 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Nottinghamshire, Derbyshire and Yorkshire Coalfield accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 78.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 78: Nottinghamshire, Derbyshire and Yorkshire Coalfield Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	129	-	129
	Gross margin of livestock production	286	-	286
Timber	Value of softwood removals	0.2	-	0.2
Minerals	Ex-works value of mineral production	101	-	101
Carbon sequestration	Value of CO2e sequestered in habitats	-	10,483	10,483
	Value of CO2e emitted by habitats	-	(545)	(545)
	Value of CO2e emitted by livestock	-	(821)	(821)
Air quality regulation	Value of PM2.5 removal by woodland	-	135	135
Recreation	Adult recreation welfare value (under 3 hours)	-	1,177	1,177
Physical health	Avoided treatment medical costs	-	912	912
Water quality	Welfare of avoiding deterioration in rivers	-	45	45
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		515	11,385	11,900
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 63 ha			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Southern Magnesian Limestone Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Southern Magnesian Limestone.



Asset Register

Figure 14 and Table 79 summarise the asset extent account for Southern Magnesian Limestone by UK broad habitat.

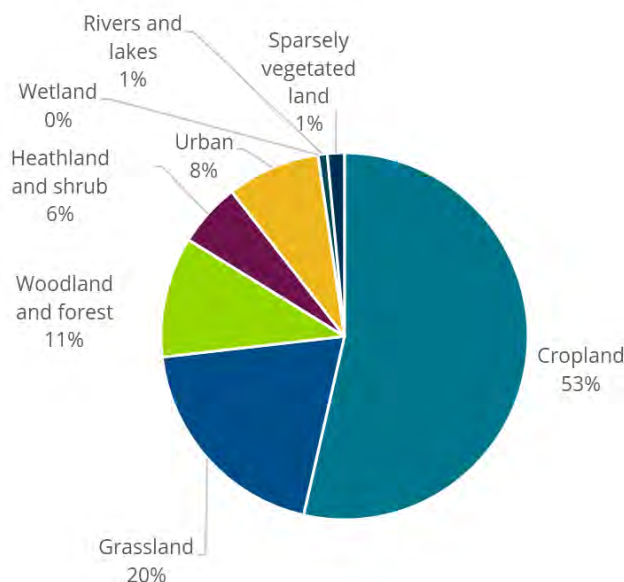


Figure 14: Southern Magnesian Limestone Extent

Table 79: Southern Magnesian Limestone extent (ha)

Habitat	Southern Magnesian Limestone area (ha)
Cropland	5,000
Grassland	1,800
Woodland and forest	1,000
Heathland and shrub	500
Urban	800
Wetland	-
Rivers and lakes	100
Sparsely vegetated land	100
Total	9,300

Table 80 presents the terrestrial designations and connectivity indicators within Southern Magnesian Limestone and the condition data on the water environment including Water Framework Directive status is presented in Table 81.

Table 80: Condition indicators in Southern Magnesian Limestone

Indicator	Southern Magnesian Limestone		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	24	66%	16%
Unfavourable recovering condition	9	24%	81%
Unfavourable declining condition	4	10%	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	36	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	160	2%	1%
Local Nature Reserves	88	1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	1,000	11%	3%
Countryside and Rights of Way	-	-	12%
Green Belt	-	-	0.1%
Parks and Gardens	320	3%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	85	1%	19,000
Flood zone 3	63	1%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	930		14,000
Length of footpaths (km)	69,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	110	1%	5%
Stepping stone	3	0%	0.1%
Remaining network	2,200	24%	42%
Outside network	7,000	75%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	9,300	100%	77%
Wetland			
Core network	63	1%	6%
Stepping stone	19	0%	0.4%
Remaining network	1,500	16%	34%
Outside network	7,800	83%	60%
Woodland			
Core network	760	8%	5%
Stepping stone	97	1%	2%
Remaining network	6,000	64%	48%
Outside network	2,500	27%	45%

Table 81: Water Framework Directive waterbodies in Southern Magnesian Limestone

Water Framework Directive status	Southern Magnesian Limestone		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	0	0%	7%
Moderate	3	17%	12%



Good	14	83%	35%
High	0	0%	45%
Total	17	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 82. The estimated annual physical and monetary values are summarised in Table 83.

Table 82: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Southern Magnesian Limestone. The total annual net value of ecosystem benefits and services produced in Southern Magnesian Limestone is £55 in 2021 prices (Table 83). Key benefit values include carbon sequestration by habitats (£52 million, 95% of total benefits) and minerals (£16 million, 13% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£7 million) and livestock (-£25 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 83: Southern Magnesian Limestone Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	25,400	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	51,080	M	Gross margin of livestock production	9	M
Timber	Volume of softwood removals (m3/yr)	740	M	Value of softwood removals	0.01	M
Minerals	Volume of minerals extracted (tonnes/yr)	1,200,000	H	Ex-works value of mineral production	16	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	214,388	M	Value of CO2e sequestered in habitats	52	M
	CO2e emitted by habitats (tCO2e/yr)	(30,472)	M	Value of CO2e emitted by habitats	(7)	M
	CO2e emitted by livestock (tCO2e/yr)	(102,682)	M	Value of CO2e emitted by livestock	(25)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	6,443	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	1,534,688	M	Adult recreation welfare value (under 3 hours)	5	M
Physical health	Number of active visits (no. active visits/yr)	790,365	M	Avoided treatment medical costs	3	M
Water quality	Length of WFD rivers (km)	17	H	Welfare of avoiding deterioration in rivers	0.4	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	55	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	36			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 84 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £1.3 billion in present value terms. A further £0.7 billion accrues to businesses through agriculture, timber and minerals. Overall, Southern Magnesian Limestone's natural capital assets have an asset value of £2 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Southern Magnesian Limestone accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 84.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 84: Southern Magnesian Limestone Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	65	-	65
	Gross margin of livestock production	231	-	231
Timber	Value of softwood removals	0.1	-	0.1
Minerals	Ex-works value of mineral production	408	-	408
Carbon sequestration	Value of CO2e sequestered in habitats	-	1,924	1,924
	Value of CO2e emitted by habitats	-	(274)	(274)
	Value of CO2e emitted by livestock	-	(659)	(659)
Air quality regulation	Value of PM2.5 removal by woodland	-	20	20
Recreation	Adult recreation welfare value (under 3 hours)	-	128	128
Physical health	Avoided treatment medical costs	-	107	107
Water quality	Welfare of avoiding deterioration in rivers	-	10	10
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		702	1,257	1,960
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 36 ha			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				



Needwood and South Derbyshire Claylands Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Needwood and South Derbyshire Claylands.

Asset Register

Figure 15 and Table 85 summarise the asset extent account for Needwood and South Derbyshire Claylands by UK broad habitat.

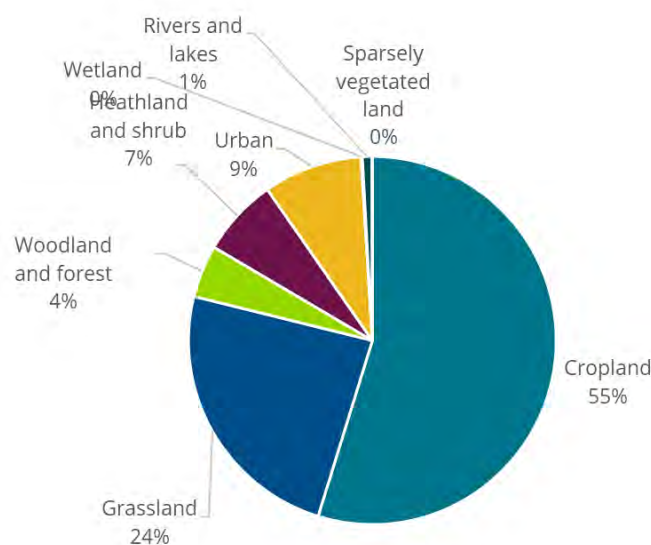


Figure 15: Needwood and South Derbyshire Claylands Extent

Table 85: Needwood and South Derbyshire Claylands extent (ha)

Habitat	Needwood and South Derbyshire Claylands area (ha)
Cropland	18,200
Grassland	8,000
Woodland and forest	1,500
Heathland and shrub	2,300
Urban	2,900
Wetland	-
Rivers and lakes	300
Sparsely vegetated land	-
Total	33,200



Table 86 presents the terrestrial designations and connectivity indicators within Needwood and South Derbyshire Claylands and the condition data on the water environment including Water Framework Directive status is presented in Table 87.

Table 86: Condition indicators in Needwood and South Derbyshire Claylands

Indicator	Needwood and South Derbyshire Claylands		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	43	38%	16%
Unfavourable recovering condition	65	58%	81%
Unfavourable declining condition	4	3%	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	112	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	-	-	1%
Local Nature Reserves	37	0.1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	470	1%	3%
Countryside and Rights of Way	4	0.01%	12%
Green Belt	2	0%	0.1%
Parks and Gardens	660	2%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	1,882	6%	19,000
Flood zone 3	1,504	5%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	870		14,000
Length of footpaths (km)	280,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	97	0.3%	5%
Stepping stone	3	0.01%	0.1%
Remaining network	4,200	13%	42%
Outside network	29,000	87%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	33,000	100%	77%
Wetland			
Core network	200	1%	6%
Stepping stone	140	0.4%	0.4%
Remaining network	5,700	17%	34%
Outside network	27,000	82%	60%
Woodland			
Core network	720	2%	5%
Stepping stone	460	1%	2%
Remaining network	18,000	54%	48%
Outside network	14,000	42%	45%

Table 87: Water Framework Directive waterbodies in Needwood and South Derbyshire Claylands

Water Framework Directive status	Needwood and South Derbyshire Claylands		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	12	42%	7%
Moderate	9	33%	12%



Good	3	11%	35%
High	4	14%	45%
Total	28	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	87	100%	44%
Good	0	0%	35%
High	0	0%	18%
Total	87	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 88. The estimated annual physical and monetary values are summarised in The total annual net value of ecosystem benefits and services produced is £176 in 2021 prices (Error! Not a valid bookmark self-reference.). Key benefit values include carbon sequestration by habitats (£186 million, over 100% of total benefits), livestock production (£18 million, 10% of total benefits) and recreation (£16 million, 9% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£17 million) and livestock (-£46 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 90.

Table 88: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Needwood and South Derbyshire Claylands. The total annual net value of ecosystem benefits and services produced is £176 in 2021 prices (Error! Not a valid bookmark self-reference.). Key benefit values include carbon sequestration by habitats (£186 million, over 100% of total benefits), livestock production (£18 million, 10% of total benefits) and recreation (£16 million, 9% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£17 million) and livestock (-£46 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 89: Needwood and South Derbyshire Claylands Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	58,703	M	Gross margin of arable crop production	6	M
	Livestock production (heads/yr)	91,109	M	Gross margin of livestock production	18	M
Timber	Volume of softwood removals (m3/yr)	1,331	M	Value of softwood removals	0.01	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	758,413	M	Value of CO2e sequestered in habitats	186	M
	CO2e emitted by habitats (tCO2e/yr)	(69,400)	M	Value of CO2e emitted by habitats	(17)	M
	CO2e emitted by livestock (tCO2e/yr)	(188,477)	M	Value of CO2e emitted by livestock	(46)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	10,281	H	Value of PM2.5 removal by woodland	4	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	4,862,548	M	Adult recreation welfare value (under 3 hours)	16	M
Physical health	Number of active visits (no. active visits/yr)	2,504,212	M	Avoided treatment medical costs	8	M
Water quality	Length of WFD rivers (km)	29	H	Welfare of avoiding deterioration in rivers	0.5	M
	Area of WFD lakes (km2)	87	H	Welfare of avoiding deterioration in lakes	1	M
				Total value	176	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	112			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 90 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £5.4 billion in present value terms. A further £0.6 billion accrues to businesses through agriculture and timber. Overall, Needwood and South Derbyshire Claylands's natural capital assets have an asset value of £6 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Needwood and South Derbyshire Claylands accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 90.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 90: Needwood and South Derbyshire Claylands Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	150	-	150
	Gross margin of livestock production	483	-	483
Timber	Value of softwood removals	0.3	-	0.3
Carbon sequestration	Value of CO2e sequestered in habitats	-	6,807	6,807
	Value of CO2e emitted by habitats	-	(623)	(623)
	Value of CO2e emitted by livestock	-	(1,692)	(1,692)
Air quality regulation	Value of PM2.5 removal by woodland	-	106	106
Recreation	Adult recreation welfare value (under 3 hours)	-	417	417
Physical health	Avoided treatment medical costs	-	341	341
Water quality	Welfare of avoiding deterioration in rivers	-	13	13
	Welfare of avoiding deterioration in lakes	-	19	19
Total gross asset value		630	5,389	6,019
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 112 ha			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Trent Valley Washlands Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Trent Valley Washlands.



Asset Register

Figure 16 and Table 91 summarise the asset extent account for Trent Valley Washlands by UK broad habitat.

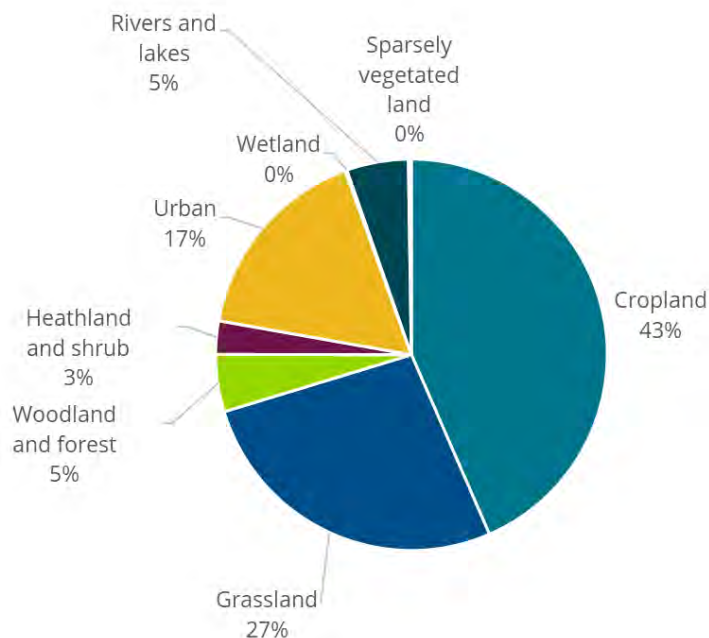


Figure 16: Trent Valley Washlands Extent

Table 91: Trent Valley Washlands extent (ha)

Habitat	Trent Valley Washlands area (ha)
Cropland	8,100
Grassland	5,000
Woodland and forest	900
Heathland and shrub	500
Urban	3,100
Wetland	-
Rivers and lakes	1,000
Sparsely vegetated land	-
Total	18,600

Table 92 presents the terrestrial designations and connectivity indicators within Trent Valley Washlands and the condition data on the water environment including Water Framework Directive status is presented in Table 93.

Table 92: Condition indicators in Trent Valley Washlands

Indicator	Trent Valley Washlands		Derbyshire
	Area (hectares)	% of total SSSI area	% of total SSSI area
Designated SSSIs			
Favourable condition	4	12%	16%
Unfavourable recovering condition	30	88%	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	34	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	73	0.4%	1%
Local Nature Reserves	97	1%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	2	0%	3%
Countryside and Rights of Way	1	0%	12%
Green Belt	160	1%	0.1%
Parks and Gardens	160	1%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	9,717	52%	19,000
Flood zone 3	8,151	44%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	750		14,000
Length of footpaths (km)	190,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	110	1%	5%
Stepping stone	3	0.02%	0.1%
Remaining network	2,300	12%	42%
Outside network	16,000	87%	54%
Heathland	-		
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	19,000	100%	77%
Wetland	-		
Core network	860	5%	6%
Stepping stone	150	1%	0.4%
Remaining network	8,100	44%	34%
Outside network	9,500	51%	60%
Woodland	-		
Core network	490	3%	5%
Stepping stone	280	1%	2%
Remaining network	5,200	27%	48%
Outside network	13,000	69%	45%

Table 93: Water Framework Directive waterbodies in Trent Valley Washlands

Water Framework Directive status	Trent Valley Washlands		Derbyshire
	Length (kilometres)	% of total length	% of total length
Rivers			
Poor	6	6%	7%
Moderate	3	3%	12%
Good	31	32%	35%
High	56	58%	45%
Total	96	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%



High	160	100%	18%
Total	160	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 94. The estimated annual physical and monetary values are summarised in Table 95.

Table 94: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Trent Valley Washlands. The total annual net value of ecosystem benefits and services produced is £152 in 2021 prices (Table 95). Key benefit values include carbon sequestration by habitats (£102 million, 67% of total benefits), recreation (£22 million, 14% of total benefits) and minerals (£19 million, 13% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£8 million) and livestock (-£5 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 95: Trent Valley Washlands Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	27,335	M	Gross margin of arable crop production	3	M
	Livestock production (heads/yr)	10,014	M	Gross margin of livestock production	2	M
Timber	Volume of softwood removals (m3/yr)	178	M	Value of softwood removals	0.001	M
Minerals	Volume of minerals extracted (tonnes/yr)	1,300,000	H	Ex-works value of mineral production	19	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	414,982	M	Value of CO2e sequestered in habitats	102	M
	CO2e emitted by habitats (tCO2e/yr)	(32,747)	M	Value of CO2e emitted by habitats	(8)	M
	CO2e emitted by livestock (tCO2e/yr)	(20,762)	M	Value of CO2e emitted by livestock	(5)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	6,356	H	Value of PM2.5 removal by woodland	4	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	6,564,559	M	Adult recreation welfare value (under 3 hours)	22	M
Physical health	Number of active visits (no. active visits/yr)	3,380,748	M	Avoided treatment medical costs	11	M
Water quality	Length of WFD rivers (km)	97	H	Welfare of avoiding deterioration in rivers	1	M
	Area of WFD lakes (km2)	455	H	Welfare of avoiding deterioration in lakes	2	M
				Total value	152	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	34			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 96 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £4.5 billion in present value terms. A further £0.3 billion accrues to businesses through agriculture, timber and minerals. Overall, Trent Valley Washlands's natural capital assets have an asset value of £4.8 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Trent Valley Washlands accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 96.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 96: Trent Valley Washlands Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	70	-	70
	Gross margin of livestock production	54	-	54
Timber	Value of softwood removals	0.03	-	0.03
Minerals	Ex-works value of mineral production	165	-	165
Carbon sequestration	Value of CO2e sequestered in habitats	-	3,725	3,725
	Value of CO2e emitted by habitats	-	(294)	(294)
	Value of CO2e emitted by livestock	-	(133)	(133)
Air quality regulation	Value of PM2.5 removal by woodland	-	96	96
Recreation	Adult recreation welfare value (under 3 hours)	-	577	577
Physical health	Avoided treatment medical costs	-	460	460
Water quality	Welfare of avoiding deterioration in rivers	-	24	24
	Welfare of avoiding deterioration in lakes	-	56	56
Total gross asset value		288	4,510	4,798
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 34 ha			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Melbourne Parklands Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Melbourne Parklands.



Asset Register

Figure 17 and Table 97 summarise the asset extent account for Melbourne Parklands by UK broad habitat.

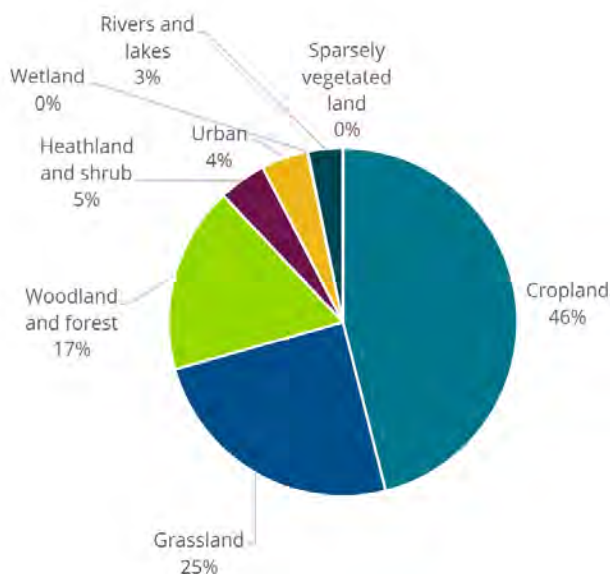


Figure 17: Melbourne Parklands Extent

Table 97: Melbourne Parklands extent (ha)

Habitat	Melbourne Parklands area (ha)
Cropland	3,500
Grassland	1,900
Woodland and forest	1,300
Heathland and shrub	300
Urban	300
Wetland	-
Rivers and lakes	200
Sparsely vegetated land	-
Total	7,500

Table 98 presents the terrestrial designations and connectivity indicators within Melbourne Parklands and the condition data on the water environment including Water Framework Directive status is presented in Table 99.

Table 98: Condition indicators in Melbourne Parklands

Derbyshire Natural Capital Strategy

Indicator	Melbourne Parklands		Derbyshire
	Area (hectares)	% of total SSSI area	% of total SSSI area
Designated SSSIs			
Favourable condition	79	64%	16%
Unfavourable recovering condition	39	32%	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	5	4%	0.02%
Total	123	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	-	-	1%
Local Nature Reserves	-	-	0.3%
National Nature Reserves	80	1%	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	540	7%	3%
Countryside and Rights of Way	-	-	12%
Green Belt	-	-	0.1%
Parks and Gardens	520	7%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	225	3%	19,000
Flood zone 3	152	2%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	770		14,000
Length of footpaths (km)	120,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	43	1%	5%
Stepping stone	1	0%	0.1%
Remaining network	1,600	21%	42%
Outside network	6,000	78%	54%
Heathland	-		
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	7,600	100%	77%
Wetland	-		
Core network	230	3%	6%
Stepping stone	28	0%	0.4%
Remaining network	2,700	36%	34%
Outside network	4,600	61%	60%
Woodland	-		
Core network	890	12%	5%
Stepping stone	150	2%	2%
Remaining network	4,900	65%	48%
Outside network	1,600	21%	45%

Table 99: Water Framework Directive waterbodies in Melbourne Parklands

Water Framework Directive status	Melbourne Parklands		Derbyshire
	Length (kilometres)	% of total length	% of total length
Rivers			



Poor	0	0%	7%
Moderate	2	11%	12%
Good	9	43%	35%
High	9	46%	45%
Total	20	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	7	1%	44%
Good	880	99%	35%
High	0	0%	18%
Total	887	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 100. The estimated annual physical and monetary values are summarised in Table 101.

Table 100: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Melbourne Parklands. The total annual net value of ecosystem benefits and services produced in Melbourne Parklands is £71 in 2021 prices (Table 101). Key benefit values include carbon sequestration by habitats (£64 million, 90% of total benefits) and water quality (£9 million, 13% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£4 million) and livestock (-£8 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 101: Melbourne Parklands Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	15,492	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	16,606	M	Gross margin of livestock production	2	M
Timber	Volume of softwood removals (m3/yr)	208	M	Value of softwood removals	0.001	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	260,189	M	Value of CO2e sequestered in habitats	64	M
	CO2e emitted by habitats (tCO2e/yr)	(18,373)	M	Value of CO2e emitted by habitats	(4)	M
	CO2e emitted by livestock (tCO2e/yr)	(31,859)	M	Value of CO2e emitted by livestock	(8)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	9,710	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	1,347,774	M	Adult recreation welfare value (under 3 hours)	4	M
Physical health	Number of active visits (no. active visits/yr)	694,104	M	Avoided treatment medical costs	2	M
Water quality	Length of WFD rivers (km)	20	H	Welfare of avoiding deterioration in rivers	0.3	M
	Area of WFD lakes (km2)	888	H	Welfare of avoiding deterioration in lakes	9	M
				Total value	71	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	123			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 102 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £2.3 billion in present value terms. A further £.09 billion accrues to businesses through agriculture and timber. Melbourne Parklands's natural capital assets have an asset value of £2.4 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Melbourne Parklands accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 102.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 102: Melbourne Parklands Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	40	-	40
	Gross margin of livestock production	55	-	55
Timber	Value of softwood removals	0.04	-	0.04
Carbon sequestration	Value of CO2e sequestered in habitats	-	2,335	2,335
	Value of CO2e emitted by habitats	-	(165)	(165)
	Value of CO2e emitted by livestock	-	(286)	(286)
Air quality regulation	Value of PM2.5 removal by woodland	-	24	24
Recreation	Adult recreation welfare value (under 3 hours)	-	113	113
Physical health	Avoided treatment medical costs	-	94	94
Water quality	Welfare of avoiding deterioration in rivers	-	7	7
	Welfare of avoiding deterioration in lakes	-	226	226
Total gross asset value		94	2,348	2,442
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 123 ha			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				



Leicestershire and South Derbyshire Coalfield Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Leicestershire and South Derbyshire Coalfield.

Asset Register

Figure 18 and Table 103 summarise the asset extent account for Leicestershire and South Derbyshire Coalfield by UK broad habitat.

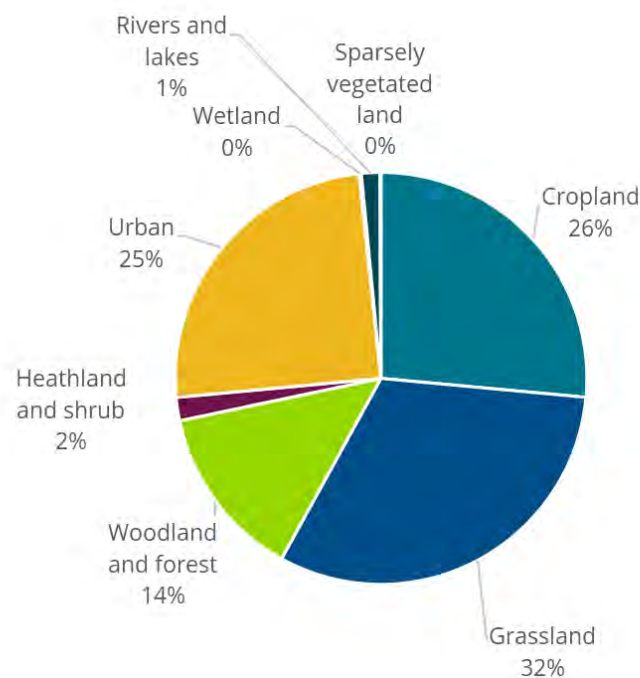


Figure 18: Leicestershire and South Derbyshire Coalfield Extent

Table 103: Leicestershire and South Derbyshire Coalfield extent (ha)

Habitat	Leicestershire and South Derbyshire Coalfield area (ha)
Cropland	700
Grassland	900
Woodland and forest	400
Heathland and shrub	100
Urban	700
Wetland	-
Rivers and lakes	-
Sparsely vegetated land	-
Total	2,800



Table 104 presents the terrestrial designations and connectivity indicators within Leicestershire and South Derbyshire Coalfield and the condition data on the water environment including Water Framework Directive status is presented in

Table 105.

Table 104: Condition indicators in Leicestershire and South Derbyshire Coalfield

Indicator	Leicestershire and South Derbyshire Coalfield		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	-	-	16%
Unfavourable recovering condition	-	-	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	-	-	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	-	-	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	-	-	1%
Local Nature Reserves	-	-	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	-	-	10%
Special Protection Areas	-	-	10%
Ancient Woodland	23	1%	3%
Green Belt	27	1%	
Parks and Gardens	-	-	
Flood risk	Areas (hectares)		Areas (hectares)
Flood zone 2	47	2%	19,000
Flood zone 3	39	1%	15,000
Accessibility	Areas (hectares)		Areas (hectares)
Area of greenspace (ha)	290		14,000
Length of footpaths (km)	17,000		3,800,000
Connectivity	Areas (hectares)	% of total habitat area	% of total habitat area
Grassland			
Core network	2	0%	5%
Stepping stone	-	-	0.1%
Remaining network	420	15%	42%
Outside network	2,400	85%	54%
Heathland			
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	2,800	100%	77%
Wetland			
Core network	29	1%	6%
Stepping stone	17	1%	0.4%
Remaining network	1,000	36%	34%
Outside network	1,700	62%	60%
Woodland			
Core network	220	8%	5%
Stepping stone	65	2%	2%
Remaining network	1,400	50%	48%
Outside network	1,100	39%	45%

Table 105: Water Framework Directive waterbodies in Leicestershire and South Derbyshire Coalfield



Water Framework Directive status	Leicestershire and South Derbyshire Coalfield		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	0	0%	7%
Moderate	0	0%	12%
Good	3	33%	35%
High	5	67%	45%
Total	8	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 106. The estimated annual physical and monetary values are summarised in Table 107.

Table 106: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Leicestershire and South Derbyshire Coalfield. The total annual net value of ecosystem benefits and services produced is £24 in 2021 prices (Table 107). Key benefit values include carbon sequestration by habitats (£23 million, 96% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£1 million) and livestock (-£4 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 107: Leicestershire and South Derbyshire Coalfield Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	1,960	M	Gross margin of arable crop production	0.2	M
	Livestock production (heads/yr)	7,955	M	Gross margin of livestock production	2	M
Timber	Volume of softwood removals (m3/yr)	56	M	Value of softwood removals	<0.01	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	94,285	M	Value of CO2e sequestered in habitats	23	M
	CO2e emitted by habitats (tCO2e/yr)	(2,326)	M	Value of CO2e emitted by habitats	(1)	M
	CO2e emitted by livestock (tCO2e/yr)	(16,497)	M	Value of CO2e emitted by livestock	(4)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	2,857	H	Value of PM2.5 removal by woodland	0.26	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	756,840	M	Adult recreation welfare value (under 3 hours)	2	M
Physical health	Number of active visits (no. active visits/yr)	389,773	M	Avoided treatment medical costs	1	M
Water quality	Length of WFD rivers (km)	8	H	Welfare of avoiding deterioration in rivers	0.07	M
	Area of WFD lakes (km2)	-	H	Welfare of avoiding deterioration in lakes	-	M
				Total value	24	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	0			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 108 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £0.8 billion in present value terms. A further £0.05 billion accrues to businesses through agriculture and timber. Overall, Leicestershire and South Derbyshire Coalfield's natural capital assets have an asset value of £0.8 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Leicestershire and South Derbyshire Coalfield accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 108.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 108: Leicestershire and South Derbyshire Coalfield Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	5	-	5
	Gross margin of livestock production	43	-	43
Timber	Value of softwood removals	0.01	-	0.01
	Value of CO2e sequestered in habitats	-	846	846
Carbon sequestration	Value of CO2e emitted by habitats	-	(21)	(21)
	Value of CO2e emitted by livestock	-	(148)	(148)
Air quality regulation	Value of PM2.5 removal by woodland	-	7	7
Recreation	Adult recreation welfare value (under 3 hours)	-	59	59
Physical health	Avoided treatment medical costs	-	53	53
Water quality	Welfare of avoiding deterioration in rivers	-	2	2
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		47	798	846
Asset values (non-monetised)				
Biodiversity				
<i>Other material unquantified benefits</i>				
Flood risk management				
Mental health				
Education				
Volunteering				

Mease/Sence Lowlands Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for Mease/Sence Lowlands.

Asset Register

Figure 19 and Table 109 summarise the asset extent account for Mease/Sence Lowlands by UK broad habitat.



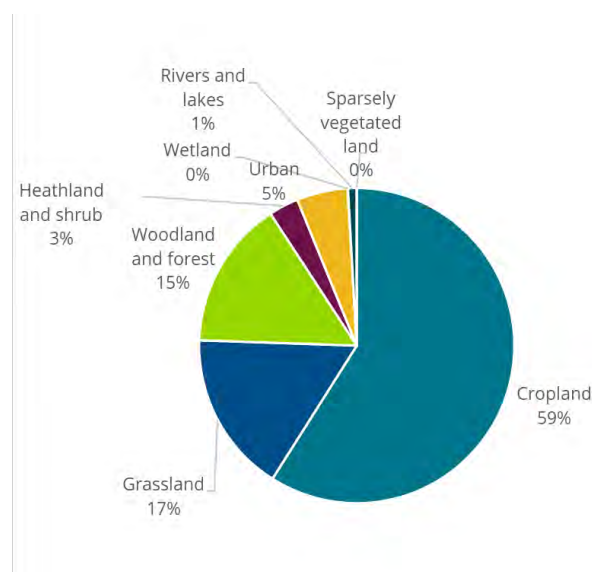


Figure 19: Mease/Sence Lowlands Extent

Table 109: Mease/Sence Lowlands extent (ha)

Habitat	Mease/Sence Lowlands area (ha)
Cropland	3,500
Grassland	1,000
Woodland and forest	900
Heathland and shrub	200
Urban	300
Wetland	-
Rivers and lakes	100
Sparsely vegetated land	-
Total	6,000

Table 110 presents the terrestrial designations and connectivity indicators within Mease/Sence Lowlands and the condition data on the water environment including Water Framework Directive status is presented in

Table 111.

Table 110: Condition indicators in Mease/Sence Lowlands

Indicator	Mease/Sence Lowlands		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	-	-	16%
Unfavourable recovering condition	-	-	81%
Unfavourable declining condition	-	-	1%
Unfavourable no change	4	100%	2%
Part destroyed	-	-	0.004%
Destroyed	-	-	0.02%
Total	4	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	-	-	1%
Local Nature Reserves	10	0.2%	0.3%
National Nature Reserves	-	-	1%
Special Areas of Conservation	4	0.1%	10%
Special Protection Areas	-	-	10%
Ancient Woodland	120	2%	3%
Countryside and Rights of Way	-	-	12%
Green Belt	-	-	0.1%
Parks and Gardens	-	-	1%
Flood risk	Areas (hectares)		Areas (hectares)
Flood zone 2	302	5%	19,000
Flood zone 3	257	4%	15,000
Accessibility	Areas (hectares)		Areas (hectares)
Area of greenspace (ha)	590		14,000
Length of footpaths (km)	19,000		3,800,000
Connectivity	Areas (hectares)	% of total habitat area	% of total habitat area
Grassland			
Core network	6	0.1%	5%
Stepping stone	-	-	0.1%
Remaining network	380	6%	42%
Outside network	5,500	93%	54%
Heathland	-		
Core network	-	-	5%
Stepping stone	-	-	0.02%
Remaining network	-	-	18%
Outside network	5,900	100%	77%
Wetland	-		
Core network	24	0.4%	6%
Stepping stone	32	1%	0.4%
Remaining network	1,400	24%	34%
Outside network	4,500	76%	60%
Woodland	-		
Core network	680	11%	5%
Stepping stone	82	1%	2%
Remaining network	3,500	59%	48%
Outside network	1,700	29%	45%

Table 111: Water Framework Directive waterbodies in Mease/Sence Lowlands

Water Framework Directive status	Mease/Sence Lowlands		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	0	0%	7%
Moderate	0	0%	12%



Good	19	95%	35%
High	1	5%	45%
Total	20	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	0	0%	44%
Good	0	0%	35%
High	0	0%	18%
Total	0	0%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 112. The estimated annual physical and monetary values are summarised in Table 113.

Table 112: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Mease/Sence Lowlands. The total annual net value of ecosystem benefits and services produced in Mease/Sence Lowlands is £40 in 2021 prices (Table 113). Key benefit value is carbon sequestration by habitats (£45 million, over 100% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£4 million) and livestock (-£8 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values.



Table 113: Mease/Sence Lowlands Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	15,533	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	16,866	M	Gross margin of livestock production	3	M
Timber	Volume of softwood removals (m3/yr)	512	M	Value of softwood removals	0.004	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	182,474	M	Value of CO2e sequestered in habitats	45	M
	CO2e emitted by habitats (tCO2e/yr)	(18,098)	M	Value of CO2e emitted by habitats	(4)	M
	CO2e emitted by livestock (tCO2e/yr)	(34,612)	M	Value of CO2e emitted by livestock	(8)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	6,678	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	534,717	M	Adult recreation welfare value (under 3 hours)	2	M
Physical health	Number of active visits (no. active visits/yr)	275,379	M	Avoided treatment medical costs	1	M
Water quality	Length of WFD rivers (km)	20	H	Welfare of avoiding deterioration in rivers	0.46	M
	Area of WFD lakes (km2)	-	●	Welfare of avoiding deterioration in lakes	-	●
				Total value	40	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	4			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						
Education						
Volunteering						



Natural Capital Asset Account

Table 114 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £1.3 billion in present value terms. A further £0.1 billion accrues to businesses through agriculture and timber. Overall, Mease/Sence Lowlands's natural capital assets have an asset value of £1.4 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Mease/Sence Lowlands accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 114.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 114: Mease/Sence Lowlands Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	40	-	40
	Gross margin of livestock production	86	-	86
Timber	Value of softwood removals	0.1	-	0.1
Carbon sequestration	Value of CO2e sequestered in habitats	-	1,638	1,638
	Value of CO2e emitted by habitats	-	(162)	(162)
	Value of CO2e emitted by livestock	-	(311)	(311)
Air quality regulation	Value of PM2.5 removal by woodland	-	16	16
Recreation	Adult recreation welfare value (under 3 hours)	-	48	48
Physical health	Avoided treatment medical costs	-	37	37
Water quality	Welfare of avoiding deterioration in rivers	-	12	12
	Welfare of avoiding deterioration in lakes	-	-	-
Total gross asset value		125	1,279	1,404
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 4 ha			
Other material unquantified benefits				
Flood risk management				
Mental health				
Education				
Volunteering				

Peak District National Park Natural Capital Asset Account

This section presents the baseline Natural Capital Asset Account for the Peak District National Park.



Asset Register

Figure 20 and Table 115 summarise the asset extent account for the Peak District National Park by UK broad habitat.

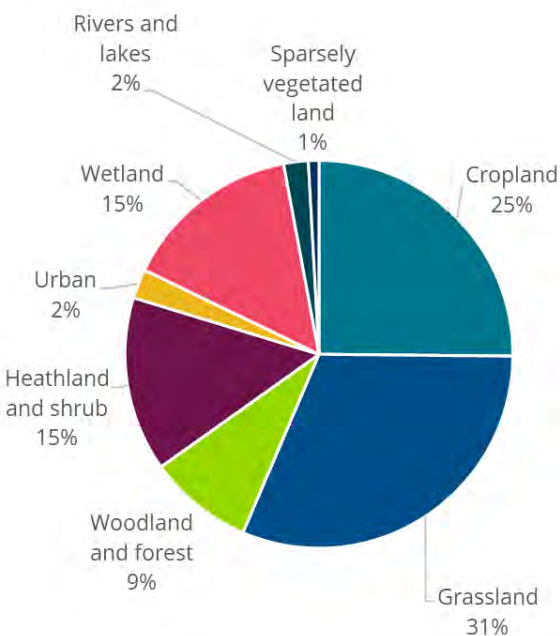


Figure 20: Peak District National Park Extent

Table 115: Peak District National Park extent (ha)

Habitat	Peak District National Park area (ha)
Cropland	22,500
Grassland	28,000
Woodland and forest	7,800
Heathland and shrub	13,100
Urban	2,200
Wetland	13,400
Rivers and lakes	1,800
Sparsely vegetated land	800
Total	89,600

Table 110 presents the terrestrial designations and connectivity indicators within Peak District National Park and the condition data on the water environment including Water Framework Directive status is presented in



Table 111.

Table 116: Condition indicators in Peak District National Park

Indicator	Peak District National Park		Derbyshire
Designated SSSIs	Area (hectares)	% of total SSSI area	% of total SSSI area
Favourable condition	4,700	17%	16%
Unfavourable recovering condition	23,000	81%	81%
Unfavourable declining condition	220	1%	1%
Unfavourable no change	470	2%	2%
Part destroyed	0	0%	0.004%
Destroyed	0	0%	0.02%
Total	28,390	100%	100%
Other designated areas	Areas (hectares)	% of total area	% of total area
Country Parks	610	1%	1%
Local Nature Reserves	0	0%	0.3%
National Nature Reserves	1,700	2%	1%
Special Areas of Conservation	26,000	29%	10%
Special Protection Areas	25,000	28%	10%
Ancient Woodland	2,956	3%	3%
Countryside and Rights of Way	31,514	35%	12%
Green Belt	-	-	0.1%
Parks and Gardens	901	1%	1%
Flood risk	Areas (hectares)	% of total area	Areas (hectares)
Flood zone 2	2,459	3%	19,000
Flood zone 3	1,931	2%	15,000
Accessibility			Areas (hectares)
Area of greenspace (ha)	5,400		14,000
Length of footpaths (km)	1,600,000		3,800,000
Connectivity	Areas (hectares)	% of total area	% of total habitat area
Grassland			
Core network	10,000	11%	5%
Stepping stone	180	0%	0.1%
Remaining network	66,000	73%	42%
Outside network	14,000	15%	54%
Heathland			
Core network	11,000	12%	5%
Stepping stone	50	0%	0.02%
Remaining network	37,000	41%	18%
Outside network	42,000	47%	77%
Wetland			
Core network	12,000	14%	6%
Stepping stone	270	0%	0.4%
Remaining network	38,000	43%	34%
Outside network	39,000	43%	60%
Woodland			
Core network	4,300	5%	5%
Stepping stone	1,200	1%	2%
Remaining network	38,000	42%	48%
Outside network	46,000	51%	45%

Table 117: Water Framework Directive waterbodies in Peak District National Park

Water Framework Directive status	Peak District National Park		Derbyshire
Rivers	Length (kilometres)	% of total length	% of total length
Poor	1	0%	7%
Moderate	9	4%	12%



Good	66	31%	35%
High	135	64%	45%
Total	211	100%	100%
Lakes	Area (hectares)	% of total area	% of total area
Poor	0	0%	4%
Moderate	771	19%	44%
Good	2,002	48%	35%
High	1,377	33%	18%
Total	4,150	100%	100%

Physical and Monetary Flow Account

The physical and monetary estimates for each benefit are given a confidence rating which is described in Table 112. The estimated annual physical and monetary values are summarised in Table 113.

Table 118: Assessing data quality

Level of confidence	Symbol	Description
Low	L	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	M	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	H	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	●	Not valued

The accounts identify a wide range of benefits from the natural capital within Peak District National Park. The total annual net value of ecosystem benefits and services produced in the Peak District National Park is £782 in 2021 prices (Table 113). Key benefit values include carbon sequestration by habitats (£737 million, 94% of total benefits), minerals (£104 million, 13% total benefits) and recreation (£51 million, 7% of total benefits). The carbon sequestration benefits provided by habitats outweigh the GHG emissions produced by habitats (-£29 million) and livestock (-£201 million). Note that wherever red values in parentheses appear, this indicates that the value is negative and represents negative environmental impacts. Across benefits, there is generally a medium-high confidence in the measurement of physical and monetary flows. Overall, there is medium to high confidence for most monetary values, except for the estimated tourism expenditure attributed to nature which is low.



Table 119: Peak District National Park Physical and Monetary Flow Account (annual values)

At November, 2022	Physical flow (unit/yr)			Monetary value (£m/yr)		
	Indicator	2021	Confidence	Valuation metric	2021	Confidence
Agricultural output	Arable crop production (tonnes/yr)	18,140	M	Gross margin of arable crop production	2	M
	Livestock production (heads/yr)	413,439	M	Gross margin of livestock production	35	M
Timber	Volume of softwood removals (m3/yr)	15,087	M	Value of softwood removals	0.5	M
Minerals	Volume of minerals extracted (tonnes/yr)	8,020,367	H	Ex-works value of mineral production	104	M
Carbon sequestration	CO2e sequestered in habitats (tCO2e/yr)	3,008,556	M	Value of CO2e sequestered in habitats	737	M
	CO2e emitted by habitats (tCO2e/yr)	(120,399)	M	Value of CO2e emitted by habitats	(29)	M
	CO2e emitted by livestock (tCO2e/yr)	(819,868)	M	Value of CO2e emitted by livestock	(201)	M
Air quality regulation	PM2.5 removal by woodland (kg/yr)	53,850	H	Value of PM2.5 removal by woodland	1	H
Recreation	Adult recreation visits (under 3 hours) (visits/year)	12,118,332	M	Adult recreation welfare value (under 3 hours)	51	M
Physical health	Number of active visits (no. active visits/yr)	6,240,941	M	Avoided treatment medical costs	21	M
Tourism	Domestic day visits and overnight trips attributed to NC (visits/yr)	141,920	L	Domestic tourism expenditure attributed to natural capital	34	L
Volunteering	Number of volunteer days (days/yr)	400	M	Value of volunteer days	0.04	M
Education	Number of education visits (visits/yr)	5,800	M	Value of educational visits	0.02	M
Water quality	Length of WFD rivers (km)	211	H	Welfare of avoiding deterioration in rivers	2	M
	Area of WFD lakes (km2)	4,150	H	Welfare of avoiding deterioration in lakes	26	M
				Total value	782	M
Key non-monetised benefits						
Biodiversity	Total SSSI area (ha)	28,608			Not valued	●
Other material unquantified benefits						
Flood risk management						
Mental health						



Natural Capital Asset Account

Table 114 reflects the distribution of benefits to businesses and wider society. Most of these benefits accrue to wider society through air quality regulation, carbon sequestration, water quality, recreation and physical health, equating to around £22.4 billion in present value terms. A further £3.7 billion accrues to businesses through agriculture, timber and minerals. Overall, Peak District National Park's natural capital assets have an asset value of £26.1 billion in present value terms. In general, there is high to moderate confidence in both the Physical and Monetary Flow Account estimates, with present value estimates having greater uncertainty due to assumptions on future trends. Key gaps and uncertainties for the Peak District National Park accounting boundary include:

- The non-monetised and unquantified benefits that are expected to be material are listed in Table 114.
- The maintenance costs associated with natural capital and their distribution (e.g., between sectors, over time) should be analysed in order to understand the relationship over time between spending on assets and the benefits they provide.

Table 120: Peak District National Park Natural Capital Asset Account, £m PV60

Produced at: September 2022	Valuation metric	Value to businesses	Value to the rest of society	Total
Asset values (monetised)				
Agricultural output	Gross margin of cereal crop production	46	-	46
	Gross margin of livestock production	944	-	944
Timber	Value of softwood removals	13	-	13
Minerals	Ex-works value of mineral production	2,730	-	2,730
Carbon sequestration	Value of CO2e sequestered in habitats	-	27,004	27,004
	Value of CO2e emitted by habitats	-	(1,081)	(1,081)
	Value of CO2e emitted by livestock	-	(7,359)	(7,359)
Air quality regulation	Value of PM2.5 removal by woodland	-	29	29
Recreation	Adult recreation welfare value (under 3 hours)	-	1,331	1,331
Physical health	Avoided treatment medical costs	-	849	849
Tourism	Domestic tourism expenditure attributed to natural capital		890	890
Volunteering	Value of volunteer days		1	1
Education	Value of educational visits		0.6	0.6
Water quality	Welfare of avoiding deterioration in rivers		47	47
	Welfare of avoiding deterioration in lakes		678	678
Total gross asset value		3,713	22,391	26,104
Asset values (non-monetised)				
Biodiversity	Total area of SSSI: 28,608 hectares			
Other material unquantified benefits				
Flood risk management				
Mental health				

