

**NW Drought Plan 2027
Strategic Environmental
Assessment (SEA)
Environmental Report:
Appendix D –
Environmental Baseline**

July 2026

NW DROUGHT PLAN 2027

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1 ENVIRONMENTAL BASELINE

The SEA Regulations requires consideration of:

‘the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme’

‘the environmental characteristics of areas likely to be significantly affected’

SEA Regulations Schedule 2 (2) and (3).

1.1 Introduction

An essential part of the Strategic Environmental Assessment (SEA) for our Drought Plan is to establish the current baseline environmental and socio-economic conditions and consider how these may change over the lifetime of the plan (the next five years: 2027-2032). Our baseline data has been drawn from a variety of sources, including plans and programmes reviewed as part of the SEA process and other published sources as referenced in this appendix. Information is presented under the SEA Regulations topics:

- Biodiversity, flora, and fauna
- Water
- Soil
- Air
- Climatic factors
- Population and human health
- Historic environment
- Landscape
- Material assets

1.1.1 Geographical scope

Our Drought Plan SEA study area shown in Figure 1.1 broadly follows our Northumbrian Water (NW) supply area boundary. However, in some locations the study area extends beyond this boundary to include the full extent of operational catchments that largely lie within the supply area but are partially outside it. This ensures that all potential pathways are considered within the assessment. These operational catchments include:

- North Tyne Upper
- Seaham Peterlee Coast
- South Tyne Upper
- Tees Lower and Estuary

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- Tees Middle
- Tees Upper.

A wider North East regional boundary has also been used to provide context where environmental data is only available at a broader spatial scale or where a larger-scale dataset is more appropriate. In addition, some baseline data are presented at the NW supply area and Water Resources Zone (WRZ) level. The two WRZs, Berwick & Fowberry and Kielder, within our supply area are shown in Figure 1.1.

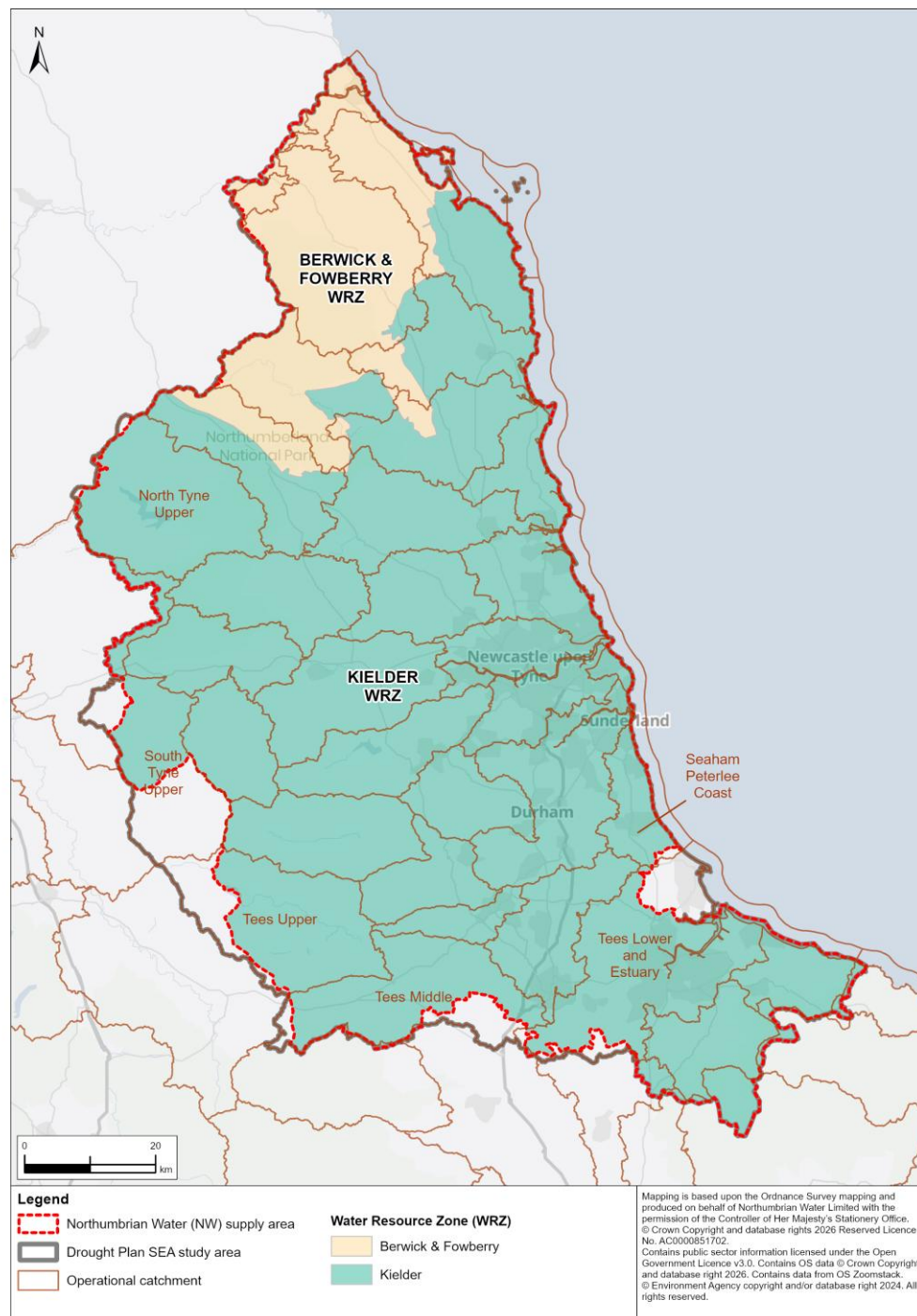


Figure 1.1 Geographical areas used to collect baseline data

1.1.2 Future baseline

The SEA Regulations require that "*the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the Plan or Programme*" are identified. Predicting future trends is inherently challenging, as they are influenced by a wide range of global, national and regional drivers, as well as policy and operational decision-making. However, based on the baseline information reviewed for this SEA, a number of key environmental and socio-economic trends have been identified. Our initial assessment indicates that the main patterns of change outlined below are likely to continue in the absence of the Drought Plan.

1.2 Biodiversity, Flora and Fauna

Biodiversity encompasses the variety of plants (flora) and animals (fauna) within an area, together with the habitats that support them. The importance of protecting and enhancing biodiversity is recognised at international, national and local levels. Biodiversity is valued both intrinsically and for the benefits it provides to quality of life, ecosystem functioning and amenity.

1.2.1 Designated sites

The Drought Plan study area and the two WRZs contain numerous Special Areas of Conservation, Special Protection Areas, Ramsar sites, Sites of Special Scientific Interest, National Nature Reserves, Local Nature Reserves, Marine Protected Areas and Marine Conservation Zones. The number and type of designated ecological sites across these areas are presented in Table 1.1 and Figure 1.2.

Table 1.1 Designated ecological sites in the Drought Plan SEA study area and WRZs

Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
Special Areas of Conservation	20	Berwickshire & North Northumberland Coast	17	Berwickshire & North Northumberland Coast	8	Berwickshire & North Northumberland Coast
		Border Mires, Kielder-Butterburn		Border Mires, Kielder-Butterburn		
		Castle Eden Dene		Castle Eden Dene		
		Durham Coast		Durham Coast		
		Ford Moss				Ford Moss
		Harbottle Moors		Harbottle Moors		Harbottle Moors
		Moor House-Upper Teesdale		Moor House-Upper Teesdale		
		Newham Fen		Newham Fen		
		North Northumberland Dunes		North Northumberland Dunes		North Northumberland Dunes
		North Pennine Dales Meadows		North Pennine Dales Meadows		North Pennine Dales Meadows
		North Pennine Moors		North Pennine Moors		
		North York Moors		North York Moors		
		River Eden		River Eden		
		River Tweed		River Tweed		River Tweed
		Roman Wall Loughs		Roman Wall Loughs		
		Simonside Hills		Simonside Hills		Simonside Hills
		Thrislington		Thrislington		
		Tweed Estuary				Tweed Estuary
		Tyne & Allen River Gravels		Tyne & Allen River Gravels		
		Tyne & Nent				
Special Protection Areas	9	Coquet Island	7	Coquet Island	4	
		Farne Islands				
		Holburn Lake & Moss				Holburn Lake & Moss
		Lindisfarne		Lindisfarne		Lindisfarne

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		North Pennine Moors		North Pennine Moors		
		North York Moors		North York Moors		
		Northumberland Marine		Northumberland Marine		Northumberland Marine
		Northumbria Coast		Northumbria Coast		Northumbria Coast
		Teesmouth and Cleveland Coast				
Ramsar sites	5	Holburn Lake & Moss	4		3	Holburn Lake & Moss
		Irthinghead Mires				
		Lindisfarne		Lindisfarne		Lindisfarne
		Northumbria Coast		Northumbria Coast		Northumbria Coast
		Teesmouth and Cleveland Coast		Teesmouth and Cleveland Coast		
Sites of Special Scientific Interest	261	Allen Confluence Gravels SSSI	231	Allen Confluence Gravels SSSI	30	
		Allendale Moors SSSI		Allendale Moors SSSI		
		Allolee to Walltown SSSI		Allolee to Walltown SSSI		
		Alnmouth Saltmarsh and Dunes SSSI		Alnmouth Saltmarsh and Dunes SSSI		
		Alston Shingle Banks SSSI				
		Appleby Fells SSSI		Appleby Fells SSSI		
		Arcot Hall Grasslands and Ponds SSSI		Arcot Hall Grasslands and Ponds SSSI		
		Arkengarthdale, Gunnerside and Reeth Moors SSSI		Arkengarthdale, Gunnerside and Reeth Moors SSSI		
		Aules Hill Meadows SSSI		Aules Hill Meadows SSSI		
		Backstone Bank and Baal Hill Woods SSSI		Backstone Bank and Baal Hill Woods SSSI		
		Baldersdale Woodlands SSSI		Baldersdale Woodlands SSSI		
		Bamburgh Coast and Hills SSSI		Bamburgh Coast and Hills SSSI		
		Bamburgh Dunes SSSI		Bamburgh Dunes SSSI		
		Barelees Pond SSSI				Barelees Pond SSSI
		Barrow Burn Meadows SSSI				Barrow Burn Meadows SSSI

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Barrow Meadow SSSI		Barrow Meadow SSSI		Barrow Meadow SSSI
		Bavington Crags SSSI		Bavington Crags SSSI		
		Beltingham River Shingle SSSI		Beltingham River Shingle SSSI		
		Bewick and Beanley Moors SSSI		Bewick and Beanley Moors SSSI		Bewick and Beanley Moors SSSI
		Big Waters SSSI		Big Waters SSSI		
		Billsmoor Park and Grasslees Wood SSSI				Billsmoor Park and Grasslees Wood SSSI
		Bishop Middleham Quarry SSSI		Bishop Middleham Quarry SSSI		
		Blagill Mine SSSI				
		Boldon Pastures SSSI		Boldon Pastures SSSI		
		Bollihope, Pikestone, Eggleston and Woodland Fells SSSI		Bollihope, Pikestone, Eggleston and Woodland Fells SSSI		
		Botany Hill SSSI		Botany Hill SSSI		
		Botton Head SSSI		Botton Head SSSI		
		Boulby Quarries SSSI		Boulby Quarries SSSI		
		Bowes Moor SSSI		Bowes Moor SSSI		
		Bowlees and Friar House Meadows SSSI		Bowlees and Friar House Meadows SSSI		
		Brada Hill SSSI		Brada Hill SSSI		
		Bradford Kames SSSI		Bradford Kames SSSI		
		Brasside Pond SSSI		Brasside Pond SSSI		
		Brenkley Meadows SSSI		Brenkley Meadows SSSI		
		Briarcroft Pasture SSSI		Briarcroft Pasture SSSI		
		Briarwood Banks SSSI		Briarwood Banks SSSI		
		Brignall Banks SSSI		Brignall Banks SSSI		
		Broughton Bank SSSI		Broughton Bank SSSI		
		Brunton Bank Quarry SSSI		Brunton Bank Quarry SSSI		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Burnfoot River Shingle and Wydon Nabb SSSI		Burnfoot River Shingle and Wydon Nabb SSSI		
		Burnhope Burn SSSI		Burnhope Burn SSSI		
		Butterburn Flow SSSI		Butterburn Flow SSSI		
		Butterby Oxbow SSSI		Butterby Oxbow SSSI		
		Campfield Kettle Hole SSSI				Campfield Kettle Hole SSSI
		Cassop Vale SSSI		Cassop Vale SSSI		
		Castle Eden Dene SSSI		Castle Eden Dene SSSI		
		Castle Point to Cullernose Point SSSI		Castle Point to Cullernose Point SSSI		
		Catton Lea Meadow SSSI		Catton Lea Meadow SSSI		
		Causey Bank Mires SSSI		Causey Bank Mires SSSI		
		Charity Land SSSI		Charity Land SSSI		
		Claxheugh Rock and Ford Limestone Quarry SSSI		Claxheugh Rock and Ford Limestone Quarry SSSI		
		Cleadon Hill SSSI		Cleadon Hill SSSI		
		Cliff Ridge SSSI		Cliff Ridge SSSI		
		Close House Mine SSSI		Close House Mine SSSI		
		Close House Riverside SSSI		Close House Riverside SSSI		
		College Valley Woodlands SSSI				College Valley Woodlands SSSI
		Colour Heugh and Bowden Doors SSSI				Colour Heugh and Bowden Doors SSSI
		Coquet Island SSSI		Coquet Island SSSI		
		Corbridge Limestone Quarry SSSI		Corbridge Limestone Quarry SSSI		
		Cornriggs Meadows SSSI		Cornriggs Meadows SSSI		
		Cotherstone Moor SSSI		Cotherstone Moor SSSI		
		Cottonshope Head Quarry SSSI				Cottonshope Head Quarry SSSI
		Crag Gill SSSI		Crag Gill SSSI		
		Cresswell and Newbiggin Shores SSSI		Cresswell and Newbiggin Shores SSSI		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Cresswell Ponds SSSI		Cresswell Ponds SSSI		
		Crime Rigg Quarry SSSI		Crime Rigg Quarry SSSI		
		Dabble Bank SSSI		Dabble Bank SSSI		
		Darras Hall Grassland SSSI		Darras Hall Grassland SSSI		
		Dawson's Plantation Quarry SSSI		Dawson's Plantation Quarry SSSI		
		Derwent Gorge & Horsleyhope Ravine SSSI		Derwent Gorge & Horsleyhope Ravine SSSI		
		Durham Coast SSSI		Durham Coast SSSI		
		Durtrees Burn Grassland SSSI				Durtrees Burn Grassland SSSI
		Eppleton Grassland SSSI		Eppleton Grassland SSSI		
		Fairy Holes Cave SSSI		Fairy Holes Cave SSSI		
		Fallowfield Mine SSSI		Fallowfield Mine SSSI		
		Fallowlees Flush SSSI		Fallowlees Flush SSSI		
		Far High House Meadows SSSI		Far High House Meadows SSSI		
		Farne Islands SSSI				
		Fishburn Grassland SSSI		Fishburn Grassland SSSI		
		Ford Moss SSSI				Ford Moss SSSI
		Foster's Hush SSSI		Foster's Hush SSSI		
		Frog Wood Bog SSSI		Frog Wood Bog SSSI		
		Fulwell and Carley Hill Quarries SSSI		Fulwell and Carley Hill Quarries SSSI		
		Geltsdale & Glendue Fells SSSI		Geltsdale & Glendue Fells SSSI		
		Gibside SSSI		Gibside SSSI		
		Gilleylaw Quarry SSSI		Gilleylaw Quarry SSSI		
		Glebe Quarry SSSI		Glebe Quarry SSSI		
		God's Bridge SSSI		God's Bridge SSSI		
		Gosforth Park SSSI		Gosforth Park SSSI		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Gowk Bank SSSI		Gowk Bank SSSI		
		Grains O' Th' Beck Meadows SSSI		Grains O' Th' Beck Meadows SSSI		
		Greencroft and Langley Moor SSSI		Greencroft and Langley Moor SSSI		
		Greenfoot Quarry SSSI		Greenfoot Quarry SSSI		
		Greenhaugh Meadow SSSI		Greenhaugh Meadow SSSI		
		Greenleighton Quarry SSSI		Greenleighton Quarry SSSI		
		Gunnerton Nick SSSI		Gunnerton Nick SSSI		
		Hadston Links SSSI		Hadston Links SSSI		
		Haggburn Gate SSSI		Haggburn Gate SSSI		
		Haggs Bank SSSI				
		Hallow Hill SSSI		Hallow Hill SSSI		
		Hannah's Meadows SSSI		Hannah's Meadows SSSI		
		Harbottle Moors SSSI		Harbottle Moors SSSI		Harbottle Moors SSSI
		Hareshaw Dene SSSI		Hareshaw Dene SSSI		
		Hart Bog SSSI				
		Harthope Burn SSSI				Harthope Burn SSSI
		Hartley Cleugh SSSI		Hartley Cleugh SSSI		
		Harton Down Hill SSSI		Harton Down Hill SSSI		
		Hastings Hill SSSI		Hastings Hill SSSI		
		Hawthorn Cottage Pasture SSSI		Hawthorn Cottage Pasture SSSI		
		Hawthorn Dene SSSI		Hawthorn Dene SSSI		
		Hawthorn Quarry SSSI		Hawthorn Quarry SSSI		
		Heatheryburn Bank SSSI		Heatheryburn Bank SSSI		
		Hell Kettles SSSI		Hell Kettles SSSI		
		Herrington Hill SSSI		Herrington Hill SSSI		
		Hesledon Moor East SSSI		Hesledon Moor East SSSI		

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	Total sites	Names	Total sites	Names	Total sites	Names
		Hesledon Moor West SSSI		Hesledon Moor West SSSI		
		Hesleyside Park SSSI		Hesleyside Park SSSI		
		Hetton Bogs SSSI		Hetton Bogs SSSI		
		Hexhamshire Moors SSSI		Hexhamshire Moors SSSI		
		High Haining Hill SSSI		High Haining Hill SSSI		
		High Knock Shield Meadow SSSI		High Knock Shield Meadow SSSI		
		High Moorsley SSSI		High Moorsley SSSI		
		Hisehope Burn Valley SSSI		Hisehope Burn Valley SSSI		
		Holburn Lake and Moss SSSI				Holburn Lake and Moss SSSI
		Holystone Burn Woods SSSI				Holystone Burn Woods SSSI
		Holystone North Wood SSSI		Holystone North Wood SSSI		Holystone North Wood SSSI
		Holywell Pond SSSI		Holywell Pond SSSI		
		Howick to Seaton Point SSSI		Howick to Seaton Point SSSI		
		Hulam Fen SSSI		Hulam Fen SSSI		
		Humbledon Hill Quarry SSSI		Humbledon Hill Quarry SSSI		
		Humbleton Hill and The Trows SSSI				Humbleton Hill and The Trows SSSI
		Hunder Beck Juniper SSSI		Hunder Beck Juniper SSSI		
		Hylton Castle Cutting SSSI		Hylton Castle Cutting SSSI		
		Irthing Gorge SSSI		Irthing Gorge SSSI		
		Joe's Pond SSSI		Joe's Pond SSSI		
		Kielder Mires SSSI		Kielder Mires SSSI		
		Kielderhead and Emblehope Moors SSSI		Kielderhead and Emblehope Moors SSSI		
		Kildale Hall SSSI		Kildale Hall SSSI		
		Kilmond Scar SSSI		Kilmond Scar SSSI		
		Knarsdale Meadows SSSI		Knarsdale Meadows SSSI		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Lambley River Shingles SSSI		Lambley River Shingles SSSI		
		Lampert Mosses SSSI		Lampert Mosses SSSI		
		Langbaugh Ridge SSSI		Langbaugh Ridge SSSI		
		Linbrigg SSSI				Linbrigg SSSI
		Lindisfarne SSSI		Lindisfarne SSSI		Lindisfarne SSSI
		Longhorsley Moor SSSI		Longhorsley Moor SSSI		
		Longhoughton Quarry SSSI		Longhoughton Quarry SSSI		
		Lovell Hill Pools SSSI		Lovell Hill Pools SSSI		
		Low Hauxley Shore SSSI		Low Hauxley Shore SSSI		
		Low Redford Meadows SSSI		Low Redford Meadows SSSI		
		Lower Derwent Meadows SSSI		Lower Derwent Meadows SSSI		
		Lune Forest SSSI		Lune Forest SSSI		
		Mere Beck Meadows SSSI		Mere Beck Meadows SSSI		
		Middle Crossthwaite SSSI		Middle Crossthwaite SSSI		
		Middle Side & Stonygill Meadows SSSI		Middle Side & Stonygill Meadows SSSI		
		Middleton Quarry SSSI		Middleton Quarry SSSI		
		Middridge Quarry SSSI		Middridge Quarry SSSI		
		Mill and Whiskershiel Burns SSSI		Mill and Whiskershiel Burns SSSI		
		Monk Wood SSSI		Monk Wood SSSI		
		Moorhouse and Cross Fell SSSI		Moorhouse and Cross Fell SSSI		
		Moorsley Banks SSSI		Moorsley Banks SSSI		
		Muckle Moss SSSI		Muckle Moss SSSI		
		Muggleswick, Stanhope and Edmundbyers Commons and Blanchland Moor SSSI		Muggleswick, Stanhope and Edmundbyers Commons and Blanchland Moor SSSI		
		Neasham Fen SSSI		Neasham Fen SSSI		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		New Hartley Ponds SSSI		New Hartley Ponds SSSI		
		New Scroggs SSSI		New Scroggs SSSI		
		Newham Fen SSSI		Newham Fen SSSI		
		Newton Ketton Meadow SSSI		Newton Ketton Meadow SSSI		
		Newton Links SSSI		Newton Links SSSI		
		Ninebanks River Shingle SSSI		Ninebanks River Shingle SSSI		
		North York Moors SSSI		North York Moors SSSI		
		Northumberland Shore SSSI		Northumberland Shore SSSI		Northumberland Shore SSSI
		Old Moss Lead Vein SSSI		Old Moss Lead Vein SSSI		
		Otterburn Mires SSSI				Otterburn Mires SSSI
		Park End Wood SSSI		Park End Wood SSSI		
		Peckriding Meadows SSSI		Peckriding Meadows SSSI		
		Peckriding Top Lot SSSI		Peckriding Top Lot SSSI		
		Pig Hill SSSI		Pig Hill SSSI		
		Pike Whin Bog SSSI		Pike Whin Bog SSSI		
		Pinkney and Gerrick Woods SSSI		Pinkney and Gerrick Woods SSSI		
		Pittington Hill SSSI		Pittington Hill SSSI		
		Pockerley Farm Pond SSSI		Pockerley Farm Pond SSSI		
		Pow Hill Bog SSSI		Pow Hill Bog SSSI		
		Prestwick Carr SSSI		Prestwick Carr SSSI		
		Quarrington Hill Grasslands SSSI		Quarrington Hill Grasslands SSSI		
		Railway Stell West SSSI		Railway Stell West SSSI		
		Raisby Hill Grassland SSSI		Raisby Hill Grassland SSSI		
		Raisby Hill Quarry SSSI		Raisby Hill Quarry SSSI		
		Ramsey's Burn Wood SSSI				Ramsey's Burn Wood SSSI
		Redcar Field SSSI		Redcar Field SSSI		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Redesdale Ironstone Quarries SSSI		Redesdale Ironstone Quarries SSSI		
		Ridley Gill SSSI		Ridley Gill SSSI		
		Rigg Farm and Stake Hill Meadows SSSI		Rigg Farm and Stake Hill Meadows SSSI		
		River Coquet and Coquet Valley Woodlands SSSI		River Coquet and Coquet Valley Woodlands SSSI		River Coquet and Coquet Valley Woodlands SSSI
		River Eden and Tributaries SSSI		River Eden and Tributaries SSSI		
		River Nent at Blagill SSSI				
		River South Tyne and Tynebottom Mine SSSI				
		River Tyne At Ovingham SSSI		River Tyne At Ovingham SSSI		
		River West Allen At Blackett Bridge SSSI		River West Allen At Blackett Bridge SSSI		
		Roddam Dene SSSI				Roddam Dene SSSI
		Rogerley Quarry SSSI		Rogerley Quarry SSSI		
		Roman Wall Escarpments SSSI		Roman Wall Escarpments SSSI		
		Roman Wall Loughs SSSI		Roman Wall Loughs SSSI		
		Roseberry Topping SSSI		Roseberry Topping SSSI		
		Ryton Willows SSSI		Ryton Willows SSSI		
		Saltburn Gill SSSI		Saltburn Gill SSSI		
		Settlingstones Mine SSSI		Settlingstones Mine SSSI		
		Sherburn Hill SSSI		Sherburn Hill SSSI		
		Shibdon Pond SSSI		Shibdon Pond SSSI		
		Shipley and Great Woods SSSI		Shipley and Great Woods SSSI		
		Simonside Hills SSSI		Simonside Hills SSSI		Simonside Hills SSSI
		Sleightholme Beck Gorge - The Troughs SSSI		Sleightholme Beck Gorge - The Troughs SSSI		
		Slit Woods SSSI		Slit Woods SSSI		
		Smallcleugh Mine SSSI				

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		South Hylton Pasture SSSI		South Hylton Pasture SSSI		
		Spindlestone Heughs SSSI		Spindlestone Heughs SSSI		
		Stawardpeel Woods SSSI		Stawardpeel Woods SSSI		
		Stonecroft Mine SSSI		Stonecroft Mine SSSI		
		Stony Cut, Cold Hesledon SSSI		Stony Cut, Cold Hesledon SSSI		
		Strother Hills SSSI		Strother Hills SSSI		
		Teesdale Allotments SSSI		Teesdale Allotments SSSI		
		Teesmouth and Cleveland Coast SSSI		Teesmouth and Cleveland Coast SSSI		
		The Allers and Lilburn Valley Junipers SSSI				The Allers and Lilburn Valley Junipers SSSI
		The Bog SSSI		The Bog SSSI		
		The Bottoms SSSI		The Bottoms SSSI		
		The Carrs SSSI		The Carrs SSSI		
		The Cheviot SSSI				The Cheviot SSSI
		Thorneyburn Meadow SSSI		Thorneyburn Meadow SSSI		
		Thornley Wood SSSI		Thornley Wood SSSI		
		Thrislington Plantation SSSI		Thrislington Plantation SSSI		
		Till Riverbanks SSSI				Till Riverbanks SSSI
		Tipalt Burn SSSI		Tipalt Burn SSSI		
		Town Kelloe Bank SSSI		Town Kelloe Bank SSSI		
		Trimdon Limestone Quarry SSSI		Trimdon Limestone Quarry SSSI		
		Tripsdale SSSI		Tripsdale SSSI		
		Tunstall Hills and Ryhope Cutting SSSI		Tunstall Hills and Ryhope Cutting SSSI		
		Tuthill Quarry SSSI		Tuthill Quarry SSSI		
		Tweed Catchment Rivers - England: Lower Tweed and Whiteadder SSSI				Tweed Catchment Rivers - England: Lower Tweed and Whiteadder SSSI

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Tweed Catchment Rivers - England: Till Catchment SSSI		Tweed Catchment Rivers - England: Till Catchment SSSI		Tweed Catchment Rivers - England: Till Catchment SSSI
		Tyne Watersmeet SSSI		Tyne Watersmeet SSSI		
		Tynemouth to Seaton Sluice SSSI		Tynemouth to Seaton Sluice SSSI		
		Upper Teesdale SSSI		Upper Teesdale SSSI		
		Waldrige Fell SSSI		Waldrige Fell SSSI		
		Warks Burn Woodland SSSI		Warks Burn Woodland SSSI		
		Warkworth Dunes and Saltmarsh SSSI		Warkworth Dunes and Saltmarsh SSSI		
		Wear River Bank SSSI		Wear River Bank SSSI		
		West Farm Meadow, Boldon SSSI		West Farm Meadow, Boldon SSSI		
		West Newlandside Meadows SSSI		West Newlandside Meadows SSSI		
		West Park Meadows SSSI		West Park Meadows SSSI		
		West Rigg Open Cutting SSSI		West Rigg Open Cutting SSSI		
		Westernhope Burn Wood SSSI		Westernhope Burn Wood SSSI		
		Wharmley Riverside SSSI		Wharmley Riverside SSSI		
		White Ridge Meadow SSSI		White Ridge Meadow SSSI		
		Whitesike Mine and Flinty Fell SSSI				
		Whitfield Moor, Plenmeller and Asholme Commons SSSI		Whitfield Moor, Plenmeller and Asholme Commons SSSI		
		Whitton Bridge Pasture SSSI		Whitton Bridge Pasture SSSI		
		Williamston River Shingle SSSI		Williamston River Shingle SSSI		
		Willow Burn Pasture SSSI		Willow Burn Pasture SSSI		
		Wingate Quarry SSSI		Wingate Quarry SSSI		
		Witton-le-Wear SSSI		Witton-le-Wear SSSI		
		Yoden Village Quarry SSSI		Yoden Village Quarry SSSI		
National Nature Reserves	16	Cassop	15	Cassop	1	
		Castle Eden Dene		Castle Eden Dene		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Derwent Gorge And Muggleswick Woods		Derwent Gorge And Muggleswick Woods		
		Durham Coast		Durham Coast		
		Farne Islands				
		Gowk Bank		Gowk Bank		
		Greenlee Lough		Greenlee Lough		
		Kielder Mires		Kielder Mires		
		Kielderhead		Kielderhead		
		Lindisfarne		Lindisfarne		Lindisfarne
		Moor House-Upper Teesdale		Moor House-Upper Teesdale		
		Muckle Moss		Muckle Moss		
		Newham Bog		Newham Bog		
		Teesmouth		Teesmouth		
		Thrislington		Thrislington		
		Whitelee Moor		Whitelee Moor		
Local Nature Reserves	132	Allensford Woods	125	Allensford Woods	2	
		Amble Dunes		Amble Dunes		
		Annitsford Pond		Annitsford Pond		
		Barmston Pond		Barmston Pond		
		Barrow Burn Wood				Barrow Burn Wood
		Barwick Pond		Barwick Pond		
		Bassleton Wood And The Holmes		Bassleton Wood And The Holmes		
		Bedlington Country Park		Bedlington Country Park		
		Benwell Nature Park		Benwell Nature Park		
		Berwick Hills		Berwick Hills		
		Billingham Beck Valley		Billingham Beck Valley		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Bishop Middleham Community Wildlife Garden		Bishop Middleham Community Wildlife Garden		
		Black Bobbies Field Thornaby		Black Bobbies Field Thornaby		
		Blackhall Grasslands		Blackhall Grasslands		
		Blyth To Seaton Sluice Dunes		Blyth To Seaton Sluice Dunes		
		Borough Woods		Borough Woods		
		Bracken Bank		Bracken Bank		
		Bracken Hill Wood		Bracken Hill Wood		
		Brankin Moor		Brankin Moor		
		Brinkburn		Brinkburn		
		Byerley		Byerley		
		Carlisle Park		Carlisle Park		
		Castle Eden Walkway		Castle Eden Walkway		
		Castle Island		Castle Island		
		Castlefields Wood		Castlefields Wood		
		Chapman's Well		Chapman's Well		
		Charlton's Pond		Charlton's Pond		
		Choppington Community Woods		Choppington Community Woods		
		Clara Vale		Clara Vale		
		Clarksons Wood		Clarksons Wood		
		Cleadon Hills		Cleadon Hills		
		Cong Burn Wood		Cong Burn Wood		
		Cow Plantation		Cow Plantation		
		Cowpen Bewley Woodland Country Park		Cowpen Bewley Woodland Country Park		
		Coxhoe Quarry Wood		Coxhoe Quarry Wood		
		Cresswell Dunes		Cresswell Dunes		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Cross Lane Meadows		Cross Lane Meadows		
		Crow Trees		Crow Trees		
		Daisy Hill		Daisy Hill		
		Davies Wood		Davies Wood		
		Deep Dene		Deep Dene		
		Denton Dene		Denton Dene		
		Drinkfield Marsh		Drinkfield Marsh		
		Dunston Pond (Acer Pond)		Dunston Pond (Acer Pond)		
		Easington		Easington		
		East Cramlington		East Cramlington		
		Errington Wood		Errington Wood		
		Eston Moor		Eston Moor		
		Ferryhill Carrs		Ferryhill Carrs		
		Flass Vale		Flass Vale		
		Flatts Lane Woodland Country Park		Flatts Lane Woodland Country Park		
		Fulwell Quarry		Fulwell Quarry		
		Geneva Wood		Geneva Wood		
		Gore Burn		Gore Burn		
		Grasslees Burn Wood				Grasslees Burn Wood
		Greatham Beck				
		Greencroft Heath		Greencroft Heath		
		Greenvale		Greenvale		
		Guisborough Branch Walkway		Guisborough Branch Walkway		
		Ha'Penny Woods		Ha'Penny Woods		
		Hardwick Dene & Elm Tree Woods		Hardwick Dene & Elm Tree Woods		
		Harperley & Pea Woods		Harperley & Pea Woods		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Hart To Haswell Walkway		Hart To Haswell Walkway		
		Hart Warren				
		Harton Down Hill		Harton Down Hill		
		Havannah Nature Reserve		Havannah Nature Reserve		
		Heddon Common		Heddon Common		
		Hedleyhill Colliery Woods		Hedleyhill Colliery Woods		
		Hetton Bogs		Hetton Bogs		
		Holywell Dene		Holywell Dene		
		Horden Grasslands		Horden Grasslands		
		Hylton Dene		Hylton Dene		
		Kyo Bogs		Kyo Bogs		
		Lanercost		Lanercost		
		Limekiln Gill		Limekiln Gill		
		Linthorpe Cemetery		Linthorpe Cemetery		
		Little Wood		Little Wood		
		Loftus Wood		Loftus Wood		
		Low Newton Junction		Low Newton Junction		
		Maidendale Fishing and Nature Reserve		Maidendale Fishing and Nature Reserve		
		Marden Quarry		Marden Quarry		
		Marsden Old Quarry		Marsden Old Quarry		
		Norton Grange Marsh		Norton Grange Marsh		
		Norwood Nature Park		Norwood Nature Park		
		Noses Point		Noses Point		
		Paddock Wood		Paddock Wood		
		Pelaw Quarry Pond		Pelaw Quarry Pond		

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Pelaw Woods		Pelaw Woods		
		Pity Me Carrs		Pity Me Carrs		
		Priestclose Wood		Priestclose Wood		
		Primrose		Primrose		
		Quarry Wood		Quarry Wood		
		Queen Elizabeth II Country Park		Queen Elizabeth II Country Park		
		Raisby Way And Trimdon Grange Quarry		Raisby Way And Trimdon Grange Quarry		
		Rockhouse Dene		Rockhouse Dene		
		Rockwell		Rockwell		
		Rosecroft Woods		Rosecroft Woods		
		Ryton Willows		Ryton Willows		
		Sacriston Wood		Sacriston Wood		
		Scotch Gill Wood		Scotch Gill Wood		
		Seaton Dunes And Common				
		Shibdon Pond		Shibdon Pond		
		Silverlink Biodiversity Park		Silverlink Biodiversity Park		
		South Stanley Woods		South Stanley Woods		
		Spion Cop Cemetery				
		St Mary'S Island		St Mary'S Island		
		Stainton Quarry		Stainton Quarry		
		Station Burn		Station Burn		
		Steely Hill		Steely Hill		
		Stillington Forest Park		Stillington Forest Park		
		Sugley Dene		Sugley Dene		
		Summerhill				

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Designated ecological sites	SEA study area		Kielder WRZ		Berwick & Fowberry WRZ	
	Total sites	Names	Total sites	Names	Total sites	Names
		Swallow Pond & Plantation		Swallow Pond & Plantation		
		Tanfield Lea Marsh		Tanfield Lea Marsh		
		The Kittiwake Tower		The Kittiwake Tower		
		The Moor		The Moor		
		The Whinnies		The Whinnies		
		Thorpe Wood		Thorpe Wood		
		Throckley & Walbottle Dene		Throckley & Walbottle Dene		
		Tilsheds		Tilsheds		
		Tunstall Hills		Tunstall Hills		
		Ulgam Meadow		Ulgam Meadow		
		Walbottle Brickworks		Walbottle Brickworks		
		Walbottle Dene		Walbottle Dene		
		Wallsend Dene		Wallsend Dene		
		Wansbeck Riverside Park		Wansbeck Riverside Park		
		Whitburn Point		Whitburn Point		
		Whitecliff, Loftus And Rosecroft Woods		Whitecliff, Loftus and Rosecroft Woods		
		Willington North Dene		Willington North Dene		
		Windy Nook Nature Park		Windy Nook Nature Park		
		Wingate Quarry		Wingate Quarry		
		Wylam Haughs		Wylam Haughs		
Marine Conservation Zones	3	Berwick to St Mary's	3	Berwick to St Mary's	1	Berwick to St Mary's
		Coquet to St Marys		Coquet to St Marys		
		Aln Estuary		Aln Estuary		

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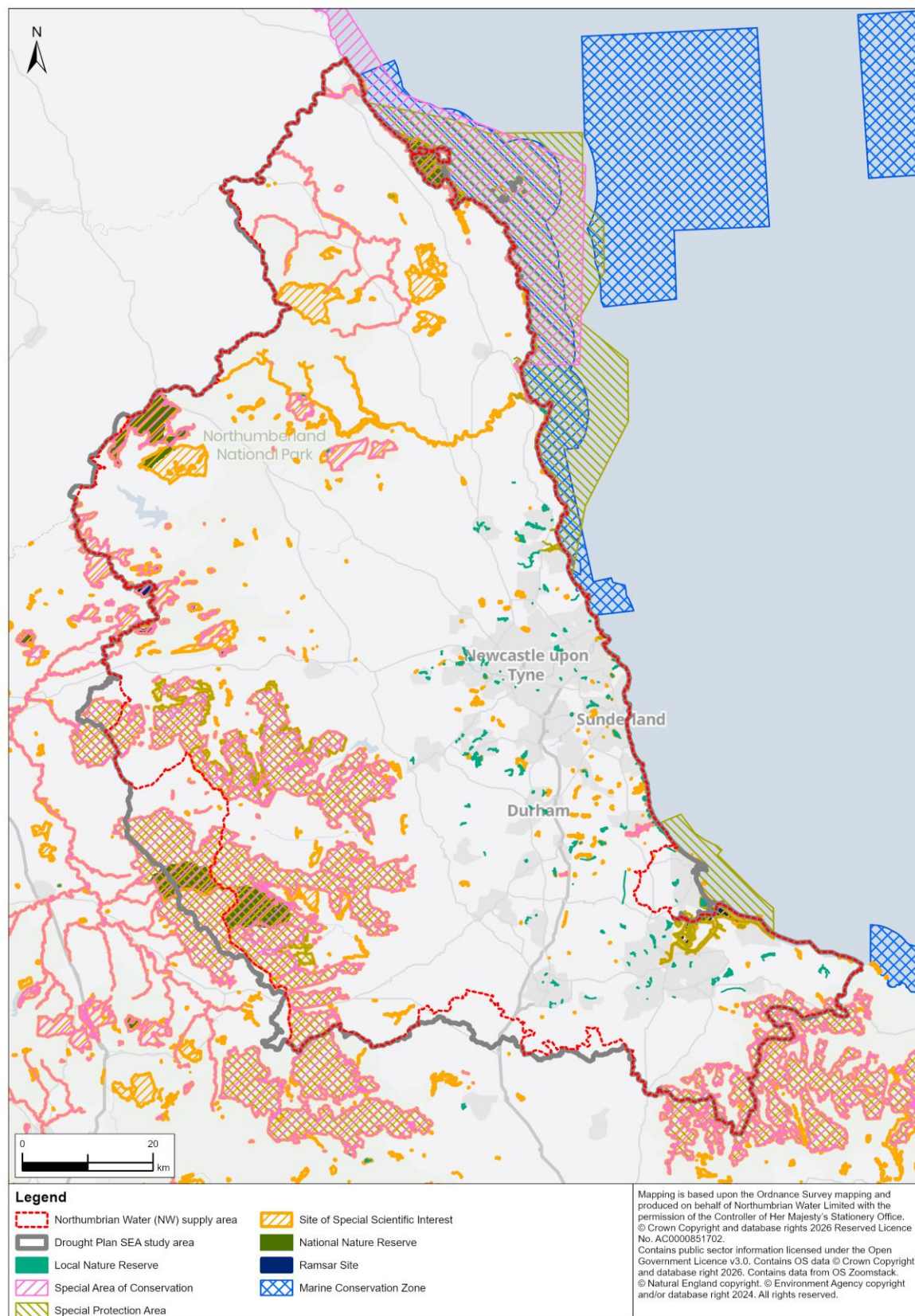


Figure 1.2 Designated sites across the Drought Plan SEA study area and NW supply area

1.2.2 Species and habitats

Under the Natural Environment and Rural Communities (NERC) Act 2006, we have a statutory duty to have regard for the conservation of biodiversity when carrying out our functions. This includes species and habitats of principal importance for biodiversity conservation, as listed under Section 41 of the Act, some of which may also be designated Local Wildlife Sites. In addition, under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2017 (as amended), we have duties not only to protect designated sites and species but also to contribute to their conservation and enhancement. We have taken these legislative requirements into account in the assessment and development of our Drought Plan.

Drought actions have the potential to affect biodiversity, flora and fauna due to the operational abstraction of water during times of water stress as well as through any construction works required to implement drought actions. Water abstraction and associated infrastructure can, in some cases, result in adverse effects on water-dependent sites. Potential impacts on biodiversity include the drying of wetland habitats, reduced water levels and slower flows in watercourse, deterioration in water quality, changes in water temperature, and the transfer or proliferation of invasive non-native species (INNS).

The sensitivity of environmental receptors to drought actions is highly site-specific. As droughts are temporary events, and any associated drought action would be deployed only for limited duration, the extent and significance of effects depend on both the duration of the intervention and the degree to which affected features can recover once normal hydrological conditions return. Consequently, the potential for reversibility of effects following drought conditions is an important consideration when assessing environmental risk.

Priority habitats

Within the Drought Plan SEA study area, there are 70 designated priority habitats, as listed in Table 1.2. Table 1.2 also provides the corresponding hectares (ha) and percentage breakdown for each priority habitat type across the study area. Priority habitats make up 28% of the study area to a total of 265,980 ha. Blanket bog accounts for the highest percentage of priority habitat in the region.

Good Quality Semi-Improved Grassland is present within the study area. Although this is not classified as a Priority Habitat, it nonetheless supports biodiversity and is considered to have potential conservation importance in England. This habitat type covers 17,323 ha (1.84%) of the study area.

Another habitat category present within the study area is 'No main habitat but additional habitats present'. This classification applies to areas where no single priority habitat dominates, but where additional habitat features of ecological value occur. This category covers 8944 ha (0.95%) of the study area.

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Table 1.2 Priority habitats in the Drought Plan SEA study area¹

Priority habitat type	Hectares (ha)	Percentage (%)
Blanket bog	83018.75	8.80
Blanket bog, Deciduous woodland	2.76	0.00
Calaminarian grassland	103.30	0.01
Coastal and floodplain grazing marsh	1807.64	0.19
Coastal and floodplain grazing marsh, Coastal saltmarsh	103.67	0.01
Coastal and floodplain grazing marsh, Lowland meadows	9.15	0.00
Coastal and floodplain grazing marsh, Lowland raised bog	17.33	0.00
Coastal and floodplain grazing marsh, Maritime cliff and slope	13.88	0.00
Coastal saltmarsh	327.24	0.03
Coastal saltmarsh, Saline lagoons	1.14	0.00
Coastal sand dunes	1792.91	0.19
Coastal sand dunes, Deciduous woodland	0.89	0.00
Coastal sand dunes, Lowland calcareous grassland	0.65	0.00
Coastal sand dunes, Lowland dry acid grassland	3.94	0.00
Coastal sand dunes, Lowland dry acid grassland, Lowland heathland	0.18	0.00
Coastal sand dunes, Lowland fens	1.52	0.00
Coastal sand dunes, Lowland fens, Reedbeds	0.03	0.00
Coastal sand dunes, Lowland heathland	0.12	0.00
Coastal sand dunes, Maritime cliff and slope	12.62	0.00
Coastal sand dunes, Reedbeds	9.88	0.00
Coastal vegetated shingle	1.61	0.00
Deciduous woodland	27995.54	2.97
Deciduous woodland, Lowland raised bog	68.97	0.01
Deciduous woodland, Maritime cliff and slope	1.22	0.00
Fragmented heath	1225.97	0.13
Good quality semi-improved grassland	17323.05	1.84
Grass moorland	22710.61	2.41
Lakes	61.72	0.01
Lakes, Lowland fens	1.88	0.00
Lakes, Reedbeds	0.37	0.00
Limestone pavement	0.14	0.00
Lowland calcareous grassland	469.60	0.05
Lowland calcareous grassland, Limestone pavement	0.04	0.00
Lowland calcareous grassland, Maritime cliff and slope	30.04	0.00
Lowland dry acid grassland	2054.53	0.22
Lowland dry acid grassland, Lowland heathland	50.80	0.01
Lowland dry acid grassland, Lowland raised bog	29.95	0.00
Lowland dry acid grassland, Maritime cliff and slope	6.64	0.00

¹ Data source: Natural England (2025). *Priority Habitats Inventory (England)*. Available at: <https://naturalengland-defra.opendata.arcgis.com/datasets/Defra:priority-habitats-inventory-england/about> [Accessed March 2026].

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Priority habitat type	Hectares (ha)	Percentage (%)
Lowland fens	638.31	0.07
Lowland fens, Lowland raised bog	68.95	0.01
Lowland fens, Maritime cliff and slope	1.14	0.00
Lowland fens, Reedbeds	7.20	0.00
Lowland heathland	3866.81	0.41
Lowland heathland, Lowland raised bog	40.76	0.00
Lowland heathland, Maritime cliff and slope	15.05	0.00
Lowland meadows	1272.94	0.13
Lowland meadows, Lowland raised bog	2.32	0.00
Lowland meadows, Maritime cliff and slope	1.74	0.00
Lowland raised bog	3837.53	0.41
Lowland raised bog, purple moor grass and rush pastures	37.75	0.00
Lowland raised bog, Upland flushes fens and swamps	73.17	0.01
Lowland raised bog, Upland heathland	240.46	0.03
Maritime cliff and slope	418.89	0.04
Maritime cliff and slope, purple moor grass and rush pastures	0.02	0.00
Maritime cliff and slope, Reedbeds	0.08	0.00
Mountain heaths and willow scrub	265.57	0.03
Mudflats	634.13	0.07
No main habitat but additional habitats present	8944.25	0.95
Ponds	22.77	0.00
Ponds, Reedbeds	0.06	0.00
Purple moor grass and rush pastures	5940.61	0.63
Reedbeds	34.17	0.00
Reedbeds, Coastal saltmarsh	4.62	0.00
Reedbeds, Upland flushes fens and swamps	0.15	0.00
Saline lagoons	20.22	0.00
Traditional orchard	60.11	0.01
Upland calcareous grassland	590.87	0.06
Upland flushes fens and swamps	5059.97	0.54
Upland hay meadow	898.90	0.10
Upland heathland	73720.58	7.81

Priority species

Key water-related NERC species are outlined below:

- Otter (*Lutra lutra*)
- Water vole (*Arvicola amphibius*)
- Atlantic salmon (*Salmo salar*)
- European eel (*Anguilla anguilla*)
- Sea/Brown trout (*Salmo trutta*)

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- River lamprey (*Lampetra fluviatilis*)
- White clawed crayfish (*Austropotamobius pallipes*)
- Snakeshead Fritillary (*Fritillaria meleagris*)
- Loddon Lilly (*Leucojum aestivum*)
- Creeping Marshwort (*Helosciadium repens*)
- Narrow-leaved water-dropwort (*Oenanthe silaifolia*)
- River water-dropwort (*Oenanthe fluviatilis*)
- Fine-lined Pea Mussel (*Pisidium tenuilineatum*)
- Freshwater Pea Mussel (*Margaritifera margaritifera*)
- Depressed River Mussel (*Pseudanodonta complanata*)
- Greater Water Parsnip (*Sium latifolium*)
- Club-tailed Dragonfly (*Gomphus vulgatissimus*)
- Tassel Stonewort (*Tolypella intricata*)
- Desmoulins Whorl Snail (*Vertigo moulinsiana*)
- Snipe (*Gallinago gallinago*)
- Lapwing (*Vanellus vanellus*)
- Natterer's Bat (*Myotis nattereri*)
- Daubenton's Bat (*Myotis daubentonii*)
- Pipistrelle Bat (*Pipistrellus pipistrellus*).

In addition to considering NERC priority habitats and species, the assessment also draws on Water Framework Directive (WFD) classifications to provide a broader, integrated understanding of the condition of the aquatic environment. The WFD ecological status classification considers the condition of biological quality elements (e.g. aquatic invertebrates, plants and fish), as well as hydromorphological and supporting physico-chemical elements within each water body. This classification provides an indication of the overall ecological functioning of a water body rather than a direct measure of the quality or condition of individual habitats or species.

Drought actions have the potential to affect biodiversity, flora and fauna associated with water-dependent ecosystems. The assessment considers these effects across three complementary levels: NERC priority habitats and species, designated sites (including Habitats Sites), and WFD water body status. NERC priority habitats and species provide an indication of important ecological features that may be sensitive to changes in flow, water quality or hydrology. Designated sites are assessed separately, with a specific focus on their qualifying features and site integrity, taking account of site-specific sensitivities and conservation objectives. At a broader scale, WFD classifications are used to understand the condition and functioning of the aquatic environment at the water body level, including biological quality elements (e.g. fish, invertebrates and aquatic plants) and

supporting physico-chemical conditions. This provides context on environmental pressures and overall system health but does not act as a proxy for assessments of individual habitats, species or designated sites. The SEA integrates these three strands to ensure that both sit-specific and wider ecosystem effects are appropriately identified and assessed. draws on WFD information to understand environmental pressures at the water-body scale, while recognising that this operates alongside, rather than as a proxy for, designated-site assessments.

Invasive Non-Native Species (INNS)

There has been a dramatic increase in the number of non-native species arriving in the United Kingdom (UK) over recent decades, as well as in the number of non-native species becoming established, and subsequently becoming invasive. There are approximately 2,000 non-native species in the UK, of which approximately 10-15% are classed as INNS, causing significant social, environmental, or economic impacts, directly costing the UK an estimated £1.7 billion a year².

We are committed to tackling the challenges posed by INNS as part of our wider approach to building resilience in the face of drought. We are tackling INNS through our Branch Out INNS Fund, supporting local projects that protect rivers, reservoirs, and catchments. By reducing the spread of species like Japanese knotweed (*Reynoutria japonica*) and signal crayfish (*Pacifastacus leniusculus*), we help safeguard biodiversity, strengthen resilience, and ensure healthy water environments that can better withstand future droughts.

Species of particular concern for us highlighted in the North East INNS Strategy and Action Plan³ include:

- Japanese Knotweed (*Reynoutria japonica*)
- Himalayan Balsam (*Impatiens glandulifera*)
- Giant Hogweed (*Heracleum mantegazzianum*)
- Signal crayfish (*Pacifastacus leniusculus*)
- Curly waterweed (*Lagarosiphon major*)
- Nuttall's pondweed (*Elodea nuttallii*)
- New Zealand pygmyweed (*Crassula helmsii*)
- Zebra mussel (*Dreissena polymorpha*)
- Chinese mitten crab (*Eriocheir sinensis*)
- Fanwort (*Cabomba caroliniana*)

² Department for Environment, Food & Rural Affairs, The Scottish Government, and Welsh Government (2023). *The Great Britain Invasive Non-Native Species Strategy: 2023 to 2030*. Available at: https://www.nonnativespecies.org/about/gb-strategy/the-great-britain-invasive-non-native-species-strategy#_edn2 [Accessed July 2025]

³ Environmental Agency (2020). *North East Invasive Non-native Species Strategy and Action Plan 2020 – 2024*. Available at: <https://www.tynerivertrust.org/wp-content/uploads/2019/08/North-East-INNS-Strategy-2020-Version-0.1-HighRes.pdf> [Accessed March 2026]

- Floating pennywort (*Hydrocotyle ranunculoides*)
- Parrot's feather (*Myriophyllum aquaticum*)
- Curly waterweed (*Lagarosiphon major*)
- Three-flowered leek (*Allium triquetrum*)
- Common cord grass (*Spartina anglica*)
- American skunk cabbage (*Lysichiton americanus*)
- Water fern (*Azolla filicoides*)
- Pirri-pirri-bur (*Acaena novae-zelandiae*)
- Giant knotweed (*Fallopia sachalinensis*)
- American mink (*Neovison vison*)
- Sea buckthorn (*Hippophae rhamnoides*)
- Australian swamp-stonecrop (*Crassula helmsii*).

This list reflects species identified as priorities for management across the wider North East region and therefore represents a strategic context baseline. Not all these species are confirmed to be present within the NW supply area; some are known to occur locally, while others are considered a risk of introduction or spread. For the purposes of the SEA, the INNS baseline is therefore informed both by known occurrences within the study area and by the potential for these species to establish or expand under changing environmental conditions. The SEA uses this information to highlight relevant invasive species pressures to ensure that both existing presence and future risk are appropriately considered in the assessment.

1.2.3 Future baseline

Designated sites

It is not anticipated that many additional sites will be designated under international or national legislation, the focus should therefore be on achieving the conservation objectives for sites with existing designations. A range of measures are included in the management plans for each action to contribute to these objectives and, assuming sufficient resources are in place, it is likely that the condition of these sites will improve over the next two or three decades to reach the objectives. These timescales recognise the time required for environmental changes to arise following positive interventions. A similar trend is likely for achievement of objectives associated with the NERC priority habitats.

The number of locally designated sites may increase slightly in response to growing community activities and the development of local environmental initiatives. An improving trend in condition of these sites is also anticipated with greater resources (particularly voluntary resources) devoted to their protection and enhancement.

Species and habitats

The Department for Environment, Food & Rural Affairs (Defra) 25 Year Environment Plan includes a commitment to restore 75% of terrestrial and freshwater protected sites to favourable condition and to create or restore 500,000 ha of wildlife-rich habitat outside protected areas by 2042⁴. These commitments have been reaffirmed and updated in the Environmental Improvement Plan (EIP) 2025, published in December 2025, which also sets revised interim targets for natural recovery. The previous interim targets set out to achieve 250,000 ha by 2030. To support this goal, Defra and Natural England published definitions and guidance in early 2025^{5,6}, which remains aligned within the long-term 2042 goal. To support delivery, Defra and Natural England published updated definitions and guidance in early 2025, alongside announcing £25 million in funding through the Species Survival Fund for habitat restoration across heathland, grassland, wetlands and more. As of May 2025, approximately 38,900 ha of wildlife-rich habitat have already been created or restored, based on Defra-backed schemes monitored⁷.

This information is relevant to the future baseline because these initiatives are expected to increase the extent, condition and resilience of protected and wildlife-rich habitats over the plan period. As these national commitments progress, the overall area and quality of habitat within the Drought Plan SEA study area are likely to improve, resulting in a more favourable ecological baseline against which future drought actions will be assessed.

Given that no construction or operational land is required for the implementation of drought actions, and all drought actions are temporary, a Biodiversity Net Gain (BNG) assessment is not required for our current Drought Plan. However, if future revisions to our Drought Plan introduce development-based drought actions, all relevant regulatory BNG requirements will need to be followed.

In relation to wider development policy, Defra's plan introduces mandatory BNG, requiring a minimum 10% uplift in biodiversity secured for at least 30 years. This was implemented in February 2024 under the Environment Act 2021 through the Biodiversity Gain (Habitat Enhancement) Regulations 2024 and associated secondary legislation, which set out the statutory processes for calculating, delivering and securing BNG. Rollout of BNG for

⁴ Department for Environment, Food & Rural Affairs (2023). 25 Year Environment Plan: at a glance – summary of targets. Available at: <https://www.gov.uk/government/publications/25-year-environment-plan/25-year-environment-plan-our-targets-at-a-glance> [Accessed December 2025].

⁵ Department for Environment, Food & Rural Affairs (2023). 25 Year Environment Plan: at a glance – summary of targets. Available at: <https://www.gov.uk/government/publications/25-year-environment-plan/25-year-environment-plan-our-targets-at-a-glance> [Accessed December 2025].

⁶ GOV.UK (2023) *Understanding biodiversity net gain*. Available at: <https://www.gov.uk/guidance/understanding-biodiversity-net-gain> [Accessed December 2025].

⁷ Department for Environment, Food & Rural Affairs and Natural England (2023). *Putting nature on road to recovery with Species Survival Fund*. Available at: <https://www.gov.uk/government/news/putting-nature-on-road-to-recovery-with-species-survival-fund> [Accessed December 2025].

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Nationally Significant Infrastructure Projects has been postponed from the originally anticipated date of November 2025 and will now apply to projects submitting Development Consent Order applications from November 2026, to allow sufficient time for effective integration into project planning.

Climate change

Beyond habitat restoration, the Drought Plan supports landscape-scale and catchment-level land management to drive meaningful ecological recovery and climate resilience. It recognises climate change as a key stressor altering seasonal behaviours, exacerbating water scarcity, and indirectly shifting species' distributions through changes in INNS pressures and ecological interactions.

Climate change is likely to have an impact on wildlife in the future by exacerbating existing pressures such as changes to the timing of seasonal activity, and water scarcity. We acknowledged that there is a need to allow wildlife to adapt to the impacts of climate change. Climate may limit species' distributions indirectly through the impact of INNS on native species along climatic gradients⁸. It will affect the abundance and diversity of natural enemies, competitors and species that constitute resources, as well as a species' ability to compete for resources or resist natural enemies.

Invasive Non-Native Species

The future baseline for INNS within the SEA study area is uncertain and influenced by a range of interacting factors. Climate change is expected to place additional pressure on native species and may favour the establishment and spread of INNS, for example through extended growing seasons and changes in habitat suitability. In parallel, the spread of INNS may also occur through natural processes and human activities (e.g. recreation, angling and water use).

Conversely, there are several ongoing and emerging initiatives across the study area aimed at managing and reducing INNS populations, including coordinated programmes led by local authorities, Wildlife Trusts, River Trusts and catchment partnerships. These initiatives are expected to help mitigate the spread and impacts of INNS over time.

Local Nature Recovery Strategies (LNRSs) are a key mechanism through which these management efforts are being coordinated. Based on the map of LNRS areas and responsible authorities published by Defra⁹, only two LNRSs within our Drought Plan SEA study area have been published to date: Cumbria (Westmorland and Furness Council) and

⁸ Pateman, R. & Hodgson, J. (2015) Biodiversity: *Climate Change Impacts Report Card Technical Paper*. Available at: <http://www.nerc.ac.uk/research/partnerships/lwec/products/report-cards/biodiversity/papers/source06/> [Accessed December 2025].

⁹ Department for Environment, Food & Rural Affairs (2023 with the last update March 2026). *Map of local nature recovery strategy (LNRS) areas and responsible authorities published*. Available at: https://assets.publishing.service.gov.uk/media/69b14fcc1daa1b70ca233166/Map_of_local_nature_recovery_strategy_areas_and_responsible_authorities.pdf [Accessed March 2026].

North Yorkshire and York (North Yorkshire Council). The remaining LNRSs within the study area are currently in preparation. Any LNRSs published during the lifespan of the Drought Plan will be reviewed, and their relevant provisions will be considered as part of the assessment.

Both the Cumbria LNRS¹⁰ and North Yorkshire and York LNRS¹¹ identify priorities relating to the control of INNS across the areas covered by the strategies (for example, INNS and control and seek to eradicate INNS throughout North Yorkshire and York). To support these priorities, each strategy proposes a range of potential measures, including:

Cumbria LNRS:

- Work with local landowners and stakeholders to develop and implement coordinated management plans for the strategic reduction/eradication of key INNS, which also consider the impacts of climate change on species distribution.
- Reduce the risk of the introduction/spread of INNS, and the diseases they can carry, by encouraging greater implementation of effective biosecurity measures, through:
 - education
 - engagement
 - signage
 - targeted risk reduction
 - working with event organisers
 - raising awareness of good practice guidance.
- Develop a coordinated approach for sharing monitoring/surveillance data on INNS, by developing emergency action plans, to allow for a rapid response to the spread of existing or introduction of new INNS.

North Yorkshire and York LNRS:

- Implement a coordinated approach to the control of INNS across North Yorkshire and York, including the development of a regional biosecurity plan.
- Work with regional partners, organisations, and projects to help raise awareness of INNS and improve INNS monitoring and reporting across North Yorkshire and York.
- Implement measures to mitigate the spread of INNS when undertaking any works (e.g. the removal of barriers from watercourses).

¹⁰ Westmorland and Furness Council (2025). *Cumbria Local Nature Recovery Strategy*. Available at: https://cumbrialnrs.org.uk/sites/default/files/11112848/2025-11/Cumbria%20LNRS%20Statement%20of%20Biodiversity%20Priorities%20%28November%2025%29_3.pdf [Accessed March 2026].

¹¹ North Yorkshire Council (2026). *North Yorkshire and York Local Nature Recovery Strategy*. Available at: <https://www.northyorks.gov.uk/sites/default/files/2026-02/NYY%20LNRS%20document%204%20priorities%20and%20measures.pdf> [Accessed March 2026].

1.3 Water

Our supply area is a relatively wet area in the UK, with the average annual rainfall exceeding 1,500 mm and is classed as an area with no serious water stress¹². However, anticipated population and economic growth alongside the projected changes in climate will likely continue to place additional stress on water availability and the natural environment within our supply area. In particular, significant industrial growth and proposed developments in the Teesside area, including the expansion of the chemicals and process industries, alongside carbon capture and storage infrastructure, and proposed hydrogen-related developments associated with the Teesside industrial cluster, represent a notable potential increase in non-household water demand. This industrial growth, alongside rising household demand, is therefore a key pressure that needs to be considered in future water resource planning.

The Drought Plan SEA study area also has a number of Ramsar sites and other water-dependent habitats, presented in Table 1.1 and Table 1.2. Therefore, the management of water resources is particularly important. Effective water resource management is critical because drought conditions and associated drought actions can significantly alter river flows and water quality. Reduced flows can lead to habitat degradation, loss of connectivity, and reduced availability of freshwater for species that depend on these ecosystems. Lower flows often result in higher concentrations of pollutants and nutrients, which can cause changes in water chemistry such as increased salinity, reduced dissolved oxygen, and altered pH levels. These changes can negatively impact aquatic species, disrupt ecological processes, and threaten the integrity of designated sites.

Our Drought Plan should therefore avoid implementing drought actions that could adversely affect water quality or ecology. We should prioritise drought actions that reduce pressure on the water environment, supporting both environmental protection and long-term resilience.

Source Protection Zones (SPZs) within the Drought Plan SEA study area are shown in Figure 1.3. Knowledge of SPZs is important for drought planning as it identifies groundwater supplies that are vulnerable to contamination. This helps ensure that drought actions, such as increased abstraction, do not compromise water quality or public health.

The study area lies within two River Basin Districts (RBDs): the Northumbria RBD and the Solway Tweed RBD. The Northumbria RBD covers an area of 9,000 km², extending from the Scottish border in the north to Stockton-upon-Tees in the south. It includes parts of Cumbria in the west and extends eastwards to the North Sea¹³. The study area intersects with seven of the management catchments in the Northumbria RBD.

¹² Environment Agency (2021). *Water Stressed Areas – Final Classification 2021*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/998237/Water_stressed_areas_final_classification_2021.odt [Accessed July 2025]

¹³ Defra and Environment Agency (2021). *Northumbria River Basin District*. Available at: <https://environment.data.gov.uk/catchment-planning/RiverBasinDistrict/3/classifications> [Accessed July 2025]

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The Solway Tweed RBD covers an area of around 17,500 km² and includes the Scottish Borders, Dumfries and Galloway, and parts of Cumbria and Northumberland. The study area intersect with one of the management catchments (Till management catchment) in the Solway Tweed RBD¹⁴. The number of water bodies within Northumbria and Solway Tweed RBDs are presented in Table 1.3.

Table 1.3 Number of water bodies in the Northumbrian and Solway Tweed RBDs

Water body categories	Northumbria RBD	Solway Tweed RBD	Total
Rivers and surface water	315	126	441
Lake	45	11	56
Coastal	7	0	7
Estuarine	7	2	9
Groundwater	10	5	15
Total	384	144	528

¹⁴ Defra and Environment Agency. *Solway Tweed River Basin District*. Available at: <https://environment.data.gov.uk/catchment-planning/RiverBasinDistrict/2> [Accessed March 2026]

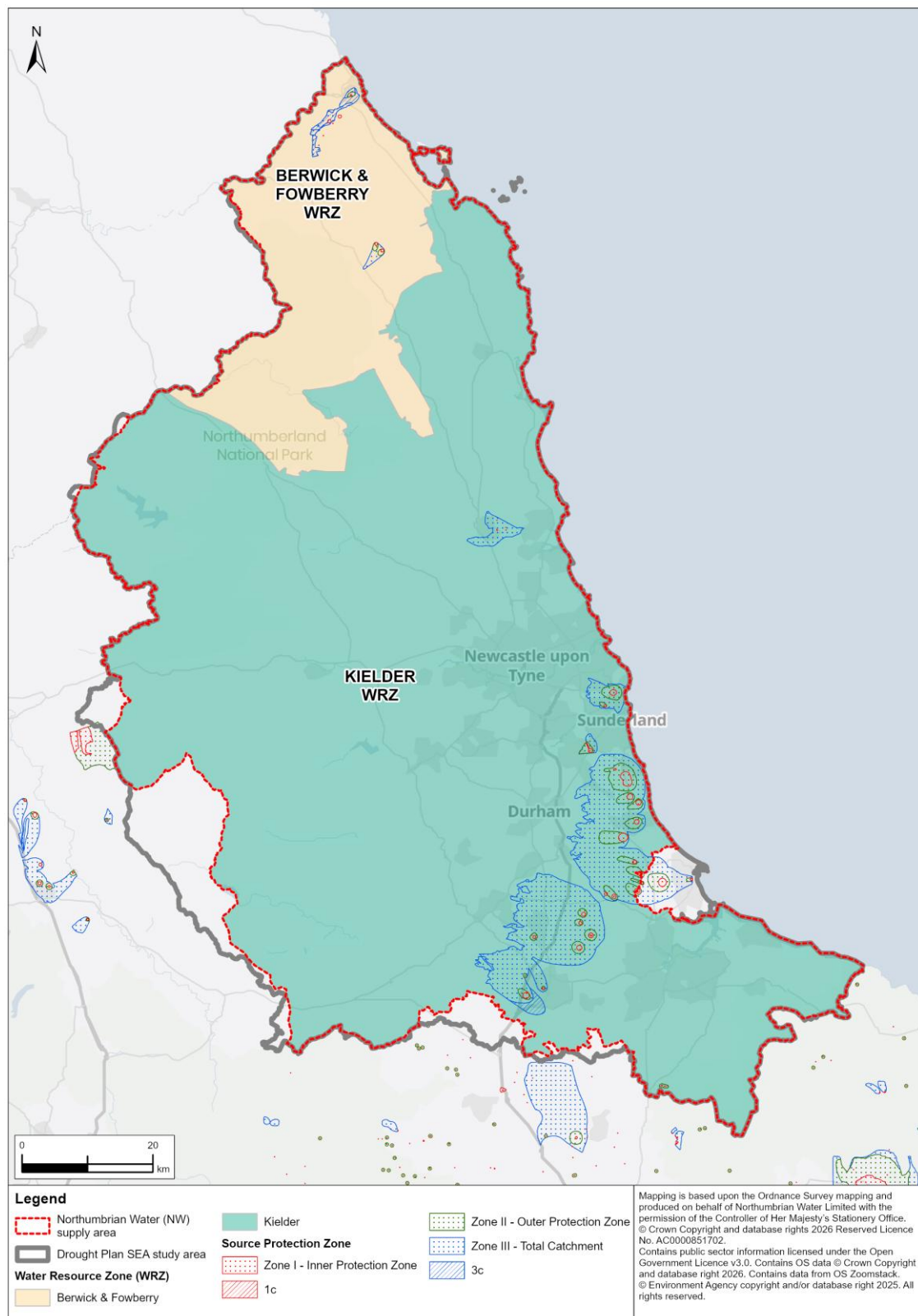


Figure 1.3 Source Protection Zones across the Drought Plan SEA study area and NW supply area

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The WFD measures the health of the water environment based on whether a water body achieves good status or potential. This assessment considers a range of quality elements, including the biological and chemical status of surface waters, as well as quantitative and chemical elements of groundwater. To achieve good ecological status or potential, good chemical status or good groundwater status every single element assessed must be at good status or better. If one element is marginally below its threshold for good status, then the whole water body's status is classed as less than good. Table 1.4 and Table 1.5 summarise the current status of surface and groundwater water bodies within the two RBDs¹⁵. In the Northumbria RBD, nearly 46% of surface water bodies are predicted to be at risk of not achieving good ecological status by 2027. In Solway Tweed RBD, approximately 6% of the water bodies are similarly at risk of not achieving good status by 2027.

Table 1.4 2019 classification for surface water bodies within Northumbrian and Solway Tweed RBDs

River Basin District	Ecological status or potential				Chemical status		
	Bad	Poor	Moderate	Good	High	Fail	Good
Northumbria RBD	11	62	202	97	2	374	0
Solway Tweed RBD	11	20	44	62	1	138	0

Table 1.5 WFD quantitative and chemical 2019 Cycle 3 classification for groundwater water bodies within Northumbrian and Solway Tweed RBDs

River Basin District	Quantitative status		Chemical status	
	Poor	Good	Poor	Good
Northumbria RBD	1	9	7	3
Solway Tweed RBD	1	18	4	1

The River Basin Management Plans for the Northumbria and Solway Tweed RBDs highlight water management issues which prevent water bodies reaching good condition, as presented in Table 1.6.

Table 1.6 Water management issues

Water Management Issue	Northumbria RBD	Solway Tweed RBD
Physical modifications	✓	
Pollution from agriculture and rural areas	✓	
Pollution from water industry and wastewater	✓	
Invasive non-native species	✓	✓

¹⁵ It should be noted that 'coastal' water bodies outlined in Table 1.4 within the NW supply area are not included within Table 1.5 and Table 1.6, as WFD classifications for these water bodies were not available considering they are not part of a river water body catchment.

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Water Management Issue	Northumbria RBD	Solway Tweed RBD
Pollution from towns, cities, and transport	✓	
Changes to water levels and flows	✓	
Chemicals in the water environment	✓	
Pollution from abandoned mines	✓	
Plastics pollution	✓	
Manmade barriers to fish movement		✓
Restoring resilience in physically modified rivers		✓
Pollution from rural land use		✓

1.3.1 Flood Risk

Within the Drought Plan SEA study area, the risk of flooding comes from a variety of sources which include coastal waters, surface water, groundwater, storms, and reservoirs. The projected changes in climate are presented in Section 1.6. Climatic factors are likely to increase the frequency of extreme weather events, which combined with projected increases in sea level will further impact flood risk across the region and subsequent changes in land use.

The Northumbria RBD has over 2.7 million residents, with over 39,000 residents who are at risk of flooding from rivers and the sea. This compares to the 175,000 people who are at some risk from surface water flooding. There is one nationally significant surface water flood risk area identified in the Northumbria RBD which is the Newcastle City Centre Flood Risk Area¹⁶.

The Solway Tweed RBD, which covers a large area of southern Scotland and northern England, faces significant flood risks, particularly in more sparsely populated areas. Thousands of properties are at risk of flooding from rivers and the sea, alongside substantial risk from surface water flooding. Several thousand residents are considered at risk of flooding from rivers and the sea, primarily along the Solway coast and major rivers like the Tweed and Eden. Surface water flooding poses a significant risk to residential properties, particularly in urban, lower-lying areas within the district. However, there are no major urbanised centres identified at significant flood risk within the Solway Tweed RBD that fall within our supply area¹⁷.

¹⁶ Environment Agency (2022). *Northumbria River Basin District Flood Risk Management Plan 2021 to 2027*. Available at: <https://assets.publishing.service.gov.uk/media/63809db18fa8f56eb302c6f9/Northumbria-FRMP-2021-2027.pdf> [Accessed August 2025].

¹⁷ Environment Agency (2022). *Solway Tweed (English Catchments) River Basin District Flood Risk Management Plan 2021 to 2027*.

1.3.2 Future baseline

Status of WFD waterbodies

The WFD originally required all water bodies to reach at least “good status” by 2015. As this target was not reached for some of the water bodies, two deadline extensions were permitted:

- Extension to 2021, where:
 - achieving good status by 2015 was technically impossible;
 - doing so would have been disproportionately expensive; or
 - natural conditions prevented improvement within the timeframe.
- Extension to 2027, where:
 - achieving good status by 2021 remained technically unachievable, disproportionately costly, or prevented by natural conditions; and
 - no further deterioration occurred.

The primary objective in the short-term is to ensure no deterioration in status between status classes: the 2015 water body classification is the baseline from which deterioration between classes is assessed; no deterioration between status classes is permitted unless certain and specific conditions apply.

Public water supply needs

Based on The National Framework for Water Resources 2025¹⁸, “*there could be an additional eight million people in England by 2025, with less water availability and increased water used due to climate change. If no continued and enhanced action is taken, around five billion extra litres of water per day may be needed by 2025 for public water supplies to address future pressures. A programme of £8 billion has been secured through the latest round of water company planning to invest in infrastructure and actions to improve water supply resilience and deliver environmental improvement.*”

In the North, it is anticipated that between 2030 and 2055 an additional 345 megalitres per day (Ml/d) of public water supply will be required, which includes 70Ml/d drought resilience. Additionally, the region has a non-public water supply demand of 222Ml/d from other users, 51% of which is attributed to power generation, demonstrating that the energy sector is the dominant non-public water supply user in the region¹⁹.

¹⁸Environment Agency (2025). The National Framework for Water Resources 2025 – Water for growth, water for nature, water for a resilient future. Available at: https://assets.publishing.service.gov.uk/media/685d4a2ac2633bd820a92a99/2025_EA_National_Framework_Water_Resources_-_summary_document.pdf [Accessed March 2026].

¹⁹ Environment Agency (2026) National Framework for Water Resources 2025: water for growth, nature and a resilient future. Available at: <https://www.gov.uk/government/publications/national-framework-for-water-resources-2025-water-for-growth-nature-and-a-resilient-future> [Accessed May 2026]

Climate change

The latest fully published UK Climate Change Risk Assessment Evidence Report - the CCRA3 Technical Report²⁰ is synthesising the latest evidence on the risks and opportunities to the UK from climate change. The assessment identified a set of 61 specific risks and opportunities to the UK from climate change, out of which some are in connection with the water environment, for example:

- Risks to terrestrial species and habitats from changing climatic conditions and extreme events, including temperature change, water scarcity, wildfire, flooding, wind, and altered hydrology (including water scarcity, flooding and saline intrusion).
- Risks to and opportunities for agricultural and forestry productivity from extreme events and changing climatic conditions (including temperature change, water scarcity, wildfire, flooding, coastal erosion, wind and saline intrusion).
- Risks to freshwater species and habitats from changing climatic conditions and extreme events, including higher water temperatures, flooding, water scarcity and phenological shifts.
- Risks to infrastructure services from river, surface water and groundwater flooding.
- Risks to public water supplies from reduced water availability.
- Risks to energy generation from reduced water availability.
- Risks to water quality and household water supplies.
- Risks to business from water scarcity.

Flood risk

The National Planning Policy Framework (NPPF)²¹ states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (Flood Zones 3a and 3b²², including the functional floodplain) and, where possible, towards areas of lowest risk (Flood Zone 1), in accordance with the sequential approach. The NPPF requires that where development is necessary, it should be made safe without increasing flood risk elsewhere, as defined in the Technical Guidance to the NPPF²³.

²⁰Climate Change Committee (2021). Third UK Climate Change Risk Assessment Technical Report. Available at <https://www.ukclimaterisk.org/wp-content/uploads/2021/06/Technical-Report-The-Third-Climate-Change-Risk-Assessment.pdf> [Accessed March 2026].

²¹Ministry of Housing, Communities & Local Government (2024). National Planning Policy Framework. Available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf [Accessed March 2026]

²²High probability of river (>1%) or sea flooding (>0.5%)

²³Ministry of Housing, Communities & Local Government (revised 2025). National Planning Policy Framework: technical guidance. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework-technical-guidance> [Accessed March 2026]

1.4 Soil

1.4.1 Land use and soils

Our drought actions should avoid, as far as possible, impacts on higher-grade agricultural land, and include appropriate mitigation where such impacts cannot be fully avoided. Our supply area is a hub for agriculture with cereal and livestock grazing being the predominant type of farming. Agricultural land is classified on a scale of 1 to 5 where Grade 1 is the highest quality and Grade 5 is the lowest²⁴. The Agricultural Land Classification (ALC) of the region is predominantly Grade 3 followed by Grade 5, with pockets of urban and non-agricultural land (see Figure 1.4).

Contaminated land refers to areas where substances present pose a risk of significant harm to human health or protected species or cause significant pollution of surface or groundwater. Certain contaminated sites may be designated as special sites under regulatory criteria, for example where contamination seriously impacts drinking water supplies, surface waters (such as rivers and lakes), or important groundwater resources. Data on contaminated land are compiled by the British Geological Survey. The North East of England has a significant number of landfill sites. Currently, there are approximately 102 authorised landfill sites across the Drought Plan SEA study area, which are relevant from the perspective of any potential land contamination, and its implications for surface and groundwater quality.

²⁴ The Agricultural Land Classification (ALC) for England and Wales was developed by the Ministry of Agriculture, Fisheries and Food (MAFF), with assistance from the Soil Survey of England and Wales and the Welsh Office Agriculture Department, introducing the system in the 1960s. *The national ALC methodology was further developed and tested by ADAS (a part of MAFF at the time) in the 1980s, and its guidelines remain in use today by Natural England.*

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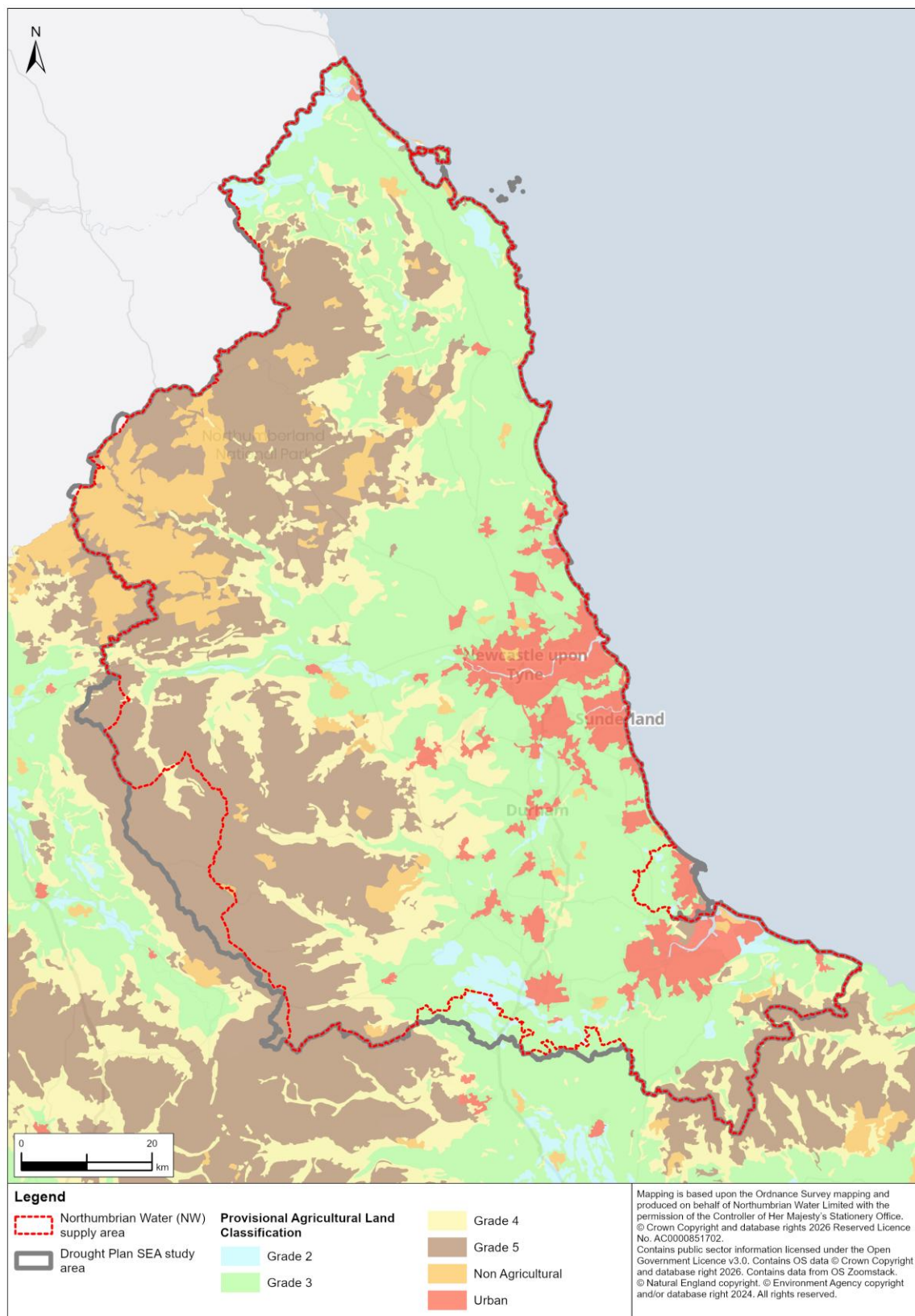


Figure 1.4 Agricultural Land Classification across the Drought Plan SEA study area and NW supply area

1.4.2 Geology

Geological sites can be sensitive to changes in water quality, water levels (e.g. waterlogged deposits), pollution and land use practices. Geological Conservation Review (GCR) sites have been identified for their scientific importance and contribution to understanding Earth sciences at both national and international levels. There are 88 GCR sites with unique site codes within the Drought Plan SEA study area. Some GCR sites are also designated as SSSIs. Geological citations for SSSIs typically relate to disused quarries and other significant geological features, such as gravel deposits used to reconstruct past climate conditions.

1.4.3 Future baseline

Drought actions within our Drought Plan have the potential to reduce water availability for agricultural processes, which may affect crop production and livestock management, particularly during prolonged dry periods. There are also opportunities for drought action related mitigation measures to deliver beneficial outcomes for agriculture, for example by supporting more efficient water use, enhancing soil moisture retention, or improving on-farm water storage and drought preparedness.

Policy developments reinforce the importance of sustainable soil and land management. Defra's Soils Strategy for England set out a vision for all soils to be managed sustainably and for degradation threats to be addressed by 2030²⁵. Agricultural policy reforms, including the Environmental Land Management²⁶ schemes and Sustainable Farming Incentive, promote farmers as custodians of the natural environment, focusing on soil health and water quality.

Despite these ambitions, population growth and development pressures risk further loss of agricultural land and soil degradation, highlighting the need for integrated land-use planning through the new Land Use Framework. The Land Use Framework for England was published by Defra in March 2026²⁷ following the completion of a public consultation in April 2025. The framework provides a non-prescriptive, spatially informed approach to support integrated land-use planning across sectors, including housing, agriculture, biodiversity, and climate resilience. It establishes a coherent national vision for optimising the use of England's finite land resource, underpinned by improved data, mapping, and

²⁵ Defra (2011). Safeguarding our soils: A strategy for England. Available at: <https://www.gov.uk/government/publications/safeguarding-our-soils-a-strategy-for-england> [Accessed December 2025].

²⁶ Defra (2023). Environmental Land Management (ELM) update: how government will pay for land-based environment and climate goods and services. Available at: <https://www.gov.uk/government/publications/environmental-land-management-update-how-government-will-pay-for-land-based-environment-and-climate-goods-and-services/environmental-land-management-elm-update-how-government-will-pay-for-land-based-environment-and-climate-goods-and-services> [Accessed December 2025].

²⁷ Defra (2026). Planning for the future: England's first Land Use Framework. Available at: <https://defraenvironment.blog.gov.uk/2026/03/18/planning-for-the-future-englands-first-land-use-framework/> [Accessed May 2026].

decision-support tools, to enable more consistent and evidence-based planning decisions. The framework promotes a more strategic and joined-up approach to land use, aiming to address historically fragmented decision-making and ensure that land can deliver multiple benefits simultaneously, including food production, nature recovery, climate mitigation, and development needs. It also emphasises the importance of multifunctional land use, the use of enhanced environmental datasets (including soil and land classification mapping), and alignment between national priorities and local planning to support resilient landscapes and sustainable land management.

1.5 Air

Air quality in the Drought Plan SEA study area is varied and there are certain areas with higher concentrations of air pollutants likely to be associated with urbanisation, transport, or business activities. Air Quality Management Areas (AQMAs) are declared where the national air quality objectives are not being met²⁸. A high proportion of the local authorities which fall within the study area contain at least one AQMA and are predominately designated for Nitrogen dioxide (NO₂) and Particulate Matter (PM₁₀)²⁹. There are three AQMAs in the study area, all of which are within Kielder WRZ.

Consideration of potential impacts on air quality formed part of our action selection, development and mitigation processes, to ensure that drought actions do not inadvertently contribute to local air quality pressures or conflict with existing local air quality obligations.

1.5.1 Future baseline

The UK is currently meeting all statutory air quality limits, except for NO₂³⁰, where roadside NO₂ concentrations have been identified as being above legal limits. The UK has consistently failed to meet the annual mean NO₂ limit value of 40 µg/m³ since 2008, a period of 17 consecutive years (2008–2024 inclusive). In response, the government's 2017 plan³¹ and 2021 Clean Air Act³² set out comprehensive policies and legally binding PM_{2.5} reduction targets (10 µg/m³ and 30% population exposure reduction by 2030, tightening to

²⁸ Defra (2023). *National Air Quality Objectives*. Available at: https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update_20230403.pdf [Accessed August 2025]

²⁹ Department for Environment, Food & Rural Affairs (Defra) (n.d.). *List of Local Authorities with Air Quality Management Areas (AQMAs)*. Available at: <https://uk-air.defra.gov.uk/aqma/list> [Accessed Aug 2025].

³⁰ Defra (2024). *Air Pollution in the UK 2023 - Compliance Assessment Summary*. Available at: https://uk-air.defra.gov.uk/library/annualreport/assets/documents/annualreport/air_pollution_uk_2023_Compliance_Assessment_Summary_Issue1.pdf [Accessed December 2025]

³¹ Defra and Department for Transport (2017). *Air quality plan for nitrogen dioxide (NO₂) in UK*. Available at: <https://www.gov.uk/government/publications/air-quality-plan-for-nitrogen-dioxide-no2-in-uk-2017> [Accessed December 2025].

³² Department for Environment, Food & Rural Affairs (2021) *Development of the Environment Act Targets*. UK-AIR. Available at: <https://uk-air.defra.gov.uk/pm25targets/targets-development> [Accessed December 2025].

2040 levels). NO₂ and PM_{2.5} are projected to decrease overall, with 2028 interim targets likely to be met³³.

Northumberland County Council's Air Quality Strategy 2025–2030³⁴ states that it will “*embrace every opportunity to fulfil the objectives and deliver strategic commitments.*” The strategy integrates actions to improve air quality from key sources, including road traffic, planning and construction, and local industry and businesses alongside monitoring, as well as communication and engagement with the public.

1.6 Climatic Factors

Climate projections indicate that the Drought Plan SEA study area is likely to experience hotter, drier summers and warmer, wetter winters, with an increase in the frequency and intensity of extreme weather events. These shifts are likely to increase the frequency and severity of drought conditions, potentially reducing water availability across the region.

Current observations indicate that the UK is continuing to warm. In 2024 and into 2025, multiple seasonal temperature and sunshine records³⁵ were broken:

- Summer 2025 was the warmest on record, with a mean temperature of 16.10°C, 1.51°C above the 1991–2020 average, surpassing the previous high of 15.76°C in 2018³⁶
- Spring 2025 was both the warmest and sunniest in UK history, averaging 9.5 °C (+1.4 °C anomaly) and breaking sunshine records for March, April, and May³⁷
- By mid-December 2025, the UK had already logged 1,622 hours of sunshine, eclipsing the previous annual record (1,587 hours in 2003), making 2025 the sunniest year since 1910³⁸.

A new winter record of 19.9°C was recorded in January 2024. The decade 2015–2024 was 1.24 °C warmer than the 1961–1990 baseline, with warming rates of ~0.25 °C per decade since the 1980s. The frequency of extreme temperature anomalies has also surged: days

³³ Defra (2025). Air quality Environment Act target delivery plan. Available at: <https://www.gov.uk/government/publications/air-quality-environment-act-target-delivery-plan/air-quality-environment-act-target-delivery-plan>. [Accessed March 2026].

³⁴ Northumberland County Council (2025). *Air Quality Strategy 2025–2030*. Available at: [Microsoft Word - Air Quality Strategy 2024 Final Cabinet](#). [Accessed March 2026]

³⁵ The Met Office defines sunshine records as the total duration of bright sunshine (measured in hours).

³⁶ Met Office (2025). Summer 2025 is the warmest on record for the UK. Available at: <https://www.metoffice.gov.uk/about-us/news-and-media/media-centre/weather-and-climate-news/2025/summer-2025-is-the-warmest-on-record-for-the-uk> [Accessed December 2025].

³⁷ Met Office (2025). Double record breaker: Spring 2025 is warmest and sunniest on UK record. Available at: <https://www.metoffice.gov.uk/about-us/news-and-media/media-centre/weather-and-climate-news/2025/double-record-breaker-spring-2025-is-warmest-and-sunniest-on-uk-record> [Accessed December 2025].

³⁸ Met Office (2025). 2025 is already the UK's sunniest year on record. Available at: <https://www.metoffice.gov.uk/about-us/news-and-media/media-centre/weather-and-climate-news/2025/2025-is-already-the-uks-sunniest-year-on-record> [Accessed December 2025].

with +5 °C anomalies doubled, those with +8 °C tripled, and +10 °C quadrupled relative to mid-20th-century levels³⁹.

The projected changes in temperature and precipitation for the North East of England region by the 2050s (2040-2059), under the RCP8.5 scenario (high emissions scenario) are detailed in Table 1.7. The 1981-2000 baseline period and the central estimate, representing ‘as likely as not’ probability of change (50th percentile), was used for the following projections.

Table 1.7 Climate projections for 2040-2059 under the RCP8.5 scenario

Climatic factor	Climate projections
Temperature	Annual mean temperatures are projected to increase by 1.6 °C. Summer temperatures are projected to see the largest increase by 1.9 °C and winter temperatures by 1.4 °C.
Precipitation	Seasonal variability is projected with a 10% decrease in precipitation during summer months and an increase of 7% during winter months.

Figure 1.5 to Figure 1.12 present our rainfall data for reservoir catchments within our supply area from January 2022 to December 2024, compared with the long-term average (1961–1990). Across all eight catchments, rainfall follows a clear yearly pattern. Rainfall is usually highest in late autumn and winter (around October to February) and lowest in late spring and summer (around May to August). All catchments experience lower rainfall during the summer months, with 2022 standing out as the driest year across the area.

The larger upland reservoir catchments, such as Kielder, Cow Green, Derwent and Waskerley, generally receive more rainfall overall and tend to have higher rainfall in winter. This is likely because they cover larger areas and lie at higher elevations, where rainfall is typically greater. As a result, these catchments are expected to cope better with short dry spells or a single dry season. However, the very dry summer of 2022 is still clearly reflected in the data, showing that even larger catchments can be affected during long-lasting and widespread dry periods.

Smaller or more supply-sensitive catchments, including Fontburn, Colt Crag, Hallington and Burnhope, receive less rainfall overall and show larger changes from month to month. Summer rainfall is particularly low in these catchments, especially in 2022. These catchments are expected to be more vulnerable to dry conditions because they have less storage capacity. While they can respond quickly when rainfall does occur, they depend heavily on regular rainfall and are therefore more sensitive to drought.

³⁹ Met Office (2025) Annual climate stocktake shows weather records and extremes now the norm in UK climate. Available at: <https://www.metoffice.gov.uk/about-us/news-and-media/media-centre/weather-and-climate-news/2025/annual-climate-stocktake-shows-weather-records-and-extremes-now-the-norm-in-uk-climate> [Accessed December 2025].

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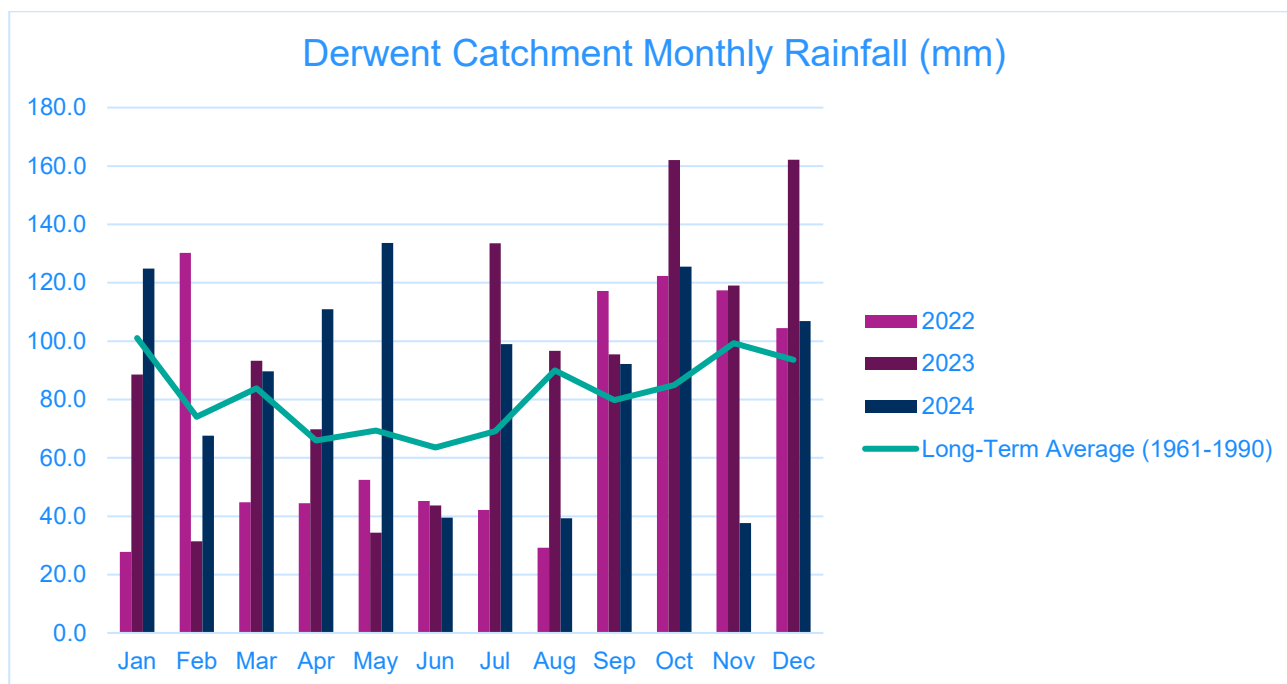


Figure 1.5 Derwent Reservoir catchment monthly rainfall chart (2022 – 2024), based on our rainfall database

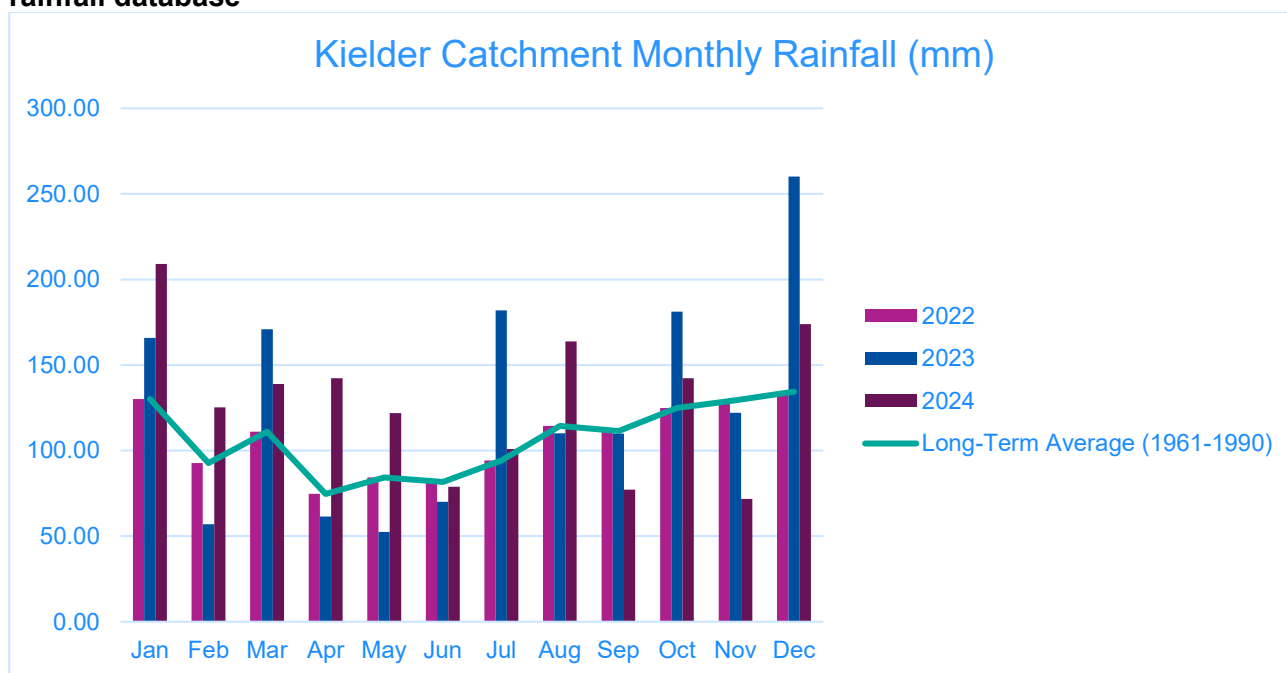


Figure 1.6 Kielder Reservoir catchment monthly rainfall chart (2022 – 2024), based on our rainfall database

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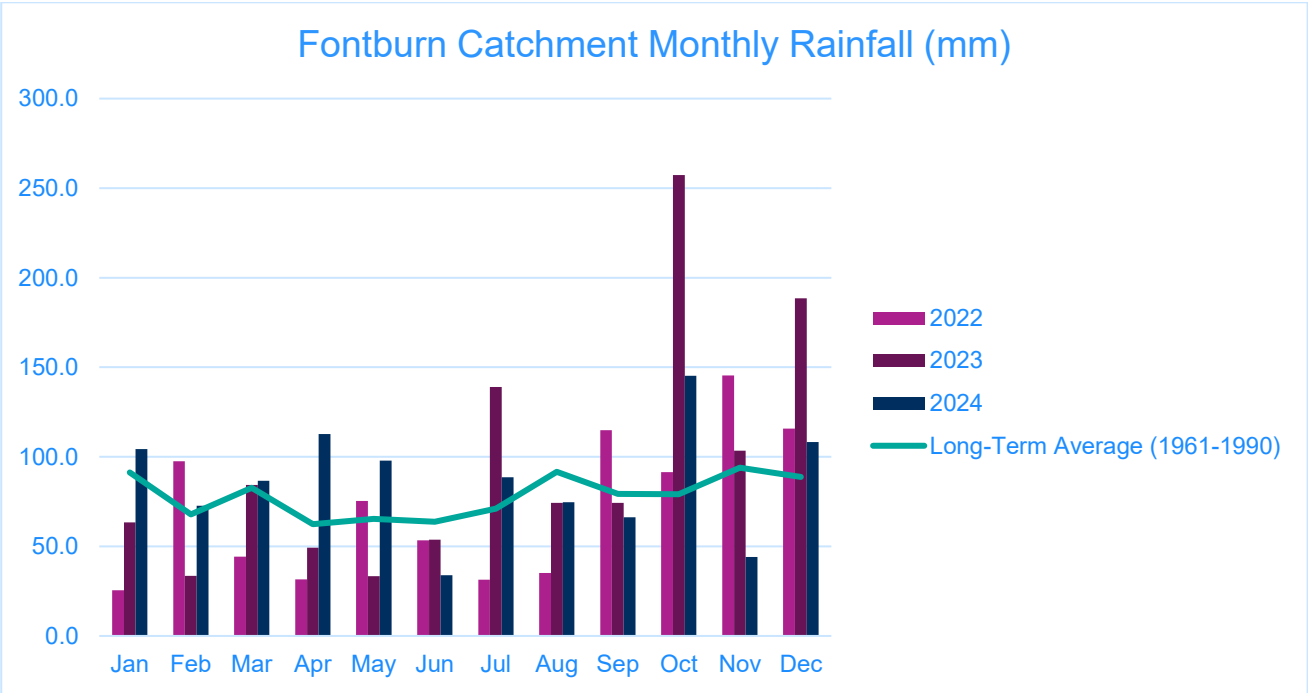


Figure 1.7 Fontburn Reservoir catchment monthly rainfall chart (2022 – 2024), based on our rainfall database

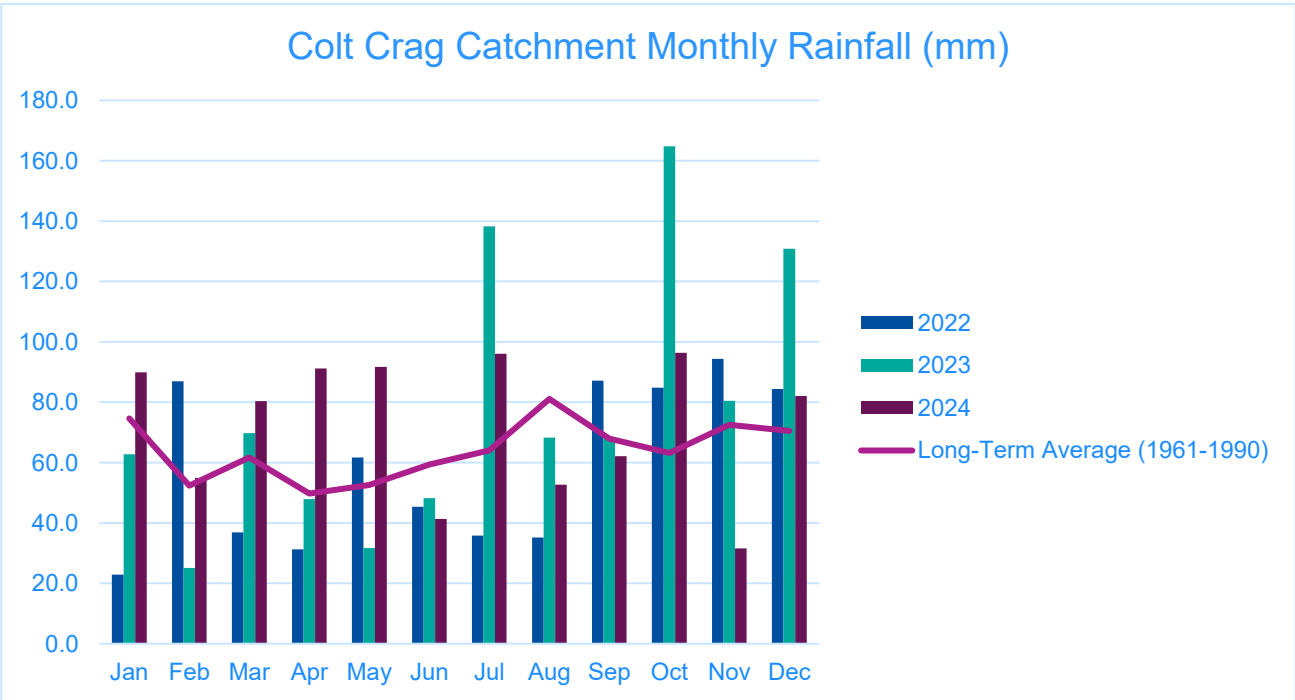


Figure 1.8 Colt Crag Reservoir catchment monthly rainfall chart (2022 – 2024), based on our rainfall database

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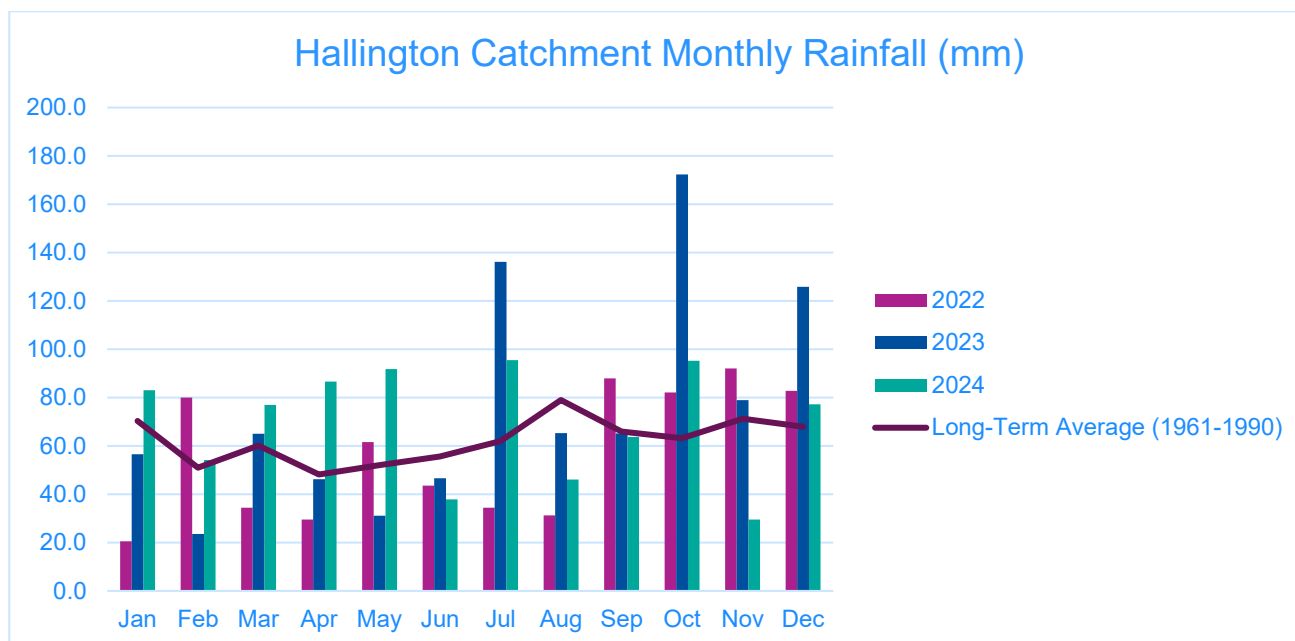


Figure 1.9 Hallington Reservoir catchment monthly rainfall chart (2022 – 2024), based on our rainfall database

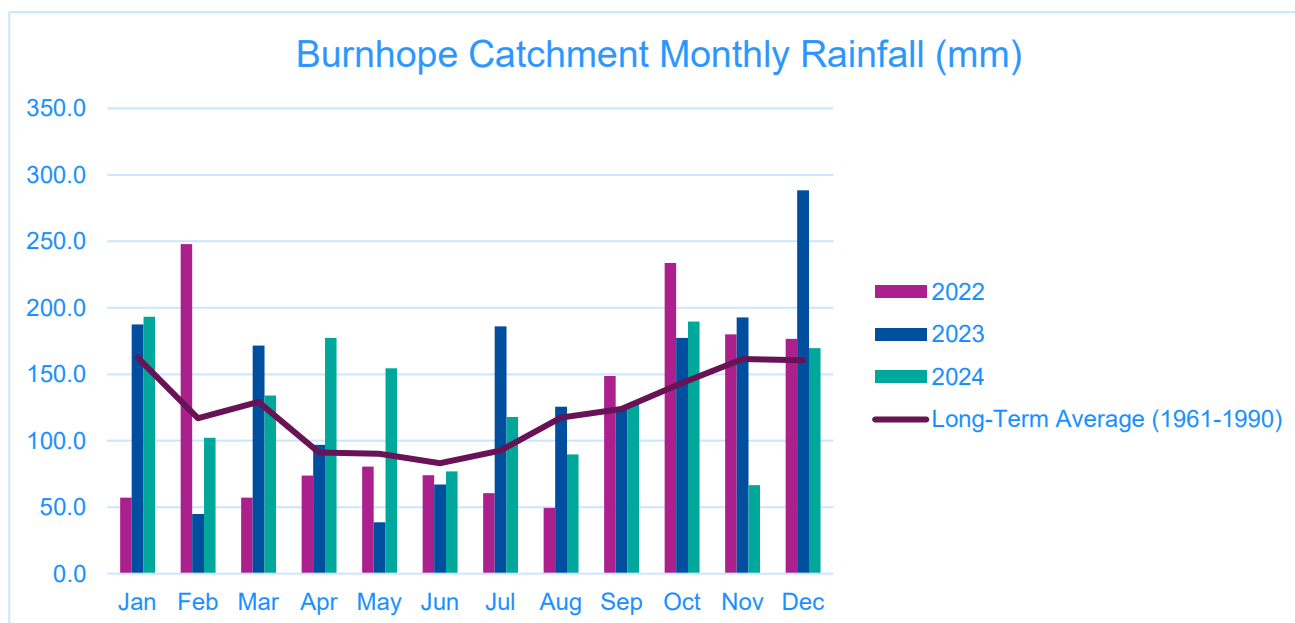


Figure 1.10 Burnhope Reservoir Catchment monthly rainfall chart (2022 – 2024), based on our rainfall database

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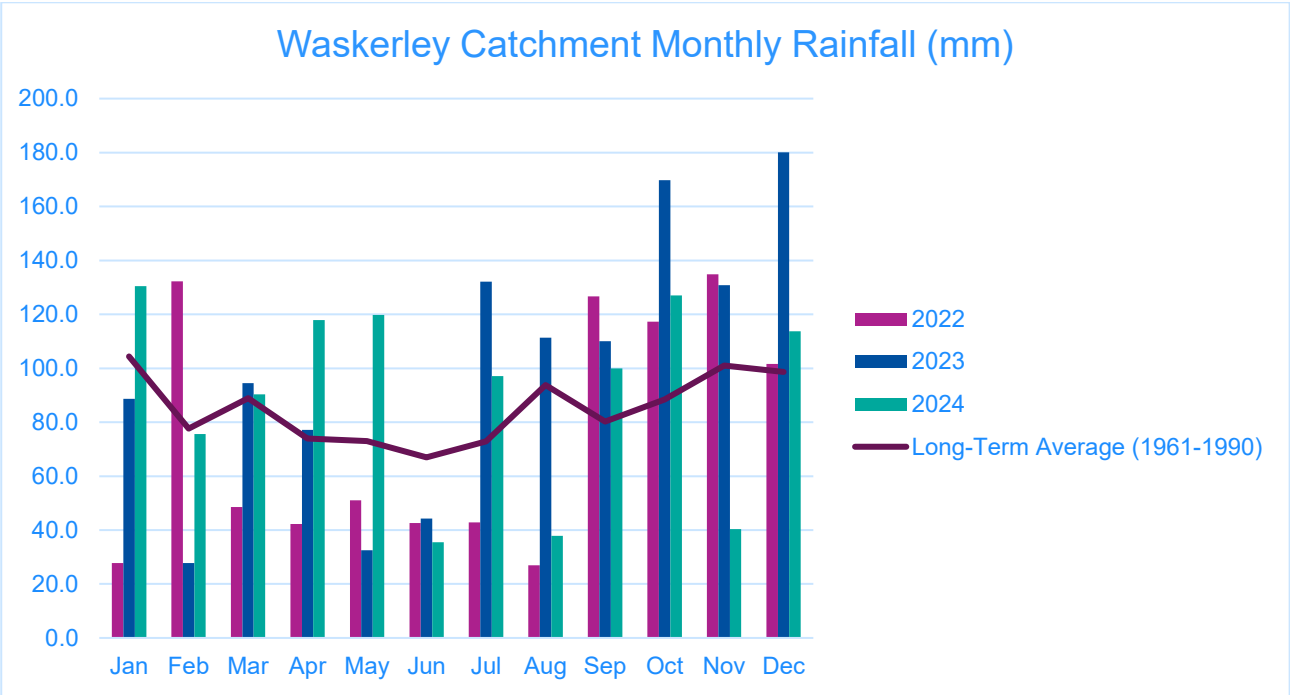


Figure 1.11 Waskerley Reservoir catchment monthly rainfall chart (2022 – 2024), based on our rainfall database

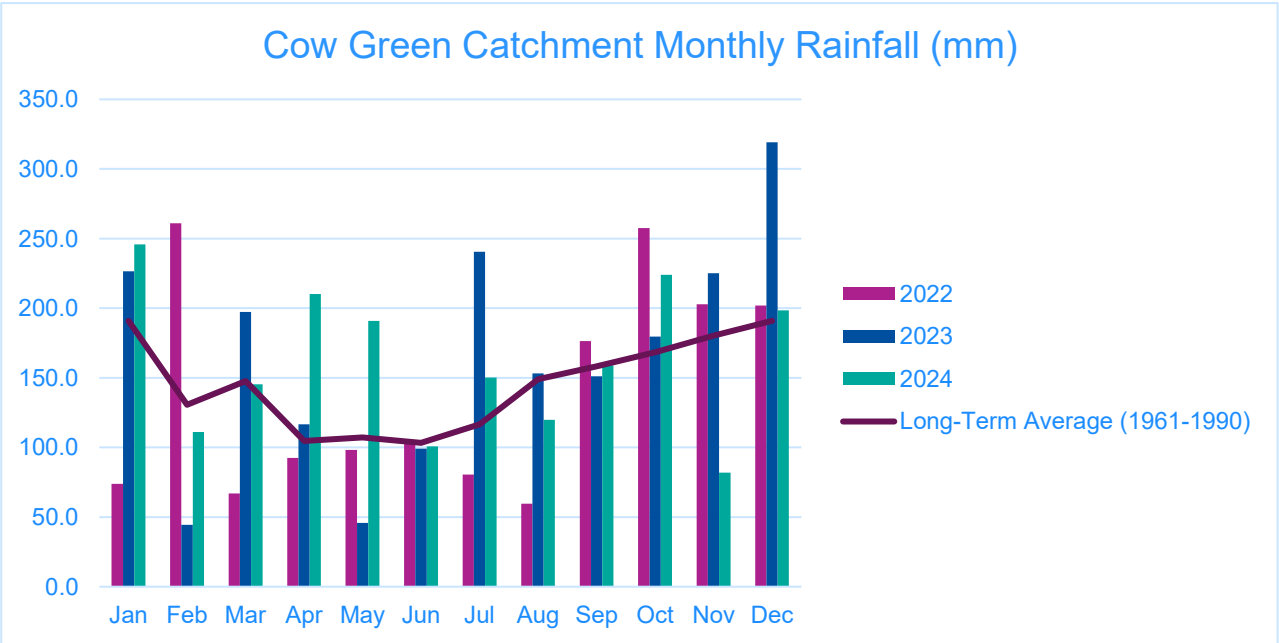


Figure 1.12 Cow Green Reservoir catchment monthly rainfall chart (2022 – 2024), based on our rainfall database

1.6.1 Greenhouse Gas Emissions

Based on the latest UK local authority and regional greenhouse gas (GHG) emissions statistics (2005 – 2023)⁴⁰ which include all local authorities within the Water Resources North region, territorial greenhouse gas emissions for 2023 across all sectors is estimated at 13,272.7 kilo tonnes (ktCO₂). While all UK regions have seen falls, the North East experienced the largest percentage reduction in greenhouse gas emissions from 2005 to 2023, in part due to industrial closures.

The transport sector contributed the highest proportion of emissions to the total in 2023 at 30.56% followed by the domestic and industry sector at 24.13% and 23.09% respectively. The Land Use, Land-Use Change, and Forestry (LULUCF) sector in the North East of England is estimated to be responsible for the removal of 416.4ktCO₂ equivalent which accounted for approximately 7.0% of the UK's total LULUCF net removals of 5,946.51 ktCO₂^{41,42}.

1.6.2 Future baseline

The climate is expected to continue to change with annual average temperatures projected to increase, particularly in summer. Winters are projected to be wetter and summers drier. Carbon and other GHG emissions will continue to be emitted; however, regulations and legislation will likely continue to promote the reduction in emissions through commitments to net zero. The water industry in the UK is aiming to become net zero by 2030.

The Department for Energy Security and Net Zero (DESNZ) publishes annual projections of UK energy demand and greenhouse gas emissions⁴³. The Energy and Emissions Projections 2023 to 2050 Report is referred to as EEP 2023-2050⁴⁴. Projected emissions are lower than EEP 2022-2040 for each of the five-year periods for which the UK has set carbon budget targets under the Climate Change Act 2008. Under EEP-ready policies, the

⁴⁰ Department for Energy Security and Net Zero (2025). UK local authority and regional greenhouse gas emissions statistics, 2005 to 2023. Available at: <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-greenhouse-gas-emissions-statistics-2005-to-2023> [Accessed May 2026]

⁴¹ Department for Energy Security and Net Zero (DESNZ) (2025). *UK local and regional greenhouse gas emissions statistics, 2005–2023*. Available at: <https://assets.publishing.service.gov.uk/media/686538ace6c3cc924228943a/2023-local-and-regional-greenhouse-gas-emissions-statistics-statistical-release.pdf> [Accessed April 2026].

⁴² Department for Energy Security and Net Zero (DESNZ) (2025). *UK local authority and regional greenhouse gas emissions statistics collection*. Available at: <https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-statistics> [Accessed April 2026].

⁴³ Department Energy Security and Net Zero (last updated 2024). Energy and emissions projections. Available at: <https://www.gov.uk/government/collections/energy-and-emissions-projections> [Accessed April 2026]

⁴⁴ Department Energy Security and Net Zero (2024). Energy and emissions projections 2023 to 2050. Available at: <https://assets.publishing.service.gov.uk/media/675c0ca798302e574b915336/eep-report-2023-2050.pdf> [Accessed April 2026].

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DESNZ project that the UK will meet its next two legislated domestic targets (Carbon Budget 4 2023-2027 and Carbon Budget 5 2028-2032). In addition, compared to EEP 2022-2040, the latest projections show a smaller gap between projected performance and emissions target for Carbon Budget 6 (2033-2037).

The Energy and Emissions Projections are produced to meet the UK's international reporting obligations under the United Nations Framework Convention on Climate Change and to provide essential assumptions for government modelling of energy and climate change policies. The Climate Change Act 2008 (CCA) introduced carbon budgets⁴⁵. These are legally binding limits on the total amount of GHG emissions the UK can emit over five-year periods. Carbon budgets have been set out to 2037, with Carbon Budget 6 (2033-2037) being the latest target set.

UK emissions projections:

- Under EEP-ready policies only, emissions are projected to fall by 23% between 2022 and 2050.
- Under EEP-ready policies only, the projections show headroom of 104 MtCO_{2e} against the fourth Carbon Budget and headroom of 83 MtCO_{2e} for the fifth Carbon Budget period.
- The scope of emissions included in Carbon Budget 6 (CB6) projections widens to include International Aviation and Shipping. For CB6 the projected shortfall is 779 MtCO_{2e}.

Our latest Annual Report⁴⁶ recognise that climate risks and opportunities will continue to evolve over time, and they remain committed to refining the approach based on emerging best practices, regulatory developments, and stakeholder expectations. By proactively managing climate related risks and integrating sustainability into the strategic decision making, we aim to enhance the resilience.

1.7 Population and Health

1.7.1 Population

Our Drought Plan provides an opportunity to ensure a resilient and reliable water supply for current and future customers, helping to meet the needs of a growing population and support continued economic growth. As pressure on water resources increases, the economic value of water may rise, potentially requiring higher charges or seasonal tariffs. When operating drought actions and implementing mitigation measures, it will be important to prevent disturbance to local communities, avoid disproportionate impacts on vulnerable

⁴⁵ Department for Energy Security and Net Zero and Department for Business, Energy and Industrial Strategy (last updated 2021). Guidance Carbon Budgets, Available at: <https://www.gov.uk/guidance/carbon-budgets> [Accessed January 2025]

⁴⁶ Northumbrian Water Group Limited (2025). Annual Report and Financial Statements for the Year Ended 31 March 2025. Available at: <https://www.nwg.co.uk/globalassets/corporate/apr/2025/nwg-12-months-to-31-march-2025-final-signed.pdf> [Accessed January 2026]

groups, and use demand-side drought actions to raise awareness of the value of water resources.

Demographic patterns across the North East region highlight the importance of understanding community needs. According to the 2021 census 17% of the North East region population are aged 0-15 years (Children & Young People), 62% of the population are aged 16-64 (Working Age group) and 21% are aged 65 and over⁴⁷. Compared to the average for England, the Working Age group is 2.1% lower than the national average, whilst the 65+ age group is 2.4% higher.

Based on WRMP24⁴⁸, settlements within the North East region of England are diverse in size, ranging from large population centres such as Newcastle, Sunderland and Durham to small rural hamlets and seaside towns. Ethnicity in the region is predominately White British. There are much smaller proportions of Black, Asian, and Mixed ethnicities in the rural areas of the region compared to urban areas.

1.7.2 Health

Our Drought Plan has the potential to influence quality of life, including human health, well-being, amenity and community, through actions to maintain essential water supplies during drought conditions. There could be beneficial (e.g. actions to provide additional supply of water will help safeguard public health) or adverse impacts (e.g. noise and disruption from temporary infrastructure required to pump water). Our Drought Plan also sets out measures to ensure that essential water supplies can be maintained to all of our customers, thereby protecting public health in drought conditions.

An overview of general North East health is provided in Table 1.8, using information collected as part of the 2021 census⁴⁹. 44.7% of North East residents described their health as "very good", decreasing from 45.2% in 2011. Those describing their health as "good" fell from 34.0% to 33.6%. The proportion of North East residents describing their health as "very bad" was 1.6%, increased from 1.2% in 2011, while those describing their health as "bad" increased from 4.7% to 5.3%.

Figures shown in Table 1.8 indicate that poorer health outcomes are more prevalent in the North East compared with England overall. In particular, the proportions of people reporting "very bad" and "bad" health are higher in the North East, while the proportions reporting "good" and "very good" health are lower than the national averages.

⁴⁷ North East Evidence Hub. Census 2021. Available at: <https://evidencehub.northeast-ca.gov.uk/evidence-by-theme/census-2021> [Accessed May 2026]

⁴⁸ Northumbrian Water (2023). Water Resources Management Plan 2024, Environmental Report. Available at: [northumbrian-water-wrmp24---environmental-report-october-2024.pdf](https://www.northumbrian-water-wrmp24---environmental-report-october-2024.pdf) [Accessed April 2026].

⁴⁹ Health Equity North (2023). Health Equity North Report. Available at: <https://www.healthequitynorth.co.uk/app/uploads/2023/04/HEN-REPORT.pdf> [Accessed May 2026]

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Table 1.8 General Health in North East (2021)

	North East (%)	England (%)
Very bad health	1.6	1.2
Bad health	5.3	4.1
Fair health	14.8	13.0
Good health	33.6	34.2
Very good health	44.7	47.5

North East values are also below the national averages for life expectancy at birth (Table 1.9). Male life expectancy in the North East is 77.7 years, compared with 79.5 years for England. For females, life expectancy is 81.6 years in the North East, compared with 83.3 years for England.

Table 1.9 Life expectancy at birth by region⁵⁰

Life expectancy by region (2022 to 2024)	North East (%)	England (%)
Male	77.7	79.5
Female	81.6	83.3

1.7.3 Future baseline

Population

Based on population projections produced by the Office for National Statistics⁵¹, the total population of Northumberland County Council area is predicted to increase by 18,970 people, from 319,030 in 2017 to approximately 338,000 by 2033, representing an increase of 8.3%. While the North East of England is a relatively wet region and is currently classified as an area with no serious water stress, future economic and population growth within Northumberland and the wider region could place pressure on water resources and water-dependent environments, particularly during dry periods or drought. Population levels across the wider North East region are expected to remain broadly stable overall, and life expectancy is lower than the national average. As such, water demand is expected to increase locally, placing additional pressure on water resources.

We currently supply water to approximately 2.7 million people⁵². Our WRMP24 forecasts future customer demand, considering projected population growth. Within this, the Berwick & Fowberry WRZ is expected to experience an average population increase of 14.1% by 2049/50, while the Kielder WRZ is forecast to grow by 11.7% over the same period. Table

⁵⁰ Office for National Statistics (2024). Life expectancy for local areas of the UK: between 2001 to 2003 and 2022 to 2024. Available at: [Life expectancy for local areas of the UK - Office for National Statistics](#) [Accessed May 2026]

⁵¹ Northumbrian Water (2023). Water Resources Management Plan 2024. Environmental Report. Available at: [100104977-rp-bot-sea-rev-f_northumbrian-water-wrmp24---environmental-report.pdf](#) [Accessed April 2026].

⁵² Northumbrian Water. Our supply area. Available at: [Our Supply Area](#) [Accessed April 2026].

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1.10 presents population projections for each WRZ for the period 2025/26 to 2029/30, based on WRMP24⁵³.

Table 1.10 Population projections all ages, 2025/2026 and 2029/2030

Total population (all ages)	2025/2026	2029/2030
Berwick & Fowberry WRZ	24,740	25,000
Kielder WRZ	2,677,670	2,683,420

In addition to population growth, planned industrial growth within the Teesside Industrial Cluster represents a significant potential pressure on our water resources. We revised our future industrial water demand estimates for Teesside from 25 MI/d to 190 MI/d by 2030⁵⁴, reflecting the scale of proposed developments and the need for substantial infrastructure upgrades to maintain supply resilience. This increase is driven by major low-carbon projects and expansion in energy and chemical sectors, which will require new raw water and wastewater treatment facilities and strategic planning to address environmental capacity challenges.

Health

The general health projections are:

- North East: The region has a unique demographic profile, characterised by the slowest population growth of all regions and a rapidly aging demographic. The number of people with major illness will increase from roughly 1 in 6 (2019) to almost 1 in 5 (2040). 80% of the projected increase in major illness is among those aged 70 and older.⁵⁵
- England: Based on updated 2024–2026 projections from the Health Foundation's REAL Centre, the number of people living with major illness in England is set to rise by 37% by 2040⁵⁶. 1 in 5 adults projected to live with major illness by 2040⁵⁷.

Growing studies emphasise the growing importance of access to recreational green and blue spaces and the historic environment in future planning. For example, the UK National Ecosystem Assessment and the Marmot Review (Fair Society, Healthy Lives) demonstrate

⁵³ Northumbrian Water (2024). Water Resources Management Plan 2024: Main Report. Available at: <https://www.nwg.co.uk/globalassets/wrmp/nwg/october-24/nwl/nw-wrmp24-main-report-final-18-october-2024.pdf> [Accessed May 2026].

⁵⁴ Northumbrian Water (2023). Industrial cluster factsheet: Teesside. Available at: <https://assets.publishing.service.gov.uk/media/6877661e88da2e5804bb6ac0/industrial-cluster-factsheet-teesside.pdf> [Accessed March 2025]

⁵⁵ Foresight, Government Office for Science. Future health trends in the North East and how they might be supported or disrupted by policy changes. Available at: [Future health trends in the North East and how they might be supported or disrupted by policy changes](#). [Accessed May 2026]

⁵⁶ The Health Foundation (2023). Health in 2040: projected patterns of illness in England. Available at: https://www.health.org.uk/sites/default/files/upload/publications/2023/Projected%20patterns%20of%20illness%20in%20England_WEB.pdf. [Accessed May 2026].

⁵⁷ The Health Foundation (2024). Health in 2040 results updated for new population projections. Available at: <https://www.health.org.uk/sites/default/files/2024-04/Health%20in%202040%20addendum.pdf>. [Accessed March 2026].

nature's benefits for mental and physical health. In response, the Government has published the 25 Year Environment Plan (2018, revised 2023)⁵⁸, the EIP 2023⁵⁹ and EIP 2025⁶⁰, which set a strategic direction for improving green infrastructure across England. These plans are supported by Natural England's Green Infrastructure Framework and standards for accessible green and blue spaces, aimed at promoting health, climate resilience, water quality, and biodiversity. Evidence of health and wellbeing gains from engagement with nature is tracked in Defra's Outcome Indicator Framework (Theme G7)⁶¹. Enhancing water quality and addressing climate-related effects also present opportunities for sustainable tourism growth, reflecting commitments in EIP 2025 to improve the natural environment and public health through economic development.

1.8 Historic Environment

The Drought Plan SEA study area and our supply area are rich in heritage, with listed buildings, scheduled monuments, registered parks and gardens and registered battlefields. The total number of each of these assets within our supply area is presented in Table 1.11. Scheduled monuments, registered parks and gardens, and registered battlefields are shown in Figure 1.13.

It is likely that most Local Authorities within the Northumbrian Water supply area maintain a Historic Environment Record (HER), which provides a database of known heritage assets, including archaeological sites, listed buildings, historic structures and recorded finds. These records typically include a wide range of assets, from churches and historic buildings to archaeological discoveries such as Roman coins and medieval artefacts.

In addition to recorded assets, there is also potential for currently unidentified heritage assets and archaeological remains to be present across the region. This may include non-designated heritage assets of archaeological interest, which, as recognised in NPPF⁶² may be of equivalent significance to designated assets and therefore warrant consideration in planning decisions.

⁵⁸ Defra (2023). A Green Future: Our 25 Year Environment Plan. Available at: https://assets.publishing.service.gov.uk/media/65fd713d65ca2f00117da89e/CD1.H_HM_Government_A_Green_Future_Our_25_Year_Plan_to_Improve_the_Environment.pdf [Accessed December 2025]

⁵⁹ Defra (2023). Environmental Improvement Plan 2023. Available at: <https://assets.publishing.service.gov.uk/media/64a6d9c1c531eb000c64ffa/environmental-improvement-plan-2023.pdf> [Accessed December 2025].

⁶⁰ Defra (2025). Environmental Improvement Plan 2025. Available at: [Environmental Improvement Plan 2025](#) [Accessed March 2026]

⁶¹ Defra (2023). Outcome Indicator Framework: Theme G7 – Health and wellbeing benefits. Available at: <https://oifdata.defra.gov.uk/themes/natural-beauty-and-engagement/G7/> [Accessed December 2025].

⁶² Ministry of Housing, Communities & Local Government (revised 2025). National Planning Policy Framework: technical guidance. Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework-technical-guidance> [Accessed March 2026]

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The drought actions within our Drought Plan should fully consider the historic environment and seek to minimise adverse effects. In doing so, we should protect archaeological and cultural heritage assets.

Table 1.11 Heritage assets within the NW supply area

Asset	Description	Berwick-Fowberry WRZ	Kielder WRZ
Listed Buildings	The statutory responsibility for listed buildings control lies with the individual Local Authorities. The Department for Digital, Culture, Media and Sport is responsible for compiling the statutory list of buildings of special architectural or historic interest and each building or structure of interest is classified under one of three Grades; I, II* and II depending on their significance (Grade I assessed as highest significance).	Grade I 39	Grade I 355
		Grade II* 57	Grade II* 720
		Grade II 906	Grade II 10,693
Registered Parks and Gardens	Historic England maintains a register of historic parks and gardens of special interest in England; these parks and gardens are as equally important as buildings and settlements and form part of an area's cultural heritage. However, unlike listed buildings and conservation areas, historical parks and gardens are not afforded legal protection within the UK. The registration of these historic parks and gardens is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the landscapes' special character.	Grade I 1	Grade I 4
		Grade II* 1	Grade II* 10
		Grade II 2	Grade II 40
Scheduled Monuments	Scheduled monuments are protected under the Ancient Monuments and Archaeological Areas Act 1979. The monuments are scheduled and recorded through Historic England, based on national importance and covering a diverse range of archaeological sites. Scheduled monuments are often in a ruinous or semi-ruinous condition or take on the form of earthworks. More complete structures of national significance are usually protected as listed buildings.	464	1039
Conservation Areas	Conservation areas are designated by local planning authorities under their powers. The areas are protected to preserve special areas of historical and architectural importance and can range from small villages, town centres and residential areas. Each conservation area will	10	260

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Asset	Description	Berwick-Fowberry WRZ	Kielder WRZ
	have its own conservation area appraisal, which sets out how it should be protected.		
Registered Battlefields	Historic England holds a Register of Historic Battlefields. Its purpose is to offer battlefields protection through the planning system, and to promote a better understanding of their significance and public enjoyment.	4	3

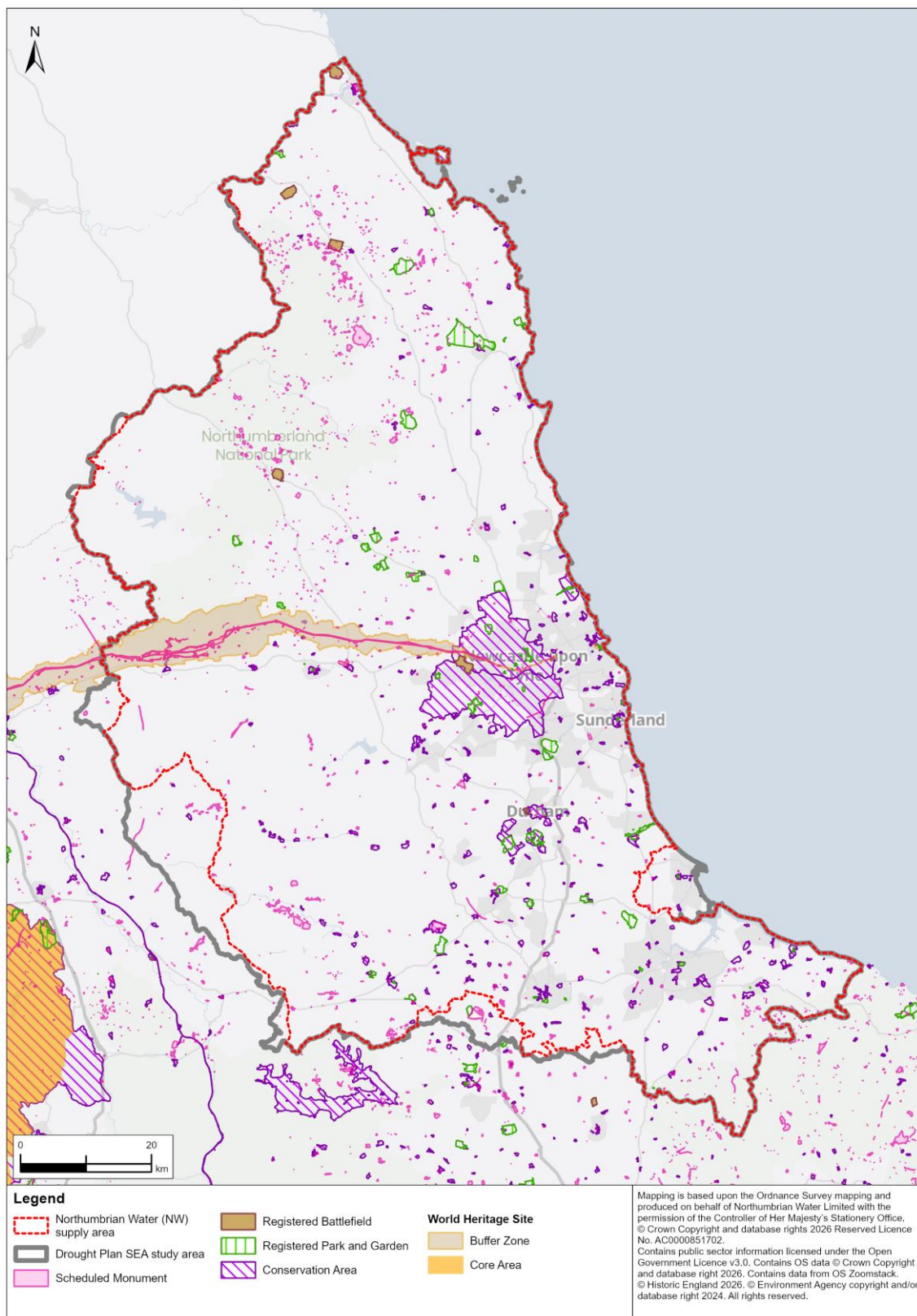


Figure 1.13 Heritage assets across the Drought Plan SEA study area and NW supply area

1.8.1 Future baseline

Recent and ongoing national economic pressures may affect the future condition of the historic environment. Reduced or uncertain funding for heritage-related activities could limit the capacity of organisations and local authorities to remove assets from the heritage at risk register, potentially resulting in a slower pace of repair, restoration or management interventions.

Climate change is also expected to influence the future baseline for the historic environment. While some types of heritage assets and landscapes have demonstrated resilience, having already survived significant climatic shifts in the past, many others are potentially vulnerable to the direct impacts of future climate change. Increased rainfall intensity, more frequent flooding, prolonged dry periods, higher temperatures and coastal change all have the potential to accelerate deterioration, damage historic fabric, or affect the setting and significance of heritage features.

These factors highlight the importance of ensuring that our Drought Plan considers the potential future pressures facing the historic environment, so that drought actions do not exacerbate existing vulnerabilities and are designed to minimise risks to archaeological sites, historic buildings, conservation areas and other cultural heritage assets.

1.9 Landscape

The landscape across the Drought Plan SEA study area is reasonably diverse; it is low and flat near the North Sea coast and increasingly mountainous toward the northwest. The region also has a striking stretch of coastline, including sandy beaches, sand dunes, rugged cliffs and isolated islands, and picturesque seaside villages. Any changes to land use, water levels, or the visibility of infrastructure associated with drought actions could influence both landscape character and people's visual amenity.

Consideration of potential impacts on the landscape and visual amenity should therefore form an integral part of our action selection process and the operation of drought actions. Where adverse effects cannot be fully avoided, we should identify and implement appropriate mitigation measures.

1.9.1 National Character Areas

National Character Areas (NCAs) divide England's landscape into 159 distinct areas and are defined by a unique combination of aspects such as landscape, biodiversity, geodiversity and economic activity⁶³. There are 17 NCAs within the Drought Plan SEA study area presented in Table 1.12 and Figure 1.14.

⁶³ Natural England (2024). *National Character Area profiles: information for local decision making*. Available at: <https://www.gov.uk/guidance/national-character-area-profiles-information-for-local-decision-making> [Accessed Aug 2025].

Table 1.12 Natural England National Character Areas within the Drought Plan SEA study area

National Character Areas Name	Key Characteristics
Border Moors and Forests	The Border Moors and Forests NCA consists of an extensive, sparsely populated upland plateau, with long-distance views and a strong sense of remoteness and tranquillity. The rivers North Tyne and Rede form wide valleys through the uplands, while the rivers Lyne and Irthing flow south-west to the Solway Firth. The underlying geology consists of Carboniferous deposits. The uplands are drained by small rivers in enclosed valleys, with the larger valleys sheltering upland hay meadows, scattered farmsteads and copses of broadleaved woodland. Much of the south-eastern area lies within Northumberland National Park. Military training areas also occupy large tracts of land.
Cheviot Fringe	The Cheviot Fringe NCA is a tranquil, undulating, lowland landscape, framed by the Cheviots NCA to the west and the Northumberland Sandstone Hills NCA to the east. The western edge falls within the Northumberland National Park and encompasses the edge of the Cheviot Hills. The importance of glacial processes in shaping this landscape is shown by the extensive array of glacial lake and fan deposits, sinuous ridges, eskers, kames and kettle holes. Weathering of the underlying bedrock combined with the widespread blanket of glacial and alluvial deposits have resulted in fertile soils that support the agriculture which dominates this area, and the river valleys provide much of the North East region's sand and gravel resources. The vales to the south are a patchwork of arable farmland, pasture and meadows with the regular field pattern still strong, delineated by hedgerows punctuated with trees. To the north, arable cultivation dominates and the fields are flatter and larger with fewer hedgerows. Three river systems, all originating in the Cheviots, meander tree-lined across the plains and vales.
Cheviots	The distinctive, smooth, rounded hills of the Cheviots NCA are part of the remote upland chain of the Northumberland moors which form the northern end of the Northumberland National Park. They rise steeply above the lowland belt of the Cheviot Fringe NCA to the north and east and the Border Moors and Forests NCA to the south. To the west, the rounded hills cascade into southern Scotland but the NCA is bounded by the Scottish border that follows a high natural ridgeline. The distinct igneous geology has formed a sinuous cluster of rounded hills with tors on some hill tops, rocky outcrops and scree slopes on the northern flanks, and many other glacial and post-glacial features. The wild, open upland landscape is dominated by rolling moorlands. Areas in the southern end of the NCA are also in use for military training. This NCA is noted for the high quality of its rivers.
Durham Coalfield Pennine Fringe	The Durham Coalfield Pennine Fringe NCA is a transitional landscape between the North Pennines NCA to the west and the Tyne and Wear Lowlands NCA to the east. It is formed by a series of broad ridges, separated by river valleys, with a strong west-east grain. The west is more upland in character, with large, open, regular fields bounded by drystone walls or fences, and is primarily used for sheep and cattle grazing. In the east the farmed landscape becomes more mixed, with

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National Character Areas Name	Key Characteristics
	arable crops grown on the richer land, and more irregular fields divided by hedges rather than walls. Networks of hedges and strips of woodland in river valleys and alongside streams, combined with shelterbelts and large conifer plantations, give parts of the area a well-wooded appearance. Several major rivers run through the area, including the Wear and Derwent, and their tributaries, Browney, Deerness and Gaunless.
Mid Northumberland	Mid Northumberland NCA is an intermediate plateau of gently undulating farmland which forms a transitional area between the Northumberland Sandstone Hills to the west and the low-lying coastal plain to the east. A series of ridges and enclosed river valleys in the northern part of the area open out into a broader, flatter landscape in the south. Hadrian's Wall World Heritage Site forms the southern border to the NCA. The area is dissected by several small rivers which flow eastwards to the sea. Some tributaries wind down from the sandstone hills and upland pastures through wooded valleys and lowland arable areas. Within this predominantly farmed landscape there are many small woodlands and shelterbelts, and a few areas of open water, relatively infrequent within Northumberland.
North Northumberland Coastal Plain	The North Northumberland Coastal Plain is a narrow, windswept strip that runs from the Anglo-Scottish border south to the mouth of the River Coquet, bounded by the sea to the east and the Northumberland Sandstone Hills to the west. The gently undulating inland plain is dominated by arable farming, with large, regular fields bounded by gappy hedgerows and in some places grey sandstone walls, with some pasture for beef cattle and sheep. Woodland cover is sparse and predominantly confined to the river valleys that meander across the coastal plain and the estate woodlands around Howick. The dramatic coastline is exceptionally varied, with rocky headlands and cliffs contrasting with long, sweeping sandy beaches backed by dunes, and extensive intertidal mudflats and salt marsh around Lindisfarne. The coast and coastal fringe are of national and international nature conservation importance for their geology, dune and coastal cliff habitats, offshore islands and intertidal habitats which support internationally significant populations of birds, grey seals and scarce plants.
North Pennines	North Pennines NCA is at the northern end of the Pennine ridge. It has a distinct identity, with its remote upland moorlands divided by quiet dales. It has some of the highest and most exposed moorland summits in England. There are few settlements, creating a strong sense of remoteness. The landscape displays slow landscape change and cultural continuity. Several major rivers, including the South Tyne, Wear and Tees, drain from the NCA. It is bordered to the west by the Eden valley. To the north is the Tyne valley, and to the east are the Durham lowlands. To the south is the Yorkshire Dales which forms part of the Pennine ridge. There are dramatic and panoramic views both across the moorland and beyond.

National Character Areas Name	Key Characteristics
North York Moors and Cleveland Hills	The North York Moors and Cleveland Hills NCA comprises a well-defined upland area, rising from the Tees Lowlands to the north, the Vale of Mowbray and Howardian Hills to the west and the Vale of Pickering to the south. To the east it is bordered by the North Sea, the extensive stretches of high coastal cliffs exposing the geology that shaped these uplands. The North York Moors and Cleveland Hills are an elevated upland of sandstone geology, incised by valleys. The expansive, largely treeless, central moorland plateau contrasts strongly with the enclosed valleys.
Northumberland Sandstone Hills	The Northumberland Sandstone Hills curve across central Northumberland in a series of distinctive flat-topped ridges which provide panoramic views of the Cheviots and the coast. The ridgetops and upper slopes are covered with heather and grass moorland broken by large geometric blocks of conifer. Below this is pasture with some arable cultivation on the lower and dip slopes, broadleaved woodland on scarp slopes and along watercourses and a few notable parklands. Several major rivers flow east to the coast: the Wansbeck and Font arise in the Sandstone Hills while the Aln and Coquet break through from the Cheviot Fringe.
Pennine Dales Fringe	The Pennine Dales Fringe NCA lies between the uplands of the Pennines to the west, and the Magnesian Limestone ridge and arable lowlands to the east. The land has a varied topography of exposed upland moorland fringes and plateaux dropping to lower foothills, separated by major river valleys and incised by numerous minor tributary valleys. It is underlain by Yoredale rocks in the north (limestone, sandstone and mudstone) and Millstone Grit in the south. It is a transitional landscape between upland and lowland. Broad valleys, widening to the east, with their more fertile soils support arable crops, while steeper, higher land in the west supports predominantly livestock farming. Broadleaved woodlands (many of them of ancient origin), coniferous and mixed plantations, and numerous small woods and hedgerow trees all contribute to the well-wooded character of the area.
South East Northumberland Coastal Plain	South East Northumberland Coastal Plain NCA is a flat, low-lying strip along the coast of the North Sea, extending from north Tyneside in the south to Amble and the Coquet Estuary in the north. It is largely urbanised in the south and more rural to the north, with large fields, restored and active open cast coal mines and a coast of rocky headlands and wide, sandy bays. Rural areas support mixed farming, with fields divided by low, often gappy hedgerows and few trees. The coast supports a wide diversity of habitats including sand dunes, maritime cliffs and slopes, coastal and flood plain grazing marsh and mudflats. The rivers Blyth, Wansbeck, Coquet, Pont and Seaton Burn drain through the coastal plain from the uplands to the west into the North Sea to the east, often passing through incised valleys with fragments of ancient woodland.
Durham Magnesian Limestone Plateau	The Durham Magnesian Limestone Plateau NCA is an open, agricultural landscape with sharply defined boundaries in the form of a steep limestone escarpment to the west and a dramatic coast of limestone cliffs, headlands and bays to the east.

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National Character Areas Name	Key Characteristics
	The River Wear cuts across the north of the area, flowing into the sea at Sunderland, and the River Skerne drains into the Tees Lowlands to the south. Rural land cover consists of arable land and grazing pasture, with small, isolated areas of wildlife-rich habitat such as Magnesian Limestone grassland and ancient woodland in the narrow valleys (or denes) running down to the coast. The Durham Magnesian Limestone Plateau is an area of dramatic environmental restoration: the River Wear was named one of England and Wales' most improved rivers in 2011 and the Turning the Tide project has removed more than a million tonnes of colliery waste from the coast to restore kilometres of beaches.
Tees Lowlands	The Tees Lowlands NCA forms a broad, open plain dominated by the meandering lower reaches of the River Tees and its tributaries, with wide views to distant hills. The large conurbation around the Lower Tees and Teesmouth contrasts with the rural area to the south and west, which is largely agricultural in character. Heavy industry has developed due to the estuary's strategic location close to; mineral reserves, a network of main roads, railways and Teesport. Early successional grasslands and scrub have also emerged on previously developed land; these brownfield sites have significant biodiversity value. Agricultural land is intensively farmed, with large fields and sparse woodland, and a settlement pattern influenced both by the river and by past agricultural practices.
Tyne and Wear Lowlands	Tyne and Wear Lowlands NCA is an area of gently undulating or rolling land, incised by the valleys of the major rivers and their tributaries. It is densely populated and heavily influenced by urban settlement, industry and infrastructure. Between settlements there are wide stretches of agricultural land. The undulating land and broad valleys of the Tyne and Wear Lowlands are underlain almost entirely by Coal Measures rocks. Mineral extraction has played a considerable role in the area, and the legacy of coal mining remains evident in the landscape, although much restoration has occurred in recent years. Spoil heaps have been restored to pastures, mixed/coniferous plantations, amenity ponds and lakes (former open cast mines) and accessible green spaces such as country parks, and new networks of footpaths and cycle routes have been created along former wagonways. In the east of the NCA, there is a small coastal area bordering the Tyne as it flows out into the sea. Sandy beaches backed by sea cliffs are found at Tynemouth and there are fragmented intertidal habitats along the heavily defended Tyne estuary. The rivers Tyne and Wear contribute a strong sense of landscape character to the area.
Tyne Gap and Hadrian's Wall	Tyne Gap and Hadrian's Wall NCA separate the uplands of the North Pennines NCA from the Border Moors and Forests NCA. Westwards are views of pastoral landscapes of the Solway Basin and Eden Valley NCAs and eastwards a more urban character prevails with views of the conurbation of Newcastle in the Tyne and Wear Lowlands NCA. The River Tyne and a network of tributaries is a major landscape feature, with the South Tyne flowing west to east and North Tyne flowing north to south and both converging just outside Hexham. At higher elevations, semi-improved, pastoral landscapes

National Character Areas Name	Key Characteristics
	covered with rough moorland are associated with the classic cuesta landscape of the Whin Sill and its unusual species-rich grasslands.
Vale of Mowbray	The Vale of Mowbray lies immediately to the north of the Vale of York, occupying the undulating flood plains associated with the rivers Swale, Wiske and Cod Beck. The Vale of Mowbray is a gently undulating landscape, the broad Vale defined by the higher land of the Yorkshire Dales to the west and North York Moors to the east. There are views over the Vale of Mowbray from this surrounding higher ground, particularly from the higher North York Moors and Cleveland Hills, and views outwards from within the Vale to the surrounding hills. The Vale of Mowbray is divided from the Tees Lowlands to the north by a minor watershed. The River Swale flows into the NCA from the Yorkshire Dales (via the Pennine Dales Fringe) and the River Wiske from the shallow watershed with the Tees Lowlands in the north, while Cod Beck rises in the North York Moors.
Yorkshire Dales	The Yorkshire Dales is situated in the Pennine uplands, adjacent to the boundary of NWL's supply area. It is a landscape of high, exposed moorland dissected by sheltered valleys or dales, each with their own character. The Yorkshire Dales are part of the chain of Pennine uplands that runs down the centre of northern England, forming a near continuous belt of moorland and upland pastures. The high ground of the Yorkshire Dales provides impressive views of surrounding NCAs, and the dramatic topography, combined with high rainfall, gives the area an important role as the headwater of many of Yorkshire's major rivers. Most of the large rivers which have their source in the Yorkshire Dales flow to the east through the Pennine Fringe and into the Vale of York. The Swale, Ure and Nidd all feed into the larger River Ouse which flows through the City of York, with the River Wharfe joining the Ouse downstream at Cawood before then flowing out to sea through the Humber Estuary. The River Ribble flows south-west from the western Yorkshire Dales into the neighbouring Bowland Fringe area and beyond into the Irish Sea. Reservoirs in the south of the area supply water to the Bradford area.

1.9.2 National Parks

National Parks are designated to protect their outstanding landscape and countryside, wildlife and cultural heritage. There are two National Parks located within the Drought Plan SEA study area (see Figure 1.14), which were designated in 1956 (Northumberland National Park) and in 1952 (North York Moors National Park).

The Northumberland National Park is located entirely within the study area while only a small area at the northern extent of the North York Moors National Park overlaps the study area.

The Northumberland National Park covers an area of 1,049 square kilometres or 405 square miles and cares for:

- 1,100 km of paths for walking, cycling and horse-riding
- 229 Listed Buildings
- 425 Scheduled Ancient Monuments
- 4,000 Historic Environment Records
- 31 Sites of Special Scientific Interest covering more than 10,000ha
- Six Special Areas of Conservation
- Three National Nature Reserves
- Two National Trails
- A Ramsar (international site for the protection of wetlands)⁶⁴.

The North York Moors National Park covers an area of 1,436 square kilometres or 554 square miles out of which 26 miles of coastline.

- There are 1,408 miles (2,268km) of Public Rights of Way in the National Park.
- The 109-mile (176km) Cleveland Way National Trail forms a horseshoe around the North York Moors starting in Helmsley and finishing in Filey.
- There are over 700 Scheduled Monuments within the North York Moors and around 3,000 listed buildings. Almost a third of the Scheduled Monuments for the Yorkshire & Humber region can be found in the National Park.
- There are around 1,500 boundary stones and crosses in the North York Moors including Lilla Cross, one of the oldest Christian monuments in England dating from 626 AD, which stands on Lilla Howe, a round barrow⁶⁵.

⁶⁴ Northumberland National Park. About Us. Available at:
<https://www.northumberlandnationalpark.org.uk/about-us/> [Accessed April 2026]

⁶⁵ North York Moors National Park. Facts and figures. Available at:
<https://www.northyorkmoors.org.uk/about-us/press-office/facts-and-figures#:~:text=Be%20in%20the%20know%20about,Urra%20Moor%20at%20454%20metres.>
[Accessed April 2026]

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1.9.3 National Landscapes

National Landscapes (NL) (formerly named Areas of Outstanding Natural Beauty (AONB)) are protected to conserve and enhance their natural beauty and distinctiveness⁶⁶. There are two NL within the Drought Plan SEA study area which are detailed in Table 1.13 and are mapped in Figure 1.14.

Table 1.13 National Landscapes within the Drought Plan SEA study area

National Landscape	Description
Northumberland Coast	Covering 40 miles (64 km) of coastline from Berwick-Upon-Tweed to the River Coquet estuary in the Northeast of England, includes sandy beaches, sand dunes, rugged cliffs and isolated islands. It includes two National Nature Reserves.
North Pennines	The North Pennines is the northernmost section of the Pennine range of hills; the NL is also a UNESCO Global Geopark. The landscape of the North Pennines NL is made up of heather moors, deep dales, upland rivers, hay meadows and stone-built villages. 36% of the NL is designated as Sites of Special Scientific Interest.

1.9.4 Tranquillity

Tranquillity is recognised as a natural resource and one which is beneficial to health and wellbeing, however infrastructure and development is putting more pressure on this special quality. The Campaign for Rural England (CPRE) has developed a tranquillity map for England to show the range of undisturbed or disturbed tranquillity areas across the country. There are areas of high tranquillity (undisturbed areas) distributed throughout Northern England, as well as pockets of urban areas.

⁶⁶ Natural England (2024). *Areas of Outstanding Natural Beauty (AONBs): designation and management*. Available at: <https://www.gov.uk/guidance/areas-of-outstanding-natural-beauty-aonbs-designation-and-management> [Accessed Aug 2025].

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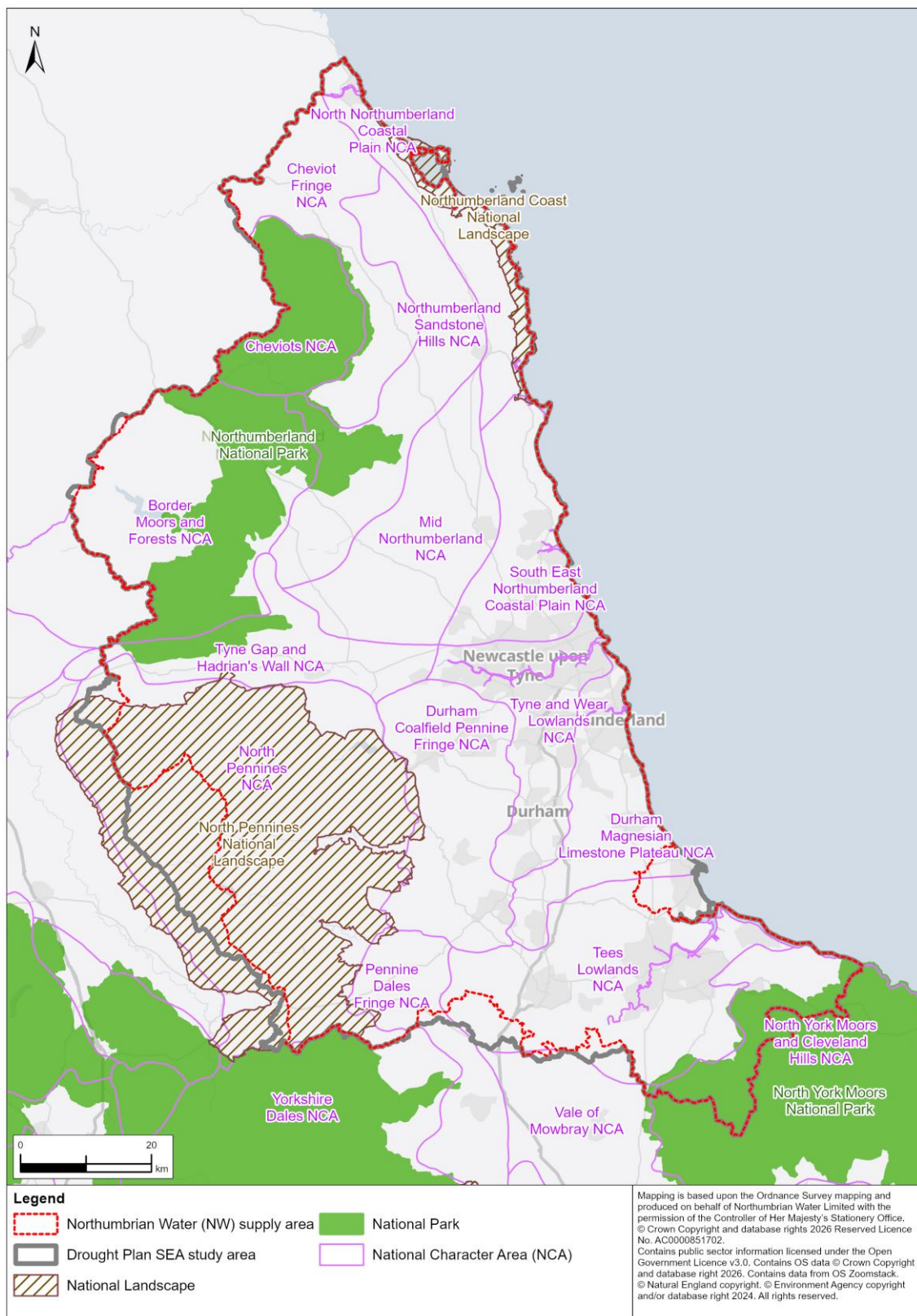


Figure 1.14 National landscapes and character areas across the Drought Plan SEA study area and NW supply area

1.9.5 Future baseline

It is anticipated that landscape and designated sites will be maintained and enhanced for the enjoyment of the public, although with the pressures for housing in many parts of our supply area, there are likely to be some threats to visual amenity more broadly beyond designated landscape areas. Climate change and land use change may also, in the longer term, lead to changes to landscape character. Historic England encourages seeking opportunities to promote public engagement with cultural heritage and historic landscapes, perhaps in particular with regard to wetlands and past human use of water resources, to enhance public access and enjoyment.

1.10 Material Assets

Our supply area has an extensive transport network which connects people, places and services both within the region and beyond to support the regional and national economy. In the wider region the A1(M) runs north-south through the region whilst several key A roads (A1, A58, A69, A696, and the A19) cross the region, mostly travelling outwards from Newcastle upon Tyne. These main trunk routes are maintained by Highways England. A variety of other major roads run through the region, maintained by county councils.

The production industry dominates the employment sector across the North East region, which is in line with the rest of the UK. Our supply area includes 412 sewage treatment works and 27 water treatment works. Our Drought Plan provides an opportunity for us to consider the efficient use of resources as part of the drought action selection process, helping to reduce energy consumption, minimise the use of materials and prevent unnecessary waste generation.

1.10.1 Future baseline

Regeneration and future investment and demand are likely to increase the number and quality of material assets such as housing, transport infrastructure, waste facilities, and community facilities.

1.11 Resource Use and Waste

There is an ongoing need for society to reduce the amount of waste it generates, by using materials more efficiently, and improving the management of waste that is produced. In 2023/24 the total amount of local authority managed waste in the UK was 25.1 million tonnes. North East of England managed the collection of 1,261 thousand tonnes of waste in 2023/24, with 31.8% of this collected waste sent for recycling, 59.8% sent to incineration, 6.3% sent to landfill and the remaining 2.1% fell within the 'other' category⁶⁷.

⁶⁷ Department for Environment, Food & Rural Affairs (2025) *Local authority collected waste management – Provisional annual results 2023/24*. Available at: <https://www.gov.uk/government/statistics/local-authority-collected-waste-management-annual-results/local-authority-collected-waste-management-provisional-annual-results-202324> [Accessed September 2025].

The recycling rate for North East of England was the second lowest in England, with only London (28.8%) performing worse

Our Drought Plan is not expected to influence this baseline or future waste-generation trends. Drought actions are temporary operational measures that do not involve construction or other activities that would generate significant waste. The waste baseline is therefore included only for contextual completeness and to meet SEA regulatory requirements, rather than because the Drought Plan is expected to affect waste generation or management.

1.11.1 Future baseline

As regional population increases and standards of treatment are increased through regulatory requirements there is the potential for increase in operational waste from the water sector. The overall future trend is to continue to diminish landfill capacity, to increase recycling and recovery industry by increasing the proportion of waste sent to recovery rather than landfill.

The Circular Economy Package⁶⁸ includes a target to recycle 65% of municipal waste to be by 2035 and no more than 10% of municipal waste to be sent to landfill by 2035.

⁶⁸ Defra (2020). Circular economy measures drive forward ambitious plans for waste. Available at: [Circular economy measures drive forward ambitious plans for waste - GOV.UK](https://www.gov.uk/government/news/circular-economy-measures-drive-forward-ambitious-plans-for-waste). [Accessed March 2026].