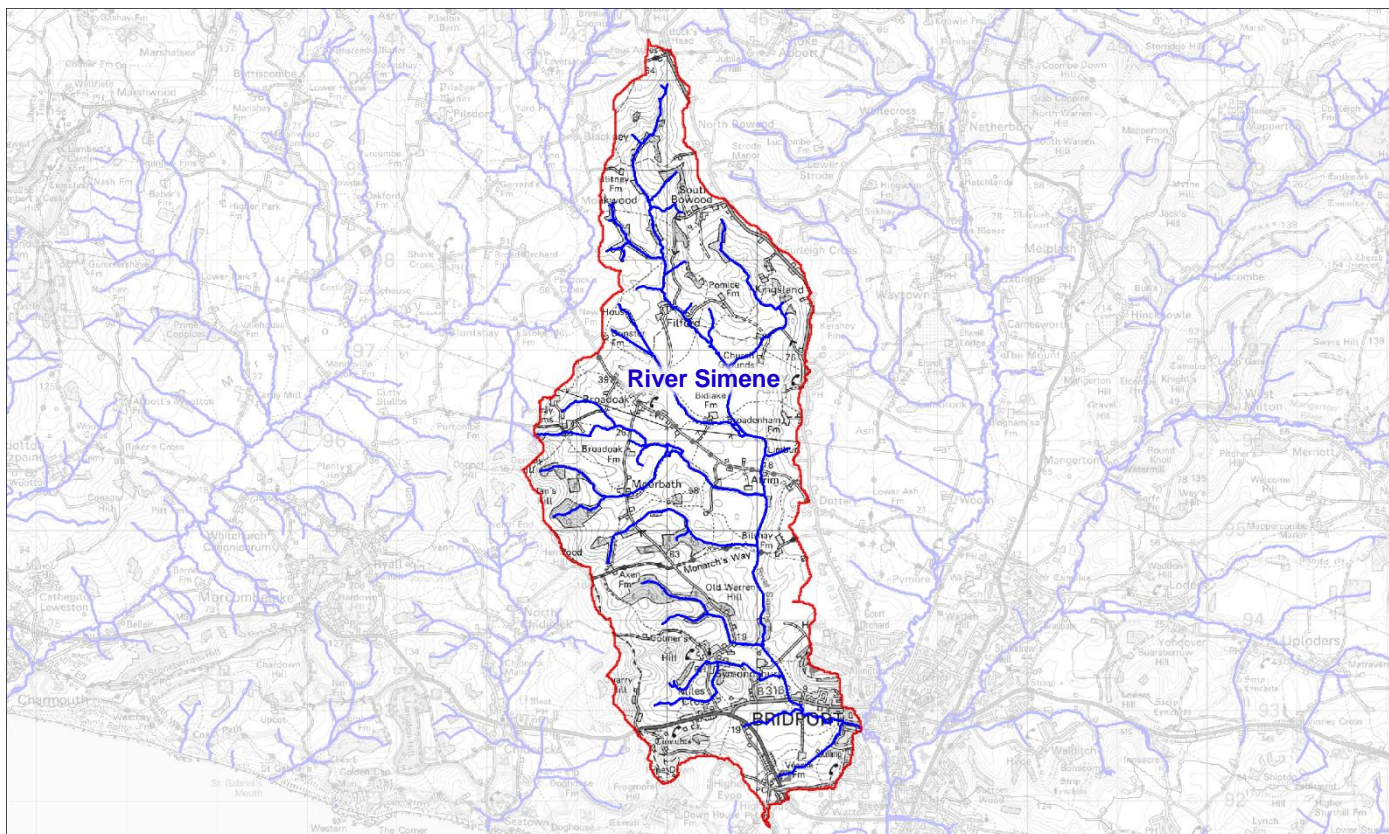




River Simene



Map of the River Simene catchment

Key

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River



Catchment boundary

Introduction

The River Simene rises near North Bowood on mudstone and flows over mudstones, clays and sandstones southwards to Bridport where it meets the River Brit.

The entire catchment is in the Dorset Area of Outstanding Natural Beauty.

River length	9.49 km
Catchment area	16.92 km ²
Geology	Mudstones, clays and sandstones throughout the catchment.
Land use	Significant areas of woodland in the headwater. Predominantly small livestock units and permanent grassland elsewhere.
Principle towns and villages	South Bowood, Broadoak, Symondsburys, Bridport



No river in England is in pristine condition, and it is the responsibility of the Environment Agency to monitor how far from pristine the condition of our waterbodies has deviated. It is up to us to tackle the issues affecting the River Simene and make a difference on the ground (because if we don't work together and make a difference, who will?). By conserving and enhancing existing habitats of importance, restoring habitats where possible and working with natural process, it is possible to make meaningful improvements to the condition of the water environment, and ultimately the wellbeing of communities living within the catchment.

The next sections explores the state of the river and wider catchment, the areas that have been identified as at risk from the Environment Agency and from local people, and potential areas to explore that will help deliver our aim of improving the condition of the River Simene.

This document should be seen as a starting point for discussion and is not meant to be comprehensive. We can work with communities to explore opportunities to help improve the river and wider catchment.



Environment

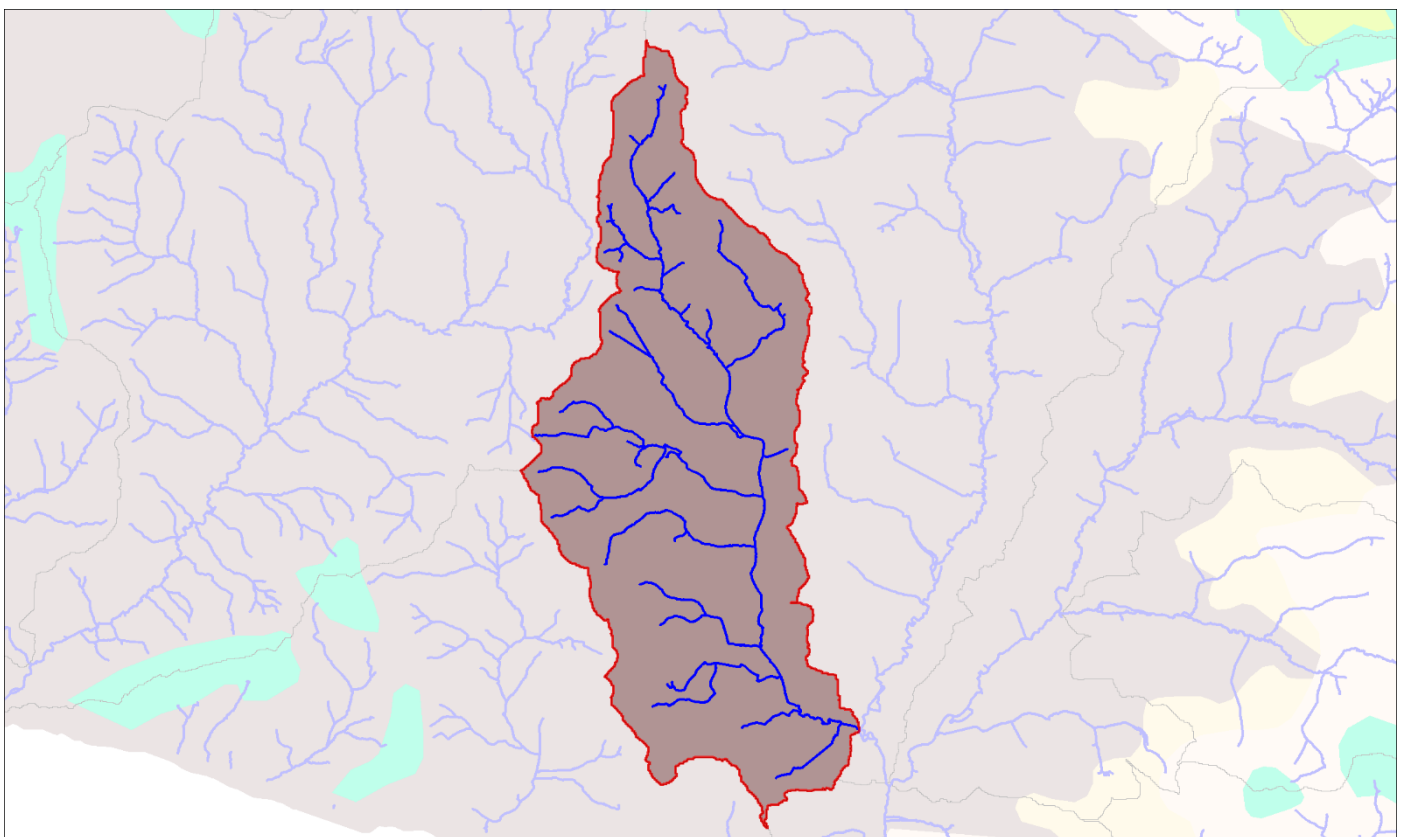
Geology

The geology under our feet heavily influences how water moves through the catchment, the soils that form above it and the plants and animals that live here. It also influences how we use the land to produce food.

The catchment is entirely made up of the Lias Group of rocks. This group is made up mudstones, siltstones, limestones and sandstones that were deposited in shallow seas some 172 to 204 million years ago in the Jurassic and Triassic Periods.




The Lias rocks significantly impede drainage and are therefore the primary reason for the damp character of the Simene Valley.

The map below shows the extent of the geology within the catchment.



Map of the River Simene underlying geology

Key

-  River
-  Catchment boundary
-  Lias Group: mudstone, siltstone, limestone and sandstone

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Geology Data © British Geological Survey and United Kingdom Research & Innovation 2021



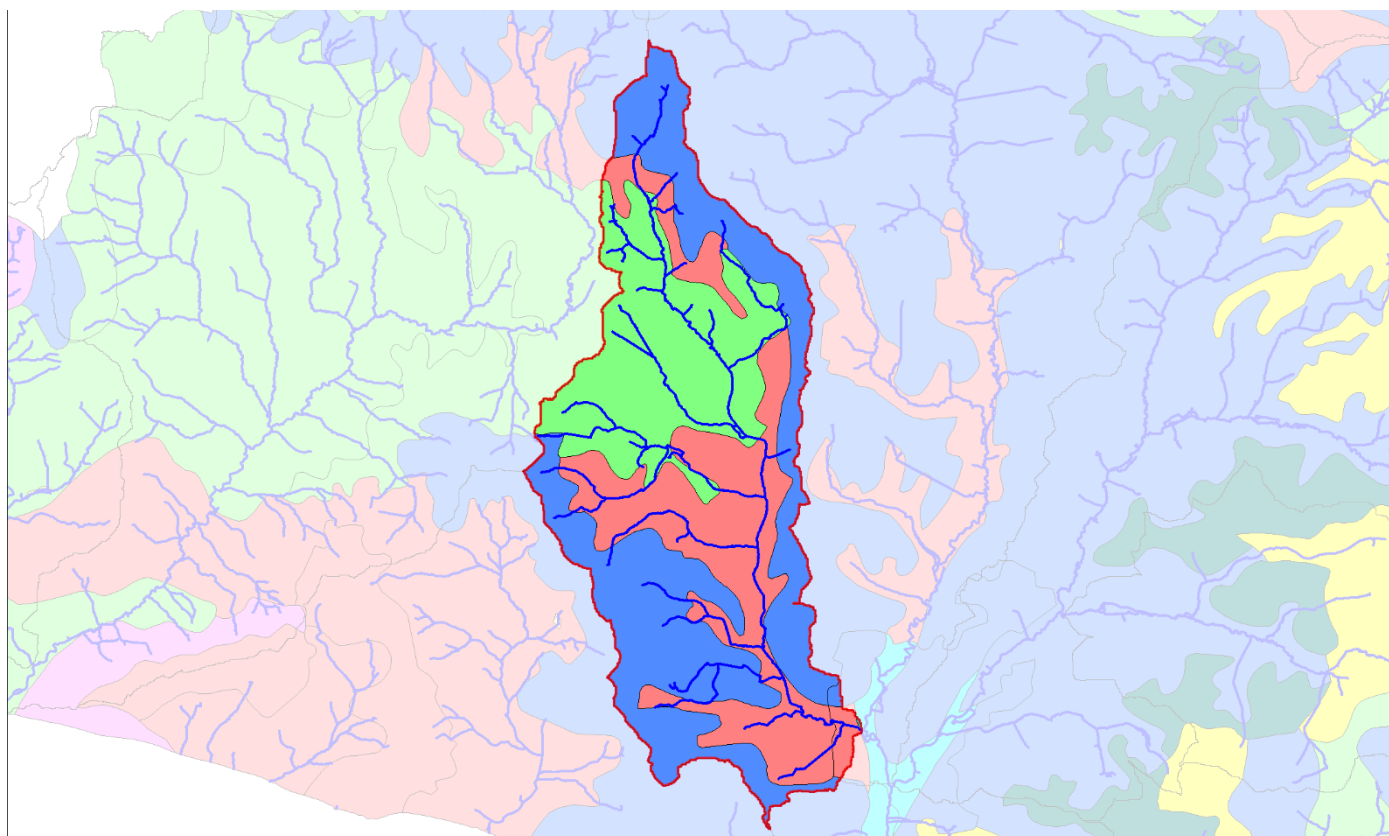
Soil types

Heavily influenced by the underlying geology, soils are at the interface between biotic (living) and abiotic (non-living) worlds. These are important stores of carbon and biodiversity in their own right and provide the foundations from which others can grow. Soils can be broadly described as basic (acid), calcareous (alkaline) and neutral. The soils of the Simene catchment are mostly neutral with some acid.

Despite the uniform geology, there are a mix of soil types present within the catchment. These have been characterised by Cranfield University's Soilscales. The three soil types present within the catchment are:






- 'Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.' They impede drainage and have moderate fertility. They are suitable for seasonally wet pasture and woodland habitat and can be used for grassland and arable, with some woodland. There is low potential for carbon storage. Water drains to a stream network (rather than groundwater) and the main risks are associated with overland flow from compacted or poached fields. Organic slurry, dirty water, fertiliser, pathogens and fine sediment can all move in suspension or solution with overland flow or drain water.
- 'Freely draining slightly acid loamy soils'. These are freely draining to local groundwater and rivers and have low fertility and low carbon storage potential. They are suitable for neutral and acid pastures and deciduous woodlands; and can be used for arable and grassland. The main risks to the water environment are groundwater contamination with nitrate; siltation and nutrient enrichment of streams from soil erosion on certain of these soils.
- 'Slightly acid loamy and clayey soils with impeded drainage.' These slightly impede drainage, feed into the stream network, have moderate to high fertility but low carbon storage potential. They are suitable for a wide range of pasture and woodland types and can be used for arable and grassland. The main risks to the water environment are drained farmland making streams more vulnerable to pollution run-off and rapid through-flow; surface capping can trigger erosion of fine sediment.

The map below shows the extent of the Soilscales in the catchment.



Map of the River Simene catchment soils

Key

-  River
-  Catchment boundary
-  Soilscape 18: slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
-  Soilscape 6: freely draining slightly acid loamy soils
-  Soilscape 8: slightly acid loamy and clayey soils with impeded drainage

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Soils Data © Cranfield University (NSRI) and for the Controller of HMSO 2021



Land use

The geology and soils of the Char catchment have strongly influenced how this land has been used. Where it is fertile and accessible to farm machinery, it may be used for arable crops or intensive grass for dairy or beef. Where the soil is less fertile or the land too steep or waterlogged, then it may be more extensively used, leaving fragments of semi-natural habitats. This fragmentation of semi-natural habitat has increased greatly since the Second World War because of improved capability of farm machinery and techniques that make farming marginal land economically viable, alongside government incentives. This was driven by an increasing population and subsequent higher demand for food. As a result, over 97% of all semi-natural habitats mapped in Dorset in the 1930s have been converted to agriculturally improved arable or grassland. This will have knock-on impacts on the water quality of the River Simene, with increased contamination of sediments and nutrients from agriculture along with increased isolation of the semi-natural habitat that exists along the river corridor.

Looking in a bit more detail at the land use of the Simene catchment, we can split it down into a number of categories that are described below. The figures are derived from a study undertaken in 2018 that mapped land use in the Dorset AONB from existing data, aerial photography and satellite images.

Intensive land use

Arable covers 55% of the catchment area. This is a high percentage. This will include several crop types grown within the catchment, grown in rotation along with maize which is grown as a fodder crop to support dairy production. Winter cereals and maize are high risk crops with regards to soil erosion, particularly on steep slopes, because bare soil is exposed at times of potential high rainfall. Good agricultural practises can mitigate these risks, by, for example, growing of cover crops that bind soils together.

Improved grassland covers 25% of the catchment area. Improved grassland will predominantly be used to support dairy cows. The grassland will be planted 'leys' dominated with grass species, such as ryegrass, possibly with clovers, that are periodically ploughed up and replanted. To maintain their condition, they will be treated with nitrates and phosphates several times during the growing season.

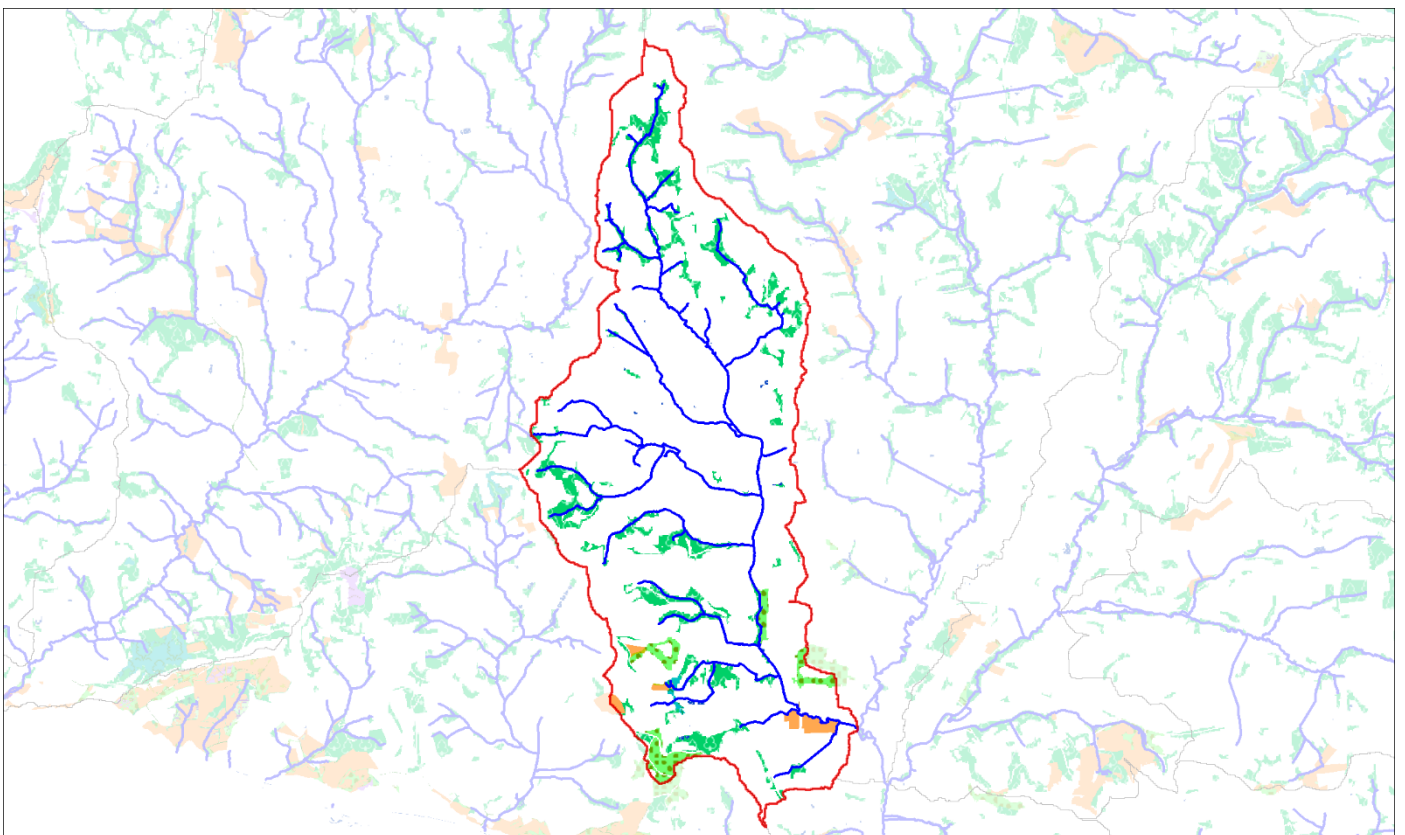
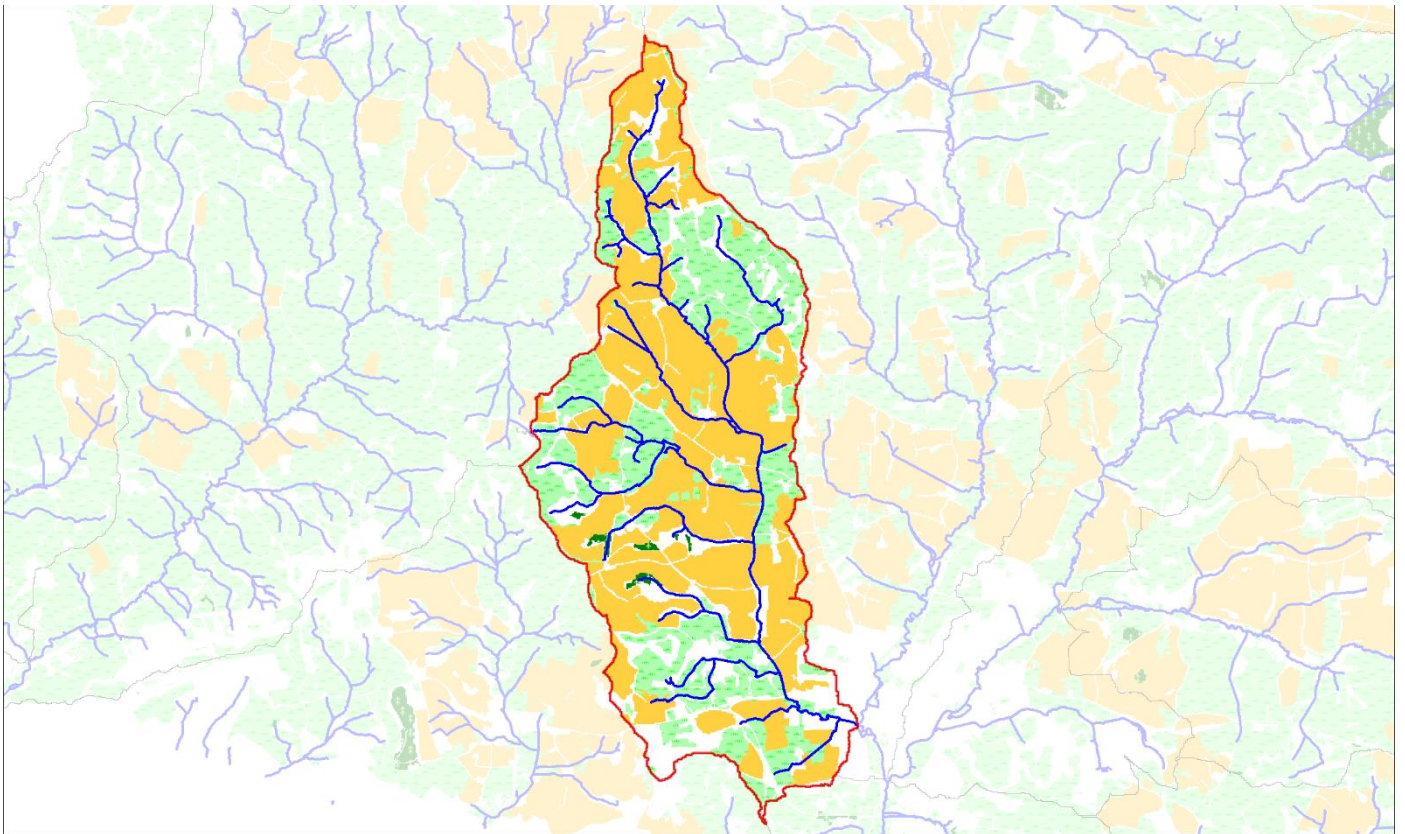
In total, intensive land use covers close to 80% of the catchment area and therefore has the potential to have significant effects on the water environment of the River Simene.

Extensive land use

The only real habitat of any extent that is not intensive is broadleaved woodland, which makes up 10% of the catchment and even this is below the average for Dorset. The next most extensive coverage is by scrub, at 2%. There is hardly any semi-improved grassland (0.7%) that has greatest potential for habitat restoration.

Other land use

Urban land cover takes up 6% of the area, and there is an additional 1% that has been classified as gardens (though this category is hard to define because the individual areas are quite small). Less than 1% is water.





Map of the River Simene catchment intensive land use (top) and extensive land use (bottom)

Key































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River



Catchment boundary

	Arable		Quarry
	Bare ground		Saltmarsh
	Bracken		Sand dune
	Broadleaved woodland		Scrub
	Cliffs and rocky shore		Semi-improved grassland
	Coniferous plantation		Shingle above high tide mark
	Felled woodland		Tall herb and fern
	Gardens		Unimproved grassland (Acid)
	Hedgerow		Unimproved grassland (Calcareous)
	Improved grassland		Unimproved grassland (Neutral)
	Intertidal habitat		Urban
	Lowland dry heath		Water
	Marshy grassland		Wet heath
	Mixed woodland		Wet woodland
	Parkland/scattered trees		Wetland

Land use categories



Ecological networks

We have undertaken further analysis of the land use data to identify areas of habitat that are important for the survival of native species, as they provide shelter and food for them. We also looked at how easily these species can move through the landscape between these 'core' habitat sites. We have broken this analysis down into four broad habitat types: grassland, woodland, heathland and wetland. For each of these, we have identified: 'core' habitat, which are extensive land use blocks over 1ha in size; 'stepping stones', which are extensive land use blocks less than 1ha in size; and the 'ecological network', which maps how a species can move between the 'core' habitat blocks using the 'stepping stones' and wider intensive land use. It is vital for the survival of species that they have access to adequate 'core' habitats to shelter, feed and reproduce as well as adapt to extreme weather and climate change.

The most significant network within the Simene catchment is woodland. There are small areas of grassland in the south of the catchment. There are no wetland sites or heathland sites (where there is a lack of suitable geology and soils for development).

It is the government's ambition to have 30% of the land managed for wildlife. If we total the 'core' habitat blocks within the catchment, this gives us a total of 13%. There is, therefore, significant capacity for restoration and enhancement to help meet this target. Natural England also recognises that for a site to function naturally, it should be at least 40ha in size. There are no habitat blocks above this threshold.

Woodland

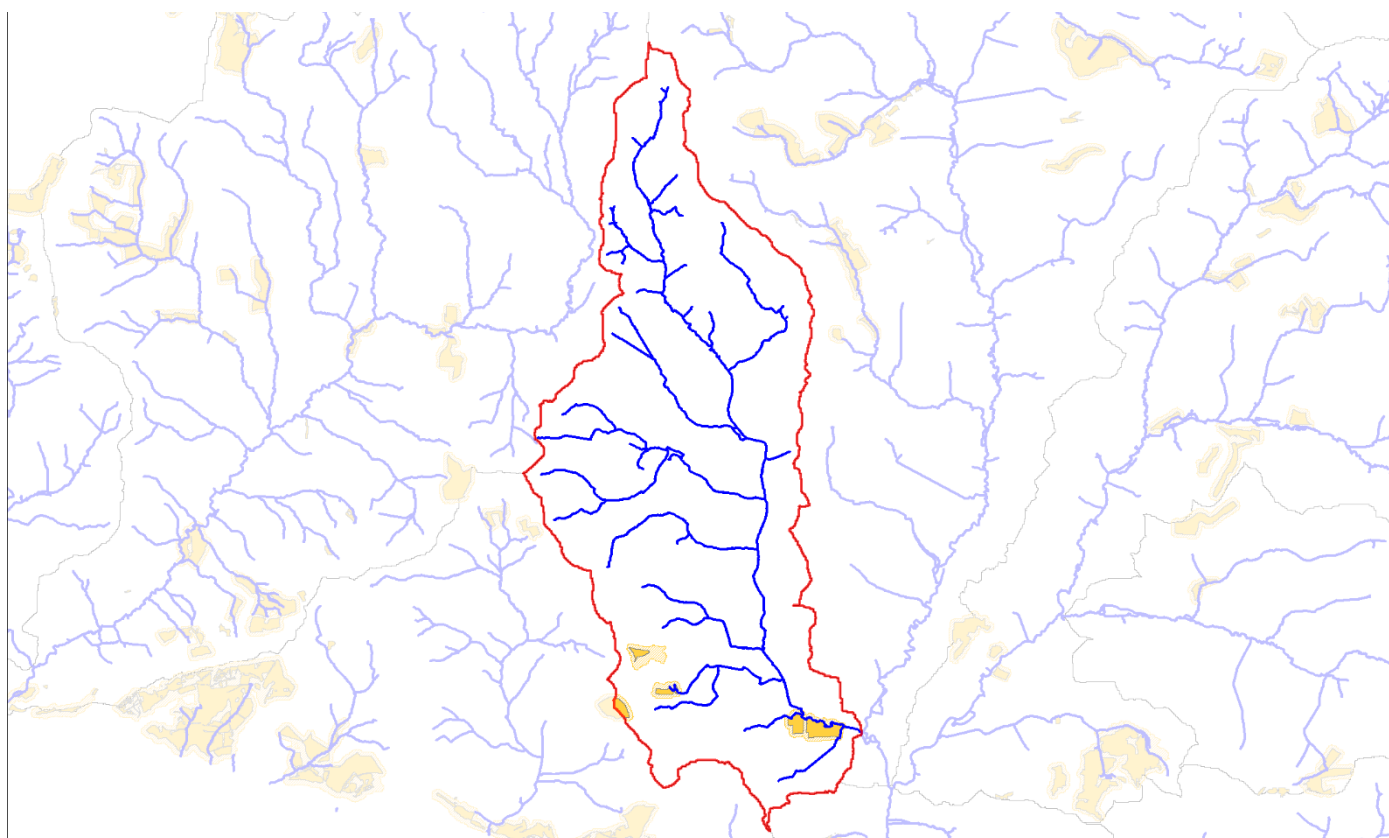
203ha of 'core' and 'stepping stone' habitat exist within the catchment over 49 locations, none of which are above 40ha. These sites support a woodland ecological network (for an average medium dispersal species) of 407ha over 20 locations.

Grassland

12 ha of 'core' and 'stepping stone' habitat exist within the catchment over 5 locations, none of which are over 40ha. These sites support a grassland ecological network (for an average medium dispersal species) of 29ha over 4 locations.





Heathland and wetland

Heathland sites are tightly restricted to specific underlying soils and geology. There is little opportunity for restoration and enhancement within the catchment. There are no wetland sites within the catchment, which means species reliant on this habitat are poorly serviced in the Simene catchment.

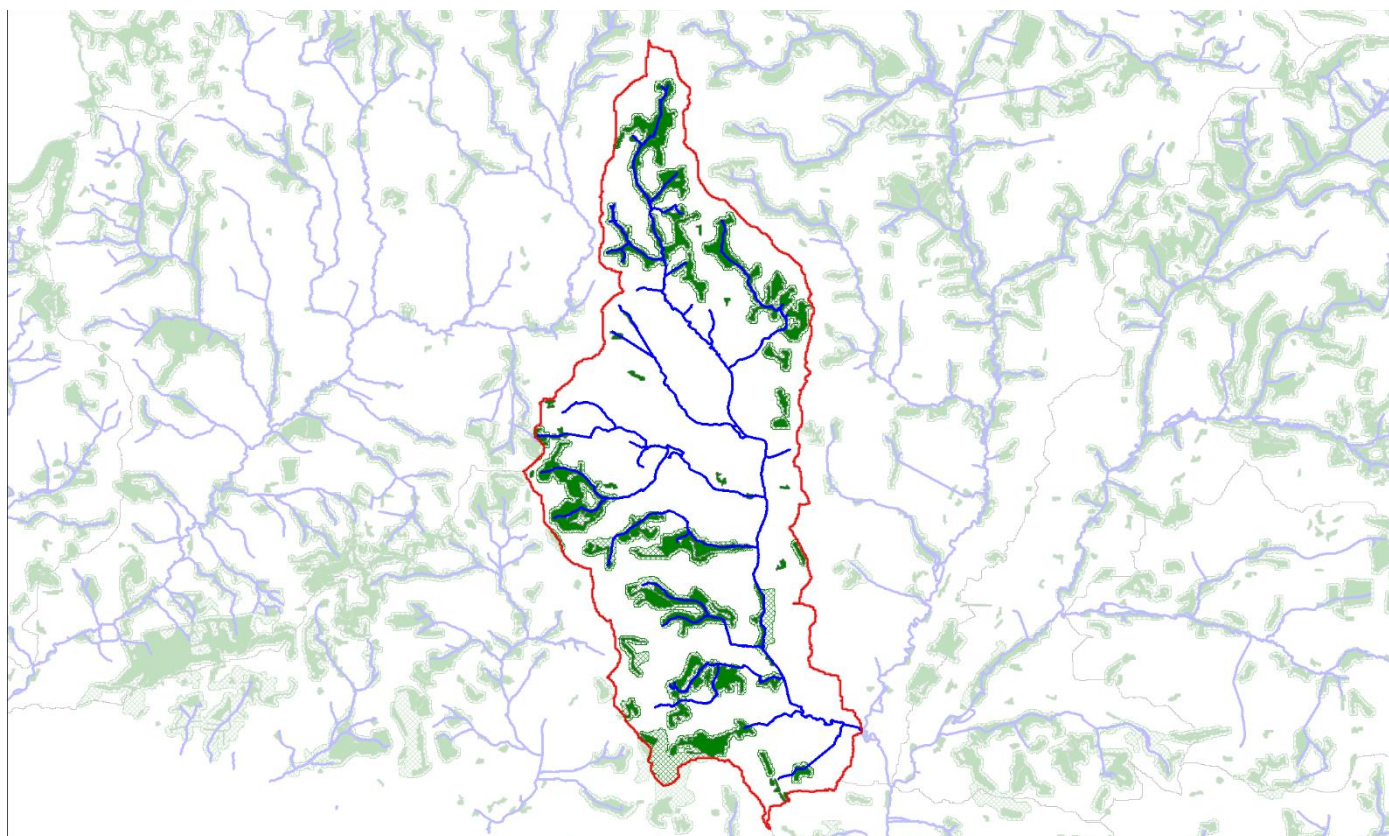


Map of the River Simene catchment grassland ecological network

Key





-  River
-  Catchment boundary
-  Grassland core (>1ha) and stepping stone (<1ha) sites
-  Grassland ecological network for a medium dispersal species

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Map of the River Simene catchment woodland ecological network

Key

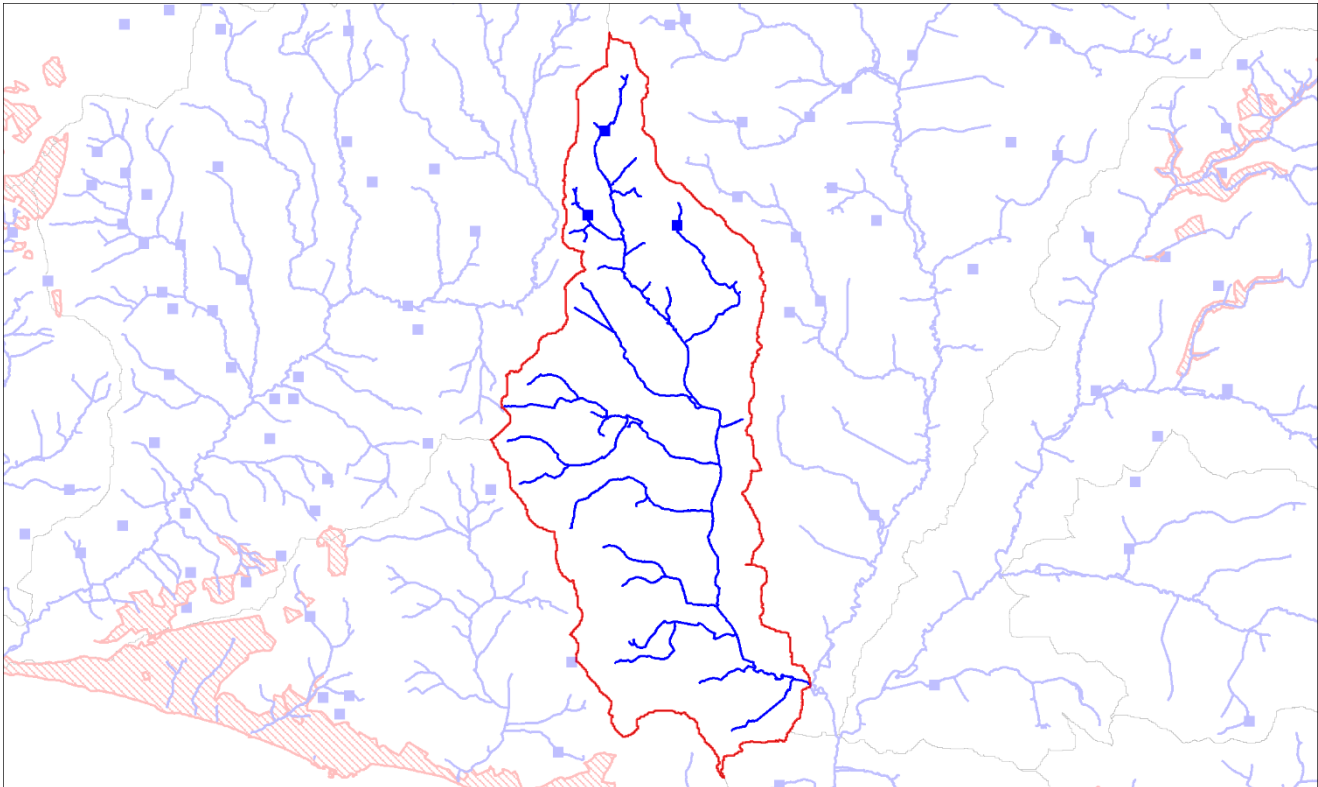
-  River
-  Catchment boundary
-  Woodland core (>1ha) and stepping stone (<1ha) sites
-  Woodland ecological network for a medium dispersal species

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

Designations

There are no Sites of Special Scientific Interest (SSSI) within the catchment. There are 3 Sites of Nature Conservation Interest covering approximately 10ha.



Map of the River Simene catchment environmental designations

Key

-  River
-  Catchment boundary
-  Sites of Special Scientific Interest (national)
-  Special Area of Conservation (international)
-  Sites of Nature Conservation Interest – point (local)

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Issues & Impacts

Water Framework Directive assessment:

The Environment Agency classify waterbodies such as the River Simene into categories that reflect their overall condition. These are **High** > **Good** > **Moderate** > **Poor** > **Bad**. The Simene is categorised as **Moderate**. The aim is to have waterbodies classed as Good, so the Simene is currently considered to be a failing watercourse. It was also classified as Moderate in 2013, 2014, 2015 and 2016.

The areas that the Environment Agency monitor to come up with their classification are summarised below. There is more detail behind these categories, which is available from the Catchment Data Explorer website¹.

Classification area		Condition assessment category
Overall		Moderate
Ecological	Biological	Moderate
	Hydromorphological	Supports Good
	Physico-chemical	Good
	Specific pollutants	No data
Chemical	Priority substances	Good
	Other pollutants	Does not require assessment
	Priority hazardous substances	Bad

The specific elements that are currently failing are:

- Macrophytes and Phytobenthos, essentially the plant population alongside and within the river itself.
- Polybrominated diphenyl ethers (PBDE)
- Mercury and its compounds

It is not known why the plants in and alongside the river are not as expected. Little is also currently known about the impacts of the hazardous substances on wildlife, and this is an area of further work for the Environment Agency.

Local assessment:

To get a local perspective, we carried out consultations with other stakeholders about their views on the threats facing the River Simene, including Dorset Council, Wessex Water and the Environment Agency, amongst others. We did this in 2015 and updated it in 2021. The main issues are rural land management leading to phosphate and sediment issues, flooding, and invasive species.

The combined areas of most concern, as identified by the Environment Agency and local stakeholders are:

1. Sediment and phosphate contamination from agriculture
2. The desire for the river to function as naturally as possible
3. Flooding in Bridport

¹ <https://environment.data.gov.uk/catchment-planning/WaterBody/GB108044010110>



4. The impact of invasive species, particularly Himalayan balsam and mink



Action

Through our engagement with organisations and individuals over the winter of 2020, several potential opportunities were highlighted for the Simene catchment. These are highlighted below:

- Wessex Water are developing Drainage and Waste Water Management Plans² that set out how Wessex Water will enhance their assets and networks to ensure they continue to deliver for their customers and the environment in a sustainable and affordable way and in the face of future challenges such as population growth and climate change. Combined Sewage Overflows have discharged a number of times over the past three years, but not above a threshold where further action would take place.
- There are funding options available to farmers to help them manage their land better for the water environment. New schemes will be starting in 2024 that will have a greater focus on managing for the water environment but up until then existing Countryside Stewardship schemes are open for new applications and extensions, along with opportunities outlined in the Agricultural Transition Plan³. Of particular interest / relevance are:
 - Farming in Protected Landscapes: a grant programme to help farmers deliver projects that benefit, nature, climate, people and place. It runs until March 2024⁴.
 - Woodland Creation Grants from the Forestry Commission. There are high priority areas for woodland planting throughout the Simene Catchment that address water quality⁵.
 - Catchment Sensitive Farming⁶

² <https://wessexwater.maps.arcgis.com/apps/MapSeries/index.html?appid=e371301c24ca4228b36db3a3a6ba8560>

³

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/954283/agricultural-transition-plan.pdf

⁴ <https://www.dorsetaonb.org.uk/resource/farming-in-protected-landscapes/>

⁵ <https://www.forestergis.com/Apps/MapBrowser/>

⁶ <https://www.gov.uk/guidance/catchment-sensitive-farming-reduce-agricultural-water-pollution>