Pressures on nature and Opportunities for recovery in Dorset

Consultation draft

Contents

NATURE RECOVERY DORSET

This detailed report provides supporting information to Dorset's local nature recovery strategy on the pressures on nature and opportunities for nature recovery. This report was put together using information provided by the nature, forestry, farming and land advisory group and the Dorset farmer clusters advisory groups and a range of engagement events.

The pressures and opportunities below are set out under the ten national environmental improvement plan goals, which came from the Environment Act 2021. There will be cross cutting issues between the goals and the examples of activities within Dorset included will often deliver multiple benefits across the goals.

Thriving plants and wildlife

We must halt the decline in our biodiversity so we can achieve thriving plants and wildlife.

Pressures on Dorset's nature

- Habitat fragmentation leads to patches of suitable habitat that are not sufficient to maintain breeding populations, and vulnerable to even small-scale changes in land use due to lack of refugia areas to move into or recolonise from, genetic isolation. It also limits a species ability to move in response to a changing climate. Examples of some of the most clearly and severely affected species in Dorset include Duke of Burgundy butterflies, dormice, marsh tits, and Bechstein's bats.
- For many years farmers have been expected to use fertilisers and pesticides, and large machinery to plough fields on grassland habitat, these were then called 'improved grasslands' because crop growth was improved.
    - » Having lots of 'improved grasslands' have reduced the amount of species-rich grassland we have in Dorset and fragmented, split up, the remaining species-rich grassland areas.
    - » 'Semi-improved grasslands' are those that have had some human inputs applied but to a lesser extent than 'improved grasslands', we do not have enough of these to provide a 'stepping stone' for wildlife. For example, providing a place for bees and pollinators to collect for nectar.
- Similarly on arable fields, the combined used of fertiliser and pesticides has contributed to a trend towards a monoculture of one arable crop, without enough space for other wildlife

- Unsustainable woodland management practices or a lack of proactive management can reduce a woodlands ecological condition and resilience. Resulting in:
  - » Loss of habitat for nesting animals
  - » Loss of timber resources
  - » Low diversity in age and species of trees and plants
  - » Poor overall structure of the woodland, gappy or sparse areas, or letting intentional gaps between trees grow over which stops other ground-level vegetation from getting enough light.
  - » Increased risk of exposure to storm damage and other pressures
- House building and other infrastructure development like roads is another competing land use which can replace nature areas with man-made surfaces and structures.
  - » Construction activities can damage tree roots or completing destroy rooting environment.
  - » Development also increases noise, light pollution and garden invasives, which can impact wildlife
  - » Small changes in towns and urban areas, like converting front gardens into driveways, can all add up to reduce the amount of space for nature
- New homes and an increase in the local population can also increase recreation pressures on natural and semi natural areas – and while we need to encourage people's connection to nature, management of people is needed through awareness raising.
- Poorly managed intensive gamebird rearing can have a negative impact on wildlife.

Opportunities for nature recovery

- Promote and adopt more wildlife-friendly gardening practices within homes, communities and businesses.
- Manage existing habitat and create new habitat in combination, both are needed and can be complementary. For example:
  - » Improving management of existing priority woodland habitats will ensure they provide biodiversity and ecosystem services, such as food or timber production.
  - » At the same time, planting or sowing carefully selected mix of species, or allowing natural regeneration processes, will increase the size or amount of habitat and can reintroduce native and shrub species.
  - » Making sure there are also other important habitats nearby to buffer the woodland, like heathland, scrub, hedgerows, wood pasture and species-rich grassland, will enable all these habitats to thrive together in a complex and dynamic mosaic.

- Enhance hedgerows to provide important habitats and linear connectors, by planting to fill in gaps and increase lengths, increasing local native species, bringing back practices like hedge laying, reducing hedge cutting, and making the grassy buffer areas next to hedgerows more species rich. This is supported by new hedgerow management rules and funding.
- Protect nature-rich areas through the land-use planning process. Policies that first avoid harm (e.g. by using alternative sites), mitigate impacts and compensate and require net gain for unavoidable impacts are essential. Policies must target development to where direct and indirect harm is minimised, and greenspace can be retained and created.
- Undertake more surveys, organised at a landscape scale, to help understand the best opportunities for both mobile species (e.g. barbastelle and horseshoe bats that use hedge lines) and more sedentary species (e.g. marsh tits that don't cross open ground but need large scrubby woodland). Updated survey and condition data is already improving woodland management plans and interventions in ancient semi-natural, priority habitat and non-priority habitat woodlands
- Deliver biodiversity net gain policies – these will be enforced and monitored resulting in more biodiversity data being available going forward.
- Secure the sustainable retention and management of existing green infrastructure and the establishment of new green infrastructure linked to the rural network.
- Buffer existing high value habitats (for example ancient woodland) through the establishment of semi-natural habitats such as broadleaved woodland, scrub and wood pasture.
- Establish new woodlands through both planting and natural colonisation to provide both habitat and ecosystem services. Preferentially locating these to buffer and link existing woodland, enhance the ecological quality, function and resilience of the woodland network, support species movement across landscapes and buffer other semi natural habitats
- Manage the important habitats of the farmed landscape, such as chalk grasslands, chalk streams, hedgerows, woodland and field margins, by using nature friendly farming practices to improve their condition and create connections between them – many farmers in Dorset are already delivering nature recover activities, such as:
  - » Arable reversion
  - » Dew pond renovation
  - » Establishment / maintenance of hedgerows, woodland and wood pasture
  - » Selective and managed grazing with appropriate number of livestock and for appropriate amounts of time to help replicate natural processes and maintain diversity of priority habitats. This can involve excluding grazing animals from some defined areas to allow natural regeneration and scrub development.

- Manage native deer species and control non-native deer species at a landscape scale to improve the ecological condition of Dorset's woodlands. Take a multi-landowner approach, with investment in skills, infrastructure and markets to support delivery and jobs.
- Restore and create wildlife-rich grassland.

Existing activities in Dorset

There are many examples of existing nature recovery work to build upon in Dorset, some examples include:

- The Great Big Dorset Hedge project offers free hedge surveying to farmers and landowners to help them make hedges bigger, better and more connected by filling up gaps with new plants, changing maintenance schedules, and reintroducing traditional practices like hedge laying.
- Four projects in Dorset have received Landscape Recovery Scheme funding and are developing their plans:
  - Brit Valley
  - River Allen
  - Wareham Arc
  - Upper Axe
- Dorset Wildlife Trust's Wild Woodbury is a community rewilding site.
- The Farming in Protected Landscape (FiPL) programme has funded a wide range of projects in both the Dorset National Landscape and Cranborne Chase National Landscape.
- Hogchester Meadow is a site of over 4,000 hectares in West Dorset where over 100 hectares has been enhanced using green hay techniques, supported by advice on grassland restoration from Dorset Wildlife Trust and Dorset National Landscape.
- The BCP Council Green Infrastructure Strategy sets out the council's ambitions for investing in green infrastructure across Bournemouth, Christchurch and Poole over the next 10 years. It shows different ways to increase nature along roads and urban spaces, re-designing towns and cities to be more nature-friendly.
- The BCP Council 2050 Urban Forest Strategy sets out its vision for the area's trees and woodlands.
- The Cranborne Wild Heaths project is managing existing habitat and creating new habitat through planting and/or natural regeneration, to achieve a complex and dynamic mosaic of lowland heath, wildlife-rich grasslands and woodland habitats. The project is led by a private landowner, working in partnership with Forestry England and Natural England
- Hemsworth Farm, working with Dorset Wildlife Trust, has hosted an innovative trial of technology to help with biodiversity monitoring on farms.

Clean air

Air pollution is harmful in the natural environment, damaging sensitive habitats and affecting crop yields. Air pollution is also the biggest environmental risk to human health.

Pressures on Dorset's nature

- Nitrogen pollution (nitrogen oxides and ammonia) is one of the most widespread and concerning. In Dorset this comes from transport (vehicles) development, industry and agriculture (with the majority of that coming from animal manure and fertilisers). Nitrogen pollution spreads as gases or particles in the air, which then settle down onto the land, impacting soil health and water quality. Other air-borne pollution, from dust and particulates, also impact habitat quality and biodiversity.
- Some species are particularly sensitive to nitrogen toxicity, especially on Dorset heathlands, where heathers, lichens and bryophytes (mosses, liverworts and hornworts) are particularly vulnerable.
- Plants that like higher nitrogen levels outcompete plants that prefer to grow in less nutrient rich soil. This can lead to a reduction in species richness and a change in species composition and over the long term the soil will become more acidic making it harder for some plants to survive.
- Changes to the species directly affected by the pollution can also impact other species in the ecosystem, making them more vulnerable to threats from frost, drought and disease.

Opportunities for nature recovery

- Adopt more sustainable and less intensive farming practices.
- Manage land around heathland sites affected by pollution by changing heather management frequency, having more intensive grazing or soil stripping to take away nutrient rich soil and invasive plants and create bare ground.
- Change practices on adjacent agricultural land near sensitive habitats to support conservation measures e.g. heathland support area.
- Restore or create a range of different habitat types to help reduce nitrogen air pollution such as planting and protecting hedgerows and trees (the right tree in the right place) that catch air pollution particles and can help mitigate ammonia emissions from farming.
- Buffer existing high value habitats (for example ancient woodland) through the establishment of semi-natural habitats such as broadleaved woodland, scrub and wood pasture.

- Maintain existing, and establish new, urban trees to improve air quality, capturing airborne pollutants, cooling streets and improving the health and wellbeing of residents and visitors. As well as helping prevent air pollution travelling to vulnerable habitats.
- Support 'cut and collect' mowing of verges to reduce the base nutrient levels from vehicle exhausts.
- Reduce the source of car pollution such as increasing the opportunities to travel by public transport, bicycle and on foot, or switching to electric or hybrid vehicles – increased adoption of electric vehicles also cuts down on transport-origin nitrogen deposition.

Existing activities in Dorset

- Dorset Heaths Partnership brings partners together and runs a range of projects such as Dorset Dogs, education activities, as well as heathland wardens.
- The Dorset Heathlands Interim Air Quality Strategy was published in 2020 and runs to 2025, and mitigation projects are currently being delivered
- Dorset Council's verge cutting policies support wildlife, including 'cut and collect' mowing.

Clean and plentiful water

Dorset's rivers, streams, lakes, and wetlands provide the water that people and wildlife depend upon to survive. But a range of pressures are affecting the water environment.

Pressures on Dorset's nature

- Nutrient levels are too high in many of Dorset's rivers and streams, especially phosphorus and nitrogen and can harm wildlife.
- Fertilisers and pesticides added to farmland and gardens to help crops and plants grow, or given to pets and livestock to protect from parasites, can lead to nutrient pollution in Dorset's water when excess chemicals enter water directly, or travel through the soils into water underground, or through rainwater flowing over the land into streams and rivers.
- High nitrogen levels in soils can lead to nitrate leaching into our waterways allowing 'nitrogen-loving' plants and organisms to grow prolifically and outcompete other plants which then die. This can mean there is less oxygen in the water for other wildlife like insects and fish to survive. This is known as eutrophication. This is a particular issue in the Poole Harbour catchment.

- Sediment (sand, soil, mud, rocks, wood and other solids) gets washed into the water from land and then deposited in other places. This is a natural process but can be sped up when soils are left bare, as this allows wind, rain and flowing water (including surface run off) to carry sediments, nutrients and other pollutants into Dorset's rivers, lakes and harbours, including the Stour, Poole Harbour, and West Dorset Rivers and Coastal Streams catchments, putting pressure on water quality.
- An imbalance of sediment and nutrients can cause eutrophication. The conditions eutrophication creates can kill plants, and also result in a lack of food and places for animals to protect their young, reducing wildlife survival. This also impacts the wildlife living outside of rivers that rely on these species.
- Abstraction is the removal of water from a river, lake, stream, reservoir of groundwater for human use. This is licenced to manage the impact on the environment but, in some places in Dorset, abstraction can still be a pressure on nature:
  - In some parts of the River Frome's catchment, abstraction can reduce the flow of water in the river which, in turn, can increase the concentration of nutrients so that lots of algae grows and smothers other plants.
  - Abstraction from the chalk aquifer, where the water is held underground in porous chalk rock, can impact spring-fed streams when groundwater levels are low.
- Climate change will impact water supplies with expected outcomes such as:
  - More rainfall in winter, and longer, drier and hotter summers.
  - Saltwater from the sea to enter our freshwater supplies, via sea level rise and storms, reducing freshwater supply.
  - Both extremes of flooding or drought can damage the habitats that wildlife depends on for food and shelter.
  - Heavier and prolonged rainfall after longer periods of drought will also mean fields that were previously at low risk of soil erosion, run-off, or flooding become more vulnerable.
- Climate change will also increase human demand for water resources for drinking and watering crops. We will need to reduce water use through efficiency measures, store water and/or get it from outside Dorset to meet these demands without abstracting more water than nature can cope with.
- Climate change is likely to see more pests, pathogens, and invasive species living in Dorset waters and this will put pressure on the wildlife that currently help keep waters clean and thriving.

- Rivers have become disconnected from their floodplain (the land next to the river that holds sediment and floodwater). In the wider landscape, we've replaced many natural areas that can hold water in the soils and plants, with houses, buildings, and roads that cannot hold water. People have made changes or modifications to divert water from rivers and water bodies to help us build our communities. For example:
  - » Building dams and weirs to provide water to the historic milling industry.
  - » Water meadows to divert water and control its flow over crop fields.
  - » Building culverts, canals and raised bridges to enable road or rail transport.
  - » Adding ponds or water features to bring water into our gardens.
  - » Building flood defences to divert water away from our homes and communities.
  - » Digging ditches and diverting watercourses to control flow of water on farmland and forestry for drainage in winter, or to provide water for animals to drink.
  - » Removing hedges and other features across the landscape, in favour of having bigger fields for growing crops.
- In Dorset these man-made changes can cause:
  - » Changes to rivers' shape, volume, and flow, resulting in water flowing faster down the river channel and increasing flood risk further downstream
  - » Low flows during summer meaning wildlife doesn't have enough water to grow and thrive.
  - » Problematic flooding, beyond the natural floodplain and frequently exacerbated by artificial pinch points that we have engineered into the landscape like settlements and bridges in the Dorset's rivers, such as the Frome, Stour, Axe and Brit, and streams leading into them, damaging habitats and increasing surface run off.
  - » Physical barriers that impact how fish can travel along the river as part of their natural migration or blocking places where they protect their young.
  - » Easy access for nutrients and sediment to get into rivers from farmland from soil run off and animal waste.
- Simplification and narrowing of river corridors have led to a decline in bankside and in-channel habitat quality. This can include over-shading which reduces the ability of in-channel vegetation to grow, and where there isn't enough bankside vegetation, a lack of ability for the river to adjust to increased temperature and reduced structural support to keep the riverbanks stable.
- In the wider landscape, loss of hedges, trees and other features also impacts the speed water flows across the land. This is described further under the section on reducing risk of harm from environmental hazards.
- People also enjoy visiting rivers and water bodies for leisure and recreation. This can disturb wildlife homes or increase pollution from litter.

- Poor water quality can also influence human health and cause sickness, it can also have an economic impact through restrictions on shell fisheries and impacts on tourism and recreation businesses.

Opportunities for nature recovery

- Take action at a catchment scale, or in rivers' headwaters to improve water quality and water habitats. By making changes at, or close to, the start of the river, the benefits can help wildlife living there and much further downstream.
- Work together to join up plans, fund and take action, enabling a catchment scale and inter-catchment approaches helps coordinate plans and funding, enabling farmers, charities, public bodies and others to all do their bit and share the benefits. Taking this Catchment Based Approach, or 'source-to-sea' approach, means organisations and landowners take actions that help individual wildlife living in a particular river or water habitat, while also restoring rivers natural functions and linking them with the wider landscape.
- Encourage activities that help reconnect rivers to their floodplain and re-create wetland habitat helping to:
  - Provides homes for lots of different wildlife
  - Remove or store sediment and nutrient pollution to improve water quality
  - Store carbon
  - Maintain stable summer flows for wildlife to thrive, increase water availability for abstraction and reduce flood risk
- Support farmers and other land managers to reduce the amount of nutrients added to the land, expanding on existing activities.
- Encourage farming for soil health which involves encouraging microbial activity beneficial to soil structure and maintaining soil cover. This can significantly enhance soil water storage capacity, infiltration rates, reducing run-off and slowing the flow of water through the catchment, minimising sediment and pollution entering watercourses, and helping manage flood risk.
- Buffer rivers through the establishment of riparian habitats, which provide food, shelter, shade, corridors and structural support to help wildlife thrive, reduce sediment and nutrients, as well as keeping rivers cool and enhancing water quality. It is important to ensure the right tree in the right place, and incorporate a mosaic of open habitats, trees and woodland
- Reduce nutrient levels in wastewater and improve water quality by upgrading water treatment facilities and using nature-based solutions, including wetlands, and investing to reduce the need for storm overflows to operate – continuing work the water companies are already undertaking.
- Remove overgrown and overhanging plants in some places to allow sunlight to reach areas of the river that are too shaded.

- Increase or improve hedges across the landscape to provide natural barriers that slow the flow of water, reducing the amount of nutrient and sediment travelling into rivers. This also helps store water and reduce flood risk.
- Establish ‘in field’ trees in the farmed landscape, adopting silvo-pasture and silvo-arable systems, cooling the landscape, increasing soil carbon and permeability, improving soil health, reducing run off and ‘holding’ water in the landscape.
- Establish woodland, through planting or natural colonisation where seed sources are present. Land which is of low existing nature value can be left to naturally transition into scrub habitat. Scrub is made up of lots of different plants, flowers and bushes growing at different heights and sizes. Over time scrub transitions into woodland but can also be managed to keep a balance between scrub and other habitat types. Newly established woodland that complies with the UK Forestry Standard can both slow and hold water within the landscape, reducing diffuse pollution into waterways. This helps improve water quality and provides a variety of wildlife homes.
- Investigate whether tree planting is the right solution, it is not always the best option and can be inappropriate within some existing habitats e.g. heathland.
- Restoring floodplain meadows can be an alternative opportunity, these meadows use sediment and nutrients deposited from flood water to grow, meaning they can cope with flooding or drought. These wildflower meadows redirect nutrients from polluting our waters into healthy food for pollinators and livestock, which in turn produces food for humans. Floodplain meadows protect rivers during drought by allowing water to trickle down through soils to the aquifer and can be managed where humans more intensively manage the flow of water. This also helps reduce soil compaction and erosion. However, they are difficult to restore.
- Use natural materials such as gravels or logs where rivers or streams are artificially deep or banks are easily eroded. These can be used to help the river flow more naturally, reducing harmful erosion and sediment build up in the wrong places. Natural materials can also be used in different ways in the floodplain to help slow the flow of water for natural flood management.
- Design greenspaces into new developments in ways that can help slow the flow of water, clean water and create wildlife habitats. Developers are combining Sustainable Drainage Systems (SuDS) with greenspace, street tree provision, and biodiversity requirements on their sites. From green roofs and rain gardens that allow water to filter through the ground rather than run-off, to larger ponds or grassy areas called swales which can take larger amounts of water flowing form the rest of the built area.
- Plant urban trees which can provide all of the functions associated with SuDS, including the storage and interception of rainfall at source, filtration of pollutants in the canopy, and infiltration at the root zone, along with amenity and ecological benefits.
- Adopt more sustainable and less intensive farming practices, such as reducing the amount of fertiliser and pesticides used.

- Ensuring new housing developments achieve nutrient neutrality, with developers and local planning authorities working together.
- Investigate opportunities for further Eurasian beaver conservation translocations. Beavers are often referred to as 'ecosystem engineers', fundamentally altering how their environment works. Their engineering slows the flow of water through the landscape, helping to reduce peak flood flows and reduce downstream flooding. The retained water has more time to filter, helping with aquifer recharge and maintaining water flow in periods of drought. The ponds they create trap excess nutrients, leading to less polluted water downstream as well as storing carbon and providing habitat for a variety of other wildlife. A key part of beaver management is recognising when their engineering will create a serious problem for their human neighbours and acting promptly to mitigate this

Existing activities in Dorset

- In Dorset, work is underway to re-naturalise the River Sherford as part of the Wild Woodbury project. Other projects are looking at rivers that flow through Dorset, but have their headwaters in other counties, such as the Heart of Wessex initiative.
- Other river improvement projects are underway across the Brit, Asker, Stour, Swan, Frome and Piddle catchments. These work through the Catchment Based Approach, taking into account the range of challenges these rivers face to make the best improvements for wildlife and people. This includes working across county boundaries such as in the Stour which has tributaries rising in Wiltshire and Somerset but flows mainly through Dorset.
- In Dorset there are four populations of beavers licenced to be kept semi wild in fenced enclosures, including Dorset Wildlife Trust's Beaver Project. There are also small populations of genuinely wild beavers in several parts of Dorset.
- Peatland restoration helps improve water quality downstream by naturally filtering water flowing through the peaty soils. Peat will also hold large amounts of water to reduce flood risk and storing carbon. As part of the Dorset Peat Partnership peat restoration projects are underway in 16 places in Dorset, with many more locations identified as future opportunities.
- Wetland restoration opportunities have been identified in the Poole Harbour Catchment.
- Slowing the flow: Restoring the river Axe at Mosterton.
- Some farmers and other land managers are making huge shifts to reduce the amount of nutrients added to the land. For example, the farmer led Poole Harbour Nutrient Management Scheme, and the Upper Axe Landscape Recovery project.
- Some methods are already being used to help reduce the impacts of abstraction:
  - » In some places, like the Devils Brook, 'stream support', where clean water is pumped back into the river higher than the abstraction point, has been in place for a number of years.

  - » In other places, like the River Tarrant, Wessex Water has been trialling a voluntary scheme to abstract less during times of low river flows than their licence allows, to reduce abstraction impacts on these rare winterbourne streams whilst meeting customer needs for clean and plentiful water.
  - » Some abstraction licences are also being reviewed to take account of the various pressures on water for people and the environment.
- Dorset Catchment Partnership works to join up and coordinate plans and funding and enable catchment-scale and inter-catchment approaches. This allows farmers, charities, public bodies and others to all do their bit and share the benefits. Taking this Catchment Based Approach or 'source-to-sea' approach means actions help individual wildlife living in a particular river or water habitat, while also restoring rivers natural functions and linking them with the wider landscape.
- Water companies across the South West are working together to plan and prepare for a future which balances our environment's needs, including for climate adaptation, and the demands of a growing population for plentiful water supply. This includes moving water between areas, storing more water, and encouraging people to reduce the amount of water they use.
- Dorset Beaver Management Group provides advice and support on free roaming beavers

Managing exposure to chemicals and pesticides

Chemicals and pesticides help us with industry, food growing, medicine and water cleaning, but they can also cause harm to people and wildlife.

Pressures on Dorset's nature

- The use of pesticides in agriculture has, directly and indirectly, been reducing the biodiversity of farmland for decades. Pesticides include a raft of chemicals including insecticides and herbicides.
- Insecticides used to prevent ticks, fleas and worms in dogs and cats are getting into rivers and are toxic to aquatic life. They are particularly harmful to growing insects, which has knock-on effects for fish, birds and bats who depend on these insects for food.
- Pharmaceuticals, or medicines, used for human health can put pressure on nature when they enter our water systems and soils. For example:
  - » Paracetamol is toxic to most aquatic life
  - » Ibuprofen can cause changes in reproduction and cardiac function in aquatic species

  - Synthetic oestrogen can cause the collapse of some fish populations due to the feminisation of male fish
  - Some antidepressants can delay tadpole development in frogs
  - Antibiotics entering water systems and crops can potentially lead to antimicrobial resistance, meaning medicines no longer work effectively for humans and animals.
- Data from 2019 shows Dorset's river catchments fail on the Water Framework Directive chemical status for:
  - Polybrominated di-phenyl ethers (PBDEs), a now banned fire-retardant foam, used in furniture and aircraft manufacture. Although this is now banned, the chemical remains in the environment and travels through natural processes such as sediment.
  - Mercury is banned from use but is still present as it decays naturally or travels in the air from other countries.
- Road runoff occurs when rainwater mixes with chemicals from our roads, like tyre rubber, litter, plastic and hydrocarbons and flows into our water system and freshwater habitats.

Opportunities for nature recovery

- Reduce use of nutrients on land and find nature friendly farming techniques to reduce chemical and pesticide use. For example, using beetle banks which are a refuge for predatory insects, many of which are beetles, which prey on pest species, therefore reducing reliance on imported toxins.
- Reduce use of chemicals in gardens, outdoor spaces of communities and businesses.
- Limit the impact of pet treatments on the wider environment, for example
  - Dispose of treatment packaging in a sealed bag without rising out with water
  - Disposing of pet hair in a sealed bag
  - Keep pets away from rivers after treatment
  - Avoid touching pets after the treatment applied to reduce contamination from human hand washing
  - Vets and pet owners can also consider if a preventative treatment is required based on the pets lifestyle
- Ensure there is ongoing monitoring of chemical levels in Dorset's waters which helps understand the pressures and therefore target responses.
- Follow national guidance on reducing pharmaceuticals and illegal drugs at source i.e. patients/individuals, rather than having to remove them from the water system – removing then from the water system is more costly effective and uses more energy. Research is underway to identify different ways to do this.

- Increase trees within the farmed landscape i.e. agro-forestry. This improves soil carbon, water infiltration and retention, soil health and biodiversity, reducing need for additional inputs. It also provides browse, shade and shelter for livestock, improving their health and growth rates, reducing need for feeds and medication.
- Establish woodland buffers adjacent to the highway network, slowing and reducing run off, into the road network, and thence to waterways with highway pollutants.

Existing activities in Dorset

- Monitoring of chemical levels in Dorset's waters is already being undertaken by the Environment Agency and Wessex Water.
- Farmers are using Integrated Pest Management approaches including beetle banks and grassy margins to attract predatory insects.

Maximise our resources, minimise our waste

Everything we use and consume requires resources that come from our environment, and waste can have negative impacts.

Pressures on Dorset's nature

- There is a finite amount of resource in the country, and their extraction, manufacturing and disposal can harm the environment.
- Plastic pollution, including microplastics, from litter, industrial waste and wastewater can harm wildlife. From animals getting tangled up in plastic, to toxic chemicals leaking out of waste, or microplastics changing reproductive processes and causing genetic mutations.
- Fly tipping of all kinds can harm wildlife and damage habitats. Fly tipping garden waste puts excess nutrients into the countryside and often brings non-native plants which may establish in new places and put pressure on native plants.

Opportunities for nature recovery

- Enhance places where minerals have been extracted in Dorset (e.g. quarries) or where waste has been disposed (e.g. former landfill), through habitat restoration or creation, for example, Swanworth - Nature After Minerals. Mineral restoration can achieve even more benefits when done at a landscape scale.

- Reduce plastic pollution for macro and micro plastic pollution in freshwater and marine environment by looking at the catchment from source to sea following projects such as the Preventing Plastic Pollution project.
- Reduce plastic waste through the collection and recycling of farm plastics.
- Plant trees and woodlands following the right tree, in the right place approach to remove and immobilise contaminants, woodland establishment can be an inexpensive approach to remediation.

Existing activities in Dorset

- An example of habitat restoration in a former quarry is Silverlake as part of the development of a holiday park on the former Warmwell quarry, where a new nature reserve was created for local people and visitors to enjoy. Knighton Reserve has a mosaic of lakes, woodlands and gorse scrub and a conservation and community fund was also set up to support local projects.
- By working together operators, landowners, planners and conservation organisations are helping create important heathland habitat in Dorset on former quarry sites.
- FWAG South West operates a scheme for collecting plastic farm waste for recycling. Litter Free Dorset support local communities and partners with this work.

Using resources from nature sustainably

The natural environment provides us with resources such as soils, plants, animals and fish for food, or timber and stone for making products and construction. However over recent decades these resources are now limited as we are taking more than nature can provide and replenish.

Pressures on Dorset's nature

Pressures from our use of natural resources

- Herbivore grazing is an important part of maintaining important habitats like species-rich grassland and heathland. But the economics and practicalities of livestock grazing do not always enable appropriate grazing practices.
    - » Over the years there has been a decline in mixed farming, where crops are grown alongside rearing livestock. This means some farms don't have livestock.

    - There have also been declines in some of the traditional hardy breeds well suited to grazing semi-natural habitat
    - Some farms lack infrastructure such as fencing and water to manage grazing
    - Until recently payment rates for government environmental farming schemes were very low
- Historic land management cleared woodlands from many parts of the Dorset landscape, with small fragments of ancient woodland remaining upon steep slopes or escarpments. Recent land management and herbivore pressure have prevented the expansion of these fragments. Often both their size and location mean proactive management is not financially viable, the resilience of these woodlands to climate change and to pests and diseases is poor.
- Removal of trees and woodlands across the landscape, and a reduction in natural regeneration within woodlands, which is the process where seeds fall from existing trees and grow into new trees nearby.
- Hedgerows have been removed from the landscape or not managed for many reasons, including a past trend towards creating larger farm fields to maximise space for food growing and to allow for the use of larger machinery.
- Canopy closure has caused scrub, a valuable habitat that forms temporarily where grassland and heathland are gradually changing to woodland overtime, to become less nature rich.
- Loss of important species across the wider Dorset landscape impacts agricultural productivity, for example crop pollinators.
- For many years farmers have been expected to use fertilisers and pesticides to ‘improve’ how crops grow in the soil, but we now know these have reduced the health of our soils.
    - Soil structures have also been impacted by ploughing crop fields and the weight of livestock grazing.
    - In woodlands, soil health has also been degraded by clearance of deadwood and leaf litter that would otherwise rot down into the soil.
    - Degraded soils reduce agricultural productivity, the biodiversity of habitats and allow erosion of soils by wind and water.
- Deer are part of Dorset’s landscape, and important ecosystem engineers that help make complex and varied woodland habitats through their grazing. However:
    - Deer no longer have a natural predator, so their populations have grown in certain locations to huge numbers and this, sometimes in combination with livestock, is putting too much pressure on the plants and woody habitats they depend on. They eat saplings which prevents woodland from regenerating or successional scrub developing at woodland edges.
    - Their grazing can decrease timber crop value by up to 30%
    - They can cause damage to farms and agricultural crops
    - Sustainable deer management is possible, but locally this is limited by a lack of people with the necessary skills to shoot deer safely and humanely, limited infrastructure e.g. chillers and larders, markets and a lack of coordination of deer management across different areas of land ownerships.

Wider pressures on those working in land management that influence pressures on nature

Economic, financial and business viability

- Farmers' incomes are currently in decline due to inflation of costs for inputs like materials and fuel, and the removal of the Basic Payment Scheme.
    - » Following Brexit, the UK government has been changing the way farmers receive payment for taking care of the environment while they produce food in a seven-year period called the Agricultural Transition (2021-2028).
    - » Although this should ultimately lead to more opportunities for farmers to receive funding for protecting and improving nature, this transition is a huge period of change and uncertainty for the industry,
    - » Some farmers are waiting to make decisions about which environmental scheme to sign up for until they've seen all the available options.
    - » The agricultural transition is one uncertainty, alongside all the other pressures in farming such as food prices, extreme weather and diseases affecting crops and animals.
    - » When uncertainty leads to confusion, difficulties with new application processes and delays, this can indirectly reduce the amount of action farmers can take for nature recovery.
- Demand for cheap food still drives many farming business decisions. Most farmers are price takers for commodity products, they have to accept market prices for their products rather than setting the price themselves. So, they must either cut costs when incomes are depressed or change their business model for the business to remain viable.
- Farmers must cover their fixed costs first, and then survive by being flexible to change on a yearly basis. This comes before thinking about signing up to deliver an environmental scheme over several years.
- Farmers also consider business viability for future generations when making business decisions, so need to understand the longer-term impact of any nature actions they deliver.
- The new environmental grant schemes are not enough incentive for all farm businesses.
- Some farmers are unable to change their farming system as they are locked in due to previous borrowing and investment decisions.
- Financial pressures on food producers and food consumers can also negatively impact physical and mental health of many in the community.
- Some tenant farmers are cautious about signing up to environmental schemes or unable to do so because of their tenancy agreement. There are also concerns that landowners will consider collecting income for nature recovery rather than rent, or factor in potential income for nature recovery in rent increases.

- One barrier to woodland management is the cost of improving tracks for management machinery to access the woodland or forest, costs of extraction, poor access to woodlands, transport networks, processors, manufacturers and markets can limit proactive woodland management and production of home-grown timber. The current grant is insufficient for most woodland owners.
- Funding that is targeted only at priority habitats with high biodiversity can mean farmers in other areas lack funding to ensure biodiversity remains good across all areas of the county.
- Some funding is competitive, with value for money and availability of match funding from private investors giving some an advantage over others.
- Funding is often not available for ongoing monitoring surveys and/or enforcement. For example, countryside stewardship schemes check to see if the practical actions have been taken but do not provide wildlife surveys to check the biodiversity benefits, so some farmers organise and pay for these themselves.
- Lack of funding is reducing capability of those managing Dorset's countryside and heritage, as funding decreases, and costs for materials like fencing and contractors to do works is increasing. E.g. local government greenspaces teams
- Although nature markets are emerging, green finance is still new, and some investment prospects are limited in the short term.

Technical and time capacity

- Some nature recovery activities might require farmers to change their approach and develop new skills. Plus understand and choose from a variety of new environmental scheme options and new nature markets or other finance options, some of which can be combined or stacked.
- Finding the right scheme for the right location and business is important to avoid the ecological or economic risk of being locked into the wrong scheme.
- Time for paperwork and meetings can be a barrier preventing farmers from engaging with higher level discussions around environmental action
- Planning requirements for nature actions can differ between local authority areas and be seen as a time/financial barrier.
- Lack of certainty on the success of interventions and parameters for measuring success from experts/conservation organisations can reduce landowners' confidence.

Personal opinions and perspectives

- Personal opinions on land uses and how the landscape 'should' look also influence decisions on how land is managed. For example, different views on:
    - » Wild or 'tidy' green areas
    - » How trees or scrub should feature in the farmed landscape.
    - » The balance between food production and biodiversity in land management decisions

- Landowners and farmers take pride in producing food and the farming culture, so are understandably concerned about changing some land use from food production areas into woodland or other habitats. But food production and nature recovery can be done in harmony as part of a land management plan.
- In the past there has also been a perception of a choice between either farming or forestry on one piece of land, rather than having a mixture of open fields and trees.
- Changing politics, and in some cases inconsistent policies, particularly at national level, cause uncertainties, confusion, and a lack of focus. This can also lead to decisions being made for the short-term, instead of for the longer-term gains needed to address the climate and nature emergency.

Opportunities for nature recovery

Habitat improvement, maintenance, creation and connection

- Share best practice and information on what can be achieved on commercial farms to benefit both wildlife and food production, from farmers already practicing sustainable farming methods.
- Sustainable farming methods include:
  - » Regenerative agriculture – 5 principles from 'Dirt to Soil' by Gabe Brown and summarised by Groundswell.
  - » Agroecology, including regenerative, permaculture, organic, biodynamic etc. is the application of principles from ecology in farming, with the goal of achieving balanced growth and sustainable development. As well as restoring nature and tackling climate change, agroecology can also include the design and management of socially equitable food systems for farmers and communities.
  - » Nature-friendly farming is a network of farmers focused on taking a whole-farm approach to restore nature, improve access to sustainable food, ensure fair returns for farmers, act on climate change and increase resilience.
  - » Just farming. Not everyone thinks farming with nature needs to be given a particular name, as this is how they've always done it.
- Consider maximum sustainable output, a business approach that measures individual farms' financial and environmental sustainability and the potential for improving farm viability without subsidy.
- Promote innovation in farming for soil health which is showing that moving away from reliance on external, often fossil fuel-derived inputs, is possible without much yield penalty:
  - » This boosts biodiversity on-farm, reduces pollution off-site, and having a mix of animals and cropping helps create a diverse landscape.
  - » The fact these methods often work best with animals integrated into cropping, shows that a completely no meat future isn't always necessarily best.

- Consider opportunities for enlightened or irregular silviculture, which involves removing a selection of trees at certain intervals, but not clear felling a whole area of trees. This results in an irregular stand structure and delivers complex and diverse woodland habitats with an abundance of species, more resilience to pressures and sustainable timber production. Examples include:
    - » The Rushmore Estate Biodiversity Research Project showed benefits for birds, bats and insects from irregular silviculture management of broadleaved woodland, while still being economically viable.
    - » Transitioning to Irregular Forestry, the mainly conifer forest at Stourhead has surprisingly high biodiversity.
    - » These research projects also show that some form of management is best for biodiversity, rather than neglecting woodlands so we have an opportunity to bring more woodland into favourable management.
- Understand the ecological condition of woodlands Woodland Condition Assessments – Field Studies Council.
- Secure and implement, informed UKFS compliant management plans. Increasing the resilience of our woodlands and ensuring the sustained provision of habitats, timber supplies and ecosystem services such as carbon sequestration and water quality.
- Where suited to the habitat type, use selective, informed, managed and regulated grazing with the appropriate livestock numbers and for appropriate periods of time
- Consider opportunities for agroforestry, which is the deliberate mix of growing trees with crop growing and/or grazing livestock. Silvo pasture and silvo arable systems bring together field trees, shelter belts and hedgerows and grazing animals in mutually beneficial ways.
- Manage scrub habitat to be included in site management plans so that some scrub areas are able to thrive in a mosaic of habitats.
- Develop and enhance the market for venison as a sustainable product and a tool for managing deer in woodland.
- Use the UK Forestry Standard compliant mixed and multi-functional woodlands as components of the wider woodland network' can deliver for nature, water, carbon and timber supplies.
- Ensure advice, support and funding is available for any farmer or landowner that wishes to increase opportunities for nature on their farm.

Collaboration – connect people to connect habitats

- Continue and build on the strong history of sharing learning and collaborative practices in Dorset. Every land holding is unique, as are the people that manage and depend on it, so it will therefore require a unique mix of activities for nature recovery.

- Enhance farm clusters that are working together to coordinate mapping, baselining and planning of nature recovery activities, so that habitats are improved and connected at landscape scale. This can be extended even wider through the local nature recovery strategy and other projects to include more landowners.
- Work together when considering impacts of potential changes in land use on habitat connectivity, even if an area is not designated – including landowners, environmental organisations and local government.
- Take an integrated approach to managing cross-holding features, with neighbouring farm businesses and landowners working together: For example:
    - » Hedges - having diverse species, standard trees, considering local species needs and appropriate timing of hedge cutting.
    - » Hedge buffer strips – sowing wildflower seeds, considering local species needs, and appropriate timing of cut.
    - » Water courses – having riparian buffer strips, distribution and management of bank side trees and natural flood management features.
    - » Escarpments – considering the amount of scrub, trees, wildflowers and local species needs, and appropriate timing of grazing or cutting.
- Provide local/regional training courses and information to encourage and support:
- Woodland and forestry managers apply progressive silviculture and continuous cover forestry principles to their own objectives.
- Awareness raising of ancient and veteran trees management, such as Ancient tree guides | Ancient Tree Forum
- The recording of these habitats, secure the development and implementation of management plans for the trees and their surroundings. Secure recruitment of the next generation, through retention of adjacent of mature trees and succession planting.
- The increase the use of UKFS compliant woodland management practices so that more woodlands have a plan for sustainable management.
- Learn from activities from other new or innovative projects outside Dorset see what is possible when things are done differently, such as Knepp wilding. Different landowners and managers can decide which elements are suited to apply on their land.

Resource use

- Support opportunities for more rainwater harvesting.
- Investigate opportunities for solar power generation on farm buildings.
- Investigate new food production technologies, to produce food without land, so less land is needed for farming.
- Support opportunities for sustainable fisheries.

Community engagement and wider food system change

- Widen out existing programmes of community activities with farmers and landowners to increase awareness of nature, food and farming.

- Support agricultural colleges to develop curricula which reflect the transition to more nature-friendly farming for both current and future farmers to learn through trusted providers.
- Raise awareness of local food producers and opportunities to understand the local food system. For example:
    - » Support Farm shops, market gardens and veg box schemes that are helping more people eat locally grown healthy food and support local growers that are producing food alongside protecting habitats.
    - » The UK's biggest ever food conversation is involving lots of people in conversations about how we can have a system of healthy and sustainable food.
    - » Alongside activities for nature recovery and environmental benefits on farms, there are also opportunities to address the other major issues affecting the UK food system. The National Food Strategy (2021) looks at the whole food system in more detail and major challenges, including climate change, biodiversity loss, land use, diet-related disease, health inequality, food security and trade. The strategy identifies opportunities to achieve a nature-positive, carbon-neutral food system that provides healthy and affordable food, while also supporting farmers and addressing environmental challenges.
    - » Market interventions such as public food procurement policy to support sustainable farming practices
    - » The Food, Farming & Countryside Commission have also evidenced a need to increase production and consumption of nuts, fruit and vegetables in the UK, on land that would otherwise produce arable crops destined for animal feed or biomass, and reduce our consumption of those meats that this cropping would have fed.

Existing activities in Dorset

- 'Rewilded' sites can have functional food production businesses, such as The Purbeck Wild Grazing project and Cotleigh Farm on the Mapperton Estate.
- The Poole Harbour clam & cockle fishery is registered under the Marine Stewardship Council.
- The Feeding Dorset Partnership, has joined a national network of Sustainable Food Places, to work with food growers, producers, retailers and emergency food projects towards a more resilient, sustainable and affordable food future
- There are lots of organisations providing this advice in Dorset, for example: Future Farming Resilience programme, Farming and Wildlife Advisory Group South West, Dorset Wildlife Trust, Farming in Protected Landscapes, The Game & Wildlife Conservation Trust, Forestry England, Environment Agency, Natural England, Wessex Water.

- Farmers and landowners in Dorset are offering opportunities for groups to enjoy our natural landscape and countryside. This helps people learn about nature, food production or even volunteer to help with nature recovery activities.
    - » Discover Farming – An education programme by Melplash Agricultural Society
    - » Farming, Food and Education at Middlebere Farm - Farming in Protected Landscapes Dorset
    - » Chettle community
    - » Fabulous Food & Farming - Dorset County Show

Mitigating and adapting to climate change

In Dorset, current modelling predicts that we will experience wetter but milder winters, and longer, drier and hotter summers. It will also increase the amount of extreme weather events, such as flooding, wind, wildfire, water scarcity/drought, saltwater intrusion. We are already experiencing an increase in extreme and previously unusual events, and an extension to the 'growing season' from milder winters.

Pressures on Dorset's nature

- Climate change is expected to result in wetter winters and hotter summers which will impact our ability to grow food and natural resources and prevent some current species from thriving.
- Temperate changes and extreme weather events will directly put pressure on wildlife and their habitats on land, rivers and sea, impacting their survival and recovery.
- This includes an increasing number and severity of environmental hazards such as flooding, drought, and coastal erosion
- Temperature and extreme weather will make conditions more suitable for pests and disease, including invasive non-native species (INNSs) to grow and spread.
- Ocean acidification and sea water temperature rises will also put pressure on marine and coastal species which spend all or part of their life cycle in the sea e.g. diadromous fish such as salmon and trout.
- Climate change will affect where wildlife across the world have to travel to survive, some may leave the UK and others may arrive. A climate envelope is the conditions where a species currently lives and survives. This envelop will move geographically due to climate change. We cannot predict exactly where, when or how far the envelope will move, but if the envelope moves quicker than the species themselves can travel, it's possible they won't survive.

- Climate change will put similar pressures on farming and food production, extreme weather events, such as drought, flooding or wildfires, will impact the health and yields of crops and livestock, plus degrade farmland wildlife habitats.
- Climate change is already impacting farms in Dorset and the costs of these impacts reduce resources farmers have available to take climate change adaptation and mitigation.
- Shorter seasons for people to do management work that helps nature.
- The impacts of all these different pressures caused by climate change will be interconnected on individual species, habitats and ecosystems.
- Poor management of natural areas can mean they release, rather than store, carbon. For example, draining peatland, loss or disturbance of carbon-rich soils, loss of ancient woodland, and erosion of saltmarsh
- Extreme weather events like wildfires not only destroy habitats, but also release carbon stored in the vegetation and the soils below.
- Extremes of high rainfall and drought will impact our supply of water, as will the increased risk of saltwater entering our freshwater supplies from storms and sea level rise. At the same time, our demand for water will increase, especially during hot weather as people need more water to drink or water crops.
- Increased rainfall and flooding will increase the amount of water that natural areas currently providing natural flood management are expected to slow and hold.
- Some actions to mitigate and adapt to climate change could put pressure on nature, so we need to address these impacts:
    - » If not done carefully, efforts to increase natural carbon stores such as woodlands could increase the risk of pests and diseases as habitats are connected or species are imported.
    - » Some climate mitigation and adaptation actions involve hard engineering, where we build artificial structures that can reduce or disconnect habitats and involve use of carbon-intensive resources such as concrete. As humans seek to reduce their dependence on polluting fossil fuels for energy, some natural areas could come under pressure to be used for renewable energy infrastructure, such as solar panels and wind turbines.

Opportunities for nature recovery

- Deliver activities which mitigate and adapt to climate change.
    - » Activities to mitigate reduce and stop the emissions that cause climate change.
    - » Activities to adapt are around managing the effects of unavoidable climate change.
    - » Some activities may support us to mitigate and adapt.
- Deliver nature-based solutions, which are actions that support and draw on nature to provide wider environmental or societal benefits.

- Develop nature-based solutions which deliver both mitigation and adaptation outcomes:
  - » Plant more vegetation and trees alongside rivers will help keep rivers cool during hotter summers, which will help the wildlife living in rivers keep functioning as a healthy ecosystem and capture carbon.
  - » Increase areas of nature-rich habitats and their connectivity and buffering.
  - » Protect and enhance our most precious nature-rich sites as, though their exact composition may alter due to climate change, they are always likely to remain high nature value areas and refuges for wildlife.
  - » Allow space for water
  - » Use planning policy to ensure as many habitats are protected or recreated on the site of any hard engineering schemes, and if necessary, also create habitats off-site to ensure the scheme has an overall net gain to biodiversity.
  - » Ensure renewable wind and solar energy infrastructure should be built in places with low nature-richness, such as solar panels on roofs, and designed to include measures that will enhance biodiversity.
  - » Develop nature-based solutions for climate mitigation that will assist in capturing and storing carbon. Nature recovery and increasing natural carbon stores is therefore an essential part of our path to mitigate climate change and contribute to the UK's net zero by 2050 target
  - » Develop agroecological practices which can swiftly start to rebuild this resource with additional benefits in terms of soil fertility, water management and biodiversity, because industrial agriculture has depleted soil carbon on many farms
  - » Protect our natural areas that currently store and absorb the emissions that cause climate change, stopping them from adding to climate change e.g. trees, wildlife-rich grassland, peat, soils
  - » Establish appropriate woodland that complies with the UK Forestry Standard which increases carbon sequestration and storage in the trees and woodland soils
  - » Support peatland site restoration
  - » Plan for multiple different climate scenarios, to understand what carbon storage would be achieved under different climate impacts on that area
  - » Support tree planting by giving time or money e.g. National Trust donate to plant a tree scheme or Dorset Community Tree Fund.
  - » Develop agroforestry opportunities
  - » Restore or create hedges which are a good store of carbon, in the plants and soils

- Develop nature-based solutions for climate adaptation, which can help us be more resilient to these changes, e.g. natural-flood management to protect our homes, businesses and infrastructure, natural shading to keep urban areas cool:
  - » Change woodland management practices so that there is a broad mix of species and structures in an individual woodland, across the woodland network and across the whole landscape. This will increase the ability of woodland species to adapt to changing climate and to disperse from damaged woodland to newly created woodland.
  - » Ensure tree planting supports adaptation aims by planning it in a way that manages the risk on the habitat from climate change. For example, plant new varieties of trees that are more suited to new climate may improve landscape character.
  - » Research and test how some species might be resistant to drought or pests and diseases, and therefore better able to cope with these pressures.
  - » Select species (native, near native and non-native) that will deliver resilient woodlands, informed by objectives, site conditions and climate change. Seeking advice and use of tools such as Ecological Site Classification (ESC) - Forest Research should inform decision making.
  - » Increase the area of tree and hedge planting and/or wood pasture on farms would provide more shelter from extreme heat.
  - » Allow for flexibility of end goals when managing and restoring habitats and be aware that climate change may make conditions suitable for different species, and that may have knock-on impacts on complex and dynamic systems.
  - » Factor in climate risks and adaptation on land management decisions and plans (including national to individual land), to avoid gains in one area being counteracted by losses elsewhere.
  - » Deliver natural flood management options which can improve water quality and slow the flow of water to reduce flood risk.
  - » Review land management practices which may become unsustainable in a changing climate and change to practices that are better for nature.
  - » Consider the potential for alternative crops to be grown or alternative growing seasons.
  - » Support farming for soil health options to increase soil water storage to smooth out the flood-drought fluctuations and extend the grazing/growing periods.

Existing activities in Dorset

- Dorset Peat Partnership is delivering peat restoration.
- The Dorset Wild Rivers partnership is working on Dorset's precious chalk stream catchments, keeping them cool, managing summer water levels and improving conditions for wildlife.
- Many of the activities listed through this document will also be supporting mitigation and adaptation measures.

Reduce risk of harm from environmental hazards

Environmental hazards include flooding, drought, coastal erosion and sea level rise, extreme heat, and wildfire.

Pressures on Dorset's nature

- Where we have only a few pockets of wildlife-rich areas that are small and not connected to other wildlife-rich areas, these places are more at risk of harm from environmental hazards because they are too small and/or species have nowhere to travel to for protection.
- Storms can have short term impacts, like trees being damaged at Kingston Lacy, and longer-term impacts, such as the freshwater lagoon near Cogden beach changing into a saltwater habitat due to sea water breaching into the lagoon
- Drought and heatwaves affect what plants can grow and cause some to die. As some plants die, this can trigger additional changes in the wider ecosystem and lead to a range of different scenarios. For example, drought can reduce the diversity of plants in grassland meadows, and this reduces food available for birds, insects and other invertebrates.
- Drought also impacts our soils, reducing the important microorganisms that live in the soil to make it healthy and fertile, and the dry conditions make the soil more likely to become compacted and the topsoil to become powdery so it's more likely to erode in wind or rain.
- Wildfire and arson, especially on heaths and woodland and forests, destroys plants and the wildlife that depend on them for food, shelter and more will also be impacted.
- Heavy rainfall and flooding can increase soil erosion and nutrient or sediment run-off and in some places the land can be so flooded that it stops plant's roots from absorbing what they need to grow.
- Sea level rise and coastal erosion of land into sea will reduce wildlife habitats on land and change some into sea/saltwater habitats.
- Development along the coast means that as sea level rise and coastal erosion push coastal habitats further back, they have less space to move back, known as coastal squeeze.

Opportunities for nature recovery

- Deliver nature-based solutions which can use reduce the pressures facing our water environment. Nature-based solutions will also help slow the flow of water across the landscape and therefore reduce flood risk (see mitigating and adapting to climate change opportunities for nature recovery).

- Increase the size and connectivity of habitats to improve their resilience to hazards, for example connecting ancient woodland and ancient semi-natural woodland with new woody habitats like mixed woodland, hedgerows, scrub and wood pasture to form a mosaic.
- Improve fire management, through boosted resources and communications to combat increased likelihood of wildfires, incorporating wildfire planning into site and habitat management plans. Implement site management to reduce fire risks.
- Increase resilience to natural hazards to be more cost-effective than not taking action now and paying for the damage caused later.
- Plant trees in urban areas to provide shade from extreme heat for both wildlife and people

Existing activities in Dorset

- Firewise Communities - Dorset Heaths Partnership

Enhancing biosecurity

When a new species or disease is suddenly introduced into the Dorset environment this can potentially unbalance the ecosystem. Native species may struggle to survive if a new invasive species takes over an area or if they are exposed to a new disease they don't have resilience against. With more travel and trade with more countries, and as the climate warms, this increases the number of pests, pathogens, and invasive non-native species that Dorset's habitats, wildlife and livestock are exposed to. Biosecurity is about protecting against these biological risks that can affect animals, plants, humans and the environment more widely.

Pressures on Dorset's nature

- Pathogens are disease-causing organisms, such as bacteria and fungi.
- Diseases, such as ash dieback, affects trees, woodlands and forests and can limit tree growth and cause death to one or many trees.
- Loss of trees causes loss of valuable habitat for a range of dependent species from bugs to lichens and even lower growing plants due to changes in the amount of light let in by different trees growing.
- Loss affects commercial woodlands, leading to shortages of timber and possibly loss of income.
- Diseases in Dorset include ash dieback disease, red band needle blight (on Brownsea Island), acute oak decline, Ramorum disease, Swiss needle cast. Bovine tuberculosis is a risk to cattle and wildlife on Dorset's farms and avian Influenza is a risk to farm poultry and wild birds.

- Potential threats to Dorset are the oak processionary moth which are a threat to oak trees, animal health and human health. Currently present in the London area and a government programme is aiming to minimise its size, spread and impact. Emerald ash borer is an exotic beetle that causes dieback or death of ash trees. It is not yet known to be present in the UK, but if it does then it could cause similar damage, death and economic consequences as currently in North America.
- Non-native species are animals and plants that have arrived in the UK from abroad over the years, for example through international trade of animals and plants for gardens or hunting, to accidental transport of animals and plans hitching a ride on planes and ships. Many of them are harmless, but some spread and become invasive non-native species which impact the environment, economy and human health.
- Invasive non-native species are often particularly well suited to the new environment, because the new place does not have the natural predator it had in its original country then they can outcompete other native species and disrupt the existing ecosystem, changing the habitat and starving native species of resources. Dorset examples include:
  - » Rhododendron is often seen in gardens and woodlands across Dorset but is an invasive non-native species that can block light for plants living underneath and spread diseases.
  - » Japanese Knotweed, mainly found on roadsides, in urban areas and along riverbanks
  - » Laurel
  - » Himalayan balsam found in wetland areas
  - » Gaultheria shallon
  - » Sika deer
  - » Grey squirrels are an invasive pest that dominate over our native red squirrels, outcompeting them for food and spreading disease, as well as damaging our woodlands and costing an estimated £37 million a year in England and Wales.
  - » Asian hornet has been sighted in Dorset. If not quickly eradicated, it can threaten honeybees and other insects.
  - » Sour fig
  - » Snowberry
  - » Giant hogweed
  - » Common wall lizard
  - » Alpine newt

Opportunities for nature recovery

- Manage or remove invasive plant species from an area by landowners, farmers, foresters and/or local community volunteers.
- Use biosecurity measures within the arboriculture and forestry sector.
- Increase the amount of Dorset's woodlands under a UK Forestry Standard management plan and therefore being managed sustainably, to increase

diversity, regeneration, and resilience. An increased amount is already under this management.

- Manage woodlands and forests using Low Impact Silvicultural Systems and Continuous Cover Forestry Practice, increasing the diversity in age, species and structure of the woodland. This in turn increases resilience to pest, pathogens and invasive species. An increasing proportion of Dorset's woodlands are now managed this way.
- Secure planting stock for woodland creation and tree planting schemes from certified, bio-secure suppliers.
- Remove grazing animals, or have a managed grazing regime, to help tackle invasive plants in ancient semi-natural woodland and priority woodland habitats.
- Manage grey squirrels at a landscape scale under government schemes. The new UK Squirrel Accord is a partnership researching fertility control. In Dorset, Brownsea Island provides home to a large population of the now endangered red squirrels.
- Use a portfolio approach when establishing woodland habitats to promote natural regeneration. Use local planting stock that are biosecure, healthy and only import from appropriate places, and select species matched to the site and objectives.
- Research resistant varieties of some species to help future planting regimes.
- Support border and trade controls to prevent pests or pathogens travelling between countries, whilst still enabling safe and secure trade.
- Monitor tree stocks for pests and diseases, so that action can be taken to tackle or control spread where possible.
- Plan and prepare for the arrival of biosecurity threats. For example, the UK has a mechanism for people to alert the government of Asian hornet sightings and a rapid response team to find and destroy the nests.
- Support the Be Plant Wise campaign which helps gardeners and retailers to protect native wildlife and stop the spread of non-native plants.
- Support the Check Clean Dry campaign which helps anglers, boaters, paddlers and other water users to stop the spread of invasive plants and animals in our water via their equipment
- Support a new national TB eradication strategy which aims to tackle bovine TB to protect cattle and farmers' livelihoods by moving away from badger culling to surveillance and vaccination.

Existing activities in Dorset

- Dorset Council Natural Environment Team are working with Dorset Highways, Dorset Environmental Records Centre (DERC), Dorset Wildlife Trust and the Environment Agency to ensure that all non-native invasive plant species are properly recorded and mapped, policies and protocols for control are put in place, advice is available and monitoring is carried out.

Enhancing beauty, heritage and engagement with the natural environment

Dorset's natural beauty is enjoyed by many local people and visitors, bringing big benefits to people's health and wellbeing and to the local economy. Around 52% of the county is designated as National Landscape reflecting the national importance of the area's significant beauty, making Dorset one of the local nature recovery strategy areas with the highest coverage of National Landscape.

Pressures on Dorset's nature

- One of the biggest risks to nature is that people do not have a connection with it, and so it becomes irrelevant and de-prioritised. Conversely, pressures from unmanaged recreation and tourism can be harmful if our activities disrupt wildlife too much. For example:
  - » Pressures from recreation and tourism include trampling of habitats, erosion, litter, air pollution from transport, grazing issues for land managers, avoidance of areas by wildlife and other changes in behaviour, nutrient enrichment, and increase in generalist predator activity (food availability).
  - » Dog and, to a lesser degree, cat poo can spread diseases and increase the amount of nutrients in the soil which disrupts the balance of which plants can grow.
  - » Dogs and cats have natural predatory instincts so can chase or attack wildlife and farm animals or disrupt nests.
  - » Dogs are likely to disrupt ground nesting birds by running off-lead through open land, such as heathland, woodland, meadows and beaches during nesting season.
  - » Smoking, disposable BBQs and use of fires in the countryside can increase wildfire risk that damages habitats. This risk is higher during hot, dry summers and in habitats such as heaths and woodlands.
  - » More people are getting involved in water recreation, such as boats, paddleboards and jet skis, which can result in potential noise and disturbance of wildlife such as birds, seals, otters and fish.
- Wildlife crime can have a major impact on populations of rare or declining species. The National Trust have reported incidents of illegal hare coursing on their land, and we have seen high profile incidents of raptor poisoning. In this video Dorset farmers discuss the impact of wildlife crimes.

- Shifting baseline syndrome is the gradual shifting of the accepted norm about the condition of natural places. People notice the changes in nature that occur in our lifetimes, seeing the condition of nature during our childhood as the best condition. As wildlife levels have declined over the years, the baseline therefore shifts with each generation. Our perceptions of a thriving natural world are therefore constantly changing, resulting in a limited understanding across society of the decline in nature, a loss of the cultural and social value and the urgency needed in protecting and restoring it.
- Not having enough space, or an imbalance of how land is used for different green spaces, for example retaining underused golf courses, can contribute to a lack of nature friendly urban areas
- Well-intentioned environmental actions can sometimes be done in an unsuitable location. For example, tree planting can be a great way to boost nature and provide important benefits like carbon storage and shade. However, if this is done on species-rich habitats such as grasslands, peat or heathland it unintentionally results in the loss of a valuable and scarce habitat, which also stores carbon, supports farming and promotes more species per square metre.
- Limited transition of skills and knowledge needed to manage the countryside to younger generations for the future.
- As a National Trail, the coast path provides public access to green space and is also a linear wildlife corridor, especially where the corridor can be managed for people and nature in a wide swathe. In some areas the path has been squeezed by coastal erosion, leaving nature, people and crop production potentially all competing for the same space.

Opportunities for nature recovery

- Collaborate on action to conserve and enhance natural beauty integrated via the landscape approach, for example through the county's two National Landscape Management Plans.
- Create and manage Suitable Alternative Natural Greenspaces (SANGs) to offer natural outdoor places for people and dogs to enjoy, instead of visiting more sensitive habitats like heathlands. SANGs like those at Upton Country Park are increasingly popular and can be managed for biodiversity as a secondary benefit to the primary purpose of recreation. For example, having wildflower meadows or fruit orchards. Additional funding to manage these sites in a way that makes them more attractive to people would further encourage visitors to save their visits to sensitive habitats for nature watching rather than daily dog walks.
- Implement a new national Green Infrastructure (GI) Framework to help the creation of good quality Green Infrastructure that benefits people and nature.
- Continue public awareness raising campaigns about human behavioural risks to natural spaces including BBQs, dogs on heaths and other recreation pressures.
- Investigate opportunities to improve how the Green Belt can deliver multiple benefits, nature recovery, public access to and connection with nature.

- Continue to promote sustainable tourism that promotes and protects Dorset's natural spaces.
- Promote opportunities for recreation activities to support conservation projects.
- Support community action for nature recovery and connection with nature, such as:
  - » Churchyards and road verges can be managed in ways that provide important grassland stepping stones for wildlife.
  - » Community growing projects and/or nature projects.
  - » Citizen science projects and conservation volunteering are other ways local people are getting connected to nature.
  - » Encourage more young people, youth groups and schools to connect with and take action for nature.
  - » Businesses and public sector organisations can support nature recovery and staff wellbeing by enhancing spaces around their offices for nature.
  - » Maximise the opportunity that increased housing may bring more people who can volunteer with local environmental groups and charities.
  - » Nature reserve managers, private and community restoration projects want to offer people the chance to experience nature.
- Share stories of successful projects in Dorset's landscapes to inspire and connect more and more people to help communicate wildlife-friendly practices and behaviours and inspire action.
- Support connection with nature through links to wellbeing:
  - » Identify where activities to create or enhance habitats can bring co-benefits for people's access to nature. National work is also underway to join up nature recovery and health priorities.
  - » Higher levels of nature connectedness among adults and children in England are shown to be good for health and wellbeing and linked to increase pro-environmental behaviours.
  - » Nature connectedness is about more than time spent in nature, it describes a person's relationship with nature, their thoughts and feelings about nature and their sense of place in nature.
  - » There are 5 pathways to increasing nature connectedness that can be used to design activities to build nature connectedness whether people have contact with nature for sport, learning, work or health.

Existing activities in Dorset

- Sustainable tourism opportunities are already being promoted in Dorset for examples:
  - » A collaborative sustainable tourism plan for the Purbeck Heaths
  - » Dorset National Landscape tourism and visitor management projects
  - » The Promise to Love Dorset campaign

- Wellbeing and nature connection projects are already taking place helping more people access the countryside and connect with nature in Dorset.
  - » Stepping into Nature
  - » FLAVOURS
  - » Litter Free Dorset reconnecting with nature spaces
  - » Planet Purbeck's nature experiences
  - » Natural Choices
  - » Health and Nature Dorset (HAND) a collaboration between the health and environment sections has published a report on the barriers to nature connection in Dorset.
  - » The Dorset Green Health project previously looked at where people lack access to different types of greenspace within close walking distance to their home. This research is currently being updated with refined methods. Public Health Dorset's research on access to nature is helping identify where activities to create or enhance habitats could bring co-benefits for people's access to nature.
  - » There is a commitment to embed nature-based wellbeing into the health system in Dorset, as outlined in the Dorset Integrated Care System Green Plan.
- Dorset Dogs promote responsible dog ownership and their Doggy Do Code is helping dogs and their owners enjoy the countryside without disturbing nature
- The Dorset #BringAPicnicNotABBQ campaign is reminding people of wildfire risks and not to use BBQs or have fires on Dorset's heaths.
- The Bird and Recreation Initiative (BARI) in Poole Harbour has worked with residents, recreation communities, charities and land managers to find positive solutions to deliver projects that protect bird life and enhance Poole Harbour – such as the paddle power map.
- Birds of Poole Harbour boat cruises give people opportunity to learn more about the special wildlife around the harbour
- Dorset Council is finding the right balance between road safety and biodiversity by managing verges as species-rich grasslands
- The Living Churchyards project provides advice on managing churchyard to encourage wildlife to thrive.
- The sport of shooting happens across a large proportion of Dorset and is therefore a driver for habitat maintenance and other conservation projects. Examples include:
  - » British Association for Shooting and Conservation (BASC) provide guidance on how to manage woodland for biodiversity, as well as shooting.
  - » The Game and Wildlife Conservation Trust also share best practice advice, to maintain the heritage and history of conservation habitat management in shooting.
  - » On Cranborne Estate in Dorset, Keepers carry out conservation work to encourage healthy insect populations to feed diverse bird species on the estate, including the Wild Grey Partridge.

- BCP Council's Green Infrastructure strategy aims to increase green travel networks, increase green features around town centre and homes, and connect up with the countryside, check out the video.
- In Dorset, the South West Coast Path is also an opportunity for people and nature.
- Citizen science and volunteering opportunities in Dorset include:
  - » Local recording groups help Dorset Environmental Records Centre (DERC) maintain data on Dorset's wildlife.
  - » Local people are getting involved in water quality monitoring in our rivers.
  - » Volunteers in Hilfield led by Bill Anderson manage woodlands that benefit rare species such as the Duke of burgundy Butterfly
  - » Friends groups are helping manage important nature areas
  - » Dorset is also part of the Wessex Citizen Science Local Pilot which is celebrating the Citizen Science work happening in the region, and exploring how improvements can be made to sharing knowledge, linking with universities, joining up data collection approaches and funding.
- Young people are already getting involved in nature recovery and connecting with nature in Dorset. For example:
  - » Local schools are completing Operation Future Hope's Nature and Rewilding Course for Schools and restoring habitats in school grounds.
  - » Nurseries, schools and colleges are supporting young people to follow the National Education Nature Park's 5 step cycle to plan and deliver action for nature on their sites
  - » Lots of local young people also take action for biodiversity as part of the Eco Schools framework
  - » Many schools also deliver Forest School sessions, such as St Mark's Primary School which is part of a new initiative launching in September 2024 in Purbeck to engage more families and young people with nature and nature-based activities.
  - » Places like The Ranch in Weymouth offer alternative education provision outdoors in nature, while also managing the natural habitats and heritage assets.
- Nature Recovery Dorset is celebrating and bringing together all these great opportunities.

Further reading, useful links and sources

Thriving plants and wildlife

- Making Space for Nature: A review of England's Wildlife Sites and Ecological Network: The Lawton Review
- Environmental Improvement Plan 2023
- What is an ecosystem? - Ecosystems - Edexcel - GCSE Geography Revision - Edexcel - BBC Bitesize
- What is the state of biodiversity in the UK? | Royal Society
- What is biodiversity and why does its loss matter? | Natural History Museum (nhm.ac.uk)
- Nature Networks Evidence Handbook NERR 082 – Natural England
- Newton, A.C., Watson, S.C.L., Evans, P., Ridding, L., McCracken, M., Anger-Kraavi, A., and Bullock, J. (2019). Trends in natural capital, ecosystem services and economic development in Dorset. Bournemouth University, Poole, UK.
- Enabling a Natural Capital Approach guidance - GOV.UK (www.gov.uk)
- Hedgerow management rules: new legislation – NFUonline
- Natural colonisation as a strategy for woodland creation and expansion - Forest Research
- Connectivity-And-Ecological-Networks.pdf (ecosystemsknowledge.net)
- What is biodiversity? | Pages | WWF (worldwildlife.org)
- A Simple and Visual Definition of Biodiversity - Network for Business Sustainability (NBS)
- First Steps in Trees and New Developments - ePapers Repository

Clean air

- NE air quality advice note for LNRS
- Understanding Impacts of Nitrogen on Nature (Nitrogen Futures Summary) (jncc.gov.uk)
- Eutrophication - Ecosystems – pollution and nutrient cycles – WJEC - GCSE Biology
- Nitrogen pollution (soilassociation.org)
- Managing ancient and native woodland in England
- Trees can help mitigate ammonia emissions from farming | UK Centre for Ecology & Hydrology
- First Steps in Air Quality for Built Environment Practitioners - ePapers Repository

Clean water

- Freshwater glossary - Freshwater Information Platform (freshwaterplatform.eu)
- 2023-ne-full-report-river-frome-sssi-condition-assessment.pdf (dorsetcatchments.co.uk)
- Microsoft Word - SWW draft WRMP24 chapter 1 setting the scene v2.1 No Highlights (episerver.net)
- Mind the Gap: The hidden threats facing hedgerows, nature and climate - Nature's Advocates - Our work - The RSPB Community
- KWT Land Management Advice_Sheet 7 - Scrub -value for wildlife&mgt.pdf (kentwildlifetrust.org.uk)
- Manage scrub and scrub mosaics – Farming (blog.gov.uk)
- Introduction to Heritage Assets: Water Meadows (floodplainmeadows.org.uk)
- Wetland opportunity mapping guide: PowerPoint Presentation (geowessex.com)
- Advice on maximising nature potential of SuDS.
- First Steps in Urban Water - ePapers Repository
- Woodland can slow the flow of water to improve water quality and flood management

Managing exposure to chemicals and pesticides

- Webinar on impacts of medicines on the environment
- Pharmaceuticals in the water environment: baseline assessment and recommendations
- The Agroforestry Handbook
- Role of natural flood management in flood risk reduction along highways network - Forest Research
- Flea-mergency: Pet treatments taking a bite out of… | The Rivers Trust

Maximising our resources, minimise waste

- Microplastic from types impacting salmon
- Using resources from nature sustainably
- Mind-the-Gap-Report-final.pdf (rspb.org.uk)
- Why should we conserve and manage our soils? | UK Centre for Ecology & Hydrology (ceh.ac.uk)
- Managing deer in the nation's forests | Forestry England
- Restoration guidance for landfill sites - Forest Research
- Brownfield regeneration - Forest Research
- Farming at the Sweet Spot – The Wildlife Trusts
- See findings of 'Bunce report' Bunce Woodland Survey | UK Centre for Ecology & Hydrology.
- Management Requirements for Woodland Supplement WS1 – Deer Control and Management: operations note 59 - GOV.UK
- National Food Strategy, Food and Agriculture Organization of the United Nations
- Food, Farming and Countryside Commission

Mitigating and adapting to climate change

- Climate Change Adaptation Manual - NE751 (naturalengland.org.uk)
- Climate Envelope Modelling for Threatened and Endangered Species | The Croc Docs (ufl.edu)
- Climate change and the global redistribution of biodiversity: substantial variation in empirical support for expected range shifts | Environmental Evidence | Full Text (biomedcentral.com)
- horizon scan of issues affecting UK forest management within 50 years | Forestry: An International Journal of Forest Research | Oxford Academic (oup.com)
- Experts predict 'catastrophic ecosystem collapse' of UK forests within the next 50 years if action not taken | Bangor University
- Why woodland management is key to nature recovery – Forestry Commission (blog.gov.uk)
- Chapter 3: Natural environment and Assets - UK Climate Risk
- Information on Nature Based Solutions as Nutrient Mitigation - NBS2024 (naturalengland.org.uk)
- Adapting forest and woodland management to the changing climate - Forest Research
- Factsheet: Climate change adaptation - Forest Research
- Carbon Storage and Sequestration by Habitat 2021 - NERR094 (Natural England)
- Quantifying.pdf (Wildlife Trusts report on emissions/sequestration from UK habitats)

Reduce risk of harm from environmental hazards

- Designing and managing forests and woodlands to reduce flood risk - Forest Research
- Building wildfire resilience into forest management planning - Forest Research.

Enhancing biosecurity

- Pest and disease resources - Forest Research
- Invasive species: the silent threat to our ecosystems – APHA Science Blog
- What are invasive species? | Natural History Museum (nhm.ac.uk)
- How biosecurity can prevent the introduction and spread of tree pests and diseases - GOV.UK
- Welcome to Plant Healthy - Plant Healthy and Ready to Plant - Home

Enhancing beauty, heritage and engagement with the natural environment

- Shifting baselines Ecology Training UK
- Green Belt Report for Dorset LNP
- National Planning Policy Framework (Dec 2023)
- Green Infrastructure video