

# CaBA GIS Data Package

# User

# Guide

Version 5.4



The  
**Rivers  
Trust**

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**Catchment  
Based Approach**



**Environment  
Agency**



Marine  
Management  
Organisation



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**All catchment host organisations are entitled to request the data package for their CaBA catchment(s) by contacting [info@catchmentbasedapproach.org](mailto:info@catchmentbasedapproach.org).**

## Acronyms

CaBA	Catchment Based Approach
CSO	Combined Sewer Overflow
EA	Environment Agency
ESDAC	European Soil Data Centre
GIS	Geographic Information Systems
N	Nitrate
NE	Natural England
NERC	Natural Environment Research Council
NRW	Natural Resources Wales
OGL	Open Government Licence
OP	Organo Phosphate
OS	Ordnance Survey
P	Phosphorous
SEPARATE	SEctor Pollutant AppoRtionment for the AquaTic Environment
SgZ	Safeguard Zone
SPZ	Source Protection Zone
STP	Sustainability and Transformation Partnerships
SuDS	Sustainable Urban Drainage Systems
UKWIR	UK Water Industry Research
WINEP	Water Industry National Environment Plan
WMS	Web Map Service
WWNP	Working with Natural Processes

## Introduction

This guide accompanies the Catchment Based Approach (CaBA) GIS Data Package, which is a set of GIS layers suitable for supporting integrated catchment management planning. **The data package requires ArcGIS 10.7 or ArcGISPro software to access it properly.** The datasets are displayed, interpreted and grouped to help partnerships identify issues and opportunities for collaborative action to improve their river catchments:




- [What are the opportunities for action? \(Opportunities\)](#)
- [What are the well-known issues? \(Issues\)](#)
- [What are the key characteristics of the catchment? \(Characteristics\)](#)
- [What are the potential causes of the problems? \(Causes\)](#)
- [What action is going on already in the catchment? \(Action\)](#)
- [What additional monitoring is happening in the catchment? \(Monitoring\)](#)
- [What basemapping is available? \(Basemapping\)](#)

Each of these groups is further broken down into relevant sections with a list of relevant 'data layers' available. The formatting of this guidance document follows the grouping of layers within the GIS map exchange document (.mxd) for reference. For each data layer in this package, the following information is provided:

**Layer name.** This is the name of the data layer as it appears in the desktop or online GIS package.

**Source.** This is the agency or organisation that published the dataset. It is critical to know the provenance of data, as this has a direct bearing on the weight that should be placed upon it when making decisions.

**Availability.** National layers are available to all partnerships and included in this data package. Local indicates a data layer that is not available nationally but is being increasingly used by CaBA partnerships to build their local evidence base and make it more representative of their issues.

**Data.** This is the  shapefile name (desktop),  GeoService link (ArcGIS Online) or  Map service URL. Use this to search for layers in ArcCatalogue, ArcGIS Online or to insert a mapping service into your map.

**Licence.** Licensing restrictions, credits and attributions. Most of the data made available in this data package is licensed for the use of CaBA partnerships. See [Section 1.1](#).

**Description.** A short description of each data layer and interpretation guidelines are provided. At the end of each section there are references for further detail, where available.

To ensure that users are accessing the most recently updated versions of datasets, this data package uses web-hosted data wherever possible. However, we have reached the limit, in terms of the number of online datasets that the software can cope with. All the online data resources are available on the Online CaBA data package [Link](#) and any of these that are not in V5 can be added into your data package or storymaps to ensure that you are using the most up to date data.

## Distribution

Each CaBA partnership host is responsible for the control and distribution of data to their CaBA partners; ensuring the continued potential for collaboration and maintaining the hosts position as a point of coordination. When passing on any data to partners, a copy of the catchment licence must be included.

## Data licensing considerations

The data provided in this package has been collated from a variety of sources with different licensing restrictions. All data use must comply with the licences to ensure that CaBA partnerships are recognised as responsible and trusted users of data and evidence. Any breach in licensing restrictions or misuse of data could negatively impact upon the reputation of CaBA partnerships and compromise ongoing relationships with data providers. Please use data responsibly and seek additional advice if you are unsure whether the licences provided here are suitable for your application.

- Open data** No restrictions on the use of this data. Provide acknowledgements if requested.
- Open Government Licence** Data can be used for commercial and non-commercial purposes. When publishing the data, you must provide acknowledgements where necessary. Further information on the use of the Open Government License (OGL) can be found [here](#).
- Standard** Refer to the data license document or source provider for terms and conditions of use.
- Non-commercial** Data can only be used for non-commercial purposes only. Some datasets may require formal acknowledgments if used in publications.
- Forestry Commission ToU** Data can only be used for non-commercial purposes only under the Forestry Commission Terms of Use. For further information about the use of the data please contact the Forestry Commission's Mapping and Geodata Unit.
- OS OpenData** OS OpenData is free to use under the Open Government Licence. You can use OS OpenData datasets in any way and for any purpose. But you must acknowledge the copyright and the source of the data, as follows: Contains OS data © Crown copyright and database right (year)
- ESRI** Data can only be used by organisations with a valid ESRI license.
- Creative Commons** Many organizations, institutions, and governments are using Creative Commons licenses to share data. All data should include an attribution statement (BY) and data providers may choose to allow; adaptations of their data to be shared (SA), only non-derivatives of their data to be shared (ND) or non-commercial use only (NC).
- CaBA Only** This means that the data can be used by catchment partnerships under a conditional licence. Ensure that your organisation has a copy of the licence for your catchment partnership(s), it is included in the data download. If you have mislaid your copy, please [get in touch](#).

**Important notice:** Some datasets require formal acknowledgments if they are used in publications or used in the creation of derived datasets. It is part of the licence conditions to include these acknowledgements where necessary. Always check the metadata for copyright and attribution statements.

## Limitations of this data package

This document provides guidance only. Data and evidence is always being refined and revised; the information provided here is valid and up to date at the time of publication (June 2019), but some datasets will become out of date and need renewing. Licence restrictions may also be updated.

Many agencies and organisations are now adopting open data policies, which means that new datasets are becoming available all the time. Join the CaBA Data User Group (CDUG) to receive updates or check [data.gov.uk](https://data.gov.uk) for the latest open source data.

Some data layers are only available online. Due to the large number of datasets and high frequency of updates, we will be sharing some of the data as Web Map Services (WMS) or ArcGIS Online layers hosted by [The Rivers Trust](#) or other approved sources. Where possible, we will attribute data with CaBA catchment and partnership identifiers so that you can filter large datasets by your area of interest.

Some layers might have nothing in them. This is because all layers have been included in the package for all catchments, but some datasets do not occur within every catchment. For example, datasets containing coastal information.

Since the formation of Natural Resources Wales (NRW), many of the datasets have only partial or no coverage of Wales. Where possible, data for cross border CaBA catchments has been accessed from NRW and a separate licence has been issued.

## How to tailor the package to your catchment to create a local evidence pack

This data package forms the foundation for the data and evidence component of the catchment plan. It is recommended that each catchment partnership should grow and modify the data package to build an evidence-base that is relevant, useful and fulfils the needs of the partnership. This can include the addition of **local** data such as modelling outputs, local monitoring and citizen science data. There is growing experience from catchment partnerships about the value and sources of this 'Local' data. We have incorporated this experience into this user guide to help partnerships improve the CaBA dataset and create locally specific evidence packs. The data package can also be updated and improved by adding in data from the Online CaBA data package [Link](#) but be aware that V5 is pushing the software to the limit with respect to online data so you may need to make slimmed down versions of the data package for specific purposes if the addition of more online data causes problems.

If you have any questions regarding any of the data and it's use, we recommend you get in touch with your Catchment Partnership coordinator in the first instance.



# 1 What are the opportunities for action?

*Why start with opportunities? Because CaBA is all about delivering projects. These layers help us target where we deliver projects so that they bring the maximum benefit to the environment; the economy and the community that support us.*

## 1.1 Rural Land Management.

*Where can we target our work to benefit the rural economy?*

**Countryside Stewardship Scheme Water Quality Priority Areas. National. NE. ■ CSS\_WaterQualityPriorityAreas. Non-Commercial.** Identifies the priority areas for countryside stewardship activities based on water quality objectives. Partnerships can use this information to co-ordinate their own work with that lead by Natural England and the Environment Agency, choosing either to focus their work where there are gaps in delivery or to add value to the work being funded by the Agencies. We have symbolised the WQ priority areas, however, the attribute table also has priority areas for; Groundwater Nitrate (GWNESC\_NE); Groundwater Pesticides (GWPEC\_NE); River Pesticides (RVPESC\_NE), Faecal Indicator Organisms (FISC\_NE); Sediment (SDESC\_NE) and Phosphate (PESC\_NE). Find out more [here](#).

**SAGIS Opportunity for Catchment Management of P. National. EA & UKWIR. ■ SAGIS\_Phosphorous. CaBA Only.** Identifies surface water catchments where changes in land management practice could reduce losses of phosphorus AND achieve Good Status. We have symbolised areas where < 30% reduction in the diffuse input will achieve good status. This excludes areas where the majority of the phosphorus is coming from sewage treatment works. It also excludes catchments where >30% reduction in the diffuse input would be required because this would be very difficult to achieve without wholesale land-use change. Read the full modelling report in Annex 1.

**SCIMAP Diffuse Pollution Risk Model. Local. Durham University. [my.scimap.org.uk](http://my.scimap.org.uk). Creative Commons BY-NC-SA.** This model generates a series of risk maps for diffuse pollution within your catchments and can be run using the free online tool. An offline version of the tool is available for more advanced users. The output risk maps can be used to help identify the areas within the catchment that are the most probable sources of diffuse pollution. Opportunities to reduce diffuse pollution within catchments can be identified by interpreting these risk maps alongside other modelling data and local knowledge. Find out more at [scimap.org.uk](http://scimap.org.uk) and watch the [online training webinar](#).


**SCIMAP-FIO Microbial Pollution Risk Model. Local. Durham, Stirling & Heriot Watt Universities. [fio.scimap.org.uk](http://fio.scimap.org.uk). Creative Commons BY-NC-SA.** In agricultural catchments, livestock represent one of the largest sources of faecal pollution. Bacteria such as *E. coli* found in their faeces can be transferred from land to streams by rainfall. This web-based model generates a series of risk maps identifying potential sources of diffuse *E. coli* pollution from livestock within catchments. These risk maps can be used to target landscape interventions and farm management improvements, and to engage farmers and raise awareness about the potential risks of grazing livestock to microbial water quality. Find out more at [scimap.org.uk](http://scimap.org.uk) or use the tool at [fio.scimap.org.uk](http://fio.scimap.org.uk).


## 1.2 Urban Land Management

*Where can we target our work to benefit the urban community? There are few national data layers which can be used to identify opportunities to manage land better within the urban environment.*

However, there are several locally available datasets which partnerships have found useful to target their work.

**Sewerage information. Local. Water Company. DiscoverWater.co.uk. Check with provider.** Water companies have a variety of information on their sewerage systems which can be useful for targeting action. Maps of the sewerage system coloured up to show here there are separate and combined systems is useful. The areas of separate sewerage systems are where misconnections can occur. The combined areas, where rainwater drains via the same pipes as the sewage highlight areas where Sustainable Urban Drainage Systems (SuDS) and blue green infrastructure is more likely to reduce peak flows in the system and therefore reduce the likelihood of sewer flooding and Combined Sewer Overflows (CSOs) discharging.

**WINEP Urban Wastewater Treatment Directive by Action Type. National. EA.  WINEP2019v3. CaBA Only.** The measures in the Water Industry National Environment Plan represent the investments required by water companies to meet their environmental obligations. This layer filters out measures with a core obligation to meet the Urban Wastewater Treatment Directive and shows what sort of action is planned during the next Asset Management Plan (AMP) cycle 2020-2025. Monitoring is usually the first stage in identifying frequently spilling intermittent discharges, and any which spill >40 times per year will then trigger an Investigation. These represent an opportunity for CaBA partners to contribute evidence about environmental impact and amenity value, and to input to the cost-benefit analysis and potentially align green infrastructure, SuDS or NFM projects to provide multiple benefits. The WINEP dataset is complex and not that easy to interpret. The CaBA Data&GIS team will continue to work with water companies to extract more information which could be useful to partnerships out of the WINEP dataset. If we identify additional data we will hold a webinar to guide partnerships on how to make the best of the information. Go to [water.org.uk](http://water.org.uk) for more details.

**WINEP Urban Wastewater Treatment Directive by Measure Type. National. EA.  WINEP2019v3. CaBA Only.** The measures in the Water Industry National Environment Plan represent the investments required by water companies to meet their environmental obligations. This layer filters out measures with a core obligation to meet the Urban Wastewater Treatment Directive and highlights which measures are planned during the next Asset Management Plan (AMP) cycle 2020-2025 to tackle continuous and intermittent discharges (storm overflows). These represent an opportunity for CaBA partners to target SuDS or NFM projects within the sewershed of specific discharges to provide multiple benefits.


**Outfall Safari Guide & Resource Pack. Local. The Rivers Trust & ZSL. [catchmentbasedapproach.org](http://catchmentbasedapproach.org). Creative Commons.** One of the major threats to water quality in urban rivers is misconnected pipes. These send pollution into rivers via the surface water drainage system and compromise the biodiversity and amenity value of our waterways. An innovative, citizen science method for locating, assessing the impact of, and reporting on these polluting pipes has been developed. This method is known as the Outfall Safari. Guidance, technical manuals, templates and examples of how to setup and run an Outfall Safari to get local volunteers involved in surveying sources of urban pollution is available [here](#).


**Planning and Development. Local. Local Authority. [planningportal.co.uk](http://planningportal.co.uk). Check with provider.** Local authorities have a wealth of information about future development which can be used to understand where there will be opportunities to work with developers and where key aspects of existing natural capital may be at risk. The key layers that have been useful for a number of CaBA


partnerships are 'site allocations' , which show where development is planned and 'green/blue' opportunity areas which show where the local authority wants to target green/blue infrastructure. The green/blue layers have a variety of names and the only way to get at them is to ask colleagues in the local authority which layers best represent the LA's aspirations for this type of investment.


### 1.3 Flood Resilience


*Where can we target our natural flood management work to maximise its benefit to communities and the environment? The series of maps below were generated by the Environment Agency to show where NFM could be built in any catchment. The maps do not prioritise the opportunities according to where the maximum benefit is. They are based on sophisticated modelling, the same modelling that was used to develop the Surface Water flood maps.*


**WWNP Riparian Woodland Potential.** National. EA.  Environment\_Agency. OGL. Areas where planting trees or shrubs adjacent to rivers could attenuate flooding by interrupting flow pathways. This highlights riparian areas on smaller floodplains that are not already wooded. It may be necessary to model the impacts of significant planting to evaluate the potential changes to flood risk. Riparian woodland also provides other benefits, such as increased levels of shade and water temperature regulation (see Keeping Rivers Cool – Level of Shade).

**WWNP Wider Catchment Woodland Potential.** National. EA.  Environment\_Agency. OGL. These maps identify locations with slowly permeable soils, where planting trees and scrub will be most effective to increase infiltration and hydrological losses. It is important to consider land ownership and to model the impacts of significant planting on flood risk and groundwater vulnerability.

**WWNP Floodplain Woodland Potential.** National. EA.  Environment\_Agency. OGL. Areas where planting trees on the floodplain may provide opportunities to attenuate flooding. This dataset highlights areas of floodplain that are not already wooded. It may be necessary to model the impacts of significant planting to evaluate the potential changes to flood risk.

**WWNP Floodplain Reconnection Potential.** National. EA.  Environment\_Agency. OGL. Areas where there are opportunities to increase water storage during flood events by reconnecting existing floodplains with their waterbodies, especially during high flows. These maps highlight areas where there is currently poor connectivity and flood waters are constrained to the channel, propagating downstream rapidly. This dataset is derived, in part, from the 'Risk of Flooding from Rivers and Sea' dataset.

**WWNP Runoff Attenuation Features 1 in 30 AEP.** National. EA.  Environment\_Agency. OGL. Locations of high flow accumulation which provide opportunities to temporarily store water and attenuate flooding during a 1 in 30 (3.3%) Annual Exceedance Probability event. The data does not provide information on design, which may need to consider issues such as drain-down between flood events. Use this layer in conjunction with Groundwater Vulnerability maps to ensure flood solutions will not introduce problems with groundwater pollution.

**WWNP Runoff Attenuation Features 1 in 100 AEP.** National. EA.  Environment\_Agency. OGL. Locations of high flow accumulation which provide opportunities to temporarily store water and attenuate flooding during a 1 in 100 (1%) Annual Exceedance Probability event. The data does not provide information on design, which may need to consider issues such as drain-down between flood events. Use this layer in conjunction with Groundwater Vulnerability maps to ensure flood solutions will not introduce problems with groundwater pollution.

For more information on the WWNP datasets check out the [Working with Natural Processes Evidence Directory](#).

**Priority Roads for Catchment Management. National. Highways England. HE\_PriorityRoads. CaBA Only.** Areas of the Highways England road network that could benefit from upstream catchment management of runoff. Work in these areas will 'potentially' benefit the roads network, however, the level of benefit will be site specific. Use the data to highlight areas where planned projects may benefit the main road network, Highways England have an Environment Fund [here](#) which may support your work. This data can be used to support applications to this fund.

**Priority Sewers for Catchment Management. Local. Water Company. On request. N/A.** Most water companies will hold information on sewers vulnerable to flooding. This data is sometimes referred to as DG5 flooding and can be sensitive. The data can be used to identify upstream catchments which can be managed to reduce the likelihood of sewer flooding. The SW Flooding maps are a good starting point to understand the location of sewer flooding if the information is not available from your water company. Some CaBA partnerships have managed to obtain maps of 'sewersheds' these show the area of land which drains to a specific flooding issue, only work in this area will potentially benefit the problem.

**Mine Water Treatment Schemes. Coal Authority. MineWaterTreatmentSchemes. CaBA Only.** Areas where the Coal Authority is treating mine water to reduce the impacts on rivers, aquifers and biodiversity. These treatment sites include large ponds which could be used for the temporary storage of runoff to reduce flood risk. This opportunity will be rather site specific but will allow partnerships to start a dialogue with the Coal Authority.


## 1.4 River Restoration and Wildlife


*Where can we target our work to maximise the bio-diversity benefit? The general advice is to focus effort around increasing the size of high value habitat or connecting isolated habitat patches together. The data below allows us to identify where high value habitat is. In many catchments local ecologists have developed habitat opportunity maps to show what an ideal landscape could look like. These maps are extremely useful for targeting habitat creation where it will make the most difference.*

**Areas of Outstanding Natural Beauty. National. NE. Opendata\_NE. OGL.** AONBs are protected areas designated under the Countryside and Rights of Way Act 2000 to conserve and enhance natural beauty.

**Biodiversity Opportunity Mapping. Local. Local Authority. On request. Varies.** These are available in some LA and represent an excellent resource for targeting habitat creation work and maximising the benefit of the work to the local system. We have used a variety of outputs from LA including Nature Improvement Areas, each of which had a detailed description of the habitat that the local ecologists wanted to create.


**Important Bird Areas. National. RSPB. RSPB. Standard.** Important Bird Areas (IBAs) are sites identified by Birdlife International as being critical for the world's birds. They are especially important for birds which congregate in large numbers. Attribution statement: Data reproduced with the permission of RSPB. © Crown Copyright. Ordnance Survey licence number 100021787 (2018)


**Important Plant Areas.** National. Plantlife.  Plantlife. Standard. Important Plant Areas (IPAs) are areas across the world which have been identified as valuable in terms of wild plant diversity. There are 164 IPAs in the UK and these make up an important network for prioritising conservation work. Attribution statement: Copyright © YYYY Plantlife International. All Rights Reserved. (where YYYY is the year when the data were supplied).

**Local Nature Partnerships.** National. NE.  Opendata\_NE. OGL. LNPs are partnerships of influential local organisations, businesses, academics, land owners and people who aim to strategically improve their local natural environment and contribute to the Government's national environmental objectives. They aim to ensure the local natural environment and the services it provides to the economy are considered in local decision making, such as planning and development, and often work closely with local authorities, Local Enterprise Partnerships and Health and Wellbeing Boards. LNPs are also involved in the identification of Nature Improvement Areas.


**Local Nature Reserves & Sites of Biological Interest.** Local. Local Authority. On request. Varies. A number of local authorities prioritise habitat creation work in or around these sites. Targeting work in these areas will make it easier to get permission to do the work and should positively augment the existing natural capital.


**Local Nature Reserves.** National. NE.  Opendata\_NE. OGL. LNRs are locally important sites for wildlife, geology, education or recreation. Local authorities have control of the land and their managers are responsible for the care and protection of its natural features.


**National Nature Reserves.** National. NE.  Opendata\_NE. OGL. NNRs are areas protected for habitats, species and geology. They are used as focus areas for research and education. Many NNRs offer opportunities to schools, interest groups and the public to learn about conservation.

**National Parks.** National. NE.  Opendata\_NE. OGL. National Parks are designated for the conservation and enhancement of natural beauty, wildlife and cultural heritage, as well as the promotion of public enjoyment and education.

**Nature Improvement Areas.** National. NE.  Opendata\_NE. OGL. Areas where partnerships were established to enhance and improve the resilience of ecological networks and biodiversity. There are 12 areas across England which received funding until 2015. Partnerships developed under this scheme provide an opportunity for CaBA partnerships to build upon.


**Priority River Habitat – Headwater Areas.** National. NE.  Opendata\_NE. OGL. Headwater areas that demonstrate a high degree of naturalness. Naturalness is classified using land cover data as an alternative to direct information on river habitat condition, as this data is often lacking for headwaters.


**Priority River Habitat – Rivers.** National. NE.  Opendata\_NE. OGL. Rivers and streams that demonstrate a high degree of naturalness. Rivers with a high degree of naturalness provide the best conditions for delivering sustainable and resilient riverine ecosystems. Naturalness is classified through the evaluation of 4 main components; hydrological, physical, chemical and biological. This is method recognises the importance of natural processes in maintaining sustainable riverine habitats and supporting characteristic biodiversity.


**Ramsar.** National. NE.  Opendata\_NE. OGL. Wetlands of international importance designated under the Ramsar Convention. Initial emphasis was placed on the protection of wetland bird



species, however non-bird features are increasingly being considered. Proposed Ramsar sites are not included in this dataset but are available in the NE open data portal.


**Sites of Special Scientific Interest.** National. NE.  [Opendata\\_NE](#). OGL. SSSIs are areas of land protected under the Wildlife and Countryside Act (1981) for their natural heritage value. This can include areas with best examples of British wildlife or landscapes. Most SSSIs are privately-owned or managed, whilst others are owned or managed by public bodies or non-government organisations.

**Special Areas of Conservation.** National. NE.  [Opendata\\_NE](#). OGL. SACs are protected sites designated under the EU Habitats Directive to promote the establishment of a European network of conservation sites to protect vulnerable habitat types and species.


**Special Protection Areas.** National. NE.  [Opendata\\_NE](#). OGL. SPAs are sites that have been designated in accordance with the EU Birds Directive and EU Habitats Directive to protect important and vulnerable bird populations and their habitats.


## 1.5 Water Quality


*Where can we target work to make the most difference to water quality? A number of the layers in this group are focused on areas which supply raw water for drinking, either from rivers or from groundwater. It is highly likely that water companies will be interested in any work in these areas. Other layers identify potential sources of poor water quality in rivers from roads and abandoned mines, in both cases there is the opportunity to work in partnership with either Highways England or the Coal Authority.*


**Source Protection Zones.** National. EA.  [environment.data.gov.uk](#). OGL. Groundwater Source Protection Zones (SPZs) identify the catchment to a groundwater borehole, well or spring that is used for public drinking water supply. The zones show the risk of contamination from any activities that might cause pollution. There are 3 main zones (inner, outer and total catchment) which are defined by travel time to the source. The closer the activity to the source, the greater the risk. Any work which could improve the water quality or the amount of groundwater recharge within an SPZ may be of interest to a water company because it could make the water resources more sustainable. The SgZ below, will show what the main risks to water quality are for the subset of SPZs that have current water quality problems.


Groundwater is an exceptionally valuable resource because as it has the lowest carbon footprint of any of our sources of drinking water. These zones are in the process of being refined using modelling work which is being done by the Environment Agency and water companies, it is worth checking with your local water company whether these SPZs have been updated. Also available for download. Find out more on [gov.uk](#).

**Groundwater Safeguard Zones & Pressures.** National. EA.  [Environment\\_Agency](#). OGL. Groundwater Safeguard Zones (SgZs) identify groundwater catchments where water quality has been compromised. Targeted interventions, focused on the problem pollutant/pollutants, in these areas will help to address the causes of pollution so that extra treatment of raw water can be avoided. Find out more on [data.gov.uk](#).

**Surface Water Safeguard Zones & Pressures.** National. EA.  Environment\_Agency. OGL. The surface water SgZs define the whole upstream catchment of a drinking water abstraction from rivers, lakes and reservoirs. Any activity within this zone has the potential to impact the quality of raw water abstracted for drinking. However, the nearer the activity is to the abstraction point, the greater the likelihood of impact. The dataset is displayed according to the water quality parameters that water companies are most concerned about. This dataset is ideal for targeting catchment management options to deliver benefits for water companies. Find out more on [data.gov.uk](https://data.gov.uk).


**Priority Roads for Catchment Management of Surface Water Quality.** National. Highways England.  HighwaysEngland\_PriorityOutfall. CaBA Only. Areas where the highway drainage system discharges into the catchment. These locations identify where partnerships may be able to work with Highways England to enhance river water quality by building constructed wetlands etc depending on location and type of discharge. Find out more about the [Highways England Environment Grant](#).

**Priority Drainage for Catchment Management of Groundwater Quality.** National. Highways England.  HighwaysEngland\_PriorityDrainage. CaBA Only. Areas where the highway drainage system discharges into the catchment. These locations identify where partnerships may be able to work with Highways England to enhance river water quality by building constructed wetlands etc depending on location and type of discharge. Find out more about the [Highways England Environment Grant](#).

**Suspected minewater discharges.** Coal Authority.  SuspectedMineWaterDischarges. CaBA Only. These are the locations of suspected minewater discharges from coal and metal mines. These discharges can have a profound impact on the ecology of a river. Again this opportunity will be rather site specific but will allow partnerships to start a dialogue with the Coal Authority to see whether their work can reduce the discharge or minimise the impact of the discharge.


## 1.6 Water Resources


*The layers in this section help us understand catchment scale water resources. Although the outputs are simple the modelling that underpins it is complex and takes into account the balance of abstraction and discharges; the interaction of surface and groundwater and the flow that's needed to keep the ecology healthy. It can be tempting to try and shortcut this understanding by just focusing on abstraction but that would only show part of the picture.*

**CAMS Water Resource Availability.** National. EA.  [environment.data.gov.uk](https://environment.data.gov.uk). OGL. Estimates of water resource availability are modelled at four different flow levels; low (Q95), below moderate (Q70), moderate (Q50) and high (Q30). Unlike the WFD assessments which focus on individual waterbodies, the CAMS assessment is based on the availability of water resources in the most stressed catchment downstream. Green areas indicate that there is more water available than is required to meet the needs of the environment. Yellow indicates that, if all licensed abstractions are carried out in full, there is not enough water to support the aquatic environment. Red areas show that water availability is less than the environmental flow indicator and there is not enough water to support good ecological status, as required under the WFD. Grey areas are regulated and managed through operational agreements, often held by water companies, and water availability in these areas are dependent upon these agreements. One aspect of this data that has caused confusion is the fact that a catchment can be water resource stressed at average flow but

fine at low flow which is counter intuitive. This tends to happen in discharge rich, urban catchments, where low flows are maintained at artificially high levels due to a consistent discharge from sewage treatment works.


Sub-catchments which do not have sufficient water in them can be effective targets for river improvement work because natural channels are often more resilient to low flows. Find out more [here](#).


**CAMS Water Abstraction Reliability.** National. EA.  [environment.data.gov.uk](https://environment.data.gov.uk). OGL. Indicative proportion (%) of time that water is available for abstraction within each catchment. The lower percentage of time that water is available, the more stressed the catchment is due to over-abstraction. Unreliable water availability can have significant impacts on public drinking water supply, agriculture, industry and businesses. Areas that are identified as water stressed or at risk of becoming water stressed, provide opportunities to target the catchment-based approach to water stewardship and NFM projects. The use of NFM, to 'store' water in the catchment during flood events may be quite effective at increasing groundwater resources, however, the vulnerability layer in section 4.5 should be used to help avoid swapping a flooding issue for a groundwater quality issue. Find out more [here](#).

**Coal Mining Reporting Areas.** Coal Authority.  [bgs.ac.uk](https://bgs.ac.uk). CaBA Only. This layer identifies areas where coal mining is likely to have occurred and where the Coal Authority is therefore likely to be managing groundwater levels. Problem groundwater in a mine is potentially a great new source of water to augment low flows. Identifying catchments which suffer from low flows in mining areas may provide an opportunity to work with the Coal Authority to manage groundwater levels and alleviate low flow issues. You can use the RfNAGs for flow from section 4 to see whether the Environment Agency believes that a WFD failure is being caused by low flows.

## 1.7 Climate change

*These datasets are a mixture of opportunities and vulnerabilities, both of which help us to target mitigations to maximise catchment and societal reliance to climate change.*

**Keeping Rivers Cool – Riparian Shade England.** National. EA.  [The Rivers Trust](https://www.rivers.org.uk). OGL. Maps showing the level of shade along rivers. Areas with low levels of shade can be targeted as opportunities for riparian tree and shrub planting. As well as helping to moderate water temperatures in a changing climate, trees can also provide many other benefits, such as reducing diffuse pollution and slowing flood waters.

**Neighbourhood Flood Vulnerability Index.** National. Climate Just.  NFVI. OGL. The Neighbourhood Flood Vulnerability Index provides insight into the social vulnerability of a neighbourhood should a flood occur; based on their susceptibility, ability to prepare, ability to respond, ability to recover and community support. It estimates how far individuals may experience a loss in well-being if exposed to a flood as well as their ability to prepare, respond and recover from a flood (without significant emergency support from the authorities). A neighbourhood is defined by census geographies (i.e. Lower Super Output Areas (LSOAs) in England and Wales. Targeting work in the most vulnerable areas will build more social capital.


**Social Flood Risk Index.** National. Climate Just.  SFRI. OGL. The Social Flood Risk Index (SFRI) provides insight into the flood disadvantage of a neighbourhood should a flood occur. It is a measure of where social vulnerability and exposure to flooding coincide. Higher levels of risk





occur where high numbers of people live in the floodplain in a neighbourhood with high social vulnerability. High negative values are a result of high numbers of people living in the floodplain in a neighbourhood with low social vulnerability (below the UK mean). Neighbourhoods where no-one lives in the floodplain have a value of zero. SFRI maps can be visualized for surface water (pluvial) flooding and Coastal and fluvial flooding combined. There are 3 different scenarios that can be investigated (1) Present day risk, (2) 2-degree global mean temperature rise by 2050 and (3) 4-degree rise in global mean temperatures by 2050, taking into account population growth and adaption. Again, targeting work in areas of high risk will bring additional benefits to social capital.


## 1.8 Estuaries & Coasts


*These datasets all relate to opportunities within coastal and transitional (TraC) waters. They will be especially useful in helping to identify opportunities for CaBA and Coastal Partnerships to work together.*


**Aquaculture. England and Wales. Marine Management Organisation.**  **Marine Management Organisation. OGL.** This feature service includes 24 layers related to Aquaculture. It includes locations of various species of shellfish production and sites for aquaculture potential. Attribution statement: © Marine Management Organisation, CEFAS.


**Bathing Water Catchments: Zones of Influence. National Environment Agency.**  **Environment Agency. OGL.** Identifies catchments that drain to bathing beaches. This layer is the same as that used in the [Bathing Water Explorer](#) Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.


**Designated Bathing Waters (England) Status. National Environment Agency.**  **The Rivers Trust. OGL.** English bathing waters designated under the EU Bathing Water Directive and monitored for water quality by the Environment Agency. Symbolised with most recent water quality status. Attributes include responsible water company, URL to open the full bathing water profile on the Environment Agency's Bathing Water Explorer and whether the bathing water quality is impacted by heavy rain. Land use is just one factor which will affect the status of a bathing beach. Attribution statement: © Environment Agency copyright and/or database right 2018. All rights reserved.

**England Coast Path Route. National Natural England.**  **Opendata\_NE. OGL.** The England Coast Path Route is being created by Natural England under the Marine and Coastal Access Act 2009. Once completed, it will be the world's longest managed coastal path. The England Coast path route will link up existing section of coastal path and add new sections. This dataset shows the location of the approved stretches of the coastal path. The project is expected to be completed in 2020. Attribution statement: © Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right 2020.


**Fish Nursery Grounds National. Marine Management Organisation**  **Marine Management Organisation. OGL.** Nursery ground data for 17 highly mobile fish species. The data shows areas around the UK of high concentrations of juveniles. Information is given on the number of species in each area and the species type. Attribution: Ellis, J.R., Milligan, S., Readdy, L., South, A., Taylor, N. and Brown, M. 2010. Mapping the spawning and nursery grounds of selected fish for spatial planning. Report to the Department of Environment, Food and Rural Affairs from Cefas. Defra Contract No. MB5301


**Fish Spawning Grounds** **National. Marine Management Organisation**  **Marine Management Organisation. OGL.** Spawning data for fish species considered to be of conservation importance. Locations are identified which have high concentrations of eggs and/or larvae. Information is given on the number of species in each area and the species type. Attribution: Ellis, J.R., Milligan, S., Readdy, L., South, A., Taylor, N. and Brown, M. 2010. Mapping the spawning and nursery grounds of selected fish for spatial planning. Report to the Department of Environment, Food and Rural Affairs from Cefas. Defra Contract No. MB5301


**Heritage Coasts (England)** **National. Natural England.**  **Opendata\_NE. OGL.** Heritage Coasts were established to conserve stretches of undeveloped coastline. They are protected under the planning system with local authorities aiming to maintain the character of heritage coasts and improve public access. Attribution statement: © Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right [year].

**Marine Conservation Zones.** **National. Natural England.**  **Opendata\_NE. OGL.** Marine Conservation Zones (MCZs) are designated under the Marine and Coastal Access Act (2009) and exist to protect wildlife, habitats, geology and geomorphology. This dataset contains current MCZs, proposed MCZs and MCZs. Attribution statement: © Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right 2019.


**Marine recreation potential in England.** **England. Marine Management Organisation. OGL.** The Marine Management Organisation undertook a project to model recreation potential across England for a range of activities. A selection of the most relevant modelled outputs is included in the Coastal and Estuarine data package. Full details of the MMO1064 marine recreation modelling project can be found [here](#). The full range of modelled outputs can be downloaded by following the URL in MMO's dataset list. This list can be accessed [here](#).


**Beach Activities Model.** **England. Marine Management Organisation.**  **Marine Management Organisation. OGL.** This model shows the potential for beach activities (including swimming) around England's coasts. Recreation potential is represented as relative potential across England from 'Low' potential to 'High' potential. Model outputs also exist for other recreations including scuba diving, sailing and boat angling. These additional outputs can be accessed from data.gov. Attribution statement: © Marine Management Organisation.


**National Coastal Erosion Risk Mapping (NCERM) 2018-2021** **National. Environment Agency.**  **Environment Agency. OGL.** This dataset shows predicted erosion extents and rates for three time horizons - short term (0-20 years), medium term (20-50 years) and long term (50-100 years) for two scenarios: 1) No Active Intervention Policy Scenario and 2) with the implementation of Shoreline Management Plan 2 Policies. The dataset also shows the Shoreline Management Plan policy in terms of coastal defences. Stretches of coastline have been placed into one of five categories: Advance the line, Hold the line, Managed realignment, No active Intervention and Not defined. Restoration opportunities may exist in stretches of coastline where Managed Realignment has been identified as the future policy. You can access Shoreline Management Plans [here](#). Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.


**Native Oyster Historic Locations** **National. Marine Management Organisation.**  **Native Oyster Historic Locations (MMO). OGL.** This data indicates where native oysters are known to exist currently or have been present in the past. The presence of native oysters are thought to indicate locations which may be able to support new or more extensive biogenic reefs (reefs made of hard


material created by organisms such as mussels, tube worms and oysters). However, it does not indicate that all environmental conditions are still suitable for biogenic reef creation (further investigation recommended once preferred sites have been identified). Due to potential errors and omission in the dataset, it is recommended that this dataset is used in conjunction with data from the National Biodiversity Network. More information, supporting documents and guidance can be found [HERE](#). The Environment Agency currently developing a data layer identifying potential restoration sites based on current environmental variables which will be added to the online data package when it becomes available. Attribution statement: © Marine Management Organisation (MMO) copyright and/or database right 2020. All rights reserved.

**Seagrass Historic Locations.** **National. Marine Management Organisation.**  **Seagrass Historic Locations.** **OGL.** Seagrass meadows are a critically endangered EU red listed habitat and are extremely important in terms of stabilising the seabed, providing habitat and sequestering carbon. The dataset identifies broad areas which may be suitable for seagrass restoration (based on historic presence), however specific location investigations would have to be carried out to establish whether current environmental conditions such as suitable water quality conditions are present before any restoration could progress. More information, supporting documents and guidance can be found [HERE](#). Attribution statement: © Marine Management Organisation (MMO) copyright and/or database right 2020. All rights reserved.


**Seagrass potential.** **National. Environment Agency.**  **Environment Agency.** **OGL.** This dataset shows locations where there is potential to restore seagrass. The data has been derived from inputs such as modelled wave energy and salinity along with measurements of seabed depth. The dataset should be used as an initial indication of potential from a national perspective, but local investigation is essential in order to fully assess the suitability of the location. It is also important to note that constraints such as locations of dredging activities and marine infrastructure have not been included and so it is important to consider these at a local scale when assessing the restoration potential. Finally, it is also noted that opportunity for seagrass potential is also likely to exist out with the locations highlighted within this dataset. Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.


**Saltmarsh Extents.** **National. Environment Agency.**  **Environment Agency.** **OGL.** Saltmarshes are extremely important habitat both in terms of the range of wide species they support and the role they play in buffering our coasts. Due to their location they are also at high risk from the impacts of climate change such as rising sea levels and increases in storm intensity. Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.

**Saltmarsh Potential - Potential habitat creation sites within floodplain.** **National. Marine Management Organisation.**  **Marine Management Organisation.** **OGL.** This dataset identifies areas of floodplain in England which could be suitable for saltmarsh habitat creation through managed realignment or Regulated Tidal Exchange. The dataset is useful for identifying potential sites of saltmarsh creation or restoration, however further investigation will always be required to fully assess the opportunity. More information, supporting documents and guidance can be found [HERE](#). Attribution statement: © Marine Management Organisation (MMO) copyright and/or database right 2020. All rights reserved.


**Saltmarsh Zonation.** **National. Environment Agency.**  **Environment Agency.** **OGL.** This dataset indicates the following zones within saltmarsh habitats: Pioneer, Spartina, Mid-low, Upper Marsh, Reedbeds. This data is not available for all saltmarsh habitats, only those where sufficiently


detailed aerial and ground surveys have been carried out. Combined with the saltmarsh extents dataset, this data will be useful for saltmarsh restoration projects. This dataset contains data owned by Natural Resources Wales (NRW). NRW data is not currently included in the Open Government Licence used with this dataset. To use data that relates to Wales please contact NRW. Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.

**Seabird Nesting Counts (British Isles) National Joint Nature Conservation Committee.**  **Seabird Nesting Counts (British Isles) OGL.** The seabird nesting counts are derived from the seabird census carried out between 1999 and 2003. The dataset contains information on 25 species of seabird which regularly breed in the UK. The datasets can be downloaded from Defra's Maginc website [HERE](#). Attribution statement: Contains JNCC data © copyright and database right 2014.

**Shellfish Classification Zones of England and Wales. National. Cefas**  **Shellfish Classification Zones of England and Wales. OGL.** Bivalve molluscs accumulate pollutants particular to both animal and human waste. As a result, shellfish harvesting for human consumption is very tightly controlled due to the risk of illness. Harvesting areas are classified according to the levels of *e.coli* in the shellfish flesh. Only those areas designated as 'Class A' can be consumed by humans for direct consumption. All molluscs harvested from other areas are subject to greater or lesser degrees of treatment before human consumption is permitted. It is therefore possible to use the shellfish classification zone map to highlight waters which are subject to particularly low levels of bacterial pollution and waters which may have more exposure to animal and animal pollutants. The dataset can be downloaded from the Cefas data hub page [here](#). Attribution statement: © Cefas.

**Shellfish Waters 2014 (England) National. Cefas**  **Shellfish Waters. OGL.** his dataset shows the Coastal and brackish waters in England designated as Shellfish Waters under the EC Shellfish Waters Directive (2006/113/EEC). The dataset can be downloaded from Defra's Magic dataset download page [here](#). Attribution statement: © Cefas.


**Socio-Economic Typologies of Coastal Communities. National. Marine Management Organisation.**  **Marine Management Organisation. OGL.** Coastal areas are categorised according to their socio-economic characteristics. The primary categories are: 'coastal retreats', 'coastal challenges', 'cosmopolitan coast' and 'coastal fringe'. There are then sub-categories within each of these categories. This dataset could be useful for targeting work to particular socio-economic areas. The MMO note that this data was produced to provide a strategic overview for marine planners and that local authorities are likely to have developed more detailed, locally targeted information regarding their coastal communities. The full report produced by the MMO can be accessed [here](#). Attribution statement: © Marine Management Organisation.


**Sustainable Shores habitat creation opportunities. National. RSPB.**  **RSPB. CC BY.** RSPB have produced indicative locations for potential coastal habitat creation. RSPB identified the locations based on information from a range of sources. These include areas highlighted for potential managed realignment, saltmarshes where their condition assessment shows a need for improvement and SSSIs, SACs and SPAs identified at risk of coastal habitat loss through coastal squeeze, climate change and other factors. Attribution statement: © RSPB


## 1.9 Natural Capital

*This group of ten maps describes the spatial pattern of different aspects of natural capital within each catchment, based on 2007 data. This baseline helps partnerships to both identify risks to*

existing natural capital and potential opportunities to improve areas which currently have low natural capital. The maps are ideal for communication and engagement and provide a foundation on which natural capital accounts can be based.

**Soil Carbon. National. Natural England & CEH.  CEH. OGL.** “Soil organic carbon is essential for its role as the primary energy source in soils. It is vital for maintaining soil structural condition, resilience and water retention. As soil carbon is the biosphere’s largest carbon reservoir, soils play a vital role in climate regulation.” Find out more on [eip.ceh.ac.uk](http://eip.ceh.ac.uk).

**Soil bacteria. National. Natural England & CEH.  CEH. OGL.** “Soil bacteria represents a major portion of the biodiversity in soils. At the bottom of the soil food web, bacteria play a vital role in nutrient cycling, carbon sequestration and breaking down pollutants. Soil bacterial diversity particularly affects agricultural production, soil quality and climate regulation.” Find out more on [eip.ceh.ac.uk](http://eip.ceh.ac.uk).


**Soil Nitrogen. National. Natural England & CEH.  CEH. OGL.** “Soil total nitrogen concentration is a basic measure of soil fertility. Along with soil organic carbon, it plays a key role in the process of soil formation. Not all of the nitrogen locked up in organic matter in soils, such as peat, is available for plant growth. However, soil nitrogen is important for agricultural productivity. Nitrogen leached from soils can adversely affect water quality.” Find out more on [eip.ceh.ac.uk](http://eip.ceh.ac.uk).

**Soil phosphorus. National. Natural England & CEH.  CEH. OGL.** “Soil phosphorus is a key component for nutrient cycling, soil formation and growth. It particularly influences food production. However, loss of phosphorus from soil can also result in nutrient enrichment of freshwaters. In semi-natural habitats high soil phosphorus can constrain the restoration of plant species diversity.” Find out more on [eip.ceh.ac.uk](http://eip.ceh.ac.uk).

**Soil pH. National. Natural England & CEH.  CEH. OGL.** “Measures of pH give an indication of soil acidity. In terms of natural capital, its effects range from influencing agricultural productivity to recovery from acidification. Soil pH affects the mobility and bioavailability of metals in soils. In general, metals become more available to plants in neutral or slightly acidic soils.” Find out more on [eip.ceh.ac.uk](http://eip.ceh.ac.uk).

**Soil invertebrates. National. Natural England & CEH.  CEH. OGL.** “Soil invertebrates have an important role in soil processes. This includes storing, filtering and transforming nutrients, as well as plant growth. Soil invertebrates are fundamental to maintaining soil quality, which underpins almost all other regulating services.” Find out more on [eip.ceh.ac.uk](http://eip.ceh.ac.uk).


**Carbon in vegetation. National. Natural England & CEH.  CEH. OGL.** “Although soil carbon is the biosphere’s largest carbon reservoir, forests and other vegetation also make up a large part of the total carbon pool. Carbon sequestered and stored in vegetation plays a vital role in climate regulation.” Find out more on [eip.ceh.ac.uk](http://eip.ceh.ac.uk)

**Plant indicators for habitats in good condition. National. Natural England & CEH.  CEH. OGL.** “Total plant species richness can be deceptive as a measure of biodiversity. Higher species numbers may be an indication of nutrient enrichment or disturbance. This map is based on plant species that are positive indicators, or characteristic species, of a particular habitat. Their presence indicates that a habitat is in good condition.” Find out more on [eip.ceh.ac.uk](http://eip.ceh.ac.uk)

**Nectar plant diversity for bees. National. Natural England & CEH.  CEH. OGL.** “Pollinators and pollination are important for both food production and wild flowers. Crops such as apples and





field beans particularly require pollinators. Wild flowers make a significant contribution to cultural ecosystem services.” Find out more on [eip.ceh.ac.uk](http://eip.ceh.ac.uk)

**Headwater stream quality.** National. Natural England & CEH.  CEH. OGL. “Freshwater invertebrates are good indicators of water quality. Different species vary in their tolerance or sensitivity to nutrient enrichment and other pollutants. Invertebrates are part of complex foodwebs which support fish and plants, as well as breaking down detritus and algae. This map is based on invertebrates in the smallest headwater streams.” Find out more on [eip.ceh.ac.uk](http://eip.ceh.ac.uk)

## 1.10 Air Quality

This is new data for the CaBA data package. Air quality data is complex and the impact of our work on air quality will be highly uncertain. However, it is an important component the environment and our work, especially with farmers and tree planting, and could bring some significant benefits. Partnerships may need to access colleagues with air science expertise to make meaningful use of this data.


**Ammonia Total Emissions.** National. NAEI.  NAEI\_Ammonia\_TotalEmissions. OGL. This is new data for the CaBA data package. The maps show where emissions of ammonia from agriculture, transport etc are highest. You will need to access local air scientists from the Environment Agency to help you interpret the maps and then use them to target interventions to give air quality benefits.

**PM10 (Particulate Matter <10µm) Total Emissions.** National. NAEI.  NAEI\_PM10\_TotalEmissions. OGL. This is new data for the CaBA data package. The maps show where emissions of ammonia from agriculture, transport etc are highest. You will need to access local air scientists from the Environment Agency to help you interpret the maps and then use them to target interventions to give air quality benefits.

## 1.11 Recreation & Culture

The CaBA data package has a very modest selection of the data that could be used to target our work to improve recreation and culture. This is best added to with local data.

**Rights of Way (Footpaths).** Local. Ordnance Survey. Local Authority. OGL. Public rights of way data can be requested from your local authority. Find out more [here](#).


**Access Network Mapping.** National. Natural England.  Opendata\_NE. OGL. The ‘Access Network Map’ was developed by Natural England to help improve opportunities for people to enjoy the natural environment. This map shows the relative abundance of accessible land in relation to where people live. The map does not, and cannot, provide a definitive statement of where intervention is necessary and should only be used to identify areas of interest which require further exploration. Natural England believes that places where people can enjoy the natural environment should be improved and created where they are most wanted. Each Lower Layer Super Output Area (LSOA) is ranked to show it’s relative accessibility.


**Infiltration SuDS Maps.** Local. BGS. [bgs.ac.uk](http://bgs.ac.uk). Available to purchase. Sustainable urban Drainage Schemes (SuDS) slow down runoff and can allow greater storage of water within a catchment. The increased storage of water can reduce peak flows, especially from intense summer storms. This can help reduce localised surface water flooding, however, it is unlikely to be effective at reducing catchment scale flooding due to the relative area of the scheme to the overall size of the

catchment. Infiltration SuDS direct water which would have runoff overland into the groundwater. Find out more or download commercial data from [bgs.ac.uk](https://bgs.ac.uk).

## 1.12 Socio-economic


*Another new set of information for the CaBA data package. This data helps target our work to maximise its impact on social deprivation and health.*


**Index of Multiple Deprivation.** **National.** **ONS.**  **The Rivers Trust.** **OGL.** The English Indices of Deprivation 2015 are based on 37 separate indicators, organised across seven distinct domains of deprivation which are combined, using appropriate weights, to calculate the Index of Multiple Deprivation 2015 (IMD 2015). This is an overall measure of multiple deprivation experienced by people living in an area and is calculated for every Lower layer Super Output Area (LSOA), or neighbourhood, in England. Every such neighbourhood in England is ranked according to its level of deprivation relative to that of other areas. Find out more on [gov.uk](https://gov.uk).


**Sustainability and Transformation Partnerships.** **National.** **ONS.**  **ONS.** **OGL.** These partnerships were created to bring local health and care leaders together to plan around the long-term needs of local communities and improve residents' day-to-day health. A number of these partnerships have now grown into integrated care systems and it is expected that by April 2021 every STP will become one. These partnerships offer an opportunity to engage with the integrated care community and explore the potential of nature-based prescribing. Find out more about STPs at [england.nhs.uk](https://england.nhs.uk) or read the latest research on [catchment based social prescribing](#) from Eunomia.


## 2 What are the well-known issues?


### 2.1 Rivers


**WFD Status: River, Canal and Surface Water Transfer Waterbodies (2016).** National. EA.  The Rivers Trust. OGL. The Water Framework Directive 2000/60/EC (WFD) classification status for Cycle 2 rivers, canals and surface water transfer bodies in England. This data contains the overall status, as well as the ecological and chemical status. Go to [environment.data.gov.uk](https://environment.data.gov.uk) for explanations of WFD status classification.

**WFD Status: River, Canal and Surface Water Transfer Catchments (2016).** National. EA.  The Rivers Trust. OGL. The Water Framework Directive 2000/60/EC (WFD) classification status for Cycle 2 rivers, canals and surface water transfer bodies in England. This data contains the overall status, as well as the ecological and chemical status. Got to [environment.data.gov.uk](https://environment.data.gov.uk) for explanations of WFD status classification.

**Fisheries Classification System 2 Results.** National. EA.  The Rivers Trust. OGL. This provides species level information at each site both from the FCS2 model and observations. The EQR is 'the probability of observing the number of individuals which were actually observed, or less, if the site were at reference conditions'. An EQR near 1 equates to little evidence of impact, an EQR near 0.5 equates to no evidence either way and an EQR near 0 equates to strong evidence of impact. All the data is retained in the attribute table and is the most recent data of which we are aware, however it is from 2014 so it is worth asking your local fisheries colleagues if they have more recent information available.

**Nitrate Vulnerable Zones.** National. EA.  Environment Agency. OGL. Areas designated as being at risk from agricultural nitrate pollution. The designations are made in accordance with the Nitrate Pollution Prevention Regulations 2015. Surface waters, groundwaters and eutrophic waters are defined within the Nitrates Directive as polluted if they contain or could contain, if preventative action is not taken, nitrate concentrations greater than 50mg/l. Find out more at [gov.uk](https://gov.uk).


**WFD Monitoring Sites.** National. EA.  The Rivers Trust. CaBA Only. Each biological and water quality monitoring point is assessed to determine its status. This monitoring data is then used to determine the status of the catchment in which it sits. If one element of biological or water quality fails, then the whole catchment fails. This data is critical for developing our understanding of the water body status. It is worth noting that there are surface water bodies which have water quality monitoring, but the status is 'No Information'. This happens because the experts in the Environment Agency are not sufficiently confident that the monitoring is representative. The monitoring data is for rivers, lakes, transitional waters and coastal waters but not groundwater. We are planning to do a Webinar on the monitoring data and discuss some of the common issues that can occur in the interpretation of it.

**WIMS Water Quality Sampling Sites.** National. EA.  The Rivers Trust. OGL. Water Quality Archive (WIMS) sampling points. The Water Quality Archive provides data on water quality measurements. Samples are taken at sampling points around England and can be from coastal or estuarine waters, rivers, lakes, ponds, canals or groundwaters. They are taken for several purposes including compliance assessment against discharge permits, investigation of pollution incidents or




environmental monitoring. The archive provides data on measurements and samples dating from 2000. An update can be extracted from the [OpenWIMS data archive](#).


## 2.2 Groundwater

**WFD Status: Groundwater bodies (2016).** National. EA.  The Rivers Trust. OGL. The Water Framework Directive 2000/60/EC (WFD) classification status for Cycle 2 groundwater catchments in England. This data contains the overall status, as well as the quantitative and chemical status. Quantitative status is based on five tests, which indicate how sustainable current abstraction is for groundwater.

Go to [environment.data.gov.uk](http://environment.data.gov.uk) for explanations of WFD status classification.


**Nitrate Vulnerable Zones.** National. EA.  Environment Agency. OGL. Areas designated as being at risk from agricultural nitrate pollution. The designations are made in accordance with the Nitrate Pollution Prevention Regulations 2015. Surface waters, groundwaters and eutrophic waters are defined within the Nitrates Directive as polluted if they contain or could contain, if preventative action is not taken, nitrate concentrations greater than 50mg/l. Find out more at [gov.uk](http://gov.uk).


## 2.3 Lakes

**WFD Status: Lake Waterbodies (2016).** National. EA.  The Rivers Trust. OGL. The Water Framework Directive 2000/60/EC (WFD) classification status for Cycle 2 lake waterbodies in England. This data contains the overall status, as well as the ecological and chemical status. Got to [environment.data.gov.uk](http://environment.data.gov.uk) for explanations of WFD status classification.

**Nitrate Vulnerable Zones.** National. EA.  Environment Agency. OGL. Areas designated as being at risk from agricultural nitrate pollution. The designations are made in accordance with the Nitrate Pollution Prevention Regulations 2015. Eutrophic waters are defined within the Nitrates Directive as polluted if the ecology is significantly affected. This occurs at nitrate concentrations well below the 50mg/l drinking water standard. Find out more at [gov.uk](http://gov.uk).

## 2.4 Estuaries & coasts

**Nitrate Vulnerable Zones.** National. Environment Agency.  Environment Agency. OGL. Areas designated as being at risk from agricultural nitrate pollution. The designations are made in accordance with the Nitrate Pollution Prevention Regulations 2015. Eutrophic waters are defined within the Nitrates Directive as polluted if the ecology is significantly affected. This occurs at nitrate concentrations well below the 50mg/l drinking water standard. Find out more at [gov.uk](http://gov.uk).

**Seabed Litter.** North West Europe. OSPAR.  OSPAR. CC0 1.0. Litter data was initially collected during fisheries trawl surveys. That initial data was then used to predict the relative number of litter items which would be likely to be found per km<sup>2</sup>. More details of the methodology can be found [here](#). Attribution statement: © OSPAR Commission.

**Vessel Density 2017.** European Marine Observation and Data Network (EMODnet). European.  EMODnet. Open data. This is a European wide dataset which shows the shipping density of EU waters on a 1km<sup>2</sup> grid (hours/km<sup>2</sup>/month). The data covers 2017-2018 and is also

broken down by vessel type. The dataset was generated by obtaining the location of vessels via satellite. Attribution statement: © Collecte Localisation Satellites & EMODnet - Human Activities.

**WFD Cycle 2 Overall Classification Objectives – TraC Waterbodies. England. Environment Agency.**

📶 **The Rivers Trust. OGL.** This dataset shows the overall classification objectives for TraC waterbodies. The data shows the Overall Status (Ecological and Chemical classification combined) in 2015 and a predicted status for both 2021 and 2027. Reasons for alternative objects are also included where present. Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.

**WFD Overall Status: Transitional & Coastal Waterbodies (2016). National. Environment Agency.** 📶

**The Rivers Trust. OGL.** The Water Framework Directive 2000/60/EC (WFD) classification status for Cycle 2 transitional and coastal waterbodies in England. Overall status is the water body level water framework directive classification derived from combining both Chemical Status and Ecological Status/Potential using the one-out-all-out methodology. This means a water body can only be reported at Good Status Overall if it is assessed at Good Status (or Potential) for both Ecological and Chemical Status. Both natural and artificial or heavily modified water bodies are assessed for Overall Status on a High, Good, Moderate, Poor or Bad basis. Attribution statement: Environment Agency copyright and/or database right 2016. All rights reserved. More information on the status of individual classification elements is included in the attribute table. These include:

**WFD Cycle 2 TraC angiosperm classification.** Angiosperms are the flowering plants. In terms of TraC waters, this relates to seagrasses and saltmarshes. The types and abundance of observed angiosperms are compared to the levels which would be expected in a pristine TraC waterbody. This is known as an Ecological Quality Ratios (EQR). If the ecological quality of a parameter is very similar to the quality expected in pristine conditions then the waterbody would be classified as 'High' for that parameter. The further away the observed quality is from this reference condition, the lower the level of WFD classification given. The classes range from High down through Good, Moderate, Poor and Bad. Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.

**WFD Cycle 2 TraC Coastal Phytoplankton classification.** Phytoplankton are microscopic plants. Given their short life cycle and the fact that they obtain their nutrients from the surrounding waters, they can be used as good indicators of pollution in TraC waters. Phytoplankton status is also derived from comparing observed population data with expected levels (EQR). Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.

**WFD Cycle 2 TraC DIN (Winter Dissolved Inorganic Nitrogen).** Dissolved Inorganic Nitrogen is the combination of dissolved ammonia, nitrate and nitrite. Levels of Dissolved Inorganic Nitrogen are usually a limiting factor in terms of phytoplankton growth which controls the formation of blooms. The DIN levels found in TraC waters indicate the amount of nutrient enrichment of the environment. Attribution statement: © Environment Agency copyright and/or database right 2016. All rights reserved.

**WFD Cycle 2 TraC dissolved oxygen classification.** Dissolved Oxygen can be a good indicator of whether nutrient rich pollution is impacting on a TraC waterbody. Wastewater such as sewage can trigger algal blooms which depletes levels of dissolved oxygen and

negatively impacts organisms living in TraC waters. Dissolved Oxygen values are compared to values that would be expected in pristine waters. There are then classified as 'High', 'Good' or 'Moderate' accordingly. Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.

**WFD Cycle 2 TraC Invertebrates classification.** Benthic invertebrate species such as worms, sandhoppers and clams act as good pollution indicators due to their limited mobility. Invertebrate species composition and disturbance sensitivity in each TraC waterbody was compared to reference conditions to obtain the WFD classification. Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.


**WFD Cycle 2 TraC Macroalgae classification.** Composition and abundance of different types of macroalgal communities (seaweeds) are compared to reference conditions in order to obtain a classification for each TraC waterbody. Attribution statement: © Environment Agency copyright and/or database right 2016. All rights reserved.

**WFD Cycle 2 TraC Seagrass classification.** Seagrasses are a sub-element of the angiosperm classification for TraC waterbodies. Seagrasses are very sensitive to both physical disturbance and the secondary impact of high nutrients in water which make them good indicators of pollution. Seagrasses also provide habitat for a wide range of species found in TraC waters and are effective at stabilising the seabed. Attribution statement: © Environment Agency copyright and/or database right 2016. All rights reserved.


**WFD Cycle 2 TraC Transitional Phytoplankton.** As with the coastal phytoplankton, species of phytoplankton found in transitional waters can act as good indicators of pollution. The classifications are derived from the EQR. Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.


## 3 What are the key characteristics of the catchment?


### 3.1 Weather & Climate

**Average Annual Rainfall 1981-2010.** National. Met Office.  [AvgAnnualRainfall\\_1981\\_2010](#). OGL. UKCP09 gridded (5 x 5 km) climate dataset, showing the 30-year average annual rainfall interpolated from station observations. This data can be used to gain an estimate of the expected amount of rainfall across a catchment over the period of one year, as well as to facilitate research into climate change impacts and adaptation. More datasets are available from the Met Office and can be downloaded from the [Centre for Environmental Data Analysis \(CEDA\) archive](#).

**The following three layers are only available in ArcGIS Pro and Online**


**Annual Precipitation changes 2021-2050.** EEA.  [European Environment Agency](#). **Open Data.** Projected changes in annual precipitation in percentages under A1B scenario, multi-model ensemble mean for the time periods 2021-2050 relative to 1961-1990 mean. Map presents changes using ensemble mean of several regional climate models (RCMs), run by different climate modelling communities in the frame of the EU FP6 Integrated Project ENSEMBLES (Contract number 505539). Data are presented as changes in relative terms (according to 1961-1990 period) in spatial resolution of approximately 25 km.


**Winter Precipitation changes 2021-2050.** EEA.  European Environment Agency. Open Data. Projected changes in winter precipitation in percentages under A1B scenario, multi-model ensemble mean for the time periods 2021-2050 relative to 1961-1990 mean. Map presents changes using ensemble mean of several regional climate models (RCMs), run by different climate modelling communities in the frame of the EU FP6 Integrated Project ENSEMBLES (Contract number 505539). Data are presented as changes in relative terms (according to 1961-1990 period) in spatial resolution of approximately 25 km.


**Summer Precipitation changes 2021-2050.** EEA.  European Environment Agency. Open Data. Projected changes in summer precipitation in percentages under A1B scenario, multi-model ensemble mean for the time periods 2021-2050 relative to 1961-1990 mean. Map presents changes using ensemble mean of several regional climate models (RCMs), run by different climate modelling communities in the frame of the EU FP6 Integrated Project ENSEMBLES (Contract number 505539). Data are presented as changes in relative terms (according to 1961-1990 period) in spatial resolution of approximately 25 km.


### 3.2 Land Use & Land Cover

**Land Cover Map 2000 (Raster).** National. CEH.  LandCoverMap\_2015. CaBA Only. This provides a detailed breakdown of land cover. LCM2000 was classified using a hierarchical nomenclature corresponding to the Joint Nature Conservation Committee (JNCC) Broad Habitats, which encompasses the entire range of UK habitats.

**Land Cover Map 2007 (Vector).** National. CEH.  LandCoverMap\_2015. CaBA Only. This dataset consists of a 25m resolution raster version of the Land Cover Map 2007 for Great Britain. Each 25m pixel represents a 25m area of land cover target class, broadly representing 'Broad Habitats'.


**Land Cover Map 2015 (Raster).** National. CEH.  LandCoverMap\_2015. CaBA Only. LCM2015 is derived from satellite images and digital cartography and provides land cover information for the entire UK. Land cover is based on UK Biodiversity Action Plan Broad Habitats classes. Users should be aware that some changes in data format have taken place between LCM2007 and LCM2015. Consequently, users should check all aspects of the data product they intend to use, prior to applying scripts written for LCM2007 data. Find out more at [ceh.ac.uk](http://ceh.ac.uk).


**Corine Land Cover Europe (2018).** National. EEA.  The Rivers Trust. Open Data. CORINE Land Cover (CLC) is a land cover/land use database encompassing most of the countries of Europe at approximately 100 m resolution and organised in 44 hierarchal classes. The first level (5 classes) corresponds to the main categories of the land cover/land use (artificial areas, agricultural land, forests and semi-natural areas, wetlands, water surfaces). The second level (15 classes) covers physical and physiognomic entities at a higher level of detail (urban zones, forests, lakes, etc), finally level 3 is composed of 44 classes. Data on land cover is necessary for the environment policy, regional development and agriculture. At the same time, it provides one of the basic inputs for the production of more complex information on other themes (soil erosion, pollution etc). Also available for 1990, 2000, 2006 and 2012.


**Customer Land Database (CLAD).** National. Environment Agency.  CustomerLandDatabase \_Anonymised. CaBA Only. This data is new to the CaBA data package and provides the holding level data which allows us to identify what land each farm owns. The CPH number can be used to identify all land associated with a particular holding. It should be noted that, while this dataset is the best available it is known to contain a number of errors. The private details of the owners have

been removed, this makes the dataset less useful as a resource to work with farmers. It is possible to get the full dataset from your local catchment coordinator.


**Priority Habitat Inventory (England) (North).** **National.** **NE.**  **Opendata\_NE.** **OGL.** This is a spatial dataset that describes the geographic extent and location of Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance. This inventory replaces Natural England's previous separate BAP habitat inventories: blanket bog, coastal and floodplain grazing marsh, coastal sand dunes, coastal vegetated shingle, deciduous woodland, fens, lowland calcareous grassland, lowland dry acid grassland, lowland heathland, lowland meadows, lowland raised bog, limestone pavements, maritime cliff and slope, mudflats, purple moor grass and rush pastures, reedbeds, saline lagoons, traditional orchards, undetermined grassland, upland calcareous grassland, upland hay meadows and upland heathland. This is a large dataset so may take some time to download from the [Natural England Open Data Geoportals](#). Shapefile package also available to download [here](#).

**Priority Habitat Inventory (England) (Central).** **National.** **NE.**  **Opendata\_NE.** **OGL.** As above. This is a large dataset so may take some time to download from the [Natural England Open Data Geoportals](#). Shapefile package also available to download [here](#).

**Priority Habitat Inventory (England) (South).** **National.** **NE.**  **Opendata\_NE.** **OGL.** As above. This is a large dataset so may take some time to download from the [Natural England Open Data Geoportals](#). Shapefile package also available to download [here](#).

**Provisional Agricultural Land Classification (ALC).** **National.** **NE.**  **Opendata\_NE.** **OGL.** Agricultural land classified into five grades. Grade one is best quality and grade five is poorest quality. It uses several consistent criteria for assessment, which include climate (temperature, rainfall, aspect, exposure, frost risk), site (gradient, micro-relief, flood risk) and soil (depth, structure, texture, chemicals, stoniness). The better the land grade the less likely it is that the land manager will be willing to allow interventions on their land. Find out more about the ALC at [naturalengland.org.uk](http://naturalengland.org.uk).

**Crop Map of England (2018).** **National.** **Rural Payments Agency.**  **environment.data.gov.** **OGL.** The Crop Map of England (CROME) is a polygon vector dataset mainly containing the crop types of England. The dataset contains approximately 32 million hexagonal cells classifying England into over 50 main crop types, grassland, and non-agricultural land covers, such as Trees, Water Bodies, Fallow Land and other non-agricultural land covers. CROME is also available for 2016 & 2017.


**National Forest Inventory.** **National.** **Forestry Commission.**  **mapping.geodata\_forestry.** **OGL.** The National Forest Inventory (NFI) programme monitors woodland and trees across Great Britain. The NFI provides an extensive and unique record of key information about our forests and woodlands. This dataset includes Interpreted Forest Types (IFTs) for all woodland over 0.5ha and Interpreted Open Area (IOA) information for areas over 0.5ha that are surrounded by woodland. Find out more at [forestresearch.gov.uk](http://forestresearch.gov.uk).


### 3.3 Soils

**Soilscapes England & Wales.** **National.** **National Soil Resources Institute.**  **landis.org.uk.** **CaBA Only.** Simplified soils dataset covering England and Wales. It was created from the far more detailed National Soil Map (NATMAP Vector) held by Cranfield University, with the purpose of communicating effectively a general understanding of the variations which occur between soil





types, and how soils affect the environment and landscape. Soil exerts a strong influence on our whole ecosystem, being the foundation for many of the ecosystem services and functions recognised and is a fragile resource that needs to be understood and protected. This dataset is good enough to understand the key properties of the soils in your catchment, permeability and depth, especially if it is used along with the BGS layers, see below.

**BGS Soil Properties.** National. British Geological Survey.  [bgs.ac.uk](https://bgs.ac.uk). OGL. BGS soil property data layers including parent material, soil texture, group, grain size, thickness and European Soil Bureau description.

**Soil Water Management.** National. ESDAC.  [Soil\\_water\\_management](#). Open data with attribution. indicates the likelihood that soils will be under drained if arable agriculture is practiced. Although this is a basic dataset it is important. When combined with the land cover map and the map of agricultural land grade it can be used to identify where land drainage could be dominant. For many key pollutants including pesticides, phosphorus and fine sediment land drains represent a significant risk. Most of the most common mitigation measure are significantly less effective if there is land drainage. Find out more [here](#). Attribution statement: Panagos Panos. The European soil database (2006) GEO: connexion, 5 (7), pp. 32-33. ESDBv2 Raster Library - a set of rasters derived from the European Soil Database distribution v2.0 (published by the European Commission and the European Soil Bureau Network, CD-ROM, EUR 19945 EN); Marc Van Liedekerke, Arwyn Jones, Panos Panagos; 2006.


### 3.4 Rivers


**Statutory Main Rivers.** National. EA.  Environment Agency. OGL. Main rivers are regulated by the Environment Agency. If you wish to work on, or within 8m, of a main river you will need to contact the EA to see if your work requires a permit. If your river is not a 'main river' it is and 'ordinary watercourse' and activity is regulated by the Local Authority, who are responsible for permitting activities.


**WFD - River, Canal and Surface Water Transfer Water bodies Cycle 2.** National. EA.  [environment.data.gov.uk](https://environment.data.gov.uk). OGL. The main rivers are broken down into reaches, or waterbodies, for WFD assessment. There are reaches of main river near the coast which are not included in this layer, these waterbodies are associated with the coastal waterbody that they drain into.


**WFD - River Water body Catchments Cycle 2.** National. EA.  [environment.data.gov.uk](https://environment.data.gov.uk). OGL. This is the catchment that drains to each WFD waterbody.


**EA flood gauges and meteorology.** National. EA.  Environment Agency. CaBA Only. This identifies the locations of the gauges used by the EA to assess river flow. The National River Flow Archive is a great resource to access timeseries of flows for a gauge and summary flow statistics. [here](#)


**Dominant Slope Class.** National. Ordnance Survey.  [Dominant\\_slope\\_class](#). OGL. The greater the slope the higher the risk that runoff will mobilise sediment and other pollutants. It is generally accepted that slopes of greater than 11 degrees are very high risk, although both soil type and vegetation type also have a significant impact on mobilisation. The best way to 'interpret' the impact of soil slope is to run a model which combines the effect of slope, upstream catchment, soil and vegetation. [Scimap](#) is the most accessible way to do this. This dataset has a 50 m horizontal resolution.


**Risk of Flooding from Rivers and Sea.** National. EA.  The Rivers Trust. OGL. These layers identify where flooding from rivers and coast occur. Until 2015 this dataset was extremely expensive, however, the Environment Agency has move to an 'Open Data by default' policy and as a result this data has been made available free of charge. The data helps to identify areas at risk of flooding which may represent a number of opportunities for catchment managers in terms of habitat creation. The maps also identify flooding which could be reduced by upstream catchment scale delivery of natural flood management. Delivery of NFM at this scale is likely to take many years.


**Risk of Flooding from Surface Water.** National. EA.  Environment Agency. OGL. This is a very useful dataset. It identifies where surface water flooding is predicted to occur. This type of flooding relates to localised issues and is more amenable to catchment management and Green Infrastructure solutions. The predictions are based on detailed modelling work which has been validated by local knowledge, in some locations. For more information check out the 'Risk of flooding from surface water: Understanding and using the map' [guidance document](#).

**Historic flood map.** National. EA.  [environment.data.gov](https://environment.data.gov). OGL. Historic Flood Map is a GIS layer showing the maximum extent of all individual Recorded Flood Outlines from river, the sea and groundwater springs and shows areas of land that have previously been subject to flooding in England. Records began in 1946 when predecessor bodies to the Environment Agency started collecting detailed information about flooding incidents, although we may hold limited details about flooding incidents prior to this date. The absence of coverage by the Historic Flood Map for an area does not mean that the area has never flooded, only that we do not currently have records of flooding in this area. It is also possible that the pattern of flooding in this area has changed and that this area would now flood under different circumstances. For more information go to [data.gov.uk](https://data.gov.uk).

**SAGIS (P) WB - All sources - predicted concentration (mg/l).** National. EA.  CaBA Only. This is the annual average concentration of P predicted by the SAGIS model based on all the sources of phosphorus; sewage treatment works, livestock, arable, septic tanks and urban. If the monitored concentration is consistently higher than this it suggests that there may be a localised source of phosphorus from an unknown point source or from widespread poor practice. The output is also useful to help compare different rivers and focus effort where concentrations are likely to be higher.

**SAGIS (P) WB - Good status target (mg/l).** National. EA.  CaBA Only. The concentration of phosphorus that is associated with good ecological status changes according to the natural characteristics of the river. This layer shows the target for each water course.

**SAGIS (P) Monitoring (OP).** National. EA.  CaBA Only. This layer shows all the monitoring points that were used to calibrate the SAGIS model. If there are few monitoring points in you catchment this MAY mean that the model predictions are less reliable.


**Communities at Risk by LLFA.** Local. EA.  [environment.data.gov](https://environment.data.gov). OGL. Areas identified as at risk from flooding by Lead Local Flood Authorities. This data is very useful to help target NFM work above C@R so that we can identify who is likely to benefit from any given scheme. The definition of C@R varies across Environment Agency regions so this data needs to be sourced locally and you will need to ask how the data was produced so that it can be used properly. The data can also


be used to reduce the risk of accidentally making flood risk worse by slowing the flow downstream of a C@R.


**Internal Drainage Board Areas. Local.** There is a national map of IDB areas however, it has not been published. The Environment Agency does have this data so you may be able to get it from your catchment coordinator.


**Water Company Areas. Local.** There is a national map of water company areas however, it has not been published. The Environment Agency does have this data so you may be able to get it from your catchment coordinator. Most water companies are willing to give you this data and there is a map on the UKWATER website.


### 3.5 Groundwater


**WFD - Groundwater bodies Cycle 2. National. EA.**  [environment.data.gov.uk](https://environment.data.gov.uk). **OGL.** Groundwater bodies are more complex to define and visualise than surface water catchments because they are three dimensional. The groundwater bodies in this layer have been identified by experienced local hydrogeologists who have partitioned aquifers up into management areas which can be managed as a unit.

**Superficial Deposits Thickness Maps 1km Hex Grid. National. BGS.**  **BGS\_SuperficialDepositThickness. OGL.** Shows the variation of the thickness of superficial (Quaternary age) deposits across Great Britain. The data are presented as a cellular vector map of interlocking hexagons (side length 1 km, area approximately 2.6 km<sup>2</sup>) covering the landmass of Great Britain. Each hexagon is attributed with a series of statistics about the thickness of the underlying Quaternary units; additional information relating to the thickness models and the coverage of underpinning data is provided. The thicker the drift, the less vulnerable the groundwater is to pollution. Thick drift also means that less water can infiltrate to recharge the aquifer which means that areas of thick drift are not suitable for artificial recharge projects unless the recharge trench or borehole goes through the drift. For more information go [here](#)

**Bedrock and Superficial geology. National. BGS.**  [bgs.ac.uk](https://bgs.ac.uk). **OGL.** This dataset allows you to understand the superficial and bedrock geology. There is no information about the hydraulic properties of the geology. For more information go [here](#)

**Geo Index Hydrogeology Data Theme. National. BGS.**  **BGS\_hydrogeology. OGL.** Shows where the significant aquifers are and their key characteristics. This is helpful to see where the aquifer is; what the main flow process is through the aquifer (intergranular = slow, fractured = fast and karst = very fast). For more information go [here](#)

**GeoSure Soluble Rocks 5km Hex Grid. National. BGS.**  **BGS\_SolubleRocks. OGL.** Ground dissolution occurs when water passing through soluble rocks produces underground cavities and cave systems, known as karst features. Karstic areas are very prone to rapid pollution of groundwater and subsidence. Delivering projects in karstic areas will require careful consideration with local hydrogeological experts from the EA to avoid creating new problems like the pollution of groundwater or ground subsidence. For more information visit [bgs.ac.uk](https://bgs.ac.uk).

**Simplified Groundwater Vulnerability. National. EA.**  **Groundwater\_vulnerability. OGL.** Groundwater is the most valuable source of drinking water, requiring little treatment and it has the lowest carbon footprint of any source of water. Once polluted groundwater is expensive to clean up. These maps show where groundwater is vulnerable to pollution from activities on the



surface. This layer compliments the WWNP layers in section 2.3 and highlights areas where we need to be cautious about increasing infiltration of runoff.


**Depth to Groundwater.** **Local.** **BGS.** [www.bgs.ac.uk](http://www.bgs.ac.uk). **Available to purchase.** The BGS depth to groundwater dataset is a gridded interpolation of depth to groundwater. The dataset is a raster grid, with 50 × 50 metre pixels holding values that represent the probable maximum depth, in metres, to the phreatic water table. This represents the likely lowest water level, under natural conditions, in an open well or borehole drilled into the uppermost parts of a rock unit. Groundwater plays a key role in many shallow geological processes, and an estimate of the level of the water table is an important component of site investigations, assessments of water resources and groundwater vulnerability. Data on groundwater level is frequently used as a component within geological models, for instance in studies of slope stability, groundwater flood susceptibility or the suitability of an area for sustainable urban drainage systems. This is a commercial dataset available from [bgs.ac.uk](http://bgs.ac.uk).


**Minewater rebound.** **Local.** **Coal Authority.** The Coal Authority are mapping areas of groundwater rebound, where water levels are rising due to the fact that mining, and the associated pumping, has stopped. These areas are at higher risk of pollution from mine water discharges. These areas represent both a threat and an opportunity. Using these areas to infiltrate more water to reduce flood risk will potentially swap one problem, flooding, for another problem, water quality. However, if local streams are suffering from low flows then pumping from the aquifer will both protect water quality and reduce low flows. Use the layer in section 2.6 to identify if you are in an ex-coal mining area and then contact the Coal Authority if you are planning work. Contact colleagues at the Coal Authority to find out if this mapping is available for your area.


### 3.6 Lakes


**WFD – Lake Water bodies Cycle 2.** **EA.**  [environment.data.gov.uk](http://environment.data.gov.uk). **OGL.** This layer identifies the lakes which are assessed in the WFD.


### 3.7 Estuaries & Coast


**Coastal Design Sea levels.** **National.** **Environment Agency.**  **Environment Agency.** **OGL.** This bundle of datasets Contains five Environment Agency Coastal Flood Boundaries: Extreme Sea Levels, Extreme Sea Levels Estuary, Gauge Data, Estuary Intervals and Surge Shapes. The two extreme sea level datasets show levels for 16 annual probabilities of exceedance. Confidence levels (5% and 95%) are also included for each exceedance probability. The dataset is relevant only to 2018 conditions and does not take future sea level change due to climate change into account. Attribution statement: © Environment Agency copyright and/or database right 2019. All rights reserved.

**EMODnet Seabed Habitats.** **European.** **EMODnet.**  **EMODnet CC BY.** This is a European wide modelled dataset of seabed habitats. The outputs of the model are for the sublittoral zone only and include information on biological zone, energy class, oxygen regime, salinity regime, seabed substrate and riverine input. Accreditation statement: EMODnet broad-scale seabed habitat map for Europe (v2019), licensed under CC-BY 4.0 from the European Marine Observation and Data Network (EMODnet) Seabed Habitats initiative ([www.emodnet-seabedhabitats.eu](http://www.emodnet-seabedhabitats.eu)), funded by the European Commission.

**Marine Character Areas. National. Marine Management Organisation.**  **Marine Management Organisation. OGL.** This dataset shows the boundaries of the Marine Management Organisation's Marine Character Areas (MCAs). The boundaries should be considered as 'transitional'. Details of the character assessments of the MCAs can be found in the Seascape Assessments produced by the MMO. These assessments can be found by clicking on the following links for each region: [North East](#), [North West](#), [South East](#), [South West](#), [South](#) & [East](#). Attribution statement: © Marine Management Organisation.

**Neptune Coastline Campaign: Land Use 1965. England and Wales. National Trust.**  **National Trust. OGL.** In 1965 the National Trust commissioned Reading University to carry out detailed a land use survey along the whole of the England and Welsh coast. The National Trust used this information to understand which areas were most at risk of development and to raise money to purchase the most 'pristine' stretches of coastline. The survey was repeated in 2014 and the two Neptune datasets can be used in combination to assess how coastal land use has changed over time. Attribution statement: © National Trust.

**Neptune Coastline Campaign: Land Use 2014. England, Wales and Northern Ireland. National Trust.**  **National Trust. OGL.** In 2014, the National Trust commissioned the University of Leicester to undertake a desk based digital survey of coastal land use based on aerial imagery. The results can be used in combination with the 1965 Neptune coastal survey to assess how coastal land use has changed over time. Attribution statement: © National Trust.


**WFD Transitional and Coastal Waterbodies Cycle 2 National. Environment Agency.**  **Environment Agency. OGL.** The location and extent of waterbodies in England classified as either Transitional or Coastal under the Water Framework Directive. Transitional waterbodies are those which are partly saline but have a large freshwater influence i.e. estuaries. The waterbodies have also been assigned to specific River Basin Districts within this dataset. Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved. Contains Ordnance Survey data © Crown copyright and database right 2013.

## 4 What are the potential causes of the problems?


### 4.1 Pollution

Much of the data in this section comes from models. The only thing we know with confidence is that NO model results are correct, there is just too much uncertainty in complex environmental systems for a model to get the 'right' answer. However, model results combined with monitoring and risk data underpins a 'weight of evidence' approach which is much more likely to give us the 'right' answer than any one source of information on it's own. We have also put in data from multiple models. Again, comparing results from different models tells us a great deal about how the system may be working. We plan to run a webinar on the use of model outputs in catchment management to allow partnerships to discuss the pro's and con's of using model data in their work.

#### 4.1.1 Source Apportionment

**SAGIS. National EA.**  **CaBA Only.** This is the latest SAGIS model run which is available to all CaBA partnerships, it is based on data from 2010. The source apportionment pie charts provide a very useful resource to identify the sector where interventions will make the most difference to the environment. This can be very helpful to ensure that the work we are doing is targeted to make

the most difference to the water quality, e.g. if very little of the phosphorus is coming from septic tanks then working on septic tanks will make little difference to catchment scale water quality (but may still make a profound difference to local streams or ditches where septic tanks are discharging)


**SEPARATE Total Phosphorus Inputs - % of total local waterbody annual load. National NERC. . CaBA Only.** SEPARATE (SEctor Pollutant AppoRtionment for the AquaTic Environment) is a multiple pollutant source apportionment screening framework for England and Wales, containing source apportionment data summarised by non-coastal WFD Cycle2 waterbodies cycle 2. This source apportionment model provides more detail about the relative importance of different sources of phosphorus than the SAGIS model. The summary document is provided in the Annex folder. Compare the source apportionment to SAGIS, if they both say the same thing then we can be confident. If the predictions of source apportionment are very different then there is high uncertainty of the source in this sub-catchment


**SEPARATE Dissolved Phosphorus Inputs - % of total local waterbody annual load. National NERC. . CaBA Only.** As above.


**SEPARATE Nitrogen Inputs - % of total local waterbody annual load. National NERC. . CaBA Only.** As above.

**SEPARATE Sediment Inputs - % of total local waterbody annual load. National NERC. . CaBA Only.** As above.

#### 4.1.2 Point Sources

**SAGIS (P) WB - Point Concentration (mg/l). EA. . CaBA Only.** This layer gives you the average annual river concentration due to the point sources on their own. This would be the concentration in the river if you manage to remove all other inputs. In reality phosphorus accumulates in the river bed sediments, so even if you removed all phosphorus inputs the river concentration would remain high until all the phosphorus in the sediment had been exhausted.

**NIRS Environmental Pollution Incidents. National EA.  NIRS\_EnvironmentalPollutionIncidents. CaBA Only.** Highlights where the Environment Agency has investigated the most serious spills (category 1 and 2) and less serious incidents (category 3 and 4) which have impacted water quality over the last decade. The category 3 and 4 incidents have been found to be extremely helpful in tracking down catchment scale issues in some of the Pilot Catchments. The Environment Agency do not publish the category 3 and 4 incidents but they did give us the annual summarised information from 2000 to 2013. Your catchment coordinator can get you more up to date information on category 3 and 4 incidents in your catchments, these low level pollution events can be dealt with more efficiently by CaBA partnerships, e.g. misconnections, poor practice at industrial units etc.


**Consented Discharges. National EA.  ConsentedDischarges. CaBA Only.** These are the discharges to rivers which the Environment Agency regulates. Typically, these discharges will cause more of a problem at low flows due to reduced dilution. There is a large amount of information about each discharge in the attribute table. The data can be visualised by effluent type or outlet type. Storm overflows are designed to discharge during very wet periods when dilution in the river will be significant enough to avoid ecological impacts. However, it is not uncommon for this type of discharge to malfunction due to blockages, which means they can cause

pollution during low flow periods. The WINEP data can be used to show where the water company is planning to investigate CSOs which spill too frequently.

**Historic Landfill. National EA.**  [environment.data.gov](https://environment.data.gov). **OGL.** The data is the most comprehensive and consistent national historic landfill dataset and defines the location of, and provides specific attributes for, known historic (closed) landfill sites, i.e. sites where there is no PPC permit or waste management licence currently in force. Some historic landfills were not well built so are more likely to be point sources of pollution.


**Permitted Waste Sites – Authorised Landfill Site Boundaries. National EA.**  [environment.data.gov](https://environment.data.gov). **OGL.** Contains the boundaries of landfill sites that are currently authorised by the Environment Agency under Environmental Permitting Regulations. These sites are less likely to be point sources of pollution.


#### 4.1.3 Diffuse sources


**SAGIS (P) WB - Livestock concentration (mg/l). National. EA.**  **CaBA Only.** This layer gives you the average annual river concentration due to the livestock sources on their own.

**SAGIS (P) WB - Arable concentration (mg/l). National EA.**  **CaBA Only.** This layer gives you the average annual river concentration due to the arable sources on their own.


**SAGIS (P) WB - Urban concentration (mg/l). National EA.**  **CaBA Only.** This layer gives you the average annual river concentration due to the urban sources on their own.

**SAGIS (P) WB - On site waste water treatment concentration - includes septic tanks (mg/l). National EA.**  **CaBA Only.** This layer gives you the average annual river concentration due to on site waste water treatment plants Inc septic tanks on their own.


**MANURES-GIS. National. ADAS.**  **MANURES\_GIS. CaBA Only.** A national inventory and map of livestock manure loadings to agricultural land; produced using the 2004 Agricultural Census. We have symbolised 'Outdoor pigs' but there is data in the attribute table for a wide variety of livestock. This sort of data is very useful to target the key source of an issue, it is also helpful to show the relative load in one catchment verses another.


**PSYCHIC Total Phosphate Load. National. ADAS.**  **CaBA Only.** Identifies the Total Phosphate load (both annual and monthly) from agriculture. The model takes account of climate, landscape and land management factors (including crop type, livestock numbers and subsurface drainage), and utilises current knowledge of sediment and Phosphorus export processes.

**PSYCHIC Total Sediment Loss. National. ADAS.**  **CaBA Only.** Identifies the sediment load as above.


**NEAP-N Total Nitrate Loss. National. ADAS.**  **CaBA Only.** Identifies the nitrate leaching from the base of the soil layer both in terms of total load and concentration from agriculture. The attribute table also includes the breakdown of the different components of the agricultural load so it is possible to see the relative importance of livestock vs. crops etc.


## 4.2 Water Abstraction


**Water Abstraction Licences by Sector.** National. EA.  **WaterAbstractionLicences. CaBA Only.** This dataset shows where licenced abstractions are located and the licensed quantity available for abstraction. This information is valuable; however, care should be taken with this dataset! It is sensitive. The license conditions place significant restrictions on how it can be published. We recommend that you use it for your internal work but do not publish it externally.

**Water Abstraction Licences by Volume.** National. EA.  **WaterAbstractionLicences. CaBA Only.** This data shows the size of licensed abstractions; however, care should be taken in its interpretation because some licenses cover multiple abstraction points. This means that a group of licenses may have one license but on the map, it looks like each one can abstract the full license quantity. There is no way around this issue. Work with your catchment coordinator to understand how the abstractions are managed so you can develop a better understanding of how they are impacting the catchment. Again, this is a sensitive dataset so do not publish it externally, just use it for internal work within the partnership.

## 4.3 Physical Modification

**AMBER Barrier Atlas.** Natural Aptitude.  . OGL. The outputs from a citizen science app developed under the AMBER (Adaptive Management of Barriers in European Rivers) Horizon 2020 programme of the European Union. Research has shown that there are many more barriers in our rivers than indicated in existing datasets; this citizen science app aims to identify and classify barriers so that we can better understand connectivity.


**River Obstacles.** National Natural Aptitude.  The Rivers Trust. OGL. This dataset was downloaded from the River Obstacles App. (January 2019). It provides a reasonable picture of the obstacles to fish passage. The data will be improved as more citizen scientists add barriers to the system. [here](#)


**Priority Barriers to Fish Migration.** Local. EA.  The Rivers Trust. OGL. This dataset was released to CaBA in 2015 and identifies the priority barriers by fish species as agreed by the EA fisheries teams. Some of these barriers will have been removed or made passible since this data was collected. It would be better to get the most recent information from your catchment coordinator.


## 4.4 Invasive Non-Native Species


**Plant Tracker.** Local. Natural Aptitude. [www.planttracker.org.uk](http://www.planttracker.org.uk). OGL. Outputs from a citizen science app aiming to locate incidences of a number of high priority invasive plant species. Each record collected is verifiable since it is comprised of a photograph along with other relevant metadata. This app is no longer supported by the EA. We are currently trying to find a way to rejuvenate this very useful tool.


## 4.5 Reasons for not achieving good (RFNAGs)

**WFD Reasons for Not Achieving Good – Point Source.** National EA.  The Rivers Trust. OGL. This is a processed version of the latest reasons why the WFD water body is not achieving good status. The EA officers identify the main reasons why a water body is failing, this is useful expert opinion.

**WFD Reasons for Not Achieving Good – Diffuse Source. National EA.  The Rivers Trust. OGL.** This is a processed version of the latest reasons why the WFD water body is not achieving good status. The EA officers identify the main reasons why a water body is failing, this is useful expert opinion.

**WFD Reasons for Not Achieving Good – Flow. National EA.  The Rivers Trust. OGL.** This is a processed version of the latest reasons why the WFD water body is not achieving good status. The EA officers identify the main reasons why a water body is failing, this is useful expert opinion.


**WFD Reasons for Not Achieving Good – Physical Modification. National EA.  The Rivers Trust. OGL.** This is a processed version of the latest reasons why the WFD water body is not achieving good status. The EA officers identify the main reasons why a water body is failing, this is useful expert opinion.


**WFD Reasons for Not Achieving Good – INNS. National EA.  The Rivers Trust. OGL.** This is a processed version of the latest reasons why the WFD water body is not achieving good status. The EA officers identify the main reasons why a water body is failing, this is useful expert opinion.





## 5 What actions are being delivered?


This is a new section for the CaBA data package for version 5. The data in this group shows what other work is being done in the catchment so that opportunities for collaboration can be spotted; and gaps in delivery can be filled. The majority of this data will come from local data collated by the catchment partnership itself. A number of partnerships have already incorporated 'Submit a project' functionality on their Storymaps. This allows members of the partnership to identify where they are delivering improvements which their partners should know about and where there are opportunities for partners to collaborate. The datasets identified below are from national delivery initiatives. This data is a snapshot of activity within each catchment. It will rapidly get out of date and need updating if it is to be useful.


**WINEP Water Industry National Environment Plan.** National. EA.  WINEP2019v3. CaBA Only. The measures in the Water Industry National Environment Plan represent the investments required by water companies to meet their environmental obligations. The WINEP dataset is complex and not that easy to interpret. The layers in this group show why measures are required (the driver) and how many measures are planned to be delivered. The full dataset is included in the data package and the CaBA Data&GIS team will continue to work with water companies to extract more information which could be useful to partnerships out of the WINEP dataset. If we identify additional data we will hold a webinar to guide partnerships on how to make the best of the information. Go to [water.org.uk](http://water.org.uk) for more details.

**Countryside Stewardship Scheme Management Options.** National. NE.  Opendata\_NE. OGL. Location of land under management within the Countryside Stewardship Agri-Environment Scheme since 2016 (point data). This data can be symbolised by end date to help partnerships target resources to support continued improvements after agreements have ended.

**Countryside Stewardship Scheme Management Areas.** National. NE.  Opendata\_NE. OGL. Location and extent of land under management within the Countryside Stewardship Agri-Environment Scheme since 2016 (polygon data). This data can be symbolised by end date to help partnerships target resources to support continued improvements after agreements have ended.

**Defra-funded NFM Projects.** National. The Rivers Trust.  The Rivers Trust. Open Data. These are the 60 Natural flood management projects funded by the Defra £15M grant. As these projects develop each project will also collect the locations of every NFM asset that they build and these will appear on the map. This assets can only be viewed at a waterbody scale, they will disappear if you zoom in too closely. This data could be shared with all partnerships but at this stage it will be kept private due to some concerns about landowner privacy.

**River Restoration Projects.** National. The River Restoration Centre.  RRC\_Projects. Open Data. This is a download from the River Wiki. The River Wiki has been set up by the River Restoration Centre to consolidate river restoration case studies from all over Europe. Find out more at [restorerivers.eu](http://restorerivers.eu).

**Priority Habitat Creation and Restoration Projects.** National. EA.  The Rivers Trust. OGL. The Priority Habitat Creation and Restoration GIS dataset lists projects undertaken by the Environment Agency to create new priority habitats and restore existing priority habitats. The majority of projects were undertaken in partnership with other organisations. Priority habitat creation and restoration is part of the England Biodiversity Strategy. The UK Biodiversity Action Plan defined Priority habitats as those habitats most threatened and requiring conservation. This

dataset indicates the year in which the projects were completed. The year period is April 1st to March 31st, from April 2009 onwards. Attribution statement: © Environment Agency copyright and/or database right 2015. All rights reserved.



## 6 What additional monitoring is available?

**FreshWater Watch Results (UK).** National. **Earthwatch Institute.**  **FreshWater Watch.** **Open Data.** Water quality data collected by citizen scientists. Test results include water depth and speed, water temperature, pH values, nutrients (phosphate and nitrate), turbidity and visual characteristics. This is a static download.


**Riverfly Monitoring Initiative Results.** National. **The Riverfly Partnership.** [www.riverflies.org](http://www.riverflies.org). **OGL.** Citizen science volunteers carry out regular freshwater invertebrate surveys to check for severe changes in water quality. If trigger levels are breached, relevant authorities are notified, and appropriate action is taken to protect the water quality of rivers. This is a static download.

**Outfall Safari.** Local. **CaBA partnerships.** [catchmentbasedapproach.org](http://catchmentbasedapproach.org). An innovative, citizen science method for locating, assessing the impact of, and reporting on misconnected pipes that are polluting surface water. This is local data, collected in a consistent fashion using the tools developed by ZSL and The Rivers Trust. To develop an Outfall Safari for your own catchment, you can use the guide and resources available [here](#).

**EA Investigations.** Local. **Environment Agency.** The national EA monitoring team has some extremely sophisticated monitoring equipment which can do continuous sampling of river water quality. This data is much more powerful at identifying WQ issues and pointing to the likely source than grab sampling. Ask you catchment coordinator to find out where this kit has been deployed in your catchment.

## 7 What background mapping is available?

### 7.1 Administrative Areas

**Environment Agency and Natural England Public Face Areas (EA/NE)** [National EA](#)  [environment.data.gov](#). **OGL**. We think that these Areas will become the spatial unit for Local Natural Capital Plans. Once we have confirmation of this we will put a post on the CaBA website.

The following six layers are used by the EA for their reporting and organisation.

**Water Management Areas** [National EA](#)  [environment.data.gov](#). **OGL**.

**WFD River Basin Districts (Cycle 2) (EA)** [National EA](#)  [environment.data.gov](#). **OGL**.

**WFD Surface Water Management Catchments (Cycle 2)** [National EA](#)  [environment.data.gov](#). **OGL**.

**WFD Surface Water Operational Catchments (Cycle 2)** [National EA](#)  [environment.data.gov](#). **OGL**.

**WFD Groundwater Management Catchments (Cycle 2)** [National EA](#)  [environment.data.gov](#). **OGL**.


**WFD Groundwater Operational Catchments (Cycle 2)** [National EA](#)  [environment.data.gov](#). **OGL**.

**Rivers Trusts in England, Wales and All Ireland** [National](#) [The Rivers Trust](#)  [The Rivers Trust](#). **Creative Commons**. This is the latest boundary map for rivers trusts in the UK and Ireland.


**CaBA Partnership Boundaries** [National](#) [The Rivers Trust](#)  [The Rivers Trust](#). **Creative Commons**. This is the latest boundary map for CaBA partnerships in England. If you spot an issue with your boundary please let us know.

**Regional Flood and Coastal Committees Boundaries (EA)** [National EA](#)  [The Rivers Trust](#). **OGL**.


The Regional Flood and Coastal Committee (RFCC) is a committee established by the Environment Agency under the Flood and Water Management Act 2010 that brings together members appointed by Lead Local Flood Authorities (LLFAs) and independent members with relevant experience. The Environment Agency must consult with RFCCs about flood and coastal risk management work in their region and take their comments into consideration.


**Local Enterprise Partnerships Boundaries (ONS)** [National ONS](#)  [ONS](#). **OGL**. **Local enterprise partnerships** (LEPs) are voluntary **partnerships** between **local** authorities and businesses set up in 2011 by the Department for Business, Innovation and Skills to help determine **local** economic priorities and lead economic growth and job creation within the **local** area.


### 7.2 TraC background mapping

**Coastal Partnerships**. [National](#) [Coastal Partnerships Network](#)  [The Rivers Trust](#). **CC BY**. The Coastal Partnerships Network (CPN) exists to encourage the exchange of information and debate between Coastal Partnerships and to establish links with other coastal stakeholders. It seeks to offer increased opportunities for learning, collaboration and influence, strengthening and supporting Coastal Partnerships and encouraging stronger representation of the value of their

work. At a national level, Coastal Partnerships, their networks, experience and expertise are available for integrating the delivery of a whole suite of statutorily required strategic plans, actions and interventions. The integration opportunity extends to Local Nature Partnerships, Local Enterprise Partnerships and regeneration agencies, with benefits coming from more efficient management of the land-sea interface. The partnerships in the network have proven track records and are ready to help with local delivery. For more information, please visit: <http://www.coastalpartnershipsnetwork.org.uk/>. Attribution statement: © Coastal Partnerships Network.

**MMO Marine Plan Areas.** **National. Marine Management Organisation.**  **Marine Management Organisation.** **OGL.** This map shows the Marine Management Organisation's inshore and offshore planning regions for England. A marine plan is being/has been developed for each of the 11 areas. These plans will consider future development of the area, the sustainable use of marine resources, integration with planning on land and many other factors. Plans for most areas (NW, NE, SE & SW) are currently in the consultation phase (April 2020) so there is potential to input to these plans. Inshore areas extend to 12 nautical miles off the coast and the offshore areas extend out to the extent of the UK's Exclusive Economic Zone. Attribution statement: Reproduced with the permission of the Marine Management Organisation, Ordnance Survey and UK Hydrographic Office.


**Regional Flood and Coastal Committee boundaries.** **National. Environment Agency.**  **The Rivers Trust.** **OGL.** This dataset shows the boundaries of RFCCs across England. RFCC's were established in order to bring together risk management authorities and independent members to better identify, communicate and manage flood and coastal erosion risk. RFCCs also play a key role in investing funding for flood and coastal erosion risk management. Attribution statement: © Environment Agency copyright and/or database right 2016. All rights reserved.

**UK Territorial Sea Limit** **National. UK Hydrographic Office.**  **UK Territorial Sea Limit** **OGL.** UK territorial waters extend to 12 nautical miles offshore. This dataset shows the boundary for the whole of the UK. Attribution statement: Contains public sector information, licensed under the Open Government Licence v3.0, from UKHO.


### 7.3 Hydrology Reference

**Detailed River Network (EA)** **EA.**  **DRN3. CaBA Only.** This is the original EA DRN that is in the first data package. It is now quite old.

#### **Esri Hydro Reference Overlay (Esri)**

**OS Open Rivers with CaBA Partnership ID.** **National. Ordnance Survey.**  **The Rivers Trust.** **OGL.** **OS Open Rivers** with English and cross-border Catchment-Based Approach partnerships identified, allowing you to filter this layer by catchment name, partnership name, or host organisation.

### 7.4 Remote Sensing

**OS Terrain 50.** **Ordnance Survey.**  **OS\_Terrain\_50.** **OGL.** OS Terrain 50 is a digital terrain model covering the whole of the UK at 50 m horizontal resolution and 10 m vertical resolution. This is a relatively coarse resolution DEM and should only be used as a reference. For more detailed modelling and analysis, we recommend you download the [Environment Agency's LiDAR](#) or, for larger areas with more coverage, you may be interested in purchasing a finer resolution DEM such as [OS Terrain 5](#) or [NEXTMap 5™](#).

The following three layers are only available in ArcGIS Pro.

### World Imagery (for Export) (Esri)

### Terrain (Esri)

### Terrain: Hillshade (Esri)

## 7.5 Basemapping

OS MiniScale. National. Ordnance Survey.  OS\_MiniScale. OS OpenData.

OS 250k. National. Ordnance Survey.  OS\_250k. OS OpenData.

OS 50k. National. Ordnance Survey.  OS\_50k. EA Conditional.

OS 25k. National. Ordnance Survey. . EA Conditional.

## 8 Index of data layers

Group	Category	Sub-Group	Layer Name	Source
Opportunities	Rural Land Management - 1		Countryside Stewardship Water Quality Priority Areas	Natural England
Opportunities	Rural Land Management - 2		SAGIS (P) WB - Good status - required diffuse reduction (%)	UKWIR & EA
Opportunities	Urban Land Management - 3		WINEP Urban Wastewater Treatment Directive by Measure Type	Environment Agency
Opportunities	Flood Resilience - 1		WWNP Riparian Woodland Potential	Environment Agency
Opportunities	Flood Resilience - 2		WWNP Wider Catchment Woodland Potential	Environment Agency
Opportunities	Flood Resilience - 3		WWNP Floodplain Woodland Potential	Environment Agency
Opportunities	Flood Resilience - 4		WWNP Floodplain Reconnection Potential	Environment Agency
Opportunities	Flood Resilience - 5		WWNP Floodplain Reconnection Potential	Environment Agency
Opportunities	Flood Resilience - 6		WWNP Runoff Attenuation Features 1in30 AEP	Environment Agency

Opportunities	Flood Resilience - 7		WWNP Runoff Attenuation Features 1in100 AEP	Environment Agency
Opportunities	Flood Resilience - 8		HE. Priority roads for catchment management of runoff	Highways England
Opportunities	Flood Resilience - 9		Coal Authority Mine Treatment Schemes	Coal Authority
Opportunities	River Restoration & Wildlife - 1		Special Protection Areas	Natural England
Opportunities	River Restoration & Wildlife - 2		Nature Improvement Areas	Natural England
Opportunities	River Restoration & Wildlife - 3		Special Areas of Conservation	Natural England
Opportunities	River Restoration & Wildlife - 4		Sites of Special Scientific Interest	Natural England
Opportunities	River Restoration & Wildlife - 5		RAMSAR	Natural England
Opportunities	River Restoration & Wildlife - 6		National Nature Reserves	Natural England
Opportunities	River Restoration & Wildlife - 7		Local Nature Reserves	Natural England
Opportunities	River Restoration & Wildlife - 8		AONB	Natural England
Opportunities	River Restoration & Wildlife - 9		National Parks	Natural England
Opportunities	River Restoration & Wildlife - 10		Priority River Habitats	Natural England
Opportunities	River Restoration & Wildlife - 11		Priority Headwater catchments	Natural England
Opportunities	River Restoration & Wildlife - 12		Local Nature Partnerships	Natural England
Opportunities	River Restoration & Wildlife - 13		Important Bird Areas.	RSPB
Opportunities	River Restoration & Wildlife - 14		Important Plant Areas.	Plantlife

Opportunities	Water Quality - 1		Source Protection Zones	Environment Agency
Opportunities	Water Quality - 2		Ground Water Safeguard Zones	Environment Agency
Opportunities	Water Quality - 3		Surface Water Safeguard Zones	Environment Agency
Opportunities	Water Quality - 4		HE. Priority roads for catchment management of water water quality (outfall)	Highways England
Opportunities	Water Quality - 5		HE. Priority roads for catchment management of water water quality (drainage)	
Opportunities	Water Quality - 6		Suspected minewater discharges (Coal Authority)	
Opportunities	Water Resources - 1		Water Resource Availability	Environment Agency
Opportunities	Water Resources - 2		Coal Mine Reporting Area	Coal Authority
Opportunities	Climate Change - 1		Keeping Rivers Cool - Level of Shade	Environment Agency
Opportunities	Climate Change - 2		Neighbourhood Flood Vulnerability Index (NFVI)	Climate Just
Opportunities	Climate Change - 3		Social Flood Risk Index (SFRI) Present	Climate Just
Opportunities	Climate Change - 4		Social Flood Risk Index (SFRI) 2050 2 deg scenario	
Opportunities	Climate Change - 5		Social Flood Risk Index (SFRI) 2050 4 deg scenario	
Opportunities	Estuaries & Coasts - 1		Aquaculture	Marine Management Organisation
Opportunities	Estuaries & Coasts - 2		Bathing Water Catchments: Zones of Influence.	Environment Agency.
Opportunities	Estuaries & Coasts - 3		Designated Bathing Waters (England) Status.	Environment Agency.
Opportunities	Estuaries & Coasts - 4		England Coast Path Route.	Natural England
Opportunities	Estuaries & Coasts - 5		EMODnet Seabed Habitats.	EMODnet



Opportunities	Estuaries & Coasts - 6		Fish Nursery Grounds	Marine Management Organisation
Opportunities	Estuaries & Coasts - 7		Fish Spawning Grounds	Marine Management Organisation
Opportunities	Estuaries & Coasts - 8		Heritage Coasts (England)	Natural England
Opportunities	Estuaries & Coasts - 9		Marine Conservation Zones.	Natural England.
Opportunities	Estuaries & Coasts - 10		Beach Activities Model.	Marine Management Organisation
	Estuaries & Coasts - 11		National Coastal Erosion Risk Mapping (NCERM) 2018-2021	Environment Agency
Opportunities	Estuaries & Coasts - 12		Native Oyster Historic Locations	Marine Management Organisation
Opportunities	Estuaries & Coasts - 13		Seagrass Historic Locations.	Marine Management Organisation
Opportunities	Estuaries & Coasts - 14		Seagrass potential	Environment Agency
Opportunities	Estuaries & Coasts - 15		Saltmarsh Extents.	Environment Agency
Opportunities	Estuaries & Coasts - 16		Saltmarsh Potential - Potential habitat creation sites within floodplain.	Marine Management Organisation
Opportunities	Estuaries & Coasts - 17		Saltmarsh Zonation.	Environment Agency.
Opportunities	Estuaries & Coasts - 18		Seabird Nesting Counts (British Isles)	JNCC
Opportunities	Estuaries & Coasts - 19		Shellfish Classification Zones of England and Wales	Cefas
Opportunities	Estuaries & Coasts - 20		Socio-Economic Typologies of Coastal Communities.	Marine Management Organisation
Opportunities	Estuaries & Coasts - 21		Sustainable Shores habitat creation opportunities.	RSPB
Opportunities	Natural Capital - 1		Soil Carbon	NE/CEH
Opportunities	Natural Capital - 2		Soil Bacteria	NE/CEH

Opportunities	Natural Capital - 3		Soil Nitrogen	NE/CEH
Opportunities	Natural Capital - 4		Soil Phosphorus	NE/CEH
Opportunities	Natural Capital - 5		Soil pH	NE/CEH
Opportunities	Natural Capital - 6		Soil Invertebrates	NE/CEH
Opportunities	Natural Capital - 7		Carbon in vegetation	NE/CEH
Opportunities	Natural Capital - 8		Plant indicators of habitats in good condition	NE/CEH
Opportunities	Natural Capital - 9		Nectar plant diversity for bees	NE/CEH
Opportunities	Natural Capital - 10		Headwater Stream quality	NE/CEH
Opportunities	Air Quality - 1		PM 10	NAEI
Opportunities	Air Quality - 2		Ammonia	NAEI
Opportunities	Recreation & Culture - 1		Bathing water status	Environment Agency
Opportunities	Recreation & Culture - 2		Bathing Water Catchments: Zones of Influence	Environment Agency
Opportunities	Recreation & Culture - 3		Access network mapping	NE
Opportunities	Socio-economic - 1		Index of Multiple Deprivation	ONS
Opportunities	Socio-economic - 2		Sustainability and transformation partnership	ONS
Issues	Rivers - 1		WFD Status - River, Canal and Surface Water Transfer Water bodies (Cycle 2)	Environment Agency
Issues	Rivers - 2		WFD Status - River Waterbody Catchments (Cycle 2)	Environment Agency
Issues	Rivers - 3		WFD Classification Sites 2016 (EA)*	Environment Agency
Issues	Rivers - 4		Fisheries Classification System 2 (FCS2)	Environment Agency
Issues	Rivers - 5		Nitrate Vulnerable Zones (NVZ) Surface Waters - 2017 Final Designations	Environment Agency
Issues	Groundwater - 1		WFD Overall waterbody Status - Groundwater bodies (Cycle 2)	Environment Agency

Issues	Groundwater - 2		WFD Chemical Status - Groundwater bodies (Cycle 2)	Environment Agency
Issues	Groundwater - 3		WFD Quantity Status - Groundwater bodies (Cycle 2)	Environment Agency
Issues	Groundwater - 4		Nitrate Vulnerable Zones (NVZ) Groundwaters - 2017 Final Designations	Environment Agency
Issues	Lakes - 1		WFD Status - Lake Water bodies (Cycle 2)	Environment Agency
Issues	Lakes - 2		Nitrate_Vulnerable_Zones NVZ_2017_Eutrophic Waters (EA*)	Environment Agency
Issues	Estuaries & Coasts – 1		Nitrate Vulnerable Zones	Environment Agency
Issues	Estuaries & Coasts – 2		Seabed Litter	OSPAR
Issues	Estuaries & Coasts – 3		Vessel Density 2017	EMODnet
Issues	Estuaries & Coasts – 4		WFD Cycle 2 Overall Classification Objectives – TraC Waterbodies.	Environment Agency
Issues	Estuaries & Coasts – 5		WFD Overall Status: Transitional & Coastal Waterbodies (2016).	Environment Agency
Characteristics	Weather & Climate - 1		Annual Precipitation 1981-2010	Met Office
Characteristics	Land Use & Land Cover - 1		Land Cover Map (2000)	CEH
Characteristics	Land Use & Land Cover - 2		Land Cover Map (2007)	CEH
Characteristics	Land Use & Land Cover - 3		Land Cover Map (2015)	CEH
Characteristics	Land Use & Land Cover - 4		Corine Land Cover (2018)	
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Characteristics	Land Use & Land Cover - 6		Priority Habitat Inventory (England) (North)	Natural England
Characteristics	Land Use & Land Cover - 7		Priority Habitat Inventory (England) (Central)	Natural England
Characteristics	Land Use & Land Cover - 8		Priority Habitat Inventory (England) (South)	Natural England

Characteristics	Land Use & Land Cover - 9		Provisional Agricultural Land Classification (ALC) (England)	Natural England
Characteristics	Land Use & Land Cover - 10		Crop Map of England (2017)	Rural Payments Agency
Characteristics	Land Use & Land Cover - 11		National Forest Inventory	Forestry Commission
Characteristics	Soils - 1		Soilscapes	Landis
Characteristics	Soils - 2		Soil property data - right click on layer to add legend to map (BGS)*	BGS
Characteristics	Soils - 3		Soil Water Management	EU Soils
Characteristics	Rivers - 1		WFD - River, Canal and Surface Water Transfer Water bodies (Cycle 2)	Environment Agency
Characteristics	Rivers - 2		WFD - River Waterbody Catchments (Cycle 2)	Environment Agency
Characteristics	Rivers - 3		River Flood Gauges (EA)*	
Characteristics	Rivers - 4		Dominant Slope Class (deg)	Ordnance Survey
Characteristics	Rivers - 5		Risk of Flooding from Rivers and Sea	Environment Agency
Characteristics	Rivers - 6		Risk of Surface Water Flooding	Environment Agency
Characteristics	Rivers - 7		Historic flood map	Environment Agency
Characteristics	Rivers - 8		SAGIS (P) WB - All sources - predicted concentration (mg/l)	Environment Agency
Characteristics	Rivers - 9		SAGIS (P) WB - Good status target (mg/l)	Environment Agency
Characteristics	Rivers - 10		SAGIS (P) Monitoring (OP)	Environment Agency
Characteristics	Groundwater - 1		WFD - Groundwater Bodies (Cycle 2)	Environment Agency
Characteristics	Groundwater - 2		BGS Superficial Deposits Thickness Maps 1km Hex Grid	BGS
Characteristics	Groundwater - 3		Bedrock and Superficial geology (BGS)*	BGS

Characteristics	Groundwater - 4		GeoIndex Hydrogeology Data Theme (BGS)*	BGS
Characteristics	Groundwater - 5		GeoSure Soluble Rocks 5km Hex-Grid (BGS)	BGS
Characteristics	Groundwater - 6		Groundwater Vulnerability	Environment Agency
Characteristics	Lakes - 1		WFD - Lake Water bodies (Cycle 2)	Environment Agency
Characteristics	Estuaries & Coasts – 1		Coastal Design Sea levels.	Environment Agency
Characteristics	Estuaries & Coasts – 2		EMODnet Seabed Habitats.	EMODnet
Characteristics	Estuaries & Coasts – 3		Marine Character Areas.	MMO
Characteristics	Estuaries & Coasts – 4		Neptune Coastline Campaign: Land Use 1965.	National Trust
Characteristics	Estuaries & Coasts – 5		Neptune Coastline Campaign: Land Use 2014.	National Trust
Characteristics	Estuaries & Coasts - 6		WFD - Transitional and Coastal Water bodies (Cycle 2)	Environment Agency
Causes	Pollution - 1	Source apportionment	SAGIS (P) WB Shares - Pie Charts	Environment Agency
Causes	Pollution - 2	Source apportionment	SEPARATE - Total Phosphorous Inputs (%)	NERC / RSK ADAS
Causes	Pollution - 3	Source apportionment	SEPARATE - Dissolved Phosphorous Inputs (%)	NERC / RSK ADAS
Causes	Pollution - 4	Source apportionment	SEPARATE - Nitrogen Inputs (%)	NERC / RSK ADAS
Causes	Pollution - 5	Source apportionment	SEPARATE - Sediment Inputs (%)	NERC / RSK ADAS
Causes	Pollution - 6	Point	SAGIS (P) WB - Point Concentration (mg/l)	Environment Agency
Causes	Pollution - 7	Point	Historic Landfill	Environment Agency
Causes	Pollution - 8	Point	Permitted Waste Sites - Authorised Landfill Site Boundaries	Environment Agency
Causes	Pollution - 9	Point	NIRS Environmental Pollution Incidents (Categories 1 & 2) (2001-2018)	Environment Agency
Causes	Pollution - 10	Point	NIRS Environmental Pollution Incidents - England (EA) [3 & 4 2014]	Environment Agency

Causes	Pollution - 11	Point	Consented Discharges to Controlled Waters with Conditions	Environment Agency
Causes	Pollution - 12	Diffuse	SAGIS (P) WB - Livestock concentration (mg/l)	Environment Agency
Causes	Pollution - 13	Diffuse	SAGIS (P) WB - Arable concentration (mg/l)	Environment Agency
Causes	Pollution - 14	Diffuse	SAGIS (P) WB - Urban concentration (mg/l)	Environment Agency
Causes	Pollution -15	Diffuse	SAGIS (P) WB - On site waste water treatment - includes septic tanks concentration (mg/l)	Environment Agency
Causes	Pollution -16	Diffuse	MANURES-GIS Estimates of manure volumes by livestock type and land use (Outdoor pigs)	ADAS
Causes	Pollution - 17	Diffuse	MANURES-GIS Estimates of manure volumes by livestock type and land use (Poultry)	ADAS
Causes	Pollution - 18	Diffuse	PSYCHIC Total Phosphate Load (Concentration if possible)	ADAS
Causes	Pollution - 19	Diffuse	PSYCHIC Total Sediment Loss (Concentration if possible)	ADAS
Causes	Pollution - 20	Diffuse	NEAP-N Total Nitrate Loss (Concentration if possible)	ADAS
Causes	Water Abstraction - 1		Water Abstraction Licences by Sector	Defra
Causes	Water Abstraction - 2		Water Abstraction Licences by Volume	Defra
Causes	Physical Modification - 1		River Obstacles App (Jan 2019)	Natural Aptitude
Causes	Physical Modification - 2		AMBER Barrier Atlas	AMBER
Causes	INNS - 1		NBN Atlas INNS data	
Causes	RFNAG - 1		Reasons for Not Achieving Good - Physical Modification	Environment Agency



Causes	RFNAG - 2		Reasons for Not Achieving Good - Flow	Environment Agency
Causes	RFNAG - 3		Reasons for Not Achieving Good - INNS	Environment Agency
Causes	RFNAG - 4		Reasons for Not Achieving Good - Point source pollution	Environment Agency
Causes	RFNAG - 5		Reasons for Not Achieving Good - Diffuse pollution	Environment Agency
Action	WINNEP - 1		Planned WI measures	
Action	Countryside Stewardship - 1		Countryside Stewardship Scheme Management Options (NE)	EA
Action	Countryside Stewardship - 2		Countryside Stewardship Areas (NE)	EA
Action	Natural Flood Management - 1		NFM Community and catchment Projects	The Rivers Trust
Action	River Restoration - 1		River Restoration Centre Projects	The RRC
Action	River Restoration - 2		Priority Habitat Creation and Restoration Projects	Environment Agency
Monitoring	Citizen Science - 1		FreshwaterWatch monitoring	EarthWatch Institute
Monitoring	Citizen Science - 2		Riverfly	Riverfly Partnership
Basemapping	Administrative Boundaries		CaBA Catchment Partnership Boundaries	The Rivers Trust
Basemapping	Administrative Boundaries		RFCC boundaries	Environment Agency
Basemapping	Administrative Boundaries		Defra Family Areas	Environment Agency
Basemapping	Administrative Boundaries		WFD Management Catchments	Environment Agency
Basemapping	Administrative Boundaries		WFD Operational Catchments	Environment Agency
Basemapping	Administrative Boundaries		WFD River Basin Districts	Environment Agency
Basemapping	Administrative Boundaries		Local Enterprise partnerships	Government

Basemapping	Administrative Boundaries		Rivers Trust Boundaries	The Rivers Trust
Basemapping	TraC background mapping		Coastal Partnerships.	Coastal Partnerships Network
Basemapping	TraC background mapping		MMO Marine Plan Areas	Marine Management Organisation
Basemapping	TraC background mapping		Regional Flood and Coastal Committees Boundaries	Environment Agency
Basemapping	TraC background mapping		UK Territorial Sea Limit	UK Hydrographic Office
Basemapping	Remote sensing		OS Terrain 50	Ordnance Survey
Basemapping	Basemaps		OS 1:250,000 Scale Colour Raster	Ordnance Survey