Reimagining the Levels, Making the Connections

A Prospectus for Revitalising and Safeguarding the Landscapes and Communities in the Catchment of the Somerset Levels and Moors

October 2016

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Contents

Introduction **1**

Report Structure **2**

The Levels and Moors Catchment **2**

The Pressures for Change - Time for New Thinking **4**
- Social change: Public engagement and participation in policy 4
- Physical change: The Climate 5
- Political change: Brexit 7
- Economic change: The food supply chain 8
- Lower-level pressing issues 9

Our Vision for the Future and the Objectives needed to achieve it **10**
- Our Objectives for a Reimagined Levels Catchment 12
- Connecting People – *Improving understanding and accountability* 12
- Connecting the Landscape – *Enhancing natural systems, productivity and beauty* 12
- Connecting the Economy – *Developing supply chains for livelihoods, health and wellbeing* 13
- Our spatial vision for land use and management 13

Our Recommendations for Action **15**
- A. The Somerset Rivers Authority 15
- B. Support for farming, food and the environment post-Brexit 17
- C. Community representation on issues affecting the environment, land and water 18

Sources and Inspirations **20**

Cover photograph: Looking south from the Polden Hills across King's Sedgemoor towards the Fivehead Ridge

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Introduction

This report has been prepared by a group of people who live on the Somerset Levels and who are active in a range of community-based organisations. Between us we have a broad range of professional experience of the issues facing the area and a strong personal interest in its future.

The group who prepared this report

Left to right: Paul Sander-Jackson, Martin Stanley, Steve Mewes, Phil Stone, Adrian Tait, David Banwell, Sarah Sander-Jackson and Robert Deane. Robin Mewes is not pictured.

Our initial motivation for this report was the growing threats that face the Levels and Moors from future river and marine flooding. The winter flooding of 2013/14 led to renewed activity and a programme of work such as Somerset's 20-Year Flood Action Plan and the laudable Hills to Levels Project. But we felt that the focus of this work was too narrow, too short term and not sufficiently accountable to the people who will be affected, and ultimately be expected to pay for it.

There is a pressing need for a more joined-up approach that looks at the causes and solutions to flooding across the entire catchment, that promotes the social and economic opportunities that will arise from better adapted land use, and that seeks to engage all the communities affected by flooding in this future.

The Brexit referendum, which took place mid-way through this project, will have dramatic and far-reaching implications for the Levels and Moors Catchment, not least in how the countryside is managed. It is too early to predict precisely how Brexit will change food production, farming support, environmental protection and rural development. However, we believe that these changes provide the ideal opportunity to advocate a new vision for rural land use and its economy in the catchment.

Responding to these drivers of change, we believe strongly in a more socially, environmentally and economically sustainable future for the countryside and communities of the catchment. This report proposes a future in which the many services or benefits that our landscapes provide to society (including the production of nutritious food, storage of flood water, access to nature, and mitigation of climate change) are properly recognised and rewarded. It is a future in which the economic benefits of providing these services are retained and shared equitably within the area. And it is a future that local people feel they have a stake in, helping to determine the priorities for social and economic development and environmental protection.

The title of this report 'Reimagining the Levels – Making the Connections' emphasises the need for joined-up thinking. The report therefore seeks to make the connections between how we manage the upper and middle catchments and the flooding that occurs in the lower catchment; between the food purchasing decisions of local consumers and the livelihoods and production methods of our farmers; and between the organisations that regulate and support land and water management and the people who are affected by their decisions.

Report Structure

This report is split into four sections. We start by describing the **project area** and then examine the **pressures for change** and challenges facing the area. We set out our **vision and objectives** for making the connections needed to 'Reimagine the Levels' and we conclude with a set of **recommendations** for consideration by public bodies and local communities. The report is supported by a Technical Annex, available separately[1], that provides background information and data analysis. Relevant sections of this Annex are indicated in this report by a box in the margin, as shown here.

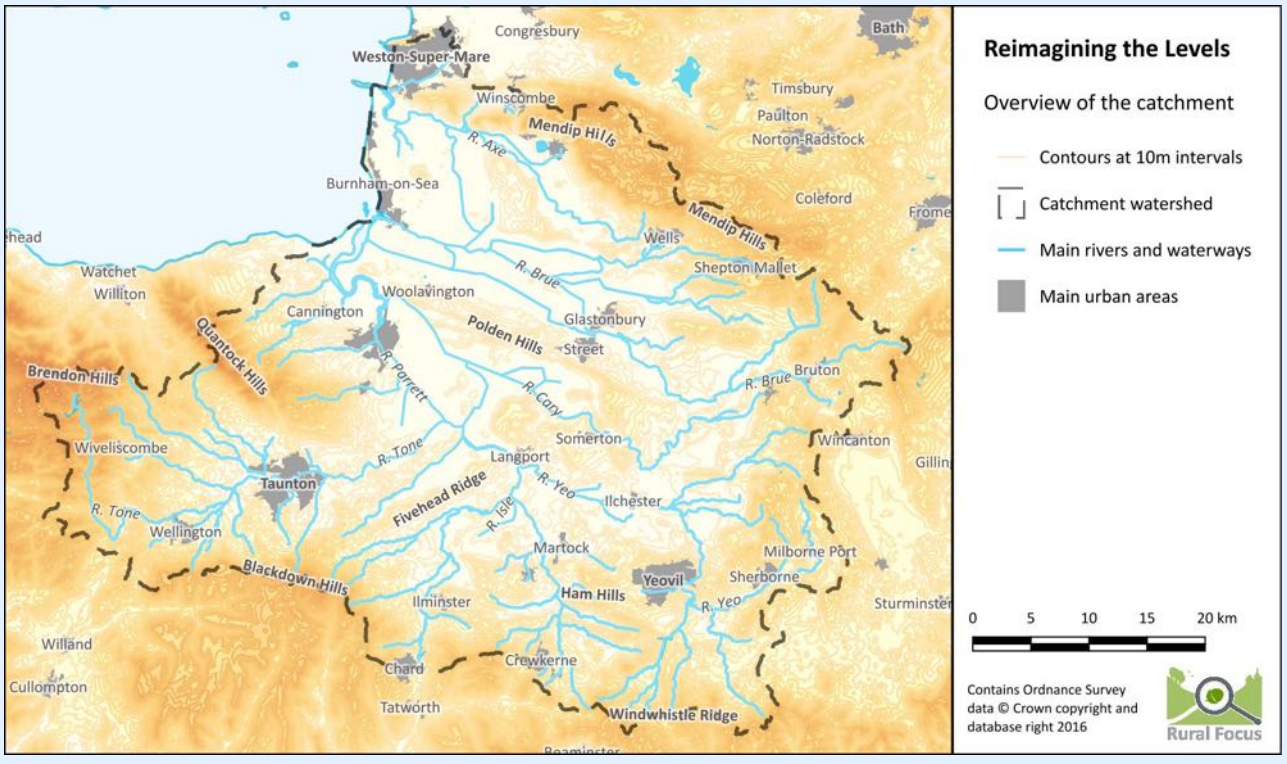
Annex 1.1

The Levels and Moors Catchment

Since one of the primary issues for this project is the threat of flooding, it was an obvious decision to define the project area by the river catchments that drain onto the Levels. These rivers, the Parrett and its tributaries south of the Polden Hills, and the Axe and Brue and their tributaries to the north, drain an area 2,464 km^2 in size. The watershed that borders this area runs, clockwise from the North, along the Mendip Hills, the Penselwood, Corton and Windwhistle ridges, the Blackdown, Brendon and Quantock Hills and along the coast of Bridgwater Bay. This geography is mapped in Figure 1.

Annex 2.1

Figure 1. Topography, rivers and main settlements of the Levels and Moors Catchment



The Catchment is home to over half a million people, living in over 200,000 households[2]. Three quarters of these people live in towns and nearly half live in the four largest towns of Weston-super-Mare, Taunton, Yeovil and Bridgwater[3].

Annex 6.1

[1] The Technical Annex can be downloaded from www.rural-focus.co.uk during October and November 2016 and thereafter from www.reimaginingthelevels.org

[2] Precise figures, based on analysis of census output areas from the 2011 census (ONS) cut to the catchment boundary, are 516,843 residents in 222,593 households.

The landscapes and land uses of the Catchment are varied and distinctive, from the flat wetlands of the Levels and Moors, the rolling mixed farming to the east and south, and rising to upland heathland and woodland on the Mendip, Quantock and Blackdown Hills. The Levels are internationally important for their overwintering birds and are one of the largest areas of wet lowland pasture in the UK and they contain large areas of peat soils which are an important store of organic carbon (Figure 2 below).

Figure 2. Land use, the environment and natural beauty

Agriculture is the dominant land use, accounting for around 79% of the land area. Around 3,000 farm businesses employ some 7,500 people, 3,600 of them full-time. Nearly three quarters of farmland is pasture, grazed by around 200,000 cattle and 210,000 sheep. Most of the rest is cropped with cereals (11% of farmland), maize (6%) and other crops (6%)[4]. Woodland covers about 6% of the Catchment.

Annex 5.1

The character of the landscape in which people live is an essential element in what gives them their sense of place and belonging. Distinctive characteristics include the flat grazing marshes of the Levels and Moors populated by cattle and sheep and a summer soundtrack of wading birds such as curlew and lapwing, distant skyline views to hills such as Burrow Mump and Glastonbury Tor, winding rural lanes connecting villages and hamlets constructed of blue lias limestone, sandstone or hamstone and pockets of cider orchards.

Annex 4

The Catchment includes a rich variety of wildlife, particularly wading birds. Nearly a quarter of the area is classified as 'Priority Habitat' and 15% is designated as Sites of Special Scientific Interest including the internationally important 6,400 ha Somerset Levels and Moors Special Protection Area. Other large designated sites occur on the Mendips (limestone grassland, woodland and cave systems), Quantock Hills (woodland and heathland) and along the eastern side of the Poldens (meadows and pastures).

Parts of the Levels are underlain by around 200 million cubic metres of peat soils, covering 20,000 ha and storing an estimated 3.7 million tonnes of carbon[5].

'Murmurations' of starlings are a characteristic and inspiring sight on the Levels © VisitSomerset

[3] These figures use the Government's Urban-Rural classification of census output areas in the Catchment. https://www.gov.uk/government/collections/rural-urban-definition

[4] Source: Analysis of Defra June Agricultural Survey data for 2013

[5] Brown, A.G. (2009). *Carbon storage and sequestration in the Somerset Levels UK*. Report to Somerset County Council. November 2009.

The Pressures for Change - Time for New Thinking

The Levels and Moors and their catchment contain much that is special, and which we have an obligation to future generations to protect. Change however is inevitable and, if planned for, may be desirable. It is therefore essential that we understand and anticipate the forces that will bring about those changes, and that we are bold in responding to them.

Here, we highlight four fundamental pressures for change that will affect the Levels and Moors Catchment. The first of these is social, the second is physical, covering climate change, the third political and the last is economic. At the end of this section, after examining these 'high level' forces, we describe some of the more immediate issues that need attention.

Social change: Public engagement and participation in policy

Events across the globe in the last few years have shown that there is a widening gulf between policy makers and the general public, fuelling a growing lack of trust in decision-making processes. The reaction of many of the communities on the Levels and Moors (who have always had an independent spirit) to the flooding in 2013/14 showed a lack of confidence in the decisions being taken by the Environment Agency and local authorities to protect them[6]. In response, some of the public bodies have sought to consult more widely and communicate their proposals in less technical language[7].

However, there are limited mechanisms available to local communities, including those in the wider Catchment who may be called on to pay for flood risk management, to give their views. The Levels and Moors Partnership (LAMP) and its predecessor the Levels and Moors Countryside forum provided a representative and accountable setting for discussion about the area for over 15 years before LAMP was ended in 2005. The Somerset Rivers Authority (SRA), which was created in 2015, promises more locally devolved and coordinated decision-making but its decision-making Board is dominated by appointed authorities[8].

The Somerset Rivers Authority receiving approval from Environment Secretary, Liz Truss in December 2014. © Defra

There is an urgent need to ensure that the communities in the Catchment are well informed and that organisations, such as the SRA, which are taking decisions on their behalf, are clearly democratically accountable. **We need to build the social capital and networks in the Catchment, ensuring that all the key groups such as landowners, residents and businesses are sensitized to the issues and potential solutions, and are able to influence the decisions that will affect their lives**.

The concept of 'knowledge co-production' is relevant and useful here. In the health and social care sectors, it is being used to create a more inclusive way of working between professionals and citizens, with the balance of influence shifting from the provider towards the user of services[9].

Annex 2.7

Annex 6.4

[6] www.flagsomerset.org.uk
[7] See for instance the progress reports issued by the Somerset Rivers Authority http://www.somersetriversauthority.org.uk/flood-risk-work/progress-update-report/
[8] http://www.somersetriversauthority.org.uk/about-us/somerset-rivers-authority-constitution/
[9] See for instance: http://www.coproductionscotland.org.uk/about/what-is-co-production/

Physical change: The Climate

Annex 2.2

The world's changing climate is an existential threat to all of us, but the rising sea levels and stormier weather patterns pose a critical, life-threatening, challenge to the people and landscape of the Levels and Moors. The number of days of heavy rain (exceeding 25 mm) are projected to increase by a factor of between 2 and 3.5 in winter by the 2080s. One-in-100 year flood events are likely to become twice as frequent by the 2050s and three to five times more frequent by the 2080s. Conservative estimates suggest average sea level will increase by 36cm over the next 70 years and by nearly half a meter by 2100[10] (some research suggests much higher rises in sea level).

We estimate that around 120,000 people in the Catchment live less than 10m above mean sea level, the large majority in the towns of Weston-super-Mare, Bridgwater and Burnham-on-Sea, with around 20,000 people in low-lying villages, hamlets and open countryside. It has recently been calculated for Somerset that "*approximately 19,000 properties are at risk from surface water flooding*", with most of these being in inland towns like Taunton and Yeovil[11]. These and other towns like Langport and Bridgwater are also at risk of flooding from tidal rivers. Perhaps at greater threat of harm are the coastal communities such as Burnham-on-Sea where flooding from the sea is a growing risk.

Flood water management on the Levels currently relies heavily on engineered solutions such as raised river banks, sluices and pumps. Rising water levels will make these increasingly expensive (and potentially unviable on some low-lying farmland). Upstream of the Levels, the way that watercourses and soils have been managed over the last 30 years has exacerbated surface water and river flooding[12] (See Figure 4), making the Catchment less resilient to the effects of climate change.

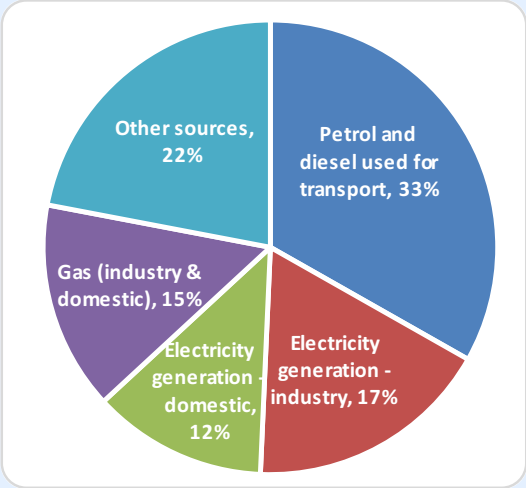
Another likely consequence of climate change is that periods of summer drought will become more frequent and intense. Low base flows in rivers and a lower water table risk damaging wetland habitats and peat soils and reducing agricultural productivity. Periods of high temperatures will increase heat stress on people, animals and plants.

We need to examine more closely the ways that rainfall, rivers and ground water are managed over the whole of the Catchment so that we are better prepared for high rainfall events and are able to reduce the risk of damaging floods. We should enable river floodplains to perform their natural function of holding back flood water (relying less on engineered solutions that require expensive maintenance) and should ensure that watercourses and soils throughout the Catchment are in an optimal state to absorb rainfall. Where necessary, we should be bold in planning for radical changes of land use in certain areas, embracing the opportunities this would bring[13].

Flood events like the one that occurred in the winter of 2013/14 will occur more frequently and become more severe

[10] The UK Climate Projections 2009 produced by the Met Office's Hadley Centre http://ukclimateprojections.metoffice.gov.uk. These are average UK estimates based on the medium emissions scenario and 50% probability estimate.
[11] http://www.somerset.gov.uk/environment-and-planning/flooding/preparing-for-flood/
[12] soil eroded from the middle and upper catchment ends up filling the river channels of the Levels, from where it needs to be dredged
[13] For instance, enabling the creation of large wetlands on the lowest-lying areas, enabling new forms of land and water use such as fish farming.

Figure 3. CO^2 emissions in Somerset, 2013



Source: www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2013

We have an obligation to take our share of the global response to reduce the man-made sources of climate change. Homes and businesses in Somerset produce an estimated 4.2 million tonnes of carbon dioxide, equivalent to 7.9 tonnes per person (see Figure 3 to the left)[14]. The Government has committed to reducing emissions by at least 80% in 2050 from 1990 levels and the Catchment is already a significant producer of renewable energy from 'solar farms' (with a capacity to produce 286 Mw of electricity, or the needs of around 40,000 homes). But much more needs to be done in the Catchment to reduce emissions from transport (the M5 is responsible for 8% of Somerset's CO^2 emissions[15]) and from agricultural soils and livestock.

Annex 4.4

There appears to be little long term planning taking place locally to adapt to and mitigate climate change. The County Council's 'Responding to Climate Change in Somerset' action plan was produced in 2008 and little appears to have been done to act on it. It is now very out of date. In our view, the analysis and policies addressing the changing climate in the District Council's Local Plans are unambitious and give no sense of urgency of the challenges we face. Most of the budget in the Somerset Rivers Authority's 20-Year Flood Action is concerned with maintaining existing flood defences or catching up on under-investment in recent years, with relatively little funding to reduce water run-off and flood generation in a proactive manner.

In view of the direct threats that climate change poses to the Levels and Moors Catchment**, we need a fuller and more ambitious assessment of what public bodies, businesses, communities and individuals can and should do to adapt to severe weather events and flooding, and also to take a lead in reducing emissions of greenhouse gases that are causing climate change**. By doing so, the Levels and Moors Catchment could become a national exemplar for local action to meet this global challenge.

There will need to be significant changes in the way we consume and produce energy

[14] https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2013
[15] *ibid*.

Political change: Brexit

The ramifications of the UK's decision to leave the EU will be felt in many ways and, amid the current uncertainty, it is likely that policy decisions that the UK Government will make in two areas will have major impacts on the Catchment.

The Levels will no longer be subject to the EU Birds Directive

The first of these policy areas covers environmental protection and conservation which has been heavily influenced by EU regulations and schemes. The Levels and Moors contain one of the largest areas of lowland wet grassland in northern Europe, 6,500 ha of which is protected as a Special Protection Area under the EU Birds Directive (part of the EU Natura 2000 network). The EU Water Framework Directive leads much of the work by the Environment Agency to improve river and groundwater quality. The large majority of the money paying for environmental conservation in the countryside comes from the EU Rural Development Programme. These and other conservation measures are far from perfect (for instance many people question the effectiveness of agri-environment schemes and conservation designations) and, given sufficient political will and funding, Brexit could provide the opportunity for improvements. **We need a more joined-up 'landscape scale' approach to habitat conservation and more ambitious 'outcomes focussed' incentives for farmers and landowners** (which entrust farmers with the means of achieving a range of public benefits).

Annex 4.2

The second policy area that will face the Government following Brexit concerns the continuing income support for agriculture. Farming in the Catchment is heavily reliant on the so called 'Pillar 1' payments that all farmers receive and without which many cropping and livestock farms would be unviable[16]. We estimate that in 2015, farmers in the Catchment received around £33 million in 'Pillar 1' income support payments (compared to an estimated farmgate value of agricultural production in the Catchment of £257 million).

Annex 5.1

There is already talk that the UK Treasury will seek to withdraw these 'Pillar 1' income support payments after 2020, instead focussing on payments for environmental and other public benefits. More incentives to provide so called 'ecosystem services' on farmland will certainly be welcome. But there is a strong risk that withdrawal of farm income support, coupled with a liberalisation of trade, will accelerate the structural change in farming, favouring larger 'factory farming' businesses capable of competing on world commodity markets. We believe strongly that this change would be to the great detriment of the landscape and rural culture of the Catchment. As we say further below, **we need a new policy for farming and the environment in England that supports economically and environmentally sustainable land management, fine-tuned to suit local circumstances**. We hope that the Government's proposed '25-year plan for a healthy natural economy'[17] will achieve this.

There is a further effect of Brexit that is worth considering. If, as seems likely, 'Pillar 1' payments are withdrawn or significant reduced by the Treasury, it is likely that the value and viability of some agricultural land on the Levels will fall[18]. This could have an impact on the cost benefit analysis of flood drainage schemes protecting farmland. **The effects of potential falling agricultural land prices and profitability needs to be factored into flood risk management planning on the Levels.**

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[16] http://farmbusinesssurvey.co.uk . See Annex 5.1 for more information.

[17] This commitment was contained in the government's response to the Natural Capital Committee's third State of Natural Capital report in September 2015. The publication of the framework for the 25-year plan has been delayed until the end of 2016 as a result of the Brexit vote.

[18] It is accepted by many economists that farm income payments have effectively been capitalised by farmers into higher land prices. See for instance Helm D (2016). *British Agricultural Policy after BREXIT*. Natural Capital Network – Paper 5. 1st September 2016

Economic change: The food supply chain

Our final pressure for change concerns what has been happening to the economics of food production and consumption in the Catchment, mirroring changes across the western world. This can be linked, both to a decline in the viability of farming and an impoverishment of the landscape, biodiversity and natural resources, but also to a rise amongst consumers in obesity and conditions such as diabetes.

The changes in dairy farming in the Catchment over the last 20 years provide a good illustration of this. As recently as 1985, there were over 1,800 dairy farms in Somerset, producing milk from grass and selling through many local dairies and cheese makers. The predominance of grass in the cows' diet is important since this is now known to give milk and meat high levels of health-giving nutrients such as omega-3 fats, conjugated linoleic acid and Vitamin E. In the last 30 years, the price of milk paid to farmers has fallen in real terms while their costs of production have risen significantly. Small farmers have left the dairy industry and larger farmers have cut their costs. They have introduced maize and imported feeds such as soya to the diets of their cows (feeds which lack the health benefits described above). They have switched to high volume production systems where there is usually less room for wildlife and landscape features. Yields have increased (from around 5,000 litres per cow a year in 1985 to over 7,000 today) but the number of dairy farms in Somerset fell from 1,800 in 1985 to fewer than 500 in 2013 and is probably less than 450 today. Consumers now buy most of their milk (which can cost less than bottled mineral water) as an unbranded commodity from supermarkets.[19]

Dairy farmers protesting over low milk prices near Bridgwater, 2015

Annex 5.2

Similar changes have taken place in the livestock (beef and sheep), arable and horticultural sectors in the Catchment. The higher input and more specialised agriculture adopted by most farmers may be, by some measures, more economically efficient. However, it takes no account of the hidden costs of declining soil and water quality, faster run-off of rainfall, loss of wildlife and a blander landscape[20].

Nor have most farmers done well out of these changes. Their incomes have not risen by the same amount as their agricultural yields. As noted above, most farms are reliant on the support payments they receive from the EU Common Agricultural Policy. Their incomes have been squeezed between higher input costs and stagnating or declining prices for their products. More of the value generated on farms has been taken by the agricultural supply industry (such as agrochemical suppliers) and by the multiple food retailers (the supermarkets). This money has been lost from rural communities, at the same time as their landscape and ecology has been impoverished.

Annex 5.1

These economic pressures have seemed inexorable and if, as predicted above, the farm income support payments from the EU are withdrawn, they may be about to accelerate. New approaches are needed to support the types of farming that provide rural livelihoods and culture, a high quality environment and wholesome food. To achieve this, **we now need a Farming, Food and Environment Policy for England that promotes healthy and environment-friendly foods, strengthens demand from consumers and supports strong and responsive local supply chains[21].**

A local food economy that supplies Somerset residents with a diverse and nutritious diet from mixed farms in the Catchment would be an exemplar for other regions of the UK. The alternatives of an industrially farmed landscape, or one that has become run-down and abandoned, are, we suggest, not what the people of Somerset want to see.

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[19] For a fuller analysis of the issues raised in this paragraph see Harvey G (2016). *Grass Fed Nation: Getting back the food we deserve*. Icon Books. ISBN 978-1-78578-076-9.

[20] See for instance: Graves et al (2011) *The total cost of soil degradation in England and Wales*. Defra Science and Research Project SP1606

[21] As noted on page 7, we hope that the Government's proposed '25-year plan for a healthy natural economy' will deliver this.

Lower-level pressing issues

The four pressures for change described above are all 'high level', requiring fundamental changes in public policy and behaviour, some at a national level. However, there are other more immediate issues affecting the Catchment which also need attention as part of a 'Reimagined Levels', particularly in relation to flood risk management. Some of these are described in Figure 4, below.

Figure 4. Immediate pressing issues in the Catchment affecting flood risk management

- Unwillingness of Treasury-funded bodies to consider payments to farmers for taking additional flood water[22], preventing fuller discussion about the merits of proactive flood water storage as an addition or alternative to hard engineering solutions.
- Largely unregulated growing of maize in the Catchment, which research in neighbouring East Devon[23] has demonstrated often damages soil structure, increasing erosion and soil runoff, both of which exacerbate flood risk and increase the need for dredging.
- A wider issue of poor soil quality (compaction and low levels of organic matter) in large areas of the middle and upper Catchment as a result of arable cropping, which increases the speed of soil run-off and the likelihood of downstream flooding.

Annex 4.5

- Poor decisions by some Local Planning Authorities which continue to allow development in locations that are likely to increase flood risk or which fail to require adequate drainage and flood management infrastructure.
- Poor maintenance of much urban and rural drainage infrastructure due partly to a lack of clarity about the responsibilities of developers and the public authorities and partly because of resource limitations at the County Council (as lead authority).

Annex 2.6

- Uncertainty over the future funding of the Somerset Rivers Authority, particularly in relation to its longer term proactive work to address the causes of flooding. Creating a more accountable and representative governance structure to the SRA must be part of its future funding arrangements.

Annex 2.7

Poor soil management in the middle and upper Catchment increases water run-off and siltation downstream

Inappropriate planning decisions have led to development on flooplains, reducing the area available to store flood water

[22] This unwillingness may be due to Treasury concern about accepting financial liability for the impact of flooding farmland.
[23] Chantal Brown Consulting (2016). *East Devon Rural Diffuse Pollution Project.* Report for the East Devon Catchment Partnership. March 2016.

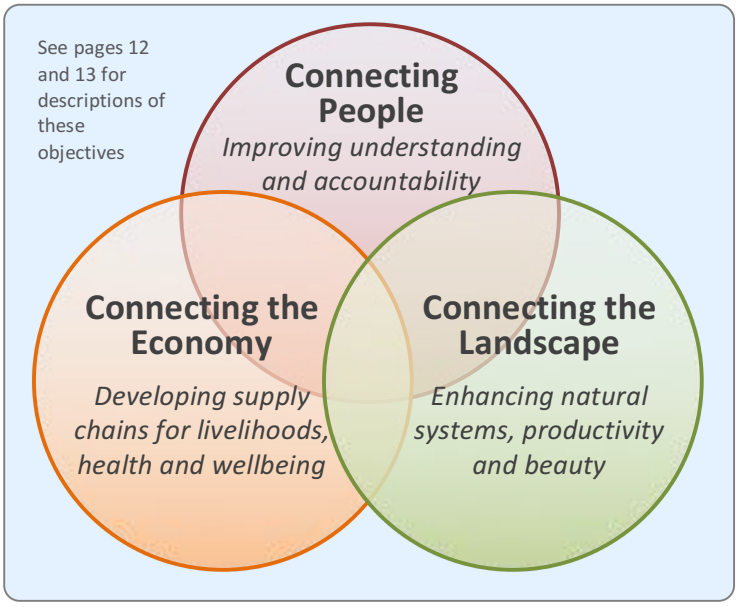
Our Vision for the Future and the Objectives needed to achieve it

In the aftermath of the flooding in 2013/14, a Task Force that combined the interests of farmers, environmental bodies and local authorities produced a nine-point vision for how they wanted the Levels and Moors to be in 20 years[24].

There is much that we agree about in this vision. It calls for "*a thriving, nature-rich wetland landscape, with grassland farming taking place on the majority of the land. The impact of extreme weather events is being reduced by land and water management in both the upper catchments and the flood plain and by greater community resilience*" and it envisages that "*New businesses, including those based on 'green tourism', have developed, meeting the needs of local people and visitors alike, while brands based on the area's special qualities are helping farmers to add value to the meat, milk and other goods and services that they produce"*.

However, we believe that the Task Force vision, published in February 2014, does not take full account of the scale of challenges now facing the area, nor is it sufficiently ambitious about the potential opportunities that need to be realised. And it requires updating in the light of the formation of the Somerset Rivers Authority and in anticipation of Brexit. Figure 5, on the next page, adds to the Task Force vision by describing some of the key changes that are needed to address the pressures for change outlined in the previous section of this report.

All visions of this kind can sound like 'pie in the sky' or fantasies of a future that can never be achieved. In order to develop concrete ways in which this vision can be taken forward, we suggest that there should be three over-riding objectives for action, each focussing on strengthening connections in different dimensions. These three sets of objectives, which are listed on pages 12 and 13, aim to connect the people, economy and landscape of the Levels Catchment.



Two concepts lie behind many of our objectives. The first is the use of '**Natural Flood Management**' techniques across the whole Catchment to supplement, and over time replace, many of the hard engineering approaches used to manage flood risk[25]. A key advantage of Natural Flood Management is that it can provide many additional benefits, such as to water quality, biodiversity and land productivity.

Annex 2.5

The second concept is that of '**Bioregionalism**' which promotes economies and governance based on naturally-defined areas such as catchments, encourages self-sufficiency within environmental limits and promotes social equity (countering the concept of globalisation)[26].

Annex 6.3

[24] http://www.rspb.org.uk/news/details.aspx?id=361933

[25] See SEPA (2015) Natural Flood Management Handbook. Published by the Scottish Environmental Protection Agency. ISBN: 978-0-85759-024-4 https://www.sepa.org.uk/media/163560/sepa-natural-flood-management-handbook1.pdf This defines Natural Flood Management as using "techniques that aim to work with natural hydrological and morphological processes, features and characteristics to manage the sources and pathways of flood waters".

[26] See Scott Cato M (2012). The Bioregional Economy: Land, Liberty and the Pursuit of Happiness. ISBN: 978-0415500821

Figure 5. Our proposals for what a Reimagined Levels Catchment should look like in 20 years' time

The ability to control water levels on the Levels has been enhanced. The basis of water level management on farmland has changed to **enable floodplains to perform their natural function of holding flood water during the winter**.

No development takes place on any areas of functional floodplain in the catchment. All new development is 'flood positive', using a higher SuDS standard*, so that it generates less flood water than before.

Tree cover in the middle and upper catchment has been increased through the targeted planting of woods, hedges and orchards. This helps wildlife, flood risk management and landscape quality and provides wood fuel, craft products and public access.

Streams and watercourses in the middle and upper catchment are managed to favour naturalised channel profiles and the accumulation of woody debris, resulting in reduced peak flows and better riparian and water habitats.

The condition of soils throughout the catchment has greatly improved, with much higher levels of organic matter and lower levels of compaction and slaking. This has required changes in agricultural land use and management, with less maize and continuous cereal production and more permanent pasture or long term grass leys.

The catchment has become carbon neutral, providing a national exemplar of the ways that households and businesses can take to reduce their impact on climate change. This has taken place through reductions in emissions from transport, heating, agriculture and waste and from renewable energy generation.

Robust and economically viable local supply chains provide consumers in the catchment with nutritious food from local farms. This has involved the re-instatement of local processing and distribution businesses (e.g. abattoirs, dairies, pack houses). Improved market intelligence has led to more equitable profit distribution along the supply chain.

People living in the catchment are better informed about the policies and work of the local organisations they are paying for and are more involved in decision-making. They use their purchasing power as consumers to improve their local environment and support local jobs and businesses.

* SuDS stands for **Su**stainable **D**rainage **S**ystem. The National Planning Policy Framework requires that planning authorities give priority to the use of sustainable drainage systems

Our Objectives for a Reimagined Levels Catchment

Connecting People – *Improving understanding and accountability*

- We should empower the people who live and work in the Catchment through a **reinvigorated network of community organisations**, coordinated through a new 'Friends of the Levels' organisation, that is able to present a well-informed and ambitious agenda for action to public bodies and businesses, and able to take action in its own right.
- The residents of the Catchment should receive positive messages about the opportunities they can take as **consumers** that will enhance their own and other people's lives, including the many ways they can reduce their impact on climate change and, by doing so, reduce the threats facing their communities. The preparation of a Zero Carbon Somerset Strategy would help achieve this.
- The **planning system** needs to do more to protect and enhance natural capital and life-support systems – especially in relation to flooding. This will require the robust use of existing powers to reject unsuitable development as well as innovative approaches to supporting positive development or mitigating the impacts of development which is in the public interest.

Connecting the Landscape – *Enhancing natural systems, productivity and beauty*

- The principle of encouraging **the functional connection between rivers and their floodplains** throughout the Catchment will need to be embedded in policy and practice. This does not mean that we should relinquish control of water on the Levels (far from it – we need to increase the influences we have over flooding). But we should be more flexible in using farmland on floodplains to manage winter flooding and allowing gravity to evacuate flood water, in addition, or as a more effective alternative, to hard engineering solutions. A process of negotiation and compensation (and potentially also land acquisition in key locations by the public or charitable sector) will be needed to re-establish the functional floodplain.
- There may be a need to consider **more radical land use change** in the lowest lying areas to allow wetland habitats to develop that will have a protective function against severe marine or fluvial flooding and could also provide productive (e.g. aquaculture) uses.
- There needs to be better understanding of the effect that **land use and management** has on both the environment and the nutritional quality of food. This should include a particular focus on the vital role of permanent pasture to sustain nature and healthy food, and the importance of fully-functioning soils and rivers (agro-ecology).
- A **soils strategy** for the Catchment is needed that identifies degraded soils and the circumstances where there is greatest potential for improving their structure and organic-matter content. This should involve a package of practical research, extension advice and financial incentives to farmers and landowners on flood and soil management.
- Greater spatial co-ordination of the management and creation of **wildlife habitats** across farms is needed. This should ensure that our core wildlife sites are no longer isolated from each other and nature is more connected and resilient to threats such as climate change, pests and diseases.

Connecting the Economy – *Developing supply chains for livelihoods, health and wellbeing*

- We need a vibrant and efficiently-functioning **bioregional economy** that joins up producers and processors of good value, nutritious and sustainably-produced goods and services with consumers at all price brackets. This will require improved market intelligence putting producers, processors and retails in touch with each other; using clear, credible and cost-effective assurance standards so consumers can be confident in what they are buying; and co-ordinated promotion to stimulate demand.
- There should be better promotion of the benefits that a high quality natural environment has to people's **spiritual and physical wellbeing**. This requires better public understanding of the positive connections between the way food is produced and its nutritional benefits; and between access to, and experience of, 'greenspaces' and landscapes.

Annex 6.3

- More efficient and effective means are needed to **address market failures** in the way public benefits are provided by the environment. Examples include a) using a levy on household and business insurance premiums to pay landowners to store flood water, reducing the risk of properties flooding and b) extending the carbon trading market to include organic matter in soils, including peat soils. Such schemes must be administratively simple and transparent.

Annex 4.5

- **Not-for-profit organisations**, including Community Benefit Societies, Community Interest Companies and Charities, have an important role to bridge the gap between private enterprise and public benefits. We can explore more opportunities for community-led organisations to use these legal structures to help public bodies do their work more effectively and with stronger local support.

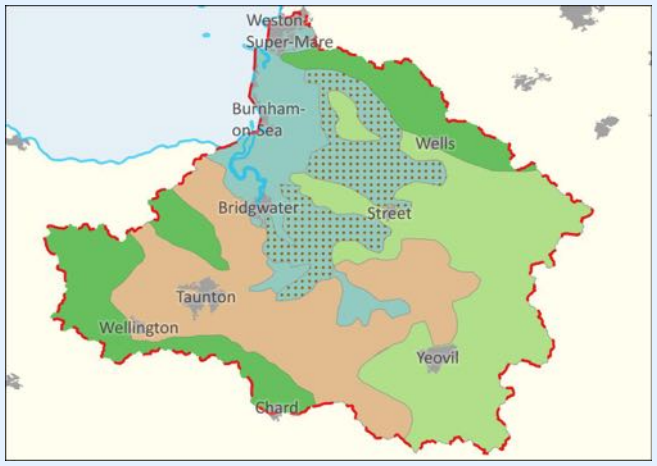
Our spatial vision for land use and management

Meeting these objectives will be easier if we have a better spatial understanding of where changes to land use and management need to happen. Solutions should be based on the characteristics of the Catchment (i.e. designed for local circumstances and not on standard national prescriptions). Figure 6 on the following page splits the Catchment into five different areas based on their current land use and natural resources, and proposes the objectives that should guide the management of land and water in each area.

Tracking progress towards these spatial objectives can be helped by setting targets as 'indicators of success'. Further work and consultation will be needed to develop these targets. As an example, we suggest that one target could be to double woodland cover in the Catchment over the next 20 years from 6% to 12%, reaching 20% in the upland parts of the Catchment (currently around 10%) and 15% in the middle parts of the Catchment (currently around 8%).

The fulfilment of all these spatial objectives lies in the hands of the many private landowners and tenants who farm the Catchment. Their willing involvement and leadership will be essential. As we have seen, a new national Food and Farming Policy is needed to provide the right structure of market incentives, compensatory payments and advice, backed up where necessary by regulation. Locally-targeted funding to pay for public benefits produced from the land (so called 'Payments for Ecosystem Services') will be required through a rejuvenated agri-environment scheme. A new facility for brokering the voluntary exchange of land (so called 'Land swaps'), already being developed by a farmer at Pawlett, may help to match the aspirations and capabilities of landowners and managers with the objectives for different parcels of land.

Figure 6. Our spatial vision and objectives for land use and management in the Catchment

Map of the Catchment showing suggested spatial divisions		Peatlands on the Levels and Moors	Other areas of the Levels & Moors	The middle catchment – mainly mixed farming	The middle catchment - currently mainly arable cropping	The uplands
All land maintained as permanent pasture. No maize or arable crops, in order to preserve peat soils and avoid further sinking of the land surface		✓				
High summer-pen water levels to prevent drying out of peat soils and enhance habitats for wildlife, including nesting wading birds		✓	✓			
Examination of necessity for long-term land use change in certain areas to create protective and productive wetlands (e.g. reed harvesting, aquaculture)		✓	✓			
Use of floodplain grassland for winter flood storage, with farmers receiving payments in recognition of additional reductions in flood risk to other areas		✓	✓	✓	✓	
The conservation and active management of traditional orchards (and markets for their fruit) to enhance landscape character, biodiversity and productivity		✓	✓	✓	✓	
Tight control of where maize is grown and when it is harvested to reduce run-off and erosion, to include consideration of no-planting areas and farm quotas			✓	✓	✓	✓
Reintroduction of grass leys to arable rotations (where they have been lost) to build the water-holding capacity and fertility of soils and improve water quality			✓	✓	✓	✓
Use of soil remediation measures (e.g. mole drainage, minimum tillage) to re-cover soil structure and organic-matter content where this has been degraded			✓	✓	✓	✓
Creation of wide field margins and hedges, especially beside rivers and water-courses, to enhance ecological connectivity and reduce surface run-off				✓	✓	✓
Naturalisation of river and stream channels, allowing build-up of vegetation and woody debris to enhance habitats and slow water flow				✓	✓	✓
Creation of wetland flood storage areas by blocking land drains and creating 'leaky' dams, reducing peak river flows and increasing summer base flows				✓	✓	✓
Increased woodland cover, especially on steep slopes and areas prone to ero-sion in order to intercept run-off and provide all the other benefits of woodland				✓	✓	✓
Reinstatement of woodland management to enhance wildlife habitats, provide wood fuel and support rural jobs				✓	✓	✓
Blocking of moorland 'grips' (drainage channels in peat soils) to increase the water-holding capacity of the upland mire habitats						✓

Our Recommendations for Action

The objectives described above contain a range of suggestions affecting land use planning, farming practices, river and water level management, environmental regulation and conservation priorities. We hope that these suggestions will influence the work of bodies managing water (including the Environment Agency, Drainage Boards and Local Authorities), the local authority planning departments, the organisations representing and advising farmers and landowners, the conservation charities that own land, and others.

However, in this final section, we focus specific recommendations on three topics. These are:

A. The development and work of the Somerset Rivers Authority;

B. Support for farming, food and the environment post-Brexit; and

C. The representation of community interests in the Catchment on policies affecting the environment, land and water.

A. The Somerset Rivers Authority

The most significant positive legacy of the flooding that occurred in 2013/14 promises to be the establishment of the Somerset Rivers Authority (SRA) to co-ordinate and develop the 20-Year Flood Action Plan. However, the SRA currently has no powers and resources of its own and its future is uncertain.

The constitution and funding of the SRA

There is much political work being done to persuade the Government to give the SRA a statutory footing as an independent precepting authority[27]. At the time of writing, it is understood that Defra plans to bring forward primary legislation which would enable Ministers, responding to requests by local authorities, to establish catchment-based precepting authorities with responsibility for flood risk management. We welcome this and hope that the Government can find the civil service resources and parliamentary time to make it happen soon. We have the following recommendations to make about how this is done.

A.1 The Government should give new precepting authorities like the SRA **a clear statutory purpose** that establishes broad 'public good' objectives covering the safeguarding of public assets including property, critical infrastructure, soils and habitats. The remit and powers of the SRA must encompass all aspects of land and water management across the whole Catchment that have a direct connection to managing the risks of flooding and drought.

A.2 The Government should ensure that the new precepting authorities include non-party **representatives who are elected specifically to represent the interests of local communities**. These locally-elected members, who would strengthen the accountability of the authority to local tax payers, should be in addition to the members nominated by local authorities, IDBs and bodies like the Environment Agency. The model provided by National Park Authorities, whose membership is split between local authority nominees, Secretary of State appointees and locally- elected representatives, has much to recommend it.

Annex 2.7

[27] This would give the SRA powers to raise its own income through a precept on the Council Tax paid by all households in Somerset.

A.3 In preparation for the primary legislation, the County Council should develop options and consult widely on the potential for the SRA to collect a **statutory area levy** to fund its work on natural flood management, to be paid on holdings over one hectare in all parts of the catchment (as well as receiving income from a precept on individual households). An exemption could be granted to holdings that currently pay a levy to the Internal Drainage Boards.

The SRA's strategic priorities and activities

The Task Force Vision for the Levels and Moors and the 20-year Flood Action Plan that were developed in the wake of the 2013/14 flooding set out a broad agenda for action, emphasising the need for work across the whole of the Catchment and new approaches based on natural flood management.

However, we note that the large majority (90%) of the SRA's budget for the 2016/17 year is being spent on river management work including dredging on the Levels. In contrast, the expertise and funding allocated to natural flood management in the middle and upper catchment is very small (for instance the programme of capital grants to landowners accounts for only 5% of the budget).

We are concerned that long term approaches to address the causes of flood generation and which have the potential to deliver a greater range of ecosystem services, will lose out to short term maintenance work such as channel dredging which may not be cost effective (and may simply move the problem downstream).

A.4 As soon as it is established as an independent authority, the SRA should give a clear commitment that it will make one of its priorities the development of **long term 'natural flood management' measures** across the whole Catchment.

This will require it to extend its leading-edge professional expertise and to work with a range of partners involved in land use and management.

The SRA has entered a crowded arena of organisations, committees and partnerships who are involved in water and flood risk management in Somerset. These include the Environment Agency, the Drainage Boards, local authorities, Regional Flood and Coastal Committee, Somerset Water Management Partnership and the reinvigorated Catchment Partnership. We accept that these bodies have different jobs to do, but local communities will quickly lose confidence in them if they see inefficient administration or a lack of co-ordination.

A.5 Provided the SRA can demonstrate local accountability for its decisions through locally-elected members (see .2), it should establish its authority as the **primary body co-ordinating water management** in Somerset, commissioning or delegating other bodies to deliver agreed programmes of work.

This should include the monitoring and maintenance of public drainage infrastructure and the use of agri-environment funding to reduce flood risk on farmland.

We make further suggestions about how the SRA should involve communities and citizens in its decision-making below (Recommendation C.2 and C.3).

B. Support for farming, food and the environment post-Brexit

As we have already indicated, there is great uncertainty over the future of public policy towards farming and the countryside following the Brexit vote in June. It is essential that we take the opportunities that leaving the Common Agricultural Policy presents to strengthen our local farming and food economy for the benefit of local people, wildlife and the landscape. This requires establishing the right overall policy framework at a national level and then developing and implementing it in line with local needs and opportunities. We make the following recommendations to guide this process.

A Farming, Food and Environment Policy Framework for England

B.1 The Government should lead an urgent national debate on how we develop **a farming and food economy that is better at enhancing national health and well-being** (addressing issues such as obesity and poor nutrition) and the **condition of the environment** (including wildlife, rural landscapes, healthy soils and the global climate).

This should identify the steps needed to prevent unacceptable practices, reward farmers for the range of public benefits they provide, create more robust and productive local supply chains and enable consumers to make better informed choices. It should form the basis of the farming and agri-environment support that replaces the EU Common Agricultural Policy in 2020, establishing a national framework under which local programmes will be developed.

A locally-led Farming, Food and Environment support programme for the Levels Catchment

B.2 Local Government and Non-Governmental Organisations in the Catchment should come together under the auspices of the Catchment Partnership to agree **the local outcomes that farming and agri-environment support** should deliver.

Among the multiple benefits and ecosystem services that should be prioritised are, we suggest, natural flood management, ecologically connected and distinctive landscapes, strong bioregional patterns of supply and consumption, and reduced food poverty[28]. We favour funding agreements that specify the outcomes to be delivered (giving flexibility to recipients how they do this and promoting local knowledge and innovation) rather than by enforcing 'top-down' prescriptions.

Government support for food produced to the highest standards

B.3 Government should do more to encourage the supply of food and drink that is produced to high environmental, nutritional and welfare standards. Specifically, it should take a more active role in setting **food labelling standards** covering nutrition, provenance and production methods.

Government should give greater powers to the Groceries Code Adjudicator to ensure **equitable access by small UK farm businesses** to the multiple retailers.

It should set targets for **public procurement** (by bodies such as the NHS, schools and Armed Forces) of food meeting high UK standards.

[28] Food poverty is defined as the inability to obtain food that is both nutritious and affordable.

C. Community representation on issues affecting the environment, land and water

This project has identified a gap between the organisations making decisions about how the Catchment, its land and water are being managed and the citizens in whose name these decisions are made. Many community organisations and individuals are keen to have their say but feel excluded by the technical language and what they see as closed decision-making processes dominated by landowning and nature conservation voices.

This issue has been identified in other policy areas, such as the commissioning and health and social care services. Here the concept of 'knowledge co-production' is being used to deliver public services in an equal and reciprocal relationship between professional service providers and the people using and benefiting from these services. The same approach should be explored in the Catchment.

Annex 6.4

To overcome the barriers, there needs to be a 'meeting in the middle', with community organisations becoming better informed and able to represent the views of citizens, and decision-making bodies like the SRA giving local people a genuine role in shaping its priorities and plans. We suggest that three steps are required to do this.

Networking and co-ordination

C.1 Community organisations in Somerset should improve the **networks of communication and dialogue between citizen groups**, particularly between rural and urban communities. A grassroots-driven process should be facilitated to enable co-ordination and joint lobbying. The model advocated by Citizens UK (http://www.citizensuk.org) should be examined.

For its part, the Reimagining the Levels Group will explore the potential for a '**Friends of the Levels' organisations** to champion the communities and environment of the Levels in public policy.

Sensitization and information sharing

C.2 The SRA, together with the Catchment Partnership, should accept their responsibility for **improving public understanding of the issues and solutions** surrounding climate change, land management and flooding.

They should develop and maintain a programme of **disseminating knowledge in formats that are accessible to ordinary people**. As well as publishing information on the internet, 'pop-up' exhibits should periodically be used to take information to public spaces such as libraries, community centres and village halls.

We would also urge other bodies such as the Environment Agency and the conservation charities that manage land to do the same.

Representation and accountability

We have already recommended that the SRA's constitution should provide for locally-elected members (Recommendation A.2). In addition, we make the following recommendation on how the SRA should go about its business.

C.3 The SRA, and other public bodies influencing land and water management in the Catchment such as the Catchment Partnership, should actively encourage **participation by communities and citizens in their decision-making processes**. This should involve dialogue at the policy formulation stage, as is increasingly being done in the health and social care sectors using participatory concepts such as 'co-production'[29] and 'citizens' juries', rather than simply consultation on preferred options.

The SRA and its partners should also consider how **volunteer work by local residents**, such as through the management or monitoring of public infrastructure or citizen science projects, could be used to give communities a stronger stake in addressing the land and water challenges that the Catchment faces.

[29] See the reference to 'knowledge co-production' at the bottom of Page 4 and also Section 6.4 of the Technical Annex.

Sources and Inspirations

The following publications may be of interest to anyone who is interested to explore more about some of the concepts and issues raised in this report.

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