

SE WALES AREA STATEMENT

GWENT LEVELS LANDSCAPE PROFILE

31 July 2019





Gwent Levels National Landscape Character Area



Gwent Levels Landscape Character Area within SE Area Statement Boundary



SUMMARY

Water

What have we got, and what is special or significant about water in this landscape?

- One of the most extensive areas of reclaimed wet pasture in Great Britain.
- A unique network of over 800 miles of highly interconnected waterways that form field boundaries managed by NRW (IDD/Flood risk Ops) and private landowners.
- Rare aquatic flora and fauna. Many nationally rare and scarce invertebrate species. European Protected Species: Otters and bats.
- Designated sites: The Gwent Levels, The River Usk, Nedern Brook and Nedern Brook Wetlands SSSI, Newport Wetlands National Nature Reserve and Site of Special Scientific Interest (SSSI), Magor Marsh SSSI and Local Nature Reserve.
- A large proportion of SSSI reens and ditches are in unfavourable condition. A monitoring program is ongoing from 2017 to review changes in the reen condition.

What is driving the current management of each ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape?

Living Levels Landscape Partnership Scheme: The Heritage Lottery LLLPS is a circa £4 million programme of 24 projects led by RSPB.

Flood defence: The Shoreline Management Plan's flood management policy for the sea wall is to 'hold the line'. Reen management by NRW with increase in Natural Flood Management (NFM)

Owner/farmer management of private ditches: Traditionally been undertaken on a long cycle. Over recent years, many of them becoming infilled, overgrown or silted up. Management Agreements can provide financial support towards ditch management, including re-casting and desilting.

Water Framework Directive (WFD): Of the nine WFD waterbodies that flow across or adjacent to the Gwent Levels only Mounton Brook currently meets these objectives.

Conservation: The designation of much of the landscape drives conservation management activities by NRW, Gwent Wildlife Trust, RSPB and others.

Agriculture: profitable and productive farming often drives poor agricultural practises that result in pollution and loss of riparian buffers. Increased call for modern underdrainage to lengthen the grazing season

Sewerage: Few properties have access to the main foul sewer, most have either traditional cesspits or septic tanks. Increase in applications to discharge sewage effluent into the reen network via package treatment plant. The Welsh Water rising main sewer is in poor condition. Misconnections across the Levels.

Development: The location of the Gwent Levels results in high pressure for development

Fly-tipping: Vulnerable as next to urban South Wales, and abundance of quiet lanes. The Living Levels fly-tipping project 'Blackspots to Bright Spots' aims to tackle this issue

Upstream Connectivity: The Ebbw and other watercourses that feed into the Gwent Levels have water quality issues



Where do we want to build resilience?

- Across the entire reen and ditch network to improve quality of aquatic and buffer habitats and the ecosystem services they provide.
- Ditch management could be particularly beneficial where SSSI field blocks that are classed unfavourable are intersected by reens that are in good condition (utilise NRW Monitoring Evidence)
- Mitigation identified in the mitigation plans for the rejected M4 Corridor around Newport (M4CaN) can be used as a key opportunity to grow extent and condition.
- Better management of land owned or managed by public bodies, S28G Authorities (under the Wildlife and Countryside Act 1981) and private businesses.
- Bridewell Common acquired by GWT.
- Increased connectivity could risk spread of invasive non-native species.
- Opportunities to improve blue infrastructure identified in Green Infrastructure (GI) Strategy.

What do we want to influence?

- Partnership working e.g. PSBs and more active engagement with landowners.
- Reen management: use the NRW's monitoring evidence base and WFD to decide which locations action is focused on
- Natural Flood Risk Management e.g. at Monks ditch
- Mechanisms for supporting owners and farmers with ditch management
- Conservation: Continued support for landscape scale, multiple benefit projects such as LLLPS.
- Evidence gathering to enable conservation management decisions
- Agriculture: Welsh Government post Brexit agricultural policy and future land management payment schemes to prioritise environmental outcomes
- Recommendations of LLLPS and SMS Farming and Ecosystem Services projects to deliver sustainable agriculture are adopted.
- Sewerage e.g. All existing dwellings to hold a permit and will have a high specification package treatment plant with reedbed polishing
- Development: Strengthened protected site designation. Land use planners to encourage sympathetic development adjacent to drainage systems.
- Transport congestion issues to consider ecosystem resilience of water including use of M4CaN mitigation sites
- Resilience of S28G Authorities and WG landholdings identified and improved in line with legislative duties
- Private businesses work collaboratively to improve resilience.
- Pro-active rather than reactive management of fly-tipping
- Awareness of and rapid response to INNS threats by responsible bodies.
- Climate Ready Gwent (CRG): Managing the shift towards flooding or drought

Grassland and Farmland

What have we got, and what is special or significant about grassland and farmland in this landscape?

- One of the largest areas of grazing marsh in Britain, reclaimed over time. Traditionally, fields were drained by a system of ridge and furrow or 'grips'
- Main farming types include intensive dairy farming, arable production, sheep and beef. Shift towards more intensive agricultural regimes.
- The sea wall stretches for 28km across the entire Gwent Levels with its landward face predominantly grassland.



- Semi-improved grassland and other flower-rich habitats provide habitat for the Shrilc carder bee

What is driving the current management of each ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape?

Agricultural practices

- The need for profitable and productive farming for food production can result in poor agricultural practises
- Agri-environment schemes and agricultural subsidies are significant drivers
- The UK's departure from the EU will result in significant changes to land use policy (Common Agricultural Policy CAP) and potential to increase economic pressures on farming

Unsustainable development: allocation of business park on Gwent Levels – Rumney & Peterstone in Cardiff Local Development Plan (LDP) and solar and wind turbine developments.

The Living Levels Landscape Partnership Scheme projects:

- **Pollinating the Levels** wildflower rich areas of habitat
- **Targeted Natural Heritage Restoration project:** restoration of ancient orchards and other key heritage
- **Orchards and Community Enterprise project:** training to promote and protect traditional orchards.
- **Ecosystem Services project:** communities to assess how they value the diversity of ecosystem services
- **Farming the Gwent Levels Sustainably** project (and associated Sustainable Management Scheme)
- **Flood defence maintenance:** Conservation opportunities for the sea wall's grassland habitat

Where do we want to build resilience?

Extent:

- The aim is to keep as much of the levels in agricultural use as possible.
- Existing areas of semi-natural grassland should be managed and reversion or creation of further areas of semi natural grassland facilitated.

Condition: nutrient management and associated water quality of the reens and ditches.

Diversity: wider range of management and subsequently grassland types – including more semi-improved and unimproved fields including some managed as hay meadows.

Connectivity: Opportunities include the sea wall, reens and ditches, roads and driveways giving priority to corridors including for shrill carder bee. Agri-environment options will play a key role in delivering this.



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What do we want to influence?

- To identify and address potentially unsustainable farming practices
- To influence policies that will determine the future of support mechanisms for local farm businesses.
To identify and influence new ways of working, for example, Welsh Government post Brexit agricultural policy and future land management payment schemes–
- Influence the planning system to enable as much of the Gwent Levels to be kept in agricultural land use as possible, including land use policies in strategic planning document such as the LDP, Supplementary Planning Guidance (SPGs).
- Agreement of development guidelines e.g. buffer strips, sewage treatment
- NRW maintenance operations so that sympathetic grassland management is incorporated.
- Stronger protection for historic landscape and designated sites
- Sea wall grassland management e.g. for shrill carder bee
- The management of the grassland to provide greater diversity that is more resilient to extreme weather events

Coastal and marine

What have we got, and what is special or significant about *coastal and marine* in this landscape?

- South East (SE) area coastline is 39.2km or 3% of Wales' total. SE area has the smallest coastline of all Area Statement areas.
- The Severn Estuary is designated as a Special Area of Conservation (SAC); Special Protection Area (SPA); and Wetland of International Importance, Ramsar site collectively known as the Severn Estuary European Marine Site (EMS).
- The Severn Estuary is one of the largest coastal plain estuaries in the UK. Its classic funnel shape, unique in the UK, is a factor causing the Severn Estuary to have one of the highest tidal ranges in the world.
- The Severn Estuary supports 1400ha of saltmarsh
- The Severn Estuary supports a large number of wildfowl and wading birds, with over 80,000 birds visiting every winter.
- The SE area is home to 60% of Wales' seagrass beds, which makes it the largest seagrass bed in Wales.
- The Severn Estuary is one of the few places where Biogenic reefs occur in the subtidal zone in addition to the intertidal zone.
- Three rare species of migratory fish: River Lamprey, Sea Lamprey and Twaite Shad which are designated features of the SAC.
- Preservation of extensive paleo-environmental and archaeological material
- Unique traditions of fishing and agriculture such as lave net fishing at Black Rock in Monmouthshire.
- The Severn Estuary is a cross border site with England

What is driving the current management of each ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape?

- The estuary supports major industry and port installations, including for global trade and sand and aggregate abstraction for construction.



- Fisheries including salmon fishing (e.g. using putchers and lave nets), and eel and elver fishery
- Recreational activities, include boating, wildfowling, angling and bait digging, and use of the Wales Coast Path.
- The **Association of Severn Estuary Relevant Authorities (ASERA)** is responsible for establishing and maintaining the Management Scheme for the Severn Estuary EMS.
The **Severn Estuary Partnership (SEP)** works with local stakeholders in promoting a sustainable approach to the planning, management, and development of the estuary
- The **Severn Estuary Coastal Group (SECG)** works to promote sustainable shoreline management around the Severn Estuary, and delivers the actions of the Shoreline Management Plan (SMP2).
- As sea-level rises, these sea defences are constraining the natural roll back of estuarine habitats, causing squeeze and loss of habitat
- Management Agreements with landowners along the foreshore

Where do we want to build resilience?

- The SMP2 policy for the majority of units is '**Hold the Line**' for all 3 epochs (2005-2025, 2025-2050, 2050- 2105). Coastal squeeze may occur resulting in loss of intertidal habitats and affect the Severn Estuary EMS.
- Seek opportunities to build resilience of intertidal habitats, options such as the use of polders to increase saltmarsh extent need investigation.

What do we want to influence?

- Feed evidence into decision-making, such as Local Development Plans, Wales National Marine Plan, Policies and Strategies
- Work with partnerships and projects including Local Authorities, Consortium of Severn Estuary Wildfowling Clubs, ASERA, ASERA and SECG
- Continue and improve cross-border working relationships (Natural England (NE), Environment Agency (EA))
- Encourage the sustainable use and enjoyment of the estuary
- Negotiate with landowners to achieve desired level of saltmarsh grazing
- Increase evidence base through project involvement such as RESILCOAST project, CSIDE project etc.
- Encourage community engagement and outreach and promote local 'ownership'
- Promote the special nature of the estuary through signage and interpretation, including along the Wales Coast Path
- Promote ASERA Good Practice Guidelines for recreational users of Estuary (<https://www.asera.org.uk/good-practice-guidelines/>)

Woodland

What have we got, and what is special or significant about *woodland* in this landscape?

- The *absence* of woodland is a significant and essential aspect of the Gwent Levels character.
- Tree features – orchard, pollarded willow, parkland veteran trees and hedgerow are nevertheless significant components of the landscape
- On the Levels hinterland there are woodland blocks important for resilience



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What is driving the current management of the *woodland* ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape?

- **Development:** In Monmouthshire, a number of candidate sites submitted for LDP consideration are in locations that NRW's woodland habitat network maps suggest may be strategically important.
- **Climate change & woodland creation targets:** Woodland habitats provide many Ecosystem Services: timber, carbon sequestration, recreation, air quality etc)
- **Gwent Levels Reen and Ditch Management:** Traditional management of the water courses includes tree and hedgerow removal to maintain an open water system

Where do we want to build resilience?

- Improve woodland resilience and connectivity including at:
 - Cardiff East "habitat ring",
 - significant block of woodland at Llanwern,
 - Caldicot Castle Country Park and Nedern Wetlands SSSI – opportunities to improve habitat networks and connectivity west to Caerwent and east to Farthing Hill.
 - Wyelands Estate –area of parkland that supports veteran trees of possible national or international importance to saproxylic invertebrates.

What do we want to influence?

- Welsh Government post Brexit agricultural policy and future land management payment schemes to ensure woodland planting is promoted, but only in appropriate places within the Gwent Levels
- Planning including Strengthened designation to protect habitat networks, including woodland.
- Robust evidence base that can influence Local Development Plans at an early stage.
- Upstream woodland management
- Resilience on S28G Authorities and WG landholdings identified and improved in line with legislative duties.

Urban environment including previously developed land

What have we got, and what is special or significant about the urban environment in this landscape? How priority habitats connect across South East Area landscapes and the importance of this for resilience?

- The Gwent Levels is the finest example in Wales of a coastal landscape 'hand-crafted' by the communities
- The vibrant cities of Chepstow, Newport and Cardiff contrasts against the tranquil Gwent Levels with its discreet village locations
- Much of the landscape is of recognised outstanding and high value by LANDMAP, the all-Wales Landscape Character Assessment
- Large scale Llanwern Steelworks site and the Uskmouth Power Station at Newport. Large scale power lines cross the landscape. Large factory units and warehouses on the outskirts of Cardiff and Newport.



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What is driving the current management of each ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape?

- Development pressures, including Local Development Plans for Cardiff, Newport and Monmouthshire
- The current housing crisis across Wales and UK
- Legislation: Section 6 of the Environment (Wales) Act 2016 states there must be a net gain of biodiversity on any new development created. Well-being of Future Generations (Wales) Act 2015 key objectives are all supportive of the built environment promoting health and well-being.
- Highway safety drives decisions for road verge maintenance

Where do we want to build resilience?

- Natural resources can provide resilience and stability: SuDS, increasing green space, carbon sequestration, reduction of air pollution, reducing mowing of verges to improve habitats for pollinators, wildlife friendly gardening, and community orchards.
- Effective transport scheme as alternative to M4CaN
- Ensure resilient choices are made for new and existing infrastructure and built development

What do we want to influence?

- Collaborative and new ways of working through the Living Levels partnership and the Gwent Green Grid Partnership
- Strengthening protected site designations that protect and strengthen habitat networks.
- It is essential that new developments are designed with inbuilt resilience and must provide green infrastructure and open green spaces
- Better use of brownfield sites
- A culture shift is required to recognise the importance of integrating naturalness as a vital design feature for a healthy and resilient urban system.
- Motivating people to use and access green space both within and outside the urban setting.
- Better integration of the different components of urban environments, e.g. between sustainable travel (vital for reducing carbon and improving resilience), development, planning, regeneration and ecological expertise.
- Welsh Government needs to provide the governance to encourage sustainable development.
- New developments can offer an opportunity to build resilience into design, through SUDs, green space provision, renewable energy, promotion of low carbon transport choices and improving connectivity of existing habitats.



GWENT LEVELS HABITAT CATEGORIES Water

What have we got, and what is special or significant about *water* in this landscape?

Reens and ditches

The Gwent Levels are an example of one of the most extensive areas of reclaimed wet pasture in Great Britain, which also includes the Somerset Levels, Romney Marsh and the Pevensey Levels, and is the largest area of its kind in Wales. Much of what is now referred to as the Gwent Levels is below the mean high-water mark.

Reens and ditches characterise the Gwent Levels. This is a unique network of over 800 miles of highly interconnected waterways that form field boundaries and connect ecosystems. It is a man-made, hand-dug habitat, created to re-claim the Gwent Levels from the sea and is largely unchanged since its making; as such this habitat type is key to telling the story of the landscape. Reens and ditches provide a significant wildlife corridor and are home to rare aquatic flora and fauna. Many nationally rare and scarce invertebrate species are present. Otters and bats, both European Protected Species, forage along the watercourses and water voles are thriving having been re-introduced to the area.

Drainage of the fields of the Gwent Levels is carried out by a series of ridge and furrow grips. These allow water to drain into the extensive network of ditches that surround each field. Field ditches, privately owned by numerous landowners, in turn connect to larger ditches, known locally as reens, which are managed by the Caldicot and Wentlooge Internal Drainage District (IDD), part of NRW. Larger reens, designated as main rivers, also the responsibility of NRW, convey water to the Severn Estuary, where discharge occurs via tidal flaps.



Water levels are managed by penning sluices, and tilting weirs. During the summer months, the IDD staff maintain a high Summer Penning Level (SPL), for a variety of purposes. These traditionally included agricultural purposes, wet fencing and stock watering, but are now also managed for nature conservation purposes. This is achieved by physically removing or adding wooden boards (slats) from the older style sluices or by mechanical means for the tilting weirs. This management practice essentially creates a static water body during the summer period. During the winter the water level is lowered to a Winter Penning Level (WPL) to retain capacity for flood water to drain from the land into the drainage network and discharge to the Severn Estuary.

The continued maintenance of reens and ditches is essential for flood defence, agriculture and conservation. Management of the watercourses keeps the reens and ditches open to sunlight allowing aquatic plants to flourish.

Protected site designations

The huge scale of this network and the ecological significance of the insect and plant life it supports is recognised through the designation of a vast swathe of the landscape through a suite of six 'Gwent Levels' SSSIs. A further three SSSIs in this landscape area also have a strong focus on water: Magor Marsh, Newport Wetlands and Nedern Brook Wetlands.



Gwent Levels SSSIs

The six Gwent Levels SSSIs from west to east are as follows Gwent Levels - Rumney and Peterstone SSSI, Gwent Levels - St. Brides SSSI, Gwent Levels - Nash and Goldcliff SSSI, Gwent Levels - Whitson SSSI, Gwent Levels - Redwick and Llandevenny SSSI and Gwent Levels - Magor and Undy SSSI.



The Gwent Levels Sites of Special Scientific Interest are notified for the ditch habitat (standing water) and the range of aquatic plants and invertebrates associated with the water in the watercourses of the drainage system. There is a particularly diverse community of insects and other invertebrates (for example water beetles) inhabiting the reens and ditches. Over 200 species of insects and other invertebrates have been recorded. The assemblage of water beetles found across the Gwent Levels is unique in Wales, and is home to several of the rarest of these water beetles, such as *Hydaticus transversalis*.

For further details see the reference section for links to citations, maps and Site Management Statements.

A large proportion of SSSI reens and ditches are in unfavourable condition [1]. The watercourses were surveyed in 2010-2013 by legacy body Countryside Council for Wales and then NRW. NRW have been undertaking a monitoring program of the reens since 2017 to review changes in the reen condition.

Rivers and coastal streams

The River Usk separates the Caldicot Level in the east from the Wentloog Level in the west, whilst the River Wye marks the Gwent Levels' eastern boundary. Both are designated as Special Areas of Conservation (SAC) and flow through this landscape into the Severn Estuary SAC / SPA and Ramsar site. These important rivers are considered in more detail in other landscape profiles. Please refer to the Coastal and Marine section of this profile for further information about the Severn Estuary.

The lower reaches of two coastal streams, the Nedern Brook and Mounton Brook also flow across this landscape. Neither watercourse is designated, however, both are important habitat network corridors and the Mounton Brook is probably nationally important for the endangered white clawed crayfish (up-to-date survey evidence needed).

Nedern Brook and Nedern Brook Wetlands SSSI

The lower Nedern Brook flows through Nedern Brook Wetlands SSSI and on through Caldicot Castle Country Park. Nedern Brook Wetlands is important for its wet grassland, which is regularly flooded during the winter months and supports wintering bird species. The area is important for Bewick swans, redshanks and wigeon. Nedern Brook Wetlands also supports breeding birds such as lapwing, mute swan and reed bunting. This type of habitat is now very rare in Wales; sites have been lost or modified through a combination of drainage and



excessive grazing. Other habitats that contribute to the special wildlife interest include running water, marginal and inundation vegetation.

In recent years, NRW collaboration with British Geological Survey, has brought to light the unique nature of the hydrology and hydrogeology of the area. Heavily influenced by changing groundwater levels within the underlying aquifers, this is likely to be worthy of SSSI designation in its own right [2]. The lower Nedern Brook has been extensively modified over the last century and is a Water Framework Directive (WFD) failing waterbody. In 2013, Environment Agency Wales commissioned a River Restoration Options Report for the lower 3km of the watercourse [3]. It was decided not to progress the report's recommendations on cost-benefit grounds, however with much of this reach in the ownership of Monmouthshire County Council, there remains an opportunity to influence management of this lower section.

Newport Wetlands SSSI and National Nature Reserve (NNR)

The creation of the Newport Wetland Reserve represents the most prominent change of land use in the 21st century, part of which has taken advantage of the former ash pits of the power station. This phenomenon, alien to the evolved history of the Levels, adds modern cultural dimensions both in the form of the Reserve, being a compensation measure for the loss of Cardiff Bay mudflats, and as a combined visitor attraction and artificially designed haven for bird and other species.



Newport Wetlands NNR was created by UK Government to provide “a substantial area of wetland habitat on the shores of the Severn Estuary” as part of the compensation for the loss of the Taff/Ely Estuary SSSI following the construction of the Cardiff Bay Barrage. It provides saline lagoons and reedbed habitat for bird life, contains reens and ditches and it is a popular focal point for visitors on the Gwent Levels. The reedbeds at Newport Wetlands are the largest within the south-east Wales area. Newport Wetlands support nationally important numbers of shoveler and black-tailed godwit. During the summer, the wet grasslands, saline lagoons and reedbeds on the site support an exceptional variety of breeding birds, including nationally important breeding populations of avocet, redshank, lapwing, water rail, Cetti’s warbler and bearded tit.

Magor Marsh SSSI, Local Nature Reserve (LNR)

This site has five special SSSI features. Marshy grassland, neutral grassland, swamp, standing water and a wetland invertebrate assemblage. These types of habitats are very rare and found on more waterlogged ground. Much of the remaining marshy and neutral grassland in Britain is found in Wales and we have a special responsibility for its conservation. Like many of other types of habitats, most has been lost or modified through a combination of drainage, burning and excessive grazing in the 20th century.

As well as the features listed above, Magor Marsh has other habitats that are essential to the maintenance of the special wildlife interest. These include hay meadows, willow carr and ponds. This diversity of habitats supports a wide range of species and these too are a key component of the special interest of the site.

[What is driving the current management of each ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape?](#)

Living Levels Landscape Partnership Scheme

The Heritage Lottery funded Living Levels Landscape Partnership Scheme (LLLPS) is a circa £4 million programme of 24 projects delivering work across the vast majority of this landscape area between 2018 and 2021. Led by RSPB, it brings together 12 different partners with the overarching aim of re-connecting people to the Gwent Levels to ensure its sustainable future.

Appreciation and long-term protection of the ecological and cultural uniqueness of this landscape is a key driver, as is the recognition that these habitats are essential in providing



ecosystem services and wellbeing. As a landscape reclaimed from the sea and defined by its reens and ditches, water habitats are central to this. The role and influence of this project is mentioned more specifically throughout this document. The Living Levels Landscape Conservation Action Plan describes the scheme background, need and projects in detail [4].

Flood defence: Sea wall

Much of the Gwent Levels lies below sea level and so the sea wall is critical for protecting this landscape including its freshwater habitats. The Shoreline Management Plan 2 [5] sets out preferred coastal flood management policy; for the Gwent Levels this is to 'hold the line' of the sea wall in the short and medium term (refer to Coastal section for further information) to provide continued protection. Saline intrusion through leaking tidal doors and flaps can however be an issue for freshwater habitats. The Eel (England and Wales) Regulations 2009 are driving a programme of sea door and tidal flap modification to improve eel migration from the estuary into the reen and ditch network.

Flood Defence: Natural Flood Risk Management

Flood Risk Management Plans [6] identify what is at risk of flooding alongside the objectives and measures proposed to manage flood risk. These often involve hard engineered solutions, but there is an increasing drive to use Natural Flood Management (NFM) as an option that delivers a cost effective, multiple ecosystem service solution. There is a need to better understand the performance of NFM and NRW has identified possible locations to do this [7]. Options include Monks Ditch, a fast reacting watercourse that impacts Llanwern Village near Newport.

Flood Defence: Reen management

Ongoing management of the reen system by NRW is essential to drain the land and carry freshwater to the sea, protecting people and land from flooding. This management of reens is critical for other ecosystem services – providing water for agriculture, ensuring there are 'open' water habitats, and maintaining the historic integrity of the landscape.

Owner/farmer management of private ditches

The management of field ditches is the responsibility of each landowner and has traditionally been undertaken on a long cycle. Over recent years, field ditch management appears to have become less of a priority for landowners leading to many of them becoming infilled, overgrown or silted up.



The LLLPS is supporting more ditch management by financing and coordinating the work on behalf of landowners, often upskilling and using local contractors so that economic and social benefits are also realised. Priority works include scrub clearance, desilting and casting to rewet these traditional landscape features which have become overgrown and double hedged, leading to biodiversity losses and failing SSSI condition.

Water Framework Directive

The Water Framework Directive (WFD) is being implemented via River Basin Management Plans [8]. The Severn River Basin Management Plan sets out legally binding objectives for each quality element and so is a driver for NRW's activities. The default objective is good status (or potential in artificial/heavily modified water bodies). Of the nine WFD waterbodies that flow across or adjacent to the Gwent Levels only Mouton Brook currently meets these objectives. Four waterbodies (Monks Ditch (x2), Mill Reen, and Broadway Reen) are classed as artificial and require a Mitigation Measures Assessment to determine what is needed to achieve the WFD requirement of Good Ecological Potential.

Conservation/SSSI Management

The designation of much of the landscape gives some protection to water ecosystem sites and drives conservation management activities by NRW, Gwent Wildlife Trust, RSPB and others.

NRW's role in driving the management of the landscape is to work with others to ensure its protection. This includes landowners and S28G Authorities (e.g. statutory undertakers, Local Authorities) to ensure that any work carried out does not adversely impact the SSSIs. NRW also works to maintain and enhance the condition of the SSSI through mechanisms such as direct advice and S16 Management Agreements, or through partnership projects. One of our aims is to encourage more casting of field ditches in order to maintain the amount of open aquatic habitat that is required by the special plants and invertebrates. Management Agreements under Section 16 of the Wildlife and Countryside Act can provide financial support for positive land management within the SSSI. This can include a contribution towards ditch management, including re-casting and desilting. Management should promote a mosaic of open and more vegetated watercourses for aquatic species.

Sites of Importance for Nature Conservation (SINCs) are the most important sites for biodiversity and nature conservation outside of legally protected sites such as SSSI. Their importance is significant in a more local context. SINC designation is non-statutory and their



designation is often seen as a planning tool. Newport City Council has a SINC technical document for details of designated and candidate SINCs.



Agriculture

The need for profitable and productive farming often drives poor agricultural practices that impact on the resilience of aquatic ecosystems. This includes pollution through inappropriate manure and nutrient management, and loss of riparian buffers. Food production is an essential provisioning ecosystem service, but intensification to meet this goal threatens other ecosystem services such as clean water, healthy soils and pollination.

The high water-table of the Gwent Levels was traditionally drained using grips (a historic ridge and furrow system, distinctive to the landscape) with cattle removed during the winter when the land becomes too wet for grazing. To lengthen the grazing season there is an increased call for modern underdrainage systems but doing so is considered likely to be detrimental to water quality, quantity, and features of the SSSI.

The LLLPS 'Farming the Gwent Levels Sustainably' project and aligned Sustaining the Gwent Levels' SMS project (see Grassland and Farmland section for further detail) will look at the impacts of farming and how to influence change that supports sustainable land management. It will include a hydrological, ecological and agricultural assessment of land drainage providing much needed modelling and evidence of impact and steer future policy. Water provides vital ecosystem services. The LLLPS Ecosystem Services Project aims to ensure that future policy and funding mechanisms ('payments for ecosystem services') are aligned with the value to society of water and other ecosystem services.



Sewerage

Many communities within the Gwent Levels do not benefit from having access to the main foul sewer and most domestic properties have either traditional cesspits or septic tanks. The high-water table within the Gwent Levels means that septic tank and soakaway systems are rarely suitable, and current planning policy means that cesspits are no longer an acceptable means of disposal. This is leading to an increase in applications to discharge sewage effluent into the green network, which is putting additional pressure on to the water environment. The proliferation of small treatment plants can cause an increase in nutrient levels in the water environment. This is an issue because increased nutrient loading can cause an increase in algal growth, which can lead to a reduction in plant and invertebrate communities. The impact of this, individually and cumulatively, is a concern due to the static nature of the water in the summer.

The East Gwent Levels (Caldicot Levels) are crossed by a Welsh Water rising main sewer taking effluent from Chepstow, Caldicot and Magor to Nash Sewage Treatment works near Newport. This is a pressurised line, which means that there are few connection points for smaller communities within the Gwent Levels. This sewer line is also in poor condition, which has resulted in fracturing of the line and a discharge to land and water surrounding the fracture. Misconnected foul to surface water is an issue across the Levels and particularly on the Nedern Brook. Work to investigate this, driven by WFD priorities, has already taken place, but due to resource and complexity the problem hasn't been fully resolved. At Monks Ditch, investigation following a flood related pollution event in 2015 showed that circa 70% of properties have cross connected some element of their surface water into the foul only. Misconnecting, overloading and structural issues were all identified as causes.

Development

The location of the Gwent Levels results in high pressure for development causing a direct loss of waterways and loss of surrounding habitats (see Urban section for further detail).

Those waterways that are not designated SSSI or SAC are most vulnerable.

There has been a loss of approximately 21 km of field ditches across all the six Gwent Levels SSSIs, including losses from development. In some cases of consented development, mitigation has not been sufficient (in scale or quality) to protect the SSSI interests [1].

Fly-tipping

Fly-tipping is particularly problematic on this landscape due to its position next to urban



South Wales, and its abundance of quiet, out-of-the-way lanes. Fly tipping occurs in the reens and ditches impacting wildlife, flood defence and water quality, as well as on road verges and on private land. Reen clean-up is undertaken by the land owner or NRW.



Engagement by the LLLPS with the community confirms fly-tipping as a key issue affecting people and wellbeing. The Living Levels fly-tipping project, 'Black Spots to Bright Spots', aims to tackle this issue through education, awareness and enforcement. It promotes a pro-active, preventative approach, rather than a reactive one (the latter – response to incident by clean up, being all that is required by law) and will undertake a cost-benefit to support this.

Upstream Connectivity

Water quality is influenced by upstream activities and the water being received from outside the Gwent Levels. The Ebbw and other watercourses that feed into the Gwent Levels have issues such as misconnections, ongoing pollution incidents, discharges from industry and forestry which are all leading to a lower quality of water entering the Gwent Levels.

Where do we want to build resilience?

Given its already highly connected nature, cultural and ecological significance, resilience should be built across the entire reen and ditch network of the Gwent Levels, to improve quality of aquatic and buffer habitats and the ecosystem services they provide.

- Areas where ditch management could be particularly beneficial are SSSI field blocks that are classed unfavourable but are intersected by reens that are in good condition e.g. Whitson SSSI. To maximise benefits, scrub removal and casting should be prioritised on ditches directly adjacent to good quality reens. From the data NRW have



gained during the recent 2010-2013 surveys, maps have been produced of the SSSIs showing which reens and field blocks are in favourable and unfavourable condition.

Water quality sampling is being undertaken in 2019 by NRW on Magor & Undy and St. Brides SSSI reens, which were identified as being in poor condition in the 2018 surveys. These data will help pin point where resilience should be built.

- Even though the M4 Corridor around Newport (M4CaN) has been rejected by WG, the M4CaN mitigation plans offer a key opportunity to grow extent and condition. A Commission has been established to look at alternative ways of easing congestion around Newport. Building resilience around water and other habitats should be a key part of this discussion of this Commission.
- Better management of land owned or managed by public bodies, S28G Authorities and private businesses on the Levels should be undertaken in order to improve connectivity and resilience.
- The acquisition of Bridewell common by GWT is also a key opportunity. Expanding the successful adjacent flagship GWT Magor Marsh reserve and SSSI will build resilience, benefiting the biodiversity and cultural heritage of the Gwent Levels, by restoring habitats and landscape features, connecting people to nature.
- Improving connectivity has the potential to increase the risk of invasive non-native species establishment on a landscape already vulnerable due to its highly connected waterways. The LLLPS recognises this threat through its Invasive Non-Native Species: Defend the Levels project, which seeks to raise awareness and ensure appropriate rapid response protocols are in place.

Green Infrastructure Strategy for the Gwent Levels

Monmouthshire County Council commissioned a Green Infrastructure (GI) Strategy for the Gwent Levels to support the LLLPS Heritage Lottery bid [9]. The GI strategy maps GI assets, considers ecosystem service benefits, identifies needs and opportunities, and presents a vision for GI delivery. Blue Infrastructure (water) is considered alongside 'green', and the fundamental importance of managing reens and ditches to create a resilient Gwent Levels landscape was emphasised. This strategy is therefore a key document for delivering resilience and Area Statement development.



Opportunities to improve blue infrastructure highlighted by this report include:

- Developing a landscape-scale approach to wetland management
- Encouraging the reinstatement of historic drainage features
- Maintaining water levels to protect as yet undiscovered buried archaeology
- Researching and exploring innovative approaches and options to address water management
- Mapping and quantifying ecosystem services
- Restoring over-drained or damaged wet grasslands
- Discouraging field enlargement and/or the infilling of field ditches that would result in the loss of watercourses
- Encouraging participation in the delivery of objectives identified in relevant River Basin Management Plans.
- Applying policy and good practice guidance to ensure the incorporation of sustainable drainage schemes (SuDS) into all new development.

- [What do we want to influence?](#)

| What do we want to influence? | |
|-------------------------------|---|
| Partnership working | <ul style="list-style-type: none"> • PSBs to support better collaborative and co-productive working at landscape and local scale. • Use of innovative approaches • More active engagement with farmers and landowners (building on CRG and LLLPS successes). • Continuation of LLLPS partnership and delivery of legacy outputs. |
| Reen management | <ul style="list-style-type: none"> • Maintenance and management of reens and riparian zones by NRW, landowners and LAs to maximise ecological and other ecosystem service benefits with particular focus on those areas identified by NRW SSSI monitoring programmes. • More collaborative ways of working e.g. involving landowners and stakeholders such as Bumblebee Conservation Trust. • Ensure WFD mitigation measures for artificial water bodies are integral to maintenance operations. • Adoption of a 'Continuous Improvement' approach to the processes around, and the ways in which, reens are managed. |
| Sea Wall Management | <ul style="list-style-type: none"> • Maximise opportunities for ecological resilience and key species such as shrill carder bee without compromising flood defence function. |



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| Natural Flood Risk Management | <ul style="list-style-type: none"> Evidence and support for (by government, engineers, scientists, communities and other stakeholders) NFM in appropriate locations. Further assessment of Monk Ditch as a possible location (with consideration of woodland resilience benefits). |
| Owner/farmer management of private ditches | <ul style="list-style-type: none"> Mechanisms for supporting owners and farmers with ditch management so that they are effective, sustainable and provide wider benefits (e.g. supporting local economy and skills, as with LLLPS approach). |
| Conservation | <ul style="list-style-type: none"> Continued support for landscape scale, multiple benefit projects such as LLLPS. Monitoring and evidence gathering, to enable conservation management decisions on designated and other sites. |
| Agriculture | <ul style="list-style-type: none"> Welsh Government post Brexit agricultural policy and future land management payment schemes to ensure environmental outcomes and (especially for this landscape) the cultural value of water habitats are a priority. Recommendations of LLLPS and SMS Farming and Ecosystem Services projects to deliver sustainable agriculture are adopted. |
| Sewerage | <ul style="list-style-type: none"> Permitting Policy and Legislation to ensure that no systems qualify for an exemption within the Gwent Levels. All existing dwellings hold a permit and will have a high specification package treatment plant, with an additional polishing such as a reedbed system included. No new developments will be allowed in the Gwent Levels which propose a discharge into the water environment - all discharges to go to main sewer Dwr Cymru Welsh Water (DCWW) to increase availability of main sewer network |
| Development | <ul style="list-style-type: none"> Strengthened designation / designation that protects habitats that support aquatic habitats, the historic landscape and strengthens habitat networks. Land use planners to encourage sympathetic development adjacent to drainage systems |
| Transport | <ul style="list-style-type: none"> Ensure that the Commission looking at congestion issues around Newport considers ecosystem resilience of water (and other habitats), including use of M4CaN mitigation sites. |
| S28G Authorities and Welsh Government | <ul style="list-style-type: none"> Resilience on S28G Authority and WG landholdings identified and improved in line with legislative duties. |
| Private businesses | <ul style="list-style-type: none"> Non-Government Organisations (NGOs) and Third Sector Organisations (TSOs) to identify opportunities and work collaboratively with private businesses to improve resilience. |



| | |
|-----------------------------|--|
| Fly tipping | <ul style="list-style-type: none"> • Pro-active rather than reactive management of fly-tipping, through a Wales wide change in legislation and policy, and appropriate funding. |
| Invasive Non-Native Species | <ul style="list-style-type: none"> • Awareness of and rapid response to INNS threats by responsible bodies. |

Climate Ready Gwent (CRG)

Climate adaption and the need to build resilience has been recognised by Gwent PSBs as a regional priority. The project “Climate Ready Gwent: Capturing the Lived Experience” engaged with communities across Gwent on perceived impact of climate change. Managing an increased amount of water in the environment (i.e. adapting to a new ‘normal’) in terms of volume; movement; and capture was key to effective climate adaptation [9,10]

On the Gwent Levels, the value of the reen system in making the Gwent Levels special, the multiple climate risks to it, and so the need for this landscape to be better understood and managed into the future were all highlighted. Community and farmer engagement raised the need to build resilience around the reen network because of the multiple ecosystem services they provide. Of concern to those engaged was the shift towards flooding or drought, and the importance of the IDD in managing the system appropriately. Planning decisions, and the loss of reens and ditches making the system harder to manage and less resilient was also a key concern.

Water – References

1. Murton, KM, Hunt, A; and Rodgers, K. Conservation Objectives for the reen and field ditch habitat feature and aquatic plant features on the Gwent Levels SSSIs and Newport Wetlands SSSI. Draft January 2018 NRW
2. Farr.G. 2016. Nedern Brook Wetland SSSI Phase 1 hydrological monitoring. British Geological Survey Internal Report, OR/15/038
3. Camelo, McKnight and Songprasit 2013. Nedern Brook River Restoration Option Summary Report Environment Agency Wales Internal Report produced by Royal Haskoning DHV
4. Boyes A. 2017. Living Levels Landscape Partnership Landscape Conservation Action Plan, RSPB Cymru
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6. 2016. Severn River Basin District. Flood Risk Management Plan 2015-2021, Natural Resources Wales and Environment Agency.



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8. 2015. Severn River Basin District. River Basin Management Plan. Natural Resources Wales and Environment Agency
9. Netherwood A and Thomas D 2019. Climate Ready Gwent: Capturing the Lived Experience. Overview Report
10. Netherwood A and Thomas D 2019. Climate Ready Gwent: Case Study – Goldcliff Community Council; Case Study – Gwent’s Farming Community

Gwent Levels: St. Brides SSSI

- ✦ [SSSI 0341 Citation EN0014d9a](#)
- ✦ [SSSI 0341 Map001f1e5](#)
- ✦ [SSSI 0341 PDO EN0012245](#)
- ✦ [SSSI 0341 SMS EN001af28](#)

Gwent Levels: Nash and Goldcliff SSSI

- ✦ [SSSI 0649 Citation EN0014ad2](#)
- ✦ [SSSI 0649 Map001d9d8](#)
- ✦ [SSSI 0649 PDO EN00126ce](#)
- ✦ [SSSI 0649 SMS EN001efd9](#)

Gwent Levels: Whitson SSSI

- ✦ [SSSI 0148 Citation EN001a06b](#)
- ✦ [SSSI 0148 Map0011076](#)
- ✦ [SSSI 0148 PDO EN0018686](#)
- ✦ [SSSI 0148 SMS EN0013223](#)

Gwent Levels: Redwick and Llandeenny SSSI

- ✦ [SSSI 0563 Citation EN0014cb0](#)
- ✦ [SSSI 0563 Map001483d](#)
- ✦ [SSSI 0563 PDO EN001b5cc](#)
- ✦ [SSSI 0563 SMS EN0012ca0](#)

Gwent Levels: Rumney and Peterstone SSSI

- ✦ [SSSI 1122 Citation EN001c0a1](#)
- ✦ [SSSI 1122 Map0011c0e](#)
- ✦ [SSSI 1122 PDO EN001c090](#)
- ✦ [SSSI 1122 SMS EN00122b5](#)

Gwent Levels: Magor and Undy SSSI

- ✦ [SSSI 0307 Citation EN001](#)



- ✦ [SSSI 0307 Map001](#)
- ✦ [SSSI 0307 PDO EN001](#)
- ✦ [SSSI 0307 SMS EN001](#)

Grassland and Farmland

What have we got, and what is special or significant about grassland and farmland in this landscape?

As one of the largest areas of grazing marsh in Britain, the Gwent Levels has been reclaimed over time, originally primarily for agricultural use. The land use is primarily pastoral agricultural land. Main farming types include intensive dairy farming, arable production, sheep and beef. Much of the pasture land is agriculturally improved, with a lot of silage production.

As well as draining the land so it is dry enough for farming and reducing the risk of flooding, management of the reed and ditch network enables agriculture to be supported, by acting as wet fences and providing water for stock. Farmers and landowners are responsible for field ditch clearance on their own land and so contribute to the maintenance of the system in the long term. See also water section.

Traditionally, fields were drained by a system of ridge and furrow or 'grips' (shallow trenches) into the extensive system of interconnected ditches that surround each field. Field grips are effective at removing surface water but do not affect the underlying water table which lies very close to the surface.

Historically, due to its wet nature it is thought that in the earliest days the land was used largely as summer pasture. Prior to WW2 the majority of the Gwent levels was grazed extensively throughout the summer and stock, mostly cattle, were removed during the winter because the land too wet to support them. The changes in farming practices immediately following WW2 led to more intensive agricultural production, for example, through the increased use of pesticides, herbicides and inorganic fertilisers, intensive dairy farming, an increase in grazing by sheep and increased arable production. All of these practices inevitably have an impact on the water quality of adjacent watercourses.

There has continued to be a shift towards more intensive agricultural regimes. There has also been a fragmentation of farm businesses, which has given rise to the problem of dispersed and disconnected land holdings, seeing pressure to infill ditches to create bigger fields



preferred by modern farming. There is also increased pressure for damaging changes such as under draining of fields, rather than relying on the traditional ridge and furrow drainage.

Fields have been agriculturally improved, hence the main scientific interest of the designated site is found in the reens and ditches of the drainage system. However, the fields are included in the SSSI boundary in order to influence the use of the land and control potentially adverse impacts, such as leaching of nutrients, pesticides and herbicides from the land into the adjacent watercourse, and increased underdrainage.

Over recent years more semi-improved, and unimproved areas of grassland have been identified on the levels, therefore not all the grassland is highly agriculturally improved.

In addition, when the lengths along reen and ditch banks, the sea-wall, road and track verges and green lanes are considered, there are significant areas left uncultivated. The sea wall stretches for 28km across the entire Gwent Levels, with its landward face predominantly grassland. Semi-improved grassland and other flower-rich habitats, along with certain agricultural options such as fertility building leys and green manures, offer important forage resources for pollinators. Of particular importance in the Gwent Levels is Shril carder bee (*Bombus sylvarum*), which relies on connected and high quality forage resources in these habitats from May – October.

[What is driving the current management of each ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape?](#)

Agricultural practices

The need for profitable and productive farming can result in poor agricultural practices that impact on the resilience of ecosystems. This includes pollution through inappropriate manure and nutrient management, loss of riparian buffers and calls for underdrainage which would impact on water quantity and quality. Food production is an essential provisioning ecosystem service, but intensification to meet this goal threatens other ecosystem services, such as clean water, healthy soils and pollination.

Agri-environment schemes and agricultural subsidies are significant drivers with the potential to alter the balance and quality of land uses within the Gwent Levels landscape. Uptake of the current Glastir scheme has been low on the Gwent Levels. Data gathered by the Centre for Ecology and Hydrology (CEH) as part of the Glastir Monitoring and Evaluation Programme showed uptake on the Gwent Levels as amongst the lowest in Wales, with less than 10% of farmers accessing the scheme.



As farming has changed, driven by policies aimed at maximising production, the ability of the landscape to support habitats and species has been degraded and subsequently, many other services have been negatively affected. The UK's departure from the EU will result in significant changes to land use policy (Common Agricultural Policy CAP) in Wales, including the likely end to Pillar 1 payments. This has the potential to increase economic pressures on farming and may lead to further intensification as farmers seek to make up lost income.

The Planning System

The planning system has a significant part to play in keeping as much of the levels in agricultural land use as possible. For example – influencing land use policies in strategic planning document such as the LDP, SPGs. For example, the unsustainable allocation of business parks on the Gwent Levels – Rumney & Peterstone in Cardiff LDP and solar and wind turbine developments. In development control for individual planning applications, it would be good to agree development guidelines to include such things as buffer strips, sewage treatment etc. – See Urban Section.

The Living Levels Landscape Partnership Scheme

The Living Levels Landscape Partnership Scheme (LLLPS; water section for background on the partnership) is undertaking several projects on the Gwent Levels that are driving change on grassland and farmland habitats:

- **Pollinating the Levels** project is working with a range of target audiences and stakeholders to conserve and connect pollinators in the Gwent Levels. The primary aim is to add new wildflower rich areas of habitat across a network of private and public landholdings to create a more resilient habitat for the rare shrill carder bee. In addition, the project aims to gather data on pollinator populations through a programme of volunteer training in species ID and to raise more awareness about pollinators and the services they provide.
- **Targeted Natural Heritage Restoration project** provides a capital restoration budget for conservation work, which primarily targets the growing issue of abandonment of field ditch management (see Water section). The project also funds the restoration of ancient orchards and other key heritage features in decline or in a degraded condition, such as willow trees in need of pollarding, field grips in danger of disappearing, and wet meadows.



- **Orchards and Community Enterprise project** is supporting landowners by providing training to promote and protect traditional orchards. The project will attempt to reverse the decline in traditional orchards on the Levels, by celebrating their cultural and potential economic value with local communities and businesses through a series of training events in pruning, grafting, and juice making. A thorough survey of the different species present in those orchards is underway to show the impact of management practices and to record ancient varieties of fruit.
- **Ecosystem Services** project will consult widely with local communities to assess how they value vital ecosystem services such as clean air and water, abundant wildlife and high quality green space which are currently provided in the Gwent Levels, but which are also under great pressure. This will place a value on these vital ecosystem services, helping to ensure that future policy mechanisms are aligned with the value NRW place on our ecosystem services. The project will investigate whether there are any viable options for novel funding mechanisms for future land management activities that enhance ecosystem service delivery, known as 'payments for ecosystem services' (PES).
- **Farming the Gwent Levels Sustainably** project (and associated Sustainable Management Scheme) is working with farmers to demonstrate a variety of on-farm measures to enhance biodiversity and the sustainable management of natural resources. The project will work with landowners to analyse the current drivers for management decisions on farm businesses in the Gwent Levels, in order to inform and influence future Welsh Government farming policy, so as to better support economic and environmental targets in the future.

Flood defence maintenance

NRW manage the reën network and adjacent banks (see water section). The Gwent Levels sea wall is an NRW asset and a linear feature that runs from Chepstow to east Cardiff. Management is driven by flood defence needs; the landward side of the wall, which is predominantly grassland, is cut at least once annually for maintenance and inspection purposes.



Where do we want to build resilience?

Extent – The aim is to keep as much of the levels in agricultural use as possible. The proximity of urban populations has led to a reduction in the area of land for agriculture and an increase in other land use activities such as golf courses, fishing lakes, horticulture and additional infrastructure.

Ditches are an integral part of farmland and there is a presumption against infilling of watercourses and ongoing maintenance of reens and particularly field ditches, so they do not become so silted up that they fall out of use. Existing areas of semi-natural grassland should be managed and reversion or creation of further areas of semi-natural grassland facilitated.

Condition – the aim is to improve the condition of the farmed landscape, in particular in terms of nutrient management and associated water quality of the reens and ditches. In addition, farm management can influence the condition of grassland – e.g. high levels of fertiliser application will reduce the variety of plants present in the sward.

As above, regular maintenance of field ditches also maintains the condition of the ditches for biodiversity and the SSSI features. Agricultural practices that drain the land also have a big influence on water levels in the surrounding watercourses and fields. The condition of semi-natural habitats, including SSSI condition, is dependent on high stable summer water levels. Modern underdrainage leads to the lowering of water tables and should be discouraged.

Diversity – As above, over recent times fields within the drainage system have been largely agriculturally improved e.g. as silage. There should be a wider range of management and subsequently grassland types – including more semi-improved and unimproved fields, including some managed as hay meadows.

Connectivity – Consideration should be given to connectivity of semi-natural grassland areas by, for example, identifying opportunities to extend and connect ecological habitats along embankments including the sea wall, reens and ditches, roads and driveways giving priority to corridors that link existing core habitats. This will entail partners such as Highways, LAs working together.

Connecting, restoring and enhancing semi-natural habitats of importance for shrill carder bee, and ensuring that they are managed in a way which provides forage resources throughout the summer into early autumn, should be a priority. Agri-environment options will play a key role in delivering this.



On the landward face of the 28km NRW owned sea wall, the opportunity exists to explore whether a diverse grassland habitat could be developed that continues to enable the wall to function as a flood defence, but also delivers conservation and other ecosystem service benefits (e.g. pollination, grazing, recreation). From 2019/20, and in partnership with the Living Levels Pollinator Project, NRW are planning a trial of alternative cutting methods that could improve the quality of the grass sward, particularly for Shril Carder Bee and other pollinators. The trial will involve a 250m section near St Brides, however the long-term aspiration is to manage as much of the sea wall as possible for both flood defence and conservation.

What do we want to influence?

- To identify and address potentially unsustainable farming practices which may be harming the environment – for example nutrient run-off, slurry management and grassland management.
- To influence policies that will determine the future of support mechanisms for local farm businesses. Understanding the current blockages to sustainable land management will be vital in securing a long term sustainable future for the Gwent Levels
- To identify and influence new ways of working, for example Welsh Government post Brexit agricultural policy and future land management payment schemes– ensure these support environmental outcomes and (especially for this landscape) the cultural value of farmland and grassland habitats.

As highlighted above, there are currently two initiatives already working on the Gwent Levels landscape which aim to address the above issues- the HLF Living Levels Sustainable Land Use project, the Living Levels Ecosystem Services Project and the complementary SMS Sustainable Farming project.

- Influence the planning system to enable as much of the levels to be kept in agricultural land use as possible, including land use policies in strategic planning document such as the LDP, SPGs.

For example, the unsustainable allocation of a business park on the Gwent Levels - Rumney & Peterstone SSSI in Cardiff LDP and solar and wind turbine developments within the SSSIs. In development control for individual planning applications- it would be good



to get development guidelines agreed to include such things as buffer strips, sewage treatment etc. See Urban section for more details.

- NRW maintenance operations so that sympathetic grassland management is incorporated.
- Intense pressure for development continues and the ability to conserve and enhance this special landscape for future generations is limited by the lack of strong protections in Planning, despite the existence of SSSI designations and local landscape designations (Special Landscape Areas). Potential to renotify the Gwent Levels SSIs to include all qualifying features. The Register of Historic Landscapes in Wales is non-statutory and therefore of limited weight as a protection tool. Stronger national protection combined with strategic landscape management that build on the strategies in the Living Levels Partnership are required to build landscape and ecological resilience.
- Threats to the land of the Gwent Levels from climate change include drying and shrinking of clay soils on the Levels and nearby, which could cause drying out of wetlands, changing crops and species and affect buried archaeology. There is the opportunity to encourage farmers to increase the diversity of the grassland on their farms, so it is more resilient to change in climate and extreme weather events of drought and flooding.

Coastal and marine

What have we got, and what is special or significant about *coastal and marine* in this landscape?

The total length of the South East (SE) area coastline is 39.2km or 3% of Wales' total. The SE area has the smallest coastline of all Area Statement areas. The coastline comprises the foreshore of the Severn Estuary and its tributaries including the Rivers Rhymney, Usk and Wye, with the extensive low-lying Gwent Levels behind the sea defences.

The Severn Estuary is designated as a:

- Special Area of Conservation (SAC);
- Special Protection Area (SPA); and
- Wetland of International Importance, Ramsar site.



Collectively known as the Severn Estuary European Marine Site (EMS).

Newport Wetlands Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR) also lies adjacent to the Severn Estuary EMS.

The Severn Estuary is one of the largest coastal plain estuaries in the UK. Its classic funnel shape, unique in the UK, is a factor causing the Severn Estuary to have one of the highest tidal ranges in the world. It comprises extensive intertidal mudflats and sandflats, rocky platforms and islands. Saltmarshes fringe the coast. The subtidal seabed is rock and gravel with subtidal sandbanks. The site also supports reefs of the tube-forming worm *Sabellaria alveolata*.



The Severn Estuary supports 1400ha of saltmarsh (including the English section). A number of notable saltmarsh species are present on the site, these are mainly associated with upper marsh and transitional grasslands. The Severn Estuary supports a large number of wildfowl and wading birds, with over 80,000 birds visiting every winter. It is a key refuelling stop for spring and autumn passage birds.

The SE area is home to 60% of Wales' seagrass beds, which makes it the largest seagrass bed in Wales. Biogenic reefs, formed by the tube-dwelling worm *Sabellaria alveolata* are predominantly intertidal habitats in the UK, but the Severn Estuary is one of the few places these reefs occur in the subtidal as well as intertidal.

The Severn Estuary is one of the most important estuaries in the UK for three rare species of migratory fish: river lamprey, sea lamprey and twaite shad which are designated features of the SAC. These species together with salmon, Sea Trout, eel and Allis Shad are also a designated feature of the Ramsar Site.



The tidal regime and intertidal areas give the area a unique coastal landscape character. There is a rich history of cultural heritage and archaeological discoveries. The Estuary has long been a focus for human activity, a location for settlement, a source of food, water and raw materials and a gateway for trading and exploration.

Wet and waterlogged conditions, notably within the rich peat deposits buried under later alluvium of the Severn Estuary, have led to the preservation of extensive paleo- environmental and archaeological material. Dating back to the Mesolithic, this includes evidence of submerged forests inundated by sea-level rises in c6000 BC, along with human and animal footprints preserved in the mud below peat deposits, known to be some c6500 years old. Then from later periods, there are Bronze Age trackways and house platforms, Roman timber features, medieval granges and ships. The rich archaeological and historical resource has yet to be fully explored and has the potential for further important finds which increase cultural understanding and appreciation.

Mesolithic remains have been discovered in underlying estuarine clay at Goldcliff, and late Mesolithic human footprints, have been found at Uskmouth. Bronze Age activity has been recorded at various sites on desiccated raised peat beds, such as at Chapel Tump. At Caldicot Castle, there is detailed evidence of palaeo-channels, pile structures, a boat strake and a considerable amount of cultural material. Iron Age evidence has been discovered in the intertidal zone at Goldcliff, with rectangular timber buildings, trackways and fishtraps on a shelf of fen peat. Also, at Barland's Farm, Crick, Roman stone and timber structures and the remains of a late 3rd century Romano-British boat have been found, alongside a buried tidal creek, emphasizing the remarkable state of preservation of archaeological material in the Levels.

The Severn Estuary supports unique traditions of fishing and agriculture, some of which are still used today, such as lave net fishing at Black Rock in Monmouthshire.

[What is driving the current management of each ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape?](#)

The seas around Wales support a range of important intertidal and subtidal habitats and species and provide numerous natural resources that we all benefit from – climate regulation, fish for food, a range of wildlife, space for recreation and enjoyment, clean energy to support our lifestyles, a means of global trade and transport, and sand for construction, amongst many



others. A Marine Area Profile has been developed that provides further information about the marine environment across Wales.

The Severn Estuary is a dynamic and diverse area with fascinating natural, cultural and geographical features, managed and used by a wide variety of organisations and individuals. The estuary supports major industry and port installations. Use of natural resources includes salmon fishing (e.g. using putchers and lave nets), an eel and elver fishery, and aggregate extraction. Recreational activities include boating, wildfowling, angling and bait digging, and use of the Wales Coast Path. Opportunities for the sustainable management of natural resources are promoted through effective partnership working on this cross-border site.

The **Association of Severn Estuary Relevant Authorities (ASERA)** is responsible for establishing and maintaining the Management Scheme for the Severn Estuary EMS. This enables Relevant Authorities to discharge their statutory duties in the most efficient and cost-effective way possible. Given the statutory duties that all Relevant Authorities share, and the benefits of sharing costs for discharging them, ASERA represents the large majority of Relevant Authorities on the Severn Estuary.

The ASERA Management Scheme provides a mechanism for Relevant Authorities to set the framework within which their activities will be managed, to achieve the nature conservation objectives of the site. It considers whether activities are causing adverse effects and, if so, how such activities can be regulated by Relevant Authorities to prevent damage to the designated features of the EMS.

The **Severn Estuary Partnership (SEP)** works with local stakeholders in promoting a sustainable approach to the planning, management, and development of the estuary for all who live and work here and for future generations. The Partnership brings people together to resolve problems and realise opportunities. SEP facilitates effective communication across and between organisations and individuals, promotes sustainable estuary use, coordinates delivery of estuary-wide actions, publicises the estuary, and supports effective estuary management.

The **Severn Estuary Coastal Group (SECG)** works to promote sustainable shoreline management around the Severn Estuary, and delivers the actions of the **Shoreline Management Plan (SMP2)**.



Sustainable management of the estuary's ecosystems is facilitated through the work of these and other partnerships, ensuring delivery of ecosystem services and offering many opportunities for the enjoyment of the estuary and the promotion of well-being.

The nature of coastline in the SE area is heavily influenced by the coastal defences managed to help minimise the risks (to people, property, the natural and historic environment) associated with coastal erosion and flooding. As sea-level rises, these defences are constraining the natural roll back of estuarine habitats, causing squeeze and loss of habitat and having impacts on species dependent upon those habitats (birds: feeding/ roosting, and fish: feeding/ nursery and shelter areas).

The Severn Estuary is a highly dynamic estuarine system. Sediment flows and fluxes affecting the estuary are of particular importance for estuarine processes and ecology, and the morphology of the estuary is constantly changing due to the complex hydrodynamics. Sediment deposits provide essential material to maintain the mudflats, sandflats and saltmarsh. Estuary-wide fluctuations in the wind-wave climate over recent centuries have led to major movements of the high-tide shoreline. In addition, the Severn Estuary Coastal Habitats Management Plan (CHaMP) (<http://severnestuarycoastalgroup.org.uk/files/2016/02/SMP2-Executive-Summary.pdf>) predicts losses of intertidal mudflats and sandflats and saltmarsh habitats over the next 100 years in response to rising sea-level.

The **Severn Estuary Shoreline Management Plan (SMP2)** is a high level non-statutory policy document designed to assist coastal flood and erosion risk management planning (<http://www.severnestuarycoastalgroup.org.uk/shoreline-management-plan/>). The SMP2 enables planners and regulators to plan for and manage the way that the coast will change. A policy option is provided for each of the three epochs (20, 50 and 100 years) for each stretch of coast.

Management initiatives at a more local level include securing Management Agreements with landowners along the foreshore to help achieve the desired level of grazing to benefit the saltmarsh habitat by influencing the areas grazed, number of stock and timings of grazing.

Where do we want to build resilience?

For the SE area, the SMP2 policy for the majority of units is '**Hold the Line**' for all 3 epochs (2005-2025, 2025-2050, 2050- 2105). The exception is unit CALD 2 on Caldicot Levels



(between Sudbrook and Blackrock) which is assigned the policy of '**No Active Intervention**' for all 3 epochs, as the shoreline at this point is predicted to undergo limited erosion and high ground precludes flooding in this period.

Coastal squeeze may occur resulting in loss of intertidal habitats and affect the Severn Estuary EMS. The Gwent Levels SSSIs behind the coastal defences will be protected. Realignment of defences could lead to a loss of terrestrial habitat but the creation of intertidal habitat in front of new defences. The integrity of the Severn Estuary SAC, SPA and Ramsar site should be maintained.

Seeking opportunities to build resilience of intertidal habitats, options such as the use of polders to increase saltmarsh extent need investigation. Polders installed over 20 years ago along Rhymney Marshes have demonstrated effective saltmarsh development. Based on historic and recent data sets, and expert knowledge of coastal processes occurring in the Severn, a general pattern has emerged that erosion of saltmarsh habitats is occurring more in the western section of coastline in the SE area and accretion of habitats is occurring more in the eastern section. Opportunities for building resilience will be based upon a sound evidence base.

What do we want to influence?

- Feed evidence into decision-making, such as Local Development Plans, Wales National Marine Plan, Policies and Strategies
- Work with partnerships and projects such as:
 - Local Authorities (Wales Coast Path, flytipping, enforcement)
 - Consortium of Severn Estuary Wildfowling Clubs
 - SEP, ASERA, Coastal Group
- Promote the importance of cross-border working relationships (NE, EA) and maintain the links built up over the years. Share data and conservation advice approaches.
- Encourage the sustainable use and enjoyment of the estuary by influencing:
 - Wildfowling clubs
 - Anglers and bait-diggers
 - Wales Coast Path users (including dog walkers, cyclists, bird watchers, school/university groups)
 - Recreational boat users
 - Drone users
- Negotiate with landowners to achieve desired level of saltmarsh grazing (to secure the right areas, number of stock, timings etc.) through Management Agreements.



- Work with and share data with research institutes to increase evidence base through project involvement, such as RESILCOAST project, CSIDE project etc.
- Encourage community engagement and outreach and promote local ‘ownership’ through various means including school initiatives, citizen science events, SEP litter project and the Big Beach Clean weekend.
- Promote the special nature of the estuary in the local and wider area through signage and interpretation along the Wales Coast Path, in marinas and other access points to the estuary and through publications promoted by Visit Wales and other tourism-based media.
- Promote ASERA Good Practice Guidelines for recreational users of Estuary (<https://www.asera.org.uk/good-practice-guidelines/>) at every opportunity.

Woodland

What have we got, and what is special or significant about *woodland* in this landscape? The *absence* of woodland is a significant and essential aspect of the Gwent Levels character. Tree features – orchard, pollarded willow, parkland veteran trees and hedgerow are nevertheless significant components of the landscape and on the Levels hinterland (and within the Landscape Character Area (LCA) there are woodland blocks important for resilience, in particular connecting Wentwood with the water and grassland habitats of the Levels.

Although distinguished by its absence of woodland, the eastern Gwent Levels’ connection to the once extensive Wentwood block is typified by its historic name – Gwent Is-Coed, or Gwent “below the wood”.

What is driving the current management of the *woodland* ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape?

Development

Housing and other development pressures threaten to reduce connectivity and opportunities for better woodland habitat networks. In Monmouthshire, a number of candidate sites submitted for LDP consideration are in locations that NRW’s woodland habitat network maps suggest may be strategically important.



Climate change & woodland creation targets

Woodland habitats provide many Ecosystem Services (timber, carbon sequestration, recreation, air quality etc.) and are critical for resilience to climate change. This has been recognised through a positive and welcome drive to increase woodland cover across Wales (e.g. Welsh Government Woodlands for Wales Action Plan and Glastir Woodland Creation Grant). In addition, woodland creation is often offered as a key mitigation measure for development impact e.g. M4CaN. In this landscape area however, it is essential that tree planting locations are carefully considered – woodland blocks are not appropriate on the ‘reclaimed’ Levels’ landscape but may be vital in the Levels’ hinterland for landscape connectivity and resilience. There is no NRW managed WG Woodland Estate in this landscape area. There are woodland blocks managed by Local Authorities, a number of which are located near communities and could offer wellbeing benefits e.g. Ringland, Underwood, Coldra.

Gwent Levels Reen and Ditch Management

Traditional management of the water courses includes tree and hedgerow removal to maintain an open water system. There is a drive to continue to do this rather than plant trees or allow succession to hedgerow – this is considered both acceptable and necessary to maintain the ecology and character of the Gwent Levels (see also Water section).

[Where do we want to build resilience?](#)

Brief analysis of the NRW Habitat Network Maps suggests a number of potential opportunities to improve woodland resilience and connectivity. Areas for further consideration include:

- Cardiff East “habitat ring” (Gwent Levels, South Central Area) – intervention on the western Gwent Levels south of the suburb of Rumney to ‘close’ a circle woodland and grassland habitat around urban East Cardiff and link the Gwent Levels through Cardiff and into the Valleys habitat network.
- Llanwern – significant block of woodland where improvement, enlargement and connection to other woodlands may be possible. NRW’s Natural Flood Management – SE Wales Potential Sites analysis identifies floodplain and riparian planting locations on the Monks Ditch that could mitigate flooding of Llanwern Village. Habitat connectivity mapping suggests this might also be a strategic location for improving resilience by enlarging and connecting woodland habitat (see maps).
- Caldicot Castle Country Park and Nedern Brook Wetlands SSSI – opportunities to improve habitat networks and connectivity west to Caerwent and east to Farthing Hill.



- Wyelands Estate –area of parkland that supports veteran trees of possible national or international importance to saproxylic invertebrates. Evidence gaps, a lack of awareness and long-term management need addressing (see Wentwood and Wye Valley Landscape Profile for further detail on importance of and management for saproxylic invertebrates). Management to enhance and expand habitats at this location could also build connectivity to the Wye Valley Woodlands and other Gwent Levels habitat types.
- Higher ground around Castleton and Coedkernow near the M4
- A48 east of Duffryn

What do we want to influence?

| What do we want to influence? | |
|--|--|
| Welsh Government Post Brexit Agricultural Policy and Future Land Management Payment Schemes | Ensure woodland planting is promoted, but only in appropriate places within the Gwent Levels LCA. Potential drive for woodland planting as climate change mitigation. |
| Planning and Development | <ul style="list-style-type: none"> • Strengthened designation to protect habitat networks including woodland. • Robust evidence base that can influence Local Development Plans at an early stage. • Increase connectivity networks to the areas of woodland in • Newport City Council ownership. Woodland officer Shona Carle emailed the panel maps showing that NCC have 4 sections of woodland in the panel's area near Ringland, Llanwern village and Coldra roundabout |
| Upstream Woodland Management | There is no NRW managed Welsh Government Woodland Estate in this landscape area however Itton Court Woods, west of Chepstow, lies on the boundary. Drainage routes from this and other woodlands upstream of the Gwent Levels affect water quality and so woodland management should account for these impacts. |
| S28G Authorities and Welsh Government | Resilience on S28G Authorities and WG landholdings identified and improved in line with legislative duties, including M4CaN 'mitigation' sites where woodland planting opportunities identified (see also 'Transport' in Water section). |

Climate Ready Gwent

The was a major focus by participants of the Climate Ready Gwent: Capturing the Lived Experience Project (see Water Section for further details and references) on the risks of biodiversity loss in terms of species and habitats including loss of woodland to disease,



windthrow and soil erosion. Managing wildfires, including in woodland habitats was also seen as a key strategic issue (across Gwent).

Urban environment including previously developed land

What have we got, and what is special or significant about the urban environment in this landscape? How priority habitats connect across South East Area landscapes and the importance of this for resilience?

The Gwent Levels is the finest example in Wales of a coastal landscape 'hand-crafted' (exploited, modified and transformed) by the communities that have lived here since its reclamation from the Severn Estuary in Roman times. The strong sense of history of human occupation and management pervades the landscape, reflected in its drainage, settlement, enclosures and field patterns, which create one of the best-preserved planned, medieval enclosure landscapes in Wales. This is recognised by its inclusion in the 1998 Register of Landscapes, Parks and Gardens of Outstanding Historic Interest in Wales as a 'Landscape of Outstanding Historic Interest'.

For over two thousand years the landscape has been managed by a succession of landowners, farmers, engineers and official bodies maintaining the land, recognising its value, initially for agriculture and more recently for housing, transport and commerce. The Medieval period is represented by a large number of Anglo-Norman sites including castles, moated sites, churches, mills, manor houses and court houses. There is evidence of continuity in the forms of land use into the Post-medieval period, when the area saw increasing enclosure of the fields although, as late as 1830, considerable areas remained common. Whilst much of the basic network of reens had been established before this period, it continued to be developed and modified, particularly as the land became enclosed.

The vibrant cities of Chepstow, Newport and Cardiff on the periphery of the Levels contrasts against the tranquil Gwent Levels with its discreet village locations and farmsteads throughout the area. The sparse settlement patterns relate to the subtle topographical variations and are linked to ecclesiastical boundaries. Much of the landscape is of recognised outstanding and high value by LANDMAP, the all-Wales Landscape Character Assessment. It is and are also highly valued by the Newport and Monmouthshire local authorities as evidenced by Special Landscape Area designations and the Living Levels Partnership Landscape Assessment and Green Infrastructure Strategy.



There are a number of unenclosed 'street commons' with farmsteads alongside, but set back from the road, such as Broad Street Common and Whitson. Whitson has houses and farmsteads set back from the road in long strips of pasture, which reflect a medieval 'cope' land allocation. Other villages have developed in a more concentric manner, with nucleated settlements set around a church.

In more recent times, large developed industrial land, depots, renewable energy installations and LDP allocated land not yet built on have also become part of the landscape. Tata Steel, Solutia and the Tesco/Wilko Depots exist. The Levels also has an extensive and strategically important network of infrastructure including the railway, national grid, Western Power Distribution (WPD) and Welsh Water assets.

This distinctive and flat landscape of wide skies interfaces uncomfortably with the massive bulk of the Llanwern Steelworks site and the Uskmouth Power Station at Newport. Large scale power lines cross the landscape and have led to the development of large scale wind turbines and proposals for large scale solar farms. Climate change mitigation measures, including increased pressure for large-scale renewable energy projects could cause major changes to the special and significant character. Large factory units and warehouses on the outskirts of Cardiff and Newport, appear out of scale for the Levels landscape, even when seen at some distance from within the rural core of the Levels. The movement of people through the levels is via a network of minor B roads and green lanes, while the M4, A48 (SDR) and A4810 are the arterial roads moving people from East to West found on the periphery.



Connectivity for urban or water habitats has not been mapped, which is why the NRW evidence maps do not show any data. However, connectivity does exist via public green spaces, private gardens, industry land and the road/rail verges. These green areas provide regulatory, provisioning, cultural and supporting services including the wellbeing benefits provided by the landscape to the people living there. This is discussed further in the Gwent Level Green Infrastructure Strategy – see Water section.

What is driving the current management of each ecosystem and its component natural resources? Are the drivers of current management also enabling the provision of ecosystem services and supporting wellbeing in this landscape?

Development pressures are one of the key threats to resilience in this Landscape Profile area and land use on the periphery. Current Local Development Plans for Cardiff, Newport and Monmouthshire have allocations for housing, developments, roads and Special Landscape Areas within the profile area. Current development guidance and governance is not adequate to ensure a sustainable and resilient urban system. These housing and other development pressures threaten to reduce connectivity, future opportunities and habitat itself. Impermeable ground in towns/villages and developments within the Levels increases vulnerability to surface water flooding.

The current housing crisis across Wales and UK as a whole has contributed to a rise in the need to allocate on greenfield sites or on unsustainable locations. In Newport, Cardiff and Monmouthshire, new housing units will be required and with targets set by Welsh Government, these form part of the Local Authorities Local Development Plan (LDP)

Cardiff, Newport and Monmouthshire all have different plan periods. In summary, each authority has the following housing requirements in their Adopted Local Development Plans:

- Cardiff Adopted Local Development Plan – housing requirement of 41,415 dwellings for the 20 year plan 2006 – 2026.
- Newport Adopted Local Development Plan – housing requirement of 10,350 dwellings over the 15 year plan period 2011 – 2026.
- Monmouthshire Adopted Local Development Plan – housing requirement of 4,500 dwellings over the 10 year plan period 2011 – 2021. Monmouthshire County Council has commenced a Local Development Plan review covering the plan period 2018 – 2033. This is at the early stages of the plan preparation process, so no housing requirement has been set out yet.



Legislation also drives decisions. Section 6 of the Environment Act states there must be a net gain of biodiversity on any new development created. In future, Local Authorities must have regard for the Area Statements when writing LDPs.

Well-being of Future Generations (Wales) Act 2015 key objectives are all supportive of the built environment promoting health and well-being. Parks, open spaces, playing fields, woodlands, wetlands, road verges, allotments and private gardens are examples of urban green infrastructure/space

Green Infrastructure is the most simple, elegant and effective way to alleviate multiple social, economic and environmental challenges and complements existing urban infrastructure. Four of the Well-being of Future Generations Act goals - 'A prosperous Wales', 'A resilient Wales', 'A Wales of connected communities' and 'A globally responsible Wales' - specifically mention the role of the environment.

Greenfield sites, including those in the Gwent Levels, are attractive for development (including renewable energy) because the area is flat, close to substations and access is good. Conversely, there are few drivers to include renewable energy on all new housing developments.

Another driver for management is Highway safety. This drives decisions for road verge maintenance – timings/how often/locations and current practices do not always consider sympathetic management regimes for wildlife.

Where do we want to build resilience?

Climate change predictions suggest increased flooding due to sea level rise, an increase in extreme climate events, and more erratic seasonal weather. The resilience of this profile area to climate change in the urban context has not been formally investigated. Natural resources can provide resilience and stability in these conditions, including through sustainable management of the drainage system (see Water section), mitigating for the urban heat island effect by increasing green space, carbon sequestration, and reduction of air pollution (see Woodland section).

Climate change resulting in sea level rise and more frequent storms has the potential to cause significant changes to the characteristics of the coastal edge, including mudflat and salt marsh habitat erosion, damage to sea walls and buried archaeology and potential settlement



flooding. The low-lying Levels are also vulnerable to river and surface water flooding and pollution from surface water run-off to reens and ditches, both from agriculture and roads, industry and housing. Scour and erosion may also affect slopes on higher ground to the north.

Biodiversity is essential for long term health of the habitats within this profile, as low diversity makes species especially vulnerable to disease, extreme weather etc. As the climate changes, urban green connectivity will become even more important to allow species to move with their ecological niches.

Even though the M4 relief road has been rejected, an alternative sustainable, carbon effective transport scheme will be required as an alternative – see Water section.

Resilience can be built through improving the connectivity, extent, diversity and condition of current habitats. In the urban environment resilience can be built through good management or the creation of green environments e.g. reducing mowing of verges to improve habitats for pollinators, wildlife friendly gardening, and community orchards.

We need to ensure resilient choices are made for infrastructure and built development, taking into account water supplies, water quality and reducing, wherever possible, air and noise pollution and environmental risks, such as flood risk/ coastal change/ land contamination and instability. Where development is necessary, habitat connectivity must be maintained and enhanced.

What do we want to influence?

The Gwent Levels Landscape Profile does not contain a high proportion of urban habitat and is covered by multiple designations. However, where villages and developments exist, or land is already allocated the area is often under pressure and expansion of this habitat is predicted given its unique location as the gateway into Wales.

Pressure for housing, infrastructure, economic development and management all threaten its integrity. Current development guidance and governance is not adequate to ensure a sustainable and resilient urban system.

Collaborative and new ways of working through the Living Levels project and the Gwent Green Grid partnership hold opportunities for its long term sustainability. Key to its survival is a recognition of its GI assets individually, cumulatively and in-combination through the planning system and the GI policy in Planning Policy Wales 10 (PPW10). To date whilst there are many designations, few are sufficiently robust to support reasons for refusal of development in isolation. Often designations are non-statutory e.g. Landscape of Outstanding Historic Interest or have limited protection such as SINCs which are often lost through changes in management or compensation offered in lieu.



We need to strengthen designation / types of designation that protect and strengthen habitat networks. There is a potential opportunity to renotify the SSSIs to re-include grassland habitat and other key species and habitats.

Options for protecting the Levels through influencing the planning system might be:

1) Through Welsh Government reviewing the Landscape of Outstanding Historic Interest designation and changing its status from non-statutory to statutory, thus affording it protection on a par with AONB's & National Parks (for which neither would really be appropriate for the Levels). Lobbying WG to achieve this, is something for the medium to long term but is one that would need local, regional and political support across the 3 LPAs and its PSBs.

2) An SPG for the Levels landscape across the 3 LPAs utilising the existing Landscape and GI strategies produced for the Living Levels. This is something that could be a relatively short term win as all LPAs are in the process of reviewing and updating their LDPs. MCC is currently due to publish its preferred strategy in the Autumn. NCC is a little further behind.

- It is essential that new developments are designed with inbuilt resilience. More innovative and sustainable design is central to future sustainable management going forward. Ensure Local Development Plans, Supplementary Planning Guidance and development plans (housing, retail, commercial and public sector) must provide green infrastructure and open green spaces
- For special sites a robust evidence base is needed that influences the Local Development Plans at an early stage.
- Better use of brownfield sites
- A culture shift is required to recognise the importance of integrating naturalness as a vital design feature for a healthy and resilient urban system.
- Motivating people to use and access green space both within and outside the urban setting. NGO and LA owned greenspaces are managed to provide opportunities for play, recreation and walking.



- Better integration of the different components of urban environments, e.g. between sustainable travel (vital for reducing carbon and improving resilience), development, planning, regeneration and ecological expertise.
- Welsh Government needs to provide the governance to encourage sustainable development. This is proven effective through the introduction of SuDs legislation in 2019. Similar and ambitious governance is required for other aspects of urban resilience, such as green space provision and connectivity. Better management of urban green spaces may also be supported by the WG required Green Infrastructure Assessments (an evidence base of green infrastructure).
- New developments can offer an opportunity to build resilience into design, through SuDs, green space provision, renewable energy, promotion of low carbon transport choices and improving connectivity of existing habitats.

CAVEATS

- This version of the document is considered to be draft.
- We do not feel we have had sufficient time to write the quality of document that we would have liked; additionally, copyrights, references etc are incomplete.
- There are uncertainties about exactly what has been asked for and how it is to be used.
- The Living Levels board have asked to see this document. We are unsure if they wish to comment on a draft version.
- We haven't had time to make links to South Central Landscape profile (part of Gwent Levels landscape area falls within South Central).
- We have not had enough time to fully consider grassland connectivity maps
- We have not yet had time to incorporate landscape experts' comments into main profile document.
- We have not had time to fully consider water quality needs, e.g. John Clark's document, requirements for water quality assessments etc
- We do not feel we have had time to fully involve relevant partners
- Environment Officer (EO) input to the Gwent Levels profile is important, but we have not had enough time to involve EO's thoroughly. The majority of the input has been from Protected Site/Conservation Officers in the Environment Teams.
- We have liaised with Flood Risk Management Team who are going to send us some maps of flood risk of the Gwent Levels



The Landscape profile for the Gwent Levels is divided into 5 separate habitat types:

- Water
- Grassland/agriculture
- Coastal/marine
- Woodland
- Urban

Gwent Levels Panel output written by Catrin Grimstead, Angela Hunt, Olwen Maidment Kerry Murton, Sarah Revill and Kate Rodgers. We had input to this Landscape panel from those that attended the panel meeting on 5 June 2019: Nicola Rimington and Richard Jones NRW and partners Collette Bosley, Monmouthshire County Council; Susan Hall Newport City Council; Alison Boyes, Living Levels Partnership; and Gemma Bodé, Gwent Wildlife Trust.

