Estates & Development - Document No. 130

Environmental Mitigation Land Asset Management Framework

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Contents:

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	Medium Term Financial Plan
	Capital Strategy
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1. Purpose and Statement

This document outlines the Council's overall approach to the development of environmental mitigation on Operational portfolio land held by Wiltshire Council. This document does not apply to property and land in the Council's Investment Estate and does not relate to building based solutions within the Operational Estate, including direct feed renewable energy solutions.

An Environmental Mitigation Land Asset Management Framework is required:

- To respond to the climate emergency and make best use of the Council's land to develop initiatives for intervention.
- To ensure that all opportunities including those longer term are considered when initiatives are being developed.
- To provide consistency of approach across the estate for development of initiatives, subject to local conditions.
- To provide a mechanism to select suitable sites and ensure robust challenge and audit exists through initiative development to implementation.
- To improve the financial stability of the Council where schemes are self-financing.

2. Related and Supporting Policies and Asset Management Approaches

Summary of relevant policies to include and how this connects:

- Wiltshire Council Business Plan
- Asset Management Frameworks, including Rural Estate

- Climate Strategy and associated delivery plans, including emerging Offsetting Plan and Climate Adaptation Plan, as updated from time to time.
- Green & Blue Infrastructure Strategy and associated delivery plans
- Emerging Local Nature Recovery Strategy
- Emerging Local Plan

3. Mitigation Opportunities

The Council's assets may be able to deliver a range of opportunities, with distinct characteristics required for them to be realised.

The initiatives have been developed for each of the following themes:

- Nutrient Neutrality – focusing on nitrogen and phosphorus neutrality
- Biodiversity Net Gain (BNG) – detailing the classifications in the national metric of:
  - Woodland
  - Wetland
  - Grassland
  - Hedgerows
  - Rivers
- Nature-based carbon offsetting – focusing on woodland creations
- Water management (Natural Flood Management) – setting out how natural solutions can assist with flooding
- Renewable energy – the ability to use land to generate carbon-free energy including:
  - Solar energy generation
  - Wind energy generation
  - Battery storage, independent of other energy generation
- Bio-mass fuel growth – for sale in the market
- Nature based air quality improvement – aiming to mitigate the impact of vehicle emissions on residents.

For each proposed initiative the following has been provided, all included in Annex 1:

- Description of Environmental Initiative – A brief description of what is involved
- Qualifying Features – Issues that are relevant to achieve this opportunity, minimum or essential requirements
- Ideal Land Allocation – Details of the size or features of land that would need to be present for this option
- Funding – Outline funding opportunities - income generation, invest to save or grant funding options
- Alignment to council objectives – Non-monetised benefits

- Community engagement – Summary of the role the community may play in delivering and managing any schemes, including funding.

Ability to stack opportunities

When seeking funding to support environmental initiatives, it is important that two sources of funding are not funding essentially the same works. Indeed, for many grants or schemes, providers are explicitly restricted from double funding certain works. It is important to understand where funding sources can be combined to deliver environmental outcomes.

Conversely, a scheme designed to meet one environmental outcome will also deliver other environmental outcomes or can be designed to do this. For example, woodland planting can sequester carbon, provide habitat for biodiversity, reduce air pollution, reduce flooding and provide a recreational resource, if designed in such a way as to meet all of these benefits. In doing so there may be compromises and trade-offs, which mean that a scheme may not be able to maximise all environmental outcomes. In site selection the process will prioritise one outcome while also delivering against the other outcomes.

Within Annex 2 a summary of the stacking options is presented for both funding and environmental outcomes. As set out the focus is on initiatives that are self-financing, tradeable units are created for which there are markets and for which more than one income source could be derived for a scheme, namely:

Initiative	Potential stacking opportunity
Nutrient neutrality	Biodiversity Net Gain Carbon offsetting
Biodiversity Net Gain	Renewable energy
Carbon offsetting	Biodiversity Net Gain

For environmental outcomes, the detail in Annex 2 provides information about the multifunctional benefits of creating habitats across the initiatives.

A section at the end of Annex 2 sets out how new farming support payments could be stacked with BNG, nutrient neutrality and carbon offsetting, where that information is known, plus detail of other initiatives being promoted and developed including comment on the compatibility of the Council's land for these schemes.

4. Site selection

This Framework sets out a range of opportunities that in theory may be achievable of Wiltshire Council land, however, the criteria for each initiative needs to be tested against the land parcels themselves then a business case established to determine its viability and likelihood of being brought forward.

A staged approach will be applied to site selection for opportunities as follows:

Stage 1 – Land review

The first stage will determine which mitigation initiatives may be possible on Council land, creating a long list of sites carried out map based review. This initially relates to land within the Rural Estate and amenity land, plus the public highway for Nature based air quality improvements only. The review will not take into account existing uses of land, nor potential uses for the sites (e.g. development), but it will take into account the ground conditions and the requirements for a successful initiative. The outcome of Stage 1 will be a list of all available physical opportunities, not considering the practical or financial implications.
This stage will not be repeated on a periodic basis, unless there are additions to the Councils land holding, the criteria for assessment changes or mitigation opportunities to consider.

Stage 2 – Site shortlisting

The outcome of Stage 1 will be used to assess other factors that have an impact on the ability to deliver mitigation initiatives, including existing tenancies (relevant to the Rural Estate), covenants associated with the land, future land uses including development. The purpose of this is to understand the potential return needed to prove that an initiative is in the best financial interest of the Council.
Developing a short-list of sites will be carried out through internal review with the Council Stakeholders. The review will focus on the self-financing initiatives, as the Council will have a choice between either an externally or internally focused proposal. They will be asked to comment on whether any proposal have either a direct or indirect impact on their service area, including alignment to council objectives (e.g. non-monetised benefits). These benefits may also assist with the ability to generate and dispose of credits especially where it links to strategic planning or environment objectives. The review will also be an opportunity to consider whether schemes can be externally or internally focused proposal.
From an Estates perspective it will factor in any existing uses, availability of land and alternate opportunities, including physical development.
Shortlisted sites will be presents to Asset Gateway & Capital Programme Board (AGCPB) to determine the preferred use of the site, considering:

- The long term impact on alternate uses
- Align with Council objectives
- Whether proposals could be either/or externally or internally focused
- The role the Council's land will take in deliver (as set out in section 6)

The sites will not all be delivered at the same time, as an opportunity to make use of the land may not be available until some time in the future, and a broad programme of delivery will be established and presented to AGCPB.

Stage 3 – Business Case

The development of a business case for self-financing and/or externally focused sites selected / approved at Stage 2 will have several aspects:

a) Stakeholder support

To have a successful scheme it is important that external stakeholders and, where public access is involved, the local community are supportive of proposals. To understand the willingness of stakeholder / community support engagement sessions and consultation will be conducted. This will include a range of stakeholders, including (where appropriate for the scheme) local elected members, town/parish councils, local resident community groups and environmental groups with an interest in the land.

This engagement will not only consider the views and ideas of the community but will also explore their role in the implementation and/or management of the initiative, where appropriate.

b) Financial

Whilst the site will meet a number of Council objectives and align with service aspirations, the financial implication needs to be carefully considered to not become a burden on the Council's finances.

Through the use of both external and internal expertise the Council will develop a financial business case to determine the likely return from any initiative, thus ensuring that the number of credits sold will cover the creation, management and monitoring of the improvements.

Where an initiative is on Rural Estate land the impact of rent will be factored into the Business Case, as will the possibility of using the tenant to carry out either or both the creation and management of the improvements, with the Council retaining the monitoring role.

c) Market assessment

Whilst a scheme may look on paper as being cost effective, it will only be successful if enough credits are sold to ensure they are self-financing. A review of the likely demand and pipeline of potential need will be carried out, with a further piece of work to

understand the likely competition from alternate schemes. This will involve potential engagement with the Council's planning teams and spatial planners and may need engagement in the development market to find suitable purchasers.

d) Legal requirements

For credits to be sold it is likely to be necessary to have then protected by covenant or legal agreement, which will be established at this stage. In addition, the regulatory / statutory body responsible for keeping a register of land will be determined and engaged.

e) Risk

Through bringing change to the existing land use there will be a number of risks to be considered and each scheme will have a dedicated risk assessment to capture the range of risks and potential mitigation strategies available.

Any sites identified that are internally focused schemes will be brought forward to AGCPB, for approval, when the responsible service area has established a proposal, including any cost avoidance value. The proposals for these schemes will be for the responsible service area to establish, including determining any capital and revenue implications.

Stage 4 – Initiative delivery

The implementation of initiatives will be established, together with the statutory consents required. This will be discussed with the stakeholder groups established in Stage 3 to ensure all parties are aware of the impact both during implementation and afterwards.

The delivery will have to consider the most appropriate time to carry out works on site and may require funding in advance of the sale of credits; this can result in greater returns from credit sales. The ability to secure funding will have to be established as will the most appropriate party to carry out the works.

Given the range of initiatives being considered under this Framework specific detail of delivery will not be detailed as the specifics of the land, proposal and potentially the community will influence this.

5. Governance

Authority to sign formal property agreements (leases and transfers) will rest with Estates, as directed by the scheme of sub-delegations. The majority of the decisions taken for operational assets will sit within the service, although on a case by case basis, sign-off may be required from Cabinet who then delegate Estates to complete the transaction. This includes the grant of tenancies within the Rural Estate, which may be utilised for a range of mitigation initiatives.

The Asset Gateway & Capital Programme Board (AGCPB) has the responsibility for making decisions for changes to the use of Council land, including re-use by Council services, disposals and investment. AGCPB will have overall responsibility for determining whether an initiative is taken forward, having considered all alternate options for a site. In some cases AGCPB will not be asked to make a decision to approve an initiative, but these occasions are limited to Rural Estate assets where there is no detrimental impact on the rent received. If necessary the Rural Estate Asset Management Framework will be updated to reflect the opportunities to make use of land for environmental mitigation schemes.

The overall programme will be managed by a Programme Executive with the Head of Estates & Development as the Senior Responsible Officer (SRO). Internal officer involvement, including internal stakeholder engagement, will be set out in a Programme Governance as approved by the SRO.

6. Finance arrangements

This Framework has the opportunity to identify both self-financing schemes and those that need Council funding, both for implementation and ongoing maintenance/management.

Whilst this is the case, the Framework will not set out a specific approach taken towards Council funded schemes as service areas responsible for these activities (for example air quality or flooding) will have to establish their own approach, except where we use “land as an enabler” the principles set out below will apply. The Framework output will inform those services area where the Council land could be included in solutions. This includes schemes where funding has been sourced through Government sources, for example woodland planting.

In respect of self-financing and/or externally focused schemes, the proposal of the Framework is to create schemes that cover both implementation and ongoing maintenance/management costs by the sale of credits. Those credits will have to be sold in any emerging market places and at the prevailing rate at the time of their sale, potentially through third party market engagement services, and after they have been formally confirmed by the relevant statutory body / code. A suitable market engagement tool will be sourced, and it is recognised that some of the credit value may be lost through engagement of a broker to maximise market opportunities.

In respect of proposals on Council land, its role as landowner and Local Planning Authority needs to be understood together with the different financial / audit requirements for both roles.

There are several ways the Council's land can be used to facilitate mitigation initiatives, and each will need a slightly different internal approach to the finances, reflecting the different roles of the Council:

a) Land as an enabler

Council land is already in use, say within the Rural Estate, is offered to a different Council Team (Client) for development of a mitigation initiative. Any income generated by the Rural Estate will have to be factored into the business case to ensure the scheme is cost neutral and cost efficient. The Client will establish funding to implement the initiative and, for externally focused schemes, sell units / credits in the market place, or secure via planning agreements. The Client will be responsible for paying for all outgoings (management, utilities, insurance payments, etc), monitoring and reporting of site during the life of the mitigation initiative.

If a Farm Business Tenancy (FBT) is needed to manage the site/habitat, then Rural Estate will receive the rent from the tenant and the Client budget to adjusted accordingly. The Client will determine the quality and specification to be included in the FBT and may ask Estates to enforce FBT, should there be any concerns over the Tenant's performance against their obligations.

b) Delivery via Farm Business Tenancy (FBT)

Council land is already in use through an agricultural tenancy and within the Rural Estate. A new tenancy will include mitigation initiative in the FBT and the Rural Estate will receive rent from the Tenant. Should there be a shortfall in rent between the market rent with and without the inclusion of environmental obligations, the Client promoting the scheme will reflect this is the business case. The Client will establish funding to implement the initiative, paying this direct to the Tenant enabling them to create the improvements, and make annual maintenance sums available to the Tenant. The Client will monitor the site, including any improvements and will use this to make annual payments to the tenant, as necessary. The Client will determine quality and specification to be included in the FBT initially and may ask Estates for enforce FBT, should there be any concerns over the Tenant's performance against their obligations.

c) Rural Estate land as direct delivery

Council land will be subject to a fundamental change where an alternate use to non-agricultural will be implemented. This will include renewal energy schemes, where the existing use is all but removed. Both the responsibility for land and any alternate revenues generated will stay within the Assets & Commercial Development Directorate, the latter compensating for the loss of any previous rent. On this basis the financial burden of no rent and costs incurred whilst void or the development process completing will sit within the Directorate. An assessment of return will be conducted

before any significant revenue or capital investment occurs to ensure that it produces a suitable return over and above any existing uses.

d) Non-commercial land as direct delivery

Council land will be subject to a degree of change where an implementation is likely to include habitat enhancement and possible changes to public access. This may include current public open space or amenity land - the Client will establish funding to implement the habitat scheme and sell unit / credits in the market place, or secure via planning agreements. The Client will be responsible for paying for all outgoings (management, utilities, insurance payments, etc), monitoring and reporting of the site during the life of the mitigation initiative.

In addition to the use of Council land there may be circumstances where the Council will need to purchase land to directly deliver mitigation initiatives:

- Private land identified by the Council Client for development of a mitigation initiative. The Client will already have secured a funding source, potentially via planning agreements or other funding sources, to purchase the site (freehold or leasehold) and implement the initiative. The Client will be responsible for paying for all outgoings (management, utilities, insurance payments, etc), monitoring and reporting of the site during the life of the mitigation initiative. If a Farm Business Tenancy (FBT) is needed to manage the site/habitat, the Rural Estate will receive the rent from the tenant and the Client budget will be adjusted accordingly. The Client will to determine quality and specification to be included in the FBT and may ask Estates to grant and enforce the FBT, should there be any concerns over the Tenant's performance against their obligations.

For all proposals a Client will be established and they will be budget holders; responsible for the funding of any proposals and disposal of credits. As an example, in respect of Bio-diversity Net Gain (including habitat loss) and Nutrient Neutrality, the Natural & Historic Environment Team will be budget holders, making direct payments associated with the schemes and arrange for monitoring / audit requirements for each scheme. As funds will be received either via s106, unilateral undertaking or CIL payments, a clear audit trail for expenditure on an initiative by initiative basis will be needed.

This Framework confirms that in respect of Biodiversity Net Gain, Nutrient Neutrality and Carbon Credits there will be no direct sale of credits between Assets & Commercial Development Directorate and developers / consumers for credits, unless brought forward as "direct delivery" defined above.

The Client budget will allow for both direct and indirect salaries to the charged to projects and overall, allowing for internal teams to cover costs of enabling, procurement, management and monitoring.

7. Stakeholders

- Third Party providers – specialists and national bodies involved in environmental mitigation activities
- Stakeholders will include a range of Council services, including:
    - Energy & FM
    - Natural and Historic Environment
    - Highways Operations
    - Local Highways, Countryside and Rights of Way
    - Climate Team
    - Public Protection
    - Highways Asset Management
- Council's Cabinet Members and Local Elected Members
- Town and Parish Councils
- Community groups and local interest groups
- Rural Estate Tenants

8. Communications

It is recognised that changes to the use of land will result in the need for consultation, outside of any required to obtain statutory consents. Ensuring both internal and external stakeholders are engaged and involved from an early stage is essential to ensure the success of any initiative.

Where an initiative is considered appropriate and to be explored, a communication plan will be developed on a case by case basis that will include all stages of the schemes including promotion of successes. Where the engagement flags any significant risk due to stakeholder feedback, the risk will be assessed and mitigations found. Should those mitigations not be suitable to the stakeholders the AGCPB will be consulted on whether to proceed or withdraw the proposal.

Communications will include the full range of media available, from face to face workshops to digital connectivity, depending on the individual communication plan established.

Elected Members and internal Overview & Scrutiny Groups will be updated on a regular basis, with the Climate Emergency Task Group have been asked to comment on this Framework before its approval.

9. Conflict of Interest

The Council has a number of roles in the implementation and delivery of Environmental Mitigation opportunities, including as:

- enabler – through use of its land or purchase of land
- implementer – establishing the specification of the schemes and either directly or indirectly delivering the opportunity
- activity monitor – monitoring the activity of the contractor to ensure habitats thrive or schemes progress as planned
- banker – holding the funds from planning agreements, making payments (including internal) for use of land, management, monitoring etc
- statutory monitoring authority – roles placed on the Council for statutory returns

Through development of this Framework, the different roles are acknowledged and demonstrate that the Council, as landowner, are not seeking a competitive advantage through promotion of its own land only. The Council has a role to fulfil its statutory duties yet it is acknowledged that the use of Council land is only one option available.

10. Monitoring and Review

Progress on the initiatives identified as a result of this Framework will be monitored on a quarterly basis with Estates & Development and reported to the AGCPB as required.

The Framework will be reviewed after 3 years of approval, to allow some initiatives to be taken forward and the impact understood, plus any changes in the criteria for assessment of land.

Annex 1 – Technical detail

Nutrient Neutrality

Description of Environmental Initiative
There are four catchments within Wiltshire that need nutrient neutrality. These are – 1. Hampshire Avon (phosphorus neutrality) 2. River Test catchment (nitrogen neutrality) 3. Somerset Levels and Moors Ramsar (phosphorus neutrality) 4. The River Lambourne (phosphorus neutrality) The Hampshire Avon catchment offers the greatest opportunity for phosphorus mitigation projects. The types of projects that are sought include opportunities for riparian buffers and wetlands. Land use change from very intensive agricultural use e.g. pig or poultry farm may also offer mitigation opportunities, especially if additionality and stacking from other environmental offsets can apply. Other agricultural land use tends not to deliver high levels of phosphorus benefit and as such may offer only limited benefits for phosphorus mitigation. There may be some opportunities for land use change in the upper Nadder catchment, and a very small part of the Upper Avon where the soils have impeded drainage e.g. clay rather than chalk. The main mitigation option that is being secured is for wetlands – either constructed wetlands downstream of Wastewater treatment works or river / stream wetlands - and riparian buffers. The Rivers Trust has produced a wetland framework to advise on design for nutrient neutrality. We are also expecting guidance from Natural England on riparian buffers in two to three months. Examples of other projects include - River Ingol Project brochure.indd (norfolkriverstrust.org) Creating new ponds with opportunities for floating wetlands, or adding floating wetlands to existing ponds are further mitigation options to be considered. Short rotation willow coppice can also remove phosphorus when situated to intercept surface run off pathways. Other technological options are possible for mitigation are possible, for example linked to package treatment plants or septic tanks (Council owned or linked to Council farms) and, possibly water efficiently in Council-owned properties. ***River Test catchment*** Wiltshire Council has a strategic mitigation scheme in place for the River Test catchment. These has capacity for immediate and future housing growth, and no further mitigation opportunities are likely to be required. ***River Lambourne and Somerset Levels and Moors*** Only very small parts of the Somerset Levels and Moors Ramsar and River Lambourne catchments fall within Wiltshire. Given this, and the lack of development opportunities in these areas, there are limited mitigation opportunities. Natural England guidance on this issue is included on our website - Phosphorus and nitrogen mitigation - Wiltshire Council
Qualifying Features
Given the Hampshire Avon is the catchment where mitigation is still sought, the area of search is within this river catchment, as demonstrated by the plan below:

Ideal Land Allocation

Proximity to rivers

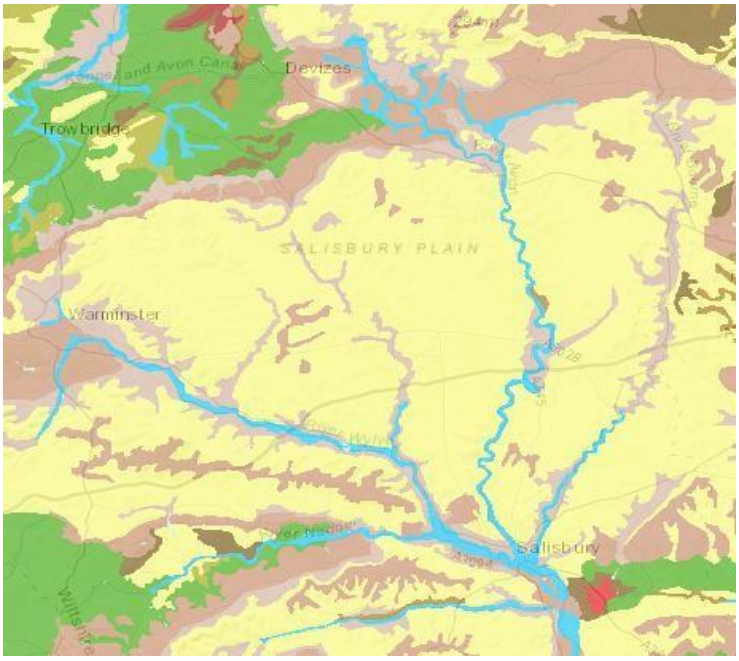
Land adjacent to the Hampshire Avon tributaries and water network.

Location

Any land in the upper Hampshire Avon catchments is sought. For example, upper Avon (upstream of Upavon), upper Wylye (upstream of Warminster), upper Nadder (upstream of Tisbury), upper Bourne (upstream of Idmiston).

Soil type

Land on soils with impeded drainage eg blue, green or dark brown categories on map below.



Soilscapes soil types viewer - National Soil Resources Institute. Cranfield University (landis.org.uk)

Size

The amount of land needed for different mitigation projects will vary. Wetlands could be between 1ha to 4 ha in size. Riparian Buffers will be a depth of around 15m from the river or stream, but the length can vary and will depend on topography and surface water overland flows. Ponds and short rotation coppice fields could be less than 1 ha.

Schemes for land use change from agricultural land to nature reserve or country park can be any size, though larger schemes, greater than 15 - 20 ha have more scope for multiple benefits.

Funding

The River Test mitigation scheme is being run as a pilot. The price for the nitrogen credits have been set by the Council at £2,500 per 1 kg /Nitrogen.

The Strategic Approach for the Hampshire Avon is funded by ringed fence pot for £850,000. A new NE Strategic Mitigation Fund is being progressed which will look at options but any mitigation (loss of rental income, habitat creation and long-term management) on Council land will be funded by the strategic approach (CiL at present, with other funding sources being investigated).

Nutrient neutrality schemes can be self-funding by the sale nutrient credits to developers. However, they do require significant capital expenditure to generate these credits.

Alignment to council objectives

Nature based solutions such as wetland, nature reserves and country parks, would need meet objectives set out in the Business Plan, Green and Blue Infrastructure Strategy and Climate Strategy.

Community engagement

Nature reserves and wetlands have scope for public access and community engagement, although maintenance may requirement specialist services that may only be deliverable by established community organisations.

Public access and health & well-being

Wetlands can provide opportunities for access to and appreciation of nature. Wetlands need to be designed to facilitate access without creating impacts that affect the functioning of wetlands systems. For example, access by dogs needs to be controlled to prevent erosion or nutrification of clean water bodies. Recreational access, particularly any interaction with water bodies (e.g. fishing, pond dipping) also needs to be managed.

Biodiversity Net Gain

Description of Environmental Initiative
Biodiversity net gain (BNG) is a process whereby development leaves biodiversity in a better state than before. BNG is a habitats based assessment which requires the calculation of baseline biodiversity 'units' and post-development (or other intervention) units. The aim for any project is to result in a net gain in those biodiversity units. Mandatory biodiversity net gain was introduced with the Environment Act 2021. At the time of writing, the Secretary of State for the Environment is drafting regulations which will set out how mandatory BNG will work. These regulations are due to come into force late in 2023. In due course, most developments and Nationally Significant Infrastructure Projects will be required by law to deliver a 10% net gain in biodiversity. The National Planning Policy Framework includes the need for development to deliver biodiversity net gain. As such many developments are already required to deliver a net gain, but not at a specified level. Some Local Plans also include BNG policy and set out net gain targets, some of which are above the nationally mandated 10%. In practice BNG will mean developments will need to be designed so as to reduce their impacts on the most important habitats. For many sites, especially small ones or those on relatively high quality habitat, will not be able to deliver a net gain on site. For these sites, developers will be required to offset their impacts by paying for biodiversity enhancements on other land. This land will either be purchased by the developer for that purpose, or developers will purchase units from habitat banks owned by third parties. Habitat banks are where landowners enhance their land to improve it for biodiversity and then sell the units generated to developers that need them. These habitat banks will need to meet target habitats and condition and will need to be managed for a minimum of 30 years. In addition, there is going to be a requirement to register sites with a regulatory; likely to be Natural England, and the potential for conservation covenants to be placed on the title. Wiltshire Council, as landowners, will be in a position to create habitat banks and sell biodiversity units to developers requiring units in Wiltshire. The regulations will also set out how this can be achieved while not creating a monopoly.
Qualifying Features
BNG works best when enhancing land of low biodiversity value to land of high biodiversity value, or improving the condition of existing habitats. Habitat creation or restoration should also be targeted in those locations that will make the greatest contribution to wider nature conservation targets. This includes sites with the Nature Recovery Network as well as Wiltshire Nature Map Strategic Nature Areas. Many of the UK's most valuable habitats for biodiversity rely on grazing animal to maintain them (lowland meadows, chalk grassland, heathland, wood pasture and parkland). The successful creation or restoration of these habitats is therefore likely to require livestock as part of the management system. Alternative management systems are possible and these should be considered where livestock are considered impractical. Therefore when planning BNG schemes, management plans need to consider the practicalities of including livestock in the management system.

BNG should enhance landscape character not transform it. Therefore proposals for BNG schemes will need to fit within the existing landscape. Largely this means enhancing the biodiversity value of existing habitats, not creating completely new ones. Some limited transformation may be acceptable, but it should be an exception. Restoration of past habitats is encouraged.

Ideal Land Allocation

BNG works best at scale. This is because the capital and maintenance costs are scale dependent, meaning small sites are more costly per hectare than larger sites. Therefore, as a general rule it is recommended that sites have a minimum area of 5 hectares, and larger sites should be prioritised.

Sites will only be considered for BNG if they are within:

- Natural England's Nature Recovery Network; or
- Wiltshire Nature Map Strategic Areas

Woodland

- Only existing woodland should be considered for BNG.
- Creating woodland under BNG does not generate many units per hectare. Therefore, improving the condition of woodlands should be prioritised, by bringing them back into active management.

Wetland

- Wetland sites can only be created on impermeable soils/geology.
- Wetlands can only be created within Flood Zones 1 and 2.

Grassland

- Where possible, grassland enhancement for BNG should target the restoration of degraded priority grassland.
- Target habitat for grassland will partly depend on the geology / soils, as well as past land use.
- Soil properties need to be measured to determine the most achievable outcomes.

Hedgerows

- Where possible hedgerows should connect other habitats, such as woodland or other hedgerows
- Hedgerows should be native and species rich, and should include standard trees.

Rivers

- River enhancement can only be carried out where Wiltshire Council is the riparian owner.

Funding

Funding for biodiversity net gain will come from the sale of generated biodiversity units to developers that require units to offset their development impacts.

Some capital funding may be required to set up habitat banks.

Any income will need to cover these capital costs, plus 30 years of management and monitoring of the habitat bank, but **BNG schemes should be self-financing if delivered at an appropriate scale**.

Alignment to council objectives

BNG will underpin the Local Plan by providing a solution to those allocated sites that cannot deliver an on-site net gain for biodiversity.

BNG will also channel funding into habitat creation and restoration in priority locations for nature conservation.

BNG funding should not replace existing budgets to manage parks and open spaces with high biodiversity, as this would lead to an overall loss of biodiversity in Wiltshire.

BNG delivered on the Council's farms supports the Rural Estate Asset Management Framework objective to *'promote sustainability, biodiversity, climate change resilience and public access across the Estate by encouraging and supporting, as appropriate, a full range of innovative measures and activities.'*

Community engagement

BNG schemes need to be managed and monitored for a minimum of 30 years. Any organization entering into BNG agreements needs to be able to demonstrate that they are able to commit to and deliver a 30 year scheme. As such, the communities may find it difficult to demonstrate this ability. However, community groups may be able to enter into partnerships with other organisations in taking on responsibility for some aspects of habitat banks. For example, the community could play a role in monitoring the site for changes in biodiversity.

Where a Council farm tenant is asked to deliver the BNG measures as part of their farm tenancy they will commit to deliver the scheme for the duration of their tenancy agreement which may be for 10 or 15 years. Following this period the Council will need to re-let or dispose of the property to another party who is prepared to commit to delivering the scheme for the remainder of the 30 year period.

Public access and health & well-being

Public open space is not a priority for BNG. This is because disturbance and eutrophication from recreational uses of open space place a ceiling on the habitats and their condition that can be created in open spaces. There is also often conflict between recreation ususes of open space and livestock that are often required to manage semi-natural habitats. As BNG works best when public access is limited, public access will not be increased through BNG.

Health and well-being benefits of BNG are likely to be limited as a result of the restrictions in public access. However there may be opportunities to facilitate limited public access to some sites for the observing and appreciation of nature.

Nature-based Carbon Offsetting

Description of Environmental Initiative
Nature-based carbon offsetting is a process whereby carbon dioxide is removed from the atmosphere through natural processes. The carbon dioxide removed is quantified and the CO_2 captured can then be sold to offset another organization or individual's carbon emissions. In theory, an organisation's emissions are offset by the sequestration in biomass leading to net zero emissions. However, in reality, CO_2 emissions are increasing year on year and there is relatively low sequestration rates due to intensive land management. Natural processes can be used to sequester some of the CO_2 in the atmosphere, which coupled with drastically reducing emissions would help mitigate the effects of climate change. Currently in the UK there are two verified nature-based carbon offsetting schemes – The Woodland Carbon Code and the Peatland Carbon Code. Both of these schemes are run by the Forestry Commission. Verified carbon standards for other habitats are emerging (e.g. Wilder Carbon), but as yet these are not widely available. Therefore, the criteria set out below will need to be revised as other schemes become established as other land may become suitable for nature-based carbon offsetting. Carbon offsetting by removals is therefore restricted to the woodland and peatland carbon codes. Many other semi-natural habitats sequester carbon. Grasslands and wetlands also sequester carbon, but at present, no mechanism exists for verifying the carbon sequestered by these habitats. It is possible however to measure carbon sequestered by natural habitats. This should be considered as part of any scheme that creates new habitat, so that future opportunities can be captured.
Qualifying Features
Peatland • Unlikely to be relevant to Wiltshire as this scheme is for peatland restoration. There are no peatland sites in Wiltshire that would qualify for this scheme. Woodland • New woodland needs to be accessible to forestry machinery and vehicles and therefore existing or new access tracks will be required. • Consideration of risks associated with trees need to be considered, especially in proximity to residential dwellings. New woodland creation therefore should be located largely in rural areas. • New woodland should be of native species to deliver other environmental outcomes. • In applying for the Woodland Carbon Code, woodlands will need to be approved by the Forestry Commission.
Ideal Land Allocation
• For woodland creation, land should be of a low ecological value. Any sites with priority habitat or those designated for nature conservation will be excluded. • New woodland planting should strengthen landscape character. Sites in landscapes where new woodland planting would not be appropriate in a landscape will be excluded. • Sites within 50 metres of residences may be excluded, subject to impact on those residences. • Sites with underground utilities will be excluded to preclude the risk of damage to infrastructure. • Sites should have a minimum area of 1 hectares to comply with the Woodland Carbon Code. Woodland over 0.5 ha will require an EIA. • Sites should have either (a) existing access, or (b) be within 200 metres of an existing access

Funding
Registration under the Woodland Carbon Code does not preclude landowners from applying for funding from other schemes including the Woodland Creation Planning Grant and the English Woodland Creation Offer. However, these schemes have eligibility criteria independent of the Woodland Carbon Code and capital costs for woodland creation will be required where sites are not eligible or funding is insufficient to meet the requirements of the site. Once approved, carbon credits can be sold via the Woodland Carbon Code market place. Carbon credit prices are approximately £70 per kilo of carbon sequestered. **These schemes are likely to be self-funding through a combination of grant funding and carbon credit sales. They do require potentially significant capital sums to create carbon offsets.**
Alignment to council objectives
Wiltshire Council may be able to use some of the carbon credits generated through woodland planting to offset their own emissions on their path to carbon neutral and net zero.
Community engagement
Communities could be involved in tree planting and possibly woodland management. It may be possible to set up community share offers so that individuals can invest in carbon offsetting for their own emissions.
Public access and health & well-being
Woodland created for carbon offsetting can be designed so as to create a recreational resource.

Water management (Natural Flood Management)

Description of Environmental Initiative
Natural Flood Management (NFM) is when natural processes are used to reduce the risk of flooding. It involves implementing measures that help to protect, restore and emulate the natural functions of catchments, floodplains and rivers. The aim of NFM is to reduce the maximum volume of water during a flood or increase the time it takes for flood water to move downstream, providing more time to take action during flood events. There are three main ways for reducing flood water volumes and delaying floods: • Increase flood water storage capacity by creating temporary storage which will fill up during a flood event and empty slowly. This is achieved by reconnecting functioning floodplains and creating storage ponds. • Increasing catchment and channel roughness. This 'slows the flow' by increasing the time it takes for flood water to move through the catchment. Approaches include planting trees and hedgerows, restoring meandering rivers and installing leaky dams. • Increase the amount of water that drains (infiltrates) into the ground or is lost back into the atmosphere via evapo-transpiration. This can be achieved by changing agricultural practices to improve soil structure and reduce soil compaction, or installing sustainable urban drainage systems (SUDS). Some interventions, such as tree planting, can have more than one benefit. Trees increase surface roughness and therefore 'slow the flow' as well as increasing evapo-transpiration rates. NFM approaches will not solve all flooding issues, and other measures such as engineered solutions or community resilience measures will also be required to reduce the impact of flooding.
Qualifying Features
Constraints: • Some works, especially those to rivers, may need consent from the Environment Agency, and their advice should be sought on any proposals. • Works should not be carried out on land designated for biodiversity, or on priority habitats, unless the works will only result in a biodiversity enhancement. • Tree planting should strengthen landscape character. • All proposals should carry out a heritage search to avoid disturbing archaeological or heritage assets. • Works should be located away from residential development so as not to increase flood risk from some activities. Flood water storage • Ponds should be located in the river flood plain to maximise flood water storage. These can be a combination of shallow scrapes or deeper ponds that hold water all year round • Flood plain reconnection can only take place within the floodplain 'Slow the flow' • Woodland can be planted anywhere in the catchment, but must not harm landscape character. Ideally woodland should be planted at the top of the catchment to slow the flow before it reaches the watercourse. • Works to river banks and re-meandering rivers should avoid loss of habitat already valuable for biodiversity. • Leaky damns will require adjacent land to be either permanent grass or woodland to avoid loss of arable crops or other sensitive land uses.

Ideal Land Allocation

- Any land in flood zone 2 and 3 which is not excluded for other reasons
- Any land in riparian ownership
- Any identified 'Working with Natural Processes' options as identified by the Environment Agency

Funding

From the 'Catchment Based Approach' website: https://catchmentbasedapproach.org/learn/find- funding-for-natural-flood-risk-management-projects/

Grant in Aid (GiA) DEFRA funding

Risk management authorities (RMAs) can apply to Defra for Grant in Aid (GiA) to deliver flood risk management schemes. For every possible Flood and Coastal Erosion Risk Management scheme around the country RMAs must make the case to Government to provide the money to cover the scheme costs. Before giving any money the Government require RMAs to go through an appraisal process and demonstrate that money spent on managing flood risk benefits the nation as a whole rather than just locally or specifically for a homeowner.

Local Levy (Regional Flood and Coastal Committees RFCC)

Projects are selected by committee. The local levy can fund all types of flood risk management projects, both traditional and natural approaches, but only those not funded by GiA. Funds are raised by a levy on local authorities and committee members are appointed from Lead Local Flood Authorities and the Environment Agency to plan and invest in flood and coastal erosion risk management.

DEFRA Natural Flood Management Funding

Following the 2016 Autumn Statement, Defra announced £15 million of government funding for natural flood management schemes across England. The Environment Agency, Natural England and Forestry Commission, identified a number of projects at a catchment or coastal zone scale, and following consultation with the Flood Minister, have allocated funding to 24 projects. £1m of funding was also set aside for an 'open competition' for community projects.

Countryside Stewardship

Countryside Stewardship provides financial incentives for land managers to look after their environment through activities including: flood risk management; conservation; woodland creation and management and reducing water pollution from agriculture. The funding is highly competitive and favours projects addressing regional priorities and delivering multiple objectives.

Community Infrastructure Levy

Community Infrastructure Levy is charged by local authorities on new developments and the funding raised can be spent on a range of infrastructure including transport, flood defences, schools, hospitals, recreation, and open spaces. There is a high demand for funds and local funding priorities will vary. Funds are allocated by local authorities.

These schemes are unlikely to be self-funding, as there are no saleable credits or other sources of income generated.

Alignment to council objectives

Reducing flood water volumes will benefit residents by reducing the risk of homes and businesses flooding.

Natural Flood Management will also deliver other environmental benefits such as increased biodiversity, improved water quality, and carbon sequestration (from woodland planting and pond creation).

Community engagement
Stakeholders, such as Bristol and Avon Rivers Trust, Wildlife Trust and local groups may have identified projects which could deliver natural flood management benefits.
Public access and health & well-being
Reducing the impact of flooding has significant health and well-being benefits, but these are related to flooding itself. The interventions to achieve these outcomes can be designed for recreational access, such as catchment woodland planting. However, overall, natural flood management does not create many recreational opportunities, as they are often limited in scope. There is however a general improvement to the riparian environment which, where access is already provided, will create better experiences.

Renewable Energy

Description of Environmental Initiative
Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed. They also create far less emissions than burning fossil fuels and are a key part of addressing the climate crisis. The UK government has set a target of achieving net zero emissions by 2050. The UK Net Zero Strategy sets a target that all electricity will come from low carbon sources by 2035, subject to security of supply, whilst meeting a 40 – 60% increase in demand. Challenges for renewable energy include: • Uncertainty in the long-term laws, policies and incentives relating to renewable energy. • Intermittency of output in providing a stable power supply. • Technology for renewables projects is rapidly evolving and investment in the technology can be costly. • Constraints within the grid network.
Qualifying Features
There are several factors that must be taken into consideration when scoping out sites for renewable energy. Sites for renewable energy will require careful consideration due to landscape and visual impacts, especially in designated or sensitive areas, such as: • Sites within any landscape designations (AONB, National Park, greenbelt) • Sites within or near any environmental designations (SSSI, SPA, SAC, RAMSAR, LWS) • Sites related to any heritage assets Additional considerations include impacts on biodiversity, the transport network, residential amenity, best and most versatile agricultural land. The minimum size site requirement varies dependent on the type of energy, based on current assumptions relating to commercial viability. Solar – minimum of 6 acres Wind – minimum of 25 acres Battery storage – minimum of 2 acres. If looking at existing buildings these should be circa 10,000sq ft. Sites must be close to a grid connection (details of types of ideal grid connection distances for each type of energy can be found in the following section), as the further away from the grid, the higher the cost of connecting.
Ideal Land Allocation
Solar • **Land Type**: Agricultural land grade 3b or below, or brownfield, contaminated and industrial land. Not in a flood zone. No PROWs. • **Connection to the grid**: be within 3km of a 33kV or 11kV line and within 5km of a substation (unless all power is being fed directly into building use). • **Topography**: land should have a slope less than 5 degrees. • **Irradiance**: site should ideally be south facing. • **Proximity to dwellings**: no buildings or trees causing shade.

Wind

- **Connection to the grid**: be within 10km of a substation and within 3km of a 33kV line.
- **Aviation**: not in an aviation zone.
- **Wind speed**: an average wind speed of 6m/s (though lower speeds may be viable in future).
- **Proximity to housing**: not be within 500m of a residential property.
- **Access**: have access to a road for works vehicles (lorries, cranes).

Battery Storage

- **Land Type**: Agricultural land grade 3b or below, or brownfield, contaminated and industrial land. Not in a flood zone 2 or 3. Could also be situated within existing buildings. No PROWs.
- **Connection to the grid**: be within 1km of 11kV, 33kV, 66kV or 132kV of cables (overhead or underground).

Funding

CfD (contracts for difference) is the government's main mechanism for supporting renewable energy generation where a strike price is agreed for the power generated. They are competitive auctions which provide efficiency and cost reduction but participating in a CfD round is costly and competitive therefore is more suitable for large-scale well-funded projects. To date these auctions have been sporadic, but from 2023 auctions will be held annually.

Other models for renewable energy include:

1. Direct development and ownership of renewables
The best returns under this model are where renewables can be co-located with buildings or a source of demand. The renewable energy goes directly into the site of demand and offsets the higher cost of imported electricity. The CfD mechanism could also be used here for the right type and scale of project.

2. Private wire renewables or micro-grid developments
Linking generation through a private wire or a micro-grid bypassing the UK grid network. This can provide cost savings through not requiring a supply licence and reduce upfront development costs. An example of this could be where the local authority could generate electricity and supply it directly to a social housing site.

3. A sleeve PPA Agreement
A sleeve PPA (power purchase agreement) is a structure that can link renewable energy generation with demand where the electricity is transported through the UK grid network with an energy supplier acting as a 'go between'. The PPA provides a contractual link between the demand customer and generator – there are no physical links. The benefit to this is fixing a price for the electricity generated over a long period.

More detail on these and some more emerging models for local authorities for development renewable energy can be found in this Regen paper - https://www.regen.co.uk/publications/local- authority-models-for-developing-renewable-energy/

Overall these schemes should be self-financing either through sale of energy to third parties, include the National Grid or through cost savings by the Council purchasing energy. This is subject to a target rate of return that would be set by the Council.

Alignment to council objectives

Renewable energy aligns with the overarching objectives of the Council Climate Strategy 2022 with the aim for Wiltshire and Wiltshire council to be carbon neutral by 2030.

Community engagement
Renewable energy generation can provide many opportunities for communities including: • Increase in jobs in construction and operation. • Lower energy prices for local households and businesses. • Greater local energy security and resilience. There is also potential for community energy groups to buy projects or become a delivery partner which then could lead to groups retaining profits and using within a community. There are already several community energy groups within Wiltshire including Salisbury Community Energy, Nadder Community Energy, Wiltshire Wildlife Community Energy and Bath & West Community Energy. Community Energy England provide support for both existing and potential new community energy groups - https://communityenergyengland.org/.
Public access and health & well-being
Energy generation schemes do not provide any recreational or health and well-being opportunities, as they are potentially dangerous environments and need to be kept secure.

Bio-mass fuel growth

Description of Environmental Initiative
Utilising some of the council owned land to grow perennial energy crops (PECs) that can be harvested, pelletised, and burnt in biomass boilers. This would not be an opportunity that the council could utilise for its own biomass boilers, as the quality of pellet that is produced is not of sufficient quality. However there is a market for using the pellet at more agricultural boiler sites and there is an opportunity to produce pellet to sell into this market. The opportunity is to grow the crops and supply a current processor/manufacturer (ideally within Wiltshire), who would then sell into this market.
Qualifying Features
A recent analysis concluded that the majority of farmland in Wiltshire is suitable for growing PECs, having looked at climate, soil types and land characteristics. Land that falls into Soilscape 18 and Soilscape 8, being heavier clay soils with greater moisture retention and fertility are well suited to PECs. Specifically, the Avon Vales and Salisbury Plain and West Wiltshire Downs areas were highlighted as being very suitable. The 30-year average rainfall, mean temperatures and sunshine for Wiltshire are deemed average to good conditions for growing PECs.
Ideal Land Allocation
Whilst there is no specified land requirement for crop growth, the nature of it being an arable product the opportunity is limited to the county farms only, rather any change of use from open space or recreation purposes. The type of crop chosen as the PEC would also dictate the land required, see detailing the different product details: **Short Rotation Coppice (SRC)** • SRC involves the planting of fast-growing willows at very close spacings (15,000/hectare). • Poplar can also be grown as SRC, but this is less common in the UK. Currently there is around 2,000 – 4,000 hectares of SRC planted, mostly in Cumbria, Yorkshire and the East Midlands. There is currently very little in the south west of England. • Harvesting takes place every 3 years. • SRC will reach a height of 7-8 metres after each 3-year cycle. • Planting should take place between March and May. • After establishment SRC is usually cut back to its base to promote coppicing. • The best option would be to plant equal amounts over a three-year period so every year a similar amount is harvested. • Rabbits are an issue – shooting is an option but only reduces the problem by 30%. Fencing is 100% effective but expensive. • SRC involves an intimate mixture of six varieties with different genetic backgrounds. Most varieties are rust resistant. Some varieties are more prone to beetles than others. Mixing varieties reduces this threat. • SRC is a very good habitat for insects and birds. • SRC is harvested wet (50-55% MC). It is best to harvest in spring. Harvesting in summer is an option but is less advantageous as this produces poor quality chip and undermines biodiversity benefits. • Planting and harvesting of SRC involves bespoke equipment and there are only a few machines and contractors currently active in the UK (mostly in the North of England and Northern Ireland). • SRC willow roots tend to be very fibrous, with the majority being located in the top 30 cm of the soil. • Future crop removal should be a simple enough task although this is fairly expensive .

Short Rotation Forestry (SRF)

- SRF involves planting single stemmed trees over rotations of 8-20 years depending on the species chosen.
- Stocking rates can vary according to species. Typically, exotics would be planted at 1,650/ha whilst natives would have closer spacings of 5,000/ha.
- There are an estimated 2,000 hectares of SRF in the UK.
- The fastest growing trees (e.g. eucalyptus) can reach a height of over 10m in 5 years and up to 20m after 20 years.
- The stem diameters can reach 10-20cm at breast height (1.3m).
- Fast growing trees with potential for SRF include native and honorary native trees such as poplar, hybrid aspen, sycamore, ash, birch, alder and spruce and exotic species such as Eucalyptus spp. and southern beech (Nothofagus spp).
- All operations are performed using conventional forestry equipment and the quality of woodfuel produced should be superior to SRC.
- After harvesting, stools can be allowed to regenerate as coppice or new plants can be established in gaps between existing stumps.

Miscanthus

- Miscanthus is a woody rhizomatous C4 grass species which originates in SE Asia.
- Miscanthus rhizomes should be planted in the spring between March and May at very close spacings (20,000/hectare).
- Harvesting takes place every year in March-April.
- As it's a perennial crop with an annual harvest, miscanthus is an easier crop to get farmers to grow. There are currently around 10 – 15,000 hectares planted in the UK. The main areas are the South West, the East Midlands, the East of England and Yorkshire.
- A reasonable crop can be harvested after year 2 but the crop doesn't reach full maturity until years 4-5.
- Mature miscanthus plots reach a height of 3 metres each year.
- Miscanthus performs best on former arable land. If the crop is to follow grass it is advisable to plant a cereal break crop to reduce the possible predation of rhizome roots by wireworms and leatherjackets.
- Miscanthus cultivation uses readily available machinery – there are lots of planters and many options for harvesting.
- Miscanthus is planted as a monoculture of one variety.
- Rabbits are an issue during establishment.
- Miscanthus does not respond to nitrogen fertiliser.
- Miscanthus can be harvested dry (~16% MC) but this relies on good (i.e. dry) spring weather conditions. In wet springs, the moisture content of chip can be ~30% MC.

Funding

The main income opportunity is the sale of PECs to the pelletising industry, where they can be used to produce pellets for burning. The amount of income that could be gained for this is not known.

There is also a potential for income from Carbon Trading through a scheme like the Woodland Carbon Code, however this does not currently cover PECs, although this is under review and may develop in the future.

Alignment to council objectives

Other benefits could include self-sufficiency of fuel supply and less volatility in pellet costs, should suitable quality pellets could be produced in the future; potential for improved control over fuel quality; long term commitment for council farms; potential to improve water quality by reduced run off; potential flood mitigation; some PECs are promoted for attracting specific bird types, pollinators, and invertebrates, hence adding to biodiversity.

Community engagement
These proposals are unlikely to create any additional jobs unless rolled out on a large scale. There is potential for working with existing farmers to switch to PECs on current arable land.
Public access and health & well-being
Bio-fuel crops do not provide any recreational or health and well-being opportunities, as they are potentially dangerous environments and need to be kept secure.

Nature-based Air Quality Improvement

Description of Environmental Initiative
Poor air quality is the largest environmental risk to public health in the UK, as long-term exposure to air pollution can cause chronic conditions such as cardiovascular and respiratory diseases as well as lung cancer, leading to reduced life expectancy. Air pollution is a complex mix of particles and gases of both natural and human origin. Particulate matter (PM) and nitrogen dioxide (NO_2) are both major components of urban air pollution. DEFRA currently requires every district and unitary council to submit an annual report on air quality within their area called an Annual Status Report. This details whether Air Quality meets UK legal requirements in their area. Air Quality Monitoring Areas (AQMAs) have been identified within Wiltshire where air quality is known to be an issue. Air quality in Wiltshire is predominantly good with the majority of the county having clean unpolluted air. There are however a small number of locations where the combination of traffic (the primary source of the pollutants is vehicle emissions), road layout and geography has resulted in exceedances of the annual average for nitrogen dioxide (NO_2) and fine particulates (PM_{10}). Nature-based Solutions (NBS) address societal challenges through the protection, sustainable management and restoration of both natural and modified ecosystems, benefiting both biodiversity and human well-being. NBS are underpinned by benefits that flow from healthy ecosystems. NBS represent a key approach to improving air quality. The use of vegetation, and notably trees and hedgerows, has been shown to be highly effective for air pollution mitigation, either by particles being deposited on the leaves and from gases being absorbed (through stomata). This assessment considers Council land that may have potential for tree and hedgerow planting to improve air quality. Although not included within the scope of this assessment, it is important to note that other NBS such as green roofs and walls with herbaceous perennial species can also help improve air quality, especially in very dense areas where the use of hedgerows or trees is not possible e.g. due to lack of space[1].
Qualifying Features
The underpinning principle for any new tree or hedgerow planting is 'the right tree, in the right place, for the right reason'. Ensuring the right trees are planted in the right places will: • Complement landscape character and protect important views • Avoid damage or loss of ecological habitats and species and heritage features. • Avoid loss of the most productive agricultural land and soils. • Contribute to national, regional and local tree & woodland aspirations e.g. The Great Western Community Forest. There are a huge number of species and varieties of trees that grow in the UK. Every species or variety has its own characteristics and tolerances which determine the best locations for it to grow and its practical use. In selecting tree species for planting it is important to take into consideration the environment into which the tree is being planted, what contribution it needs to make (in this case the primary focus being improving air quality) and the tolerances of the tree to these environmental conditions e.g. shading, drought, waterlogging and salt levels (from winter road salt spreading).

[1] European Commission, Directorate-General for Research and Innovation, Calfapietra, C., *Nature-based solutions for microclimate regulation and air quality : analysis of EU-funded projects*, Publications Office of the European Union, 2020, https://data.europa.eu/doi/10.2777/383904

Air quality can impact the growth and phenology of plants. Damage to the physiological status can drastically decrease the mitigation potential and ecosystem services provision. In some cases plant based solutions can provide ecosystem disservices in terms of air quality, and therefore the species of plant should be chosen with care e.g. considering pollen emissions and biogenic volatile organic compounds (BVOCs).

Leaf shape, area and surface texture are important aspects of a tree's ability to remove fine particulate pollution from the air. Primarily rough leaf surfaces and volume of surface area equates to maximum trapping benefit. Spreading crown types provide greater shading and cooling functions but may restrict the dissipation of pollutants in the air; this is particularly an issue where tightly spaced buildings create 'canyons' of poor air flow. More upright (fastigiate) forms tend to be more suitable for street trees, while they provide less of a shading or cooling function and can be of lower value to wildlife, they can still trap fine particulates, allow air passage and tend to be less conflicting in close proximity with passing traffic and residents.

Detailed guidance to selecting street trees has been produced by the Trees and Design Action Group (TDAG) in their guidance 'Tree Species Selection for Green Infrastructure'[2].

Tree and hedgerow planting to improve air quality should seek to optimise wider benefits to society and the environment where possible, such as providing shade in dense urban areas, and being connected to green corridors to improve biodiversity.

Monitoring the possible contribution of new tree planting in air pollution mitigation could utilise the i-Tree model.

Ideal Land Allocation

Given that the primary source of the pollutants (NO_2 and PM_{10}) is vehicle emissions, the Wiltshire Air Quality Monitoring Areas (AQMAs) should from the basis of selecting council land for potential tree and hedgerow planting.

Adopted highways land (both verges and pavements – identified using Council GIS data and OS Mastermap) and amenity green spaces (identified in the Wiltshire Open Space Assessment) are likely to have some of the highest potential for tree planting. Other types of open spaces such as parks and recreation grounds may also have potential to accommodate trees in low numbers, but these spaces have not been considered as part of this desktop assessment.

<u>Adopted highways land within AQMAs</u>

Potential for street tree planting (and/or hedgerow planting) will be identified within the AQMAs on adopted highway grass verges and pavements. Verges and pavements at least 2.5 meters wide, and at least 4m from a building will be identified, and existing tree canopy data (where it exists) will be used to scope out areas where there are existing trees (a 7m buffer will be applied to the existing tree canopy).

<u>Amenity green spaces within AQMAs</u>

Amenity green spaces are informal areas for recreation, which often consist of large areas of short mown amenity grass of poor botanical diversity. This lends many amenity green spaces to having good potential for tree planting, although this needs to be balanced with existing recreational use e.g. the space may be providing an area for informal football. In the same way as adopted highways, amenity green spaces will be identified, of at least 2.5 metres width, and with 4m buffers around buildings and 7m buffers around existing tree canopy scoped out.

[2] https://www.tdag.org.uk/species-selection-for-green-infrastructure.html

Before any tree/hedgerow planting scheme can take place, an assessment of the potential planting site is required (ground truthing). This requires considerations such as the rooting environment, built structures, utilities, future space and pollution. Full guidance is provided by the Tree and Design Action Group (TDAG) 'Trees in Hard Landscapes' guide[3]. Community engagement and support is also vital.

Funding

Funding and resources for tree planting can come from a number of sources including:

- Online sponsorship platforms such as Trees for Streets or the National Tree Sponsorship Scheme
- Levelling Up Fund
- Trees for Climate grant administered through the Great Western Community Forest.
- Woodland Trust Free Tree Packs e.g. for schools and community groups
- Countryside Stewardship, and various woodland creation and maintenance/management grants for landowners.

https://tcpa.org.uk/resources/funding-sources-for-green-infrastructure/

These schemes are unlikely to be self-funding, as there are no saleable credits or other sources of income generated.

Alignment to council objectives

Tree and hedgerow planting to help address poor air will support the delivery of the Air Quality Strategy for Wiltshire (2019-2024), and also links to wider council priorities around being carbon neutral and net zero and biodiversity.

Community engagement

Any successful tree planting scheme requires the community's support, and their direct engagement can also increase the chances of street tree planting being successful e.g. from championing trees to helping with maintenance such as watering in the first 3 years of planting. Consultation for tree planting should be started at an early stage in the process with local residents and stakeholders.

The Council has established local air quality steering groups to spearhead local initiatives to improve air quality where AQMAs have been declared. These groups could play a key role in engaging the community.

Public access and health & well-being

Trees provide additional health and well-being benefits by reducing surface water flooding and increasing cooling and shading in the summer. Trees also contribute to the visual appeal of places. As such they provide a wealth of benefits. Trees also create a sense of place and can enhance the appeal of recreational spaces.

[3] https://www.tdag.org.uk/uploads/4/2/8/0/4280686/tdag_trees-in-hard- landscapes_september_2014_colour.pdf

Annex 2 – Stacking

Nutrient Neutrality

Financial stacking

Stacking with biodiversity net gain
Nutrient neutrality interventions comprise either wetland or riparian buffer creation. At present, further guidance is awaited from Defra on how these mitigation options should be designed in order to reduce nutrient pollution of designated waterbodies. However, creating these habitats will have biodiversity benefits. Again, further guidance is awaited, but it may be possible to deliver nutrient mitigation and BNG from the same scheme. Funding derived from nutrient neutrality is aimed at nutrient removal, whereas BNG is funding the biodiversity benefits of an action. The key with all BNG related projects is to demonstrate additionality, as set out in the BNG Good Practice Principles for Development (CIEEM, 2019). Additionality refers to delivering something that is not required by another piece of legislation or policy. In the case of nutrient neutrality and BNG, it needs to be clear how nutrient reductions are achieved in addition to the biodiversity gains. At present it is not clear how this can be demonstrated.

Stacking with carbon offsetting
In creating wetlands for nutrient mitigation, there may be opportunities to stack carbon offsetting. If wetlands for nutrient mitigation can be designed to be peat-creating (i.e. lowland bog) then there may be scope to register the scheme with the peatland carbon code. However, this would need to be investigated with the Forestry Commission to explore the possibilities. If verified by the Forestry Commission, credits could be sold in the market, but they can also be used for internal carbon accounting. Guidance from Defra is needed to provide clarity on these financial mechanisms.

Environmental outcome stacking

The creation of wetlands and riparian buffers will also deliver carbon sequestration, biodiversity net gain and natural flood management.

Wetlands are known to be good at sequestering and storing carbon. This is particularly true if peat forming processes occur in wetland systems.

For biodiversity net gain, wetland habitats are highly valuable habitats that support a wide range of species. If located adjacent to rivers and streams, they provide useful additional wetland habitat for wading birds, as well as being important for amphibians, insects and plants. Wetlands can be designed to include both permanent and ephemeral habitats which maximise their biodiversity value. Species- rich riparian buffer strips can be created, enhancing their value for biodiversity.

Wetlands, both temporary and ephemeral, provide flood water storage if located in the floodplain. When located elsewhere in the catchment, wetlands and riparian buffers intercept water, slowing the flow of water across the surface and into rivers, reducing flood volumes.

Biodiversity net gain

Financial stacking

Stacking with renewable energy
Biodiversity net gain can be delivered on the same land as renewable energy projects, in particular solar projects. Solar schemes can be designed to provide space underneath and between panels, to facilitate grazing by sheep and the creation of a species rich grassland. Hedgerows surrounding a solar scheme can also add important habitat and create biodiversity units. A solar scheme may limit the value of the habitats that can be created, but nonetheless, an income from both a solar scheme and a BNG scheme can be achieved. Wind schemes may also be suitable for BNG, but care is required to avoid conflicts between turbines and birds. However, there is scope to create species rich habitats in wind schemes.

Environmental outcome stacking

The creation of habitats for biodiversity can also deliver nutrient neutrality, carbon sequestration and natural flood management.

The relationship between nutrient neutrality and biodiversity net gain has been explored in the previous section.

The creation of semi-natural habitats will, over time, sequester carbon, especially when compared to more intensive land uses. Different habitats sequester carbon at different rates and some habitats can be a significant store of carbon over time.

The creation of natural habitats can have positive impacts on natural flood management. This is in two ways: first in providing additional flood water storage through the creation of ponds and scrapes; and second by slowing the flow of water over the surface and therefore reducing flood water volumes.

Therefore the creation of natural habitats anywhere in a catchment will help to reduce the impact of flooding.

Carbon offsetting

Financial stacking

Stacking with biodiversity net gain
Biodiversity net gain can be stacked with carbon offsetting for woodland. Woodland design is important to make sure the BNG is additional to the carbon offsetting scheme. A single species woodland can be designed to capture carbon. By planting a mixed species woodland, the difference between a single species and mixed species woodland can be captured for BNG. In this way, carbon offsetting adds additional income to woodland planting, which does not generate that many units for BNG.

Environmental outcome stacking

Carbon offsetting via tree planting can also deliver biodiversity outcomes, natural flood management and air quality improvements. Woodland creation creates habitats for biodiversity, as well as slowing the flow of water across the landscape to reduce flood volumes. Tree planting can also reduce air pollution, by trapping and absorbing both gaseous and particulate pollution. However, if trees are planted in the countryside away from sources of air pollution their impact will be lower.

Where funding has been sourced through Government schemes for woodland planting any BNG benefits cannot be sold, as the schemes are fully funded and not additionality for BNG is likely to be created and thus available for sale.

Agricultural support payments (ELMS)

Funding for farming is changing in England with the introduction of Environmental Land Management Schemes (ELMS). There are three concurrent schemes to replace previous agricultural subsidies which aim to put 60% of agricultural soil under sustainable management by 2030 resulting in improved water quality, flood risk management, biodiversity and carbon emission reductions.

There is the potential for some of these funding streams to be stacked with BNG, carbon offsetting and nutrient neutrality, as set out below.

Sustainable Farming Incentive

This scheme is aimed at promoting sustainable farming methods and is the first scheme being launched in 2022.

Eligibility:

- Initially farmers eligible for Basic Payment Scheme will be eligible with a roll-out once scheme established but unlikely to be before 2024
- Payments made on a land-parcel scale so individual fields can be entered rather than the whole farm.
- Minimum estate size is 5ha but no minimum or maximum amount of land which must be entered into scheme
- Common land is eligible but applications must be made by a single entity e.g. a commons association.

Agreements:

- 3 year agreements with flexibility for amendments every 12 months so additional standards can be incorporated, more land included and increase ambition level allowing incremental entry and engagement with the scheme
- Agreements made with person(s) delivering the actions, e.g. owner occupier, tenant or groups farming on common land.

Interaction with private sector schemes:

- SFI and private schemes such as BNG and carbon can operate on the same land
- This is subject to requirements for additionality and verification
- This will be reviewed in 2023 and ongoing on an annual basis
- Aim is for private finance to deliver better outcomes for farmers
- Avoid payments for actions already being funded by private finance

Initial standards in SFI relate to:

- Arable and Horticultural Soils
- Improved Grassland Soils
- Moorland and Rough Grazing (introductory)
- Annual health and welfare review for livestock

Payments made quarterly, with the annual amount ranging from £22 - £58 per hectare. The actions and monitoring will be covered by guidance and training to be produced by DEFRA for farmers with the aim for them to be able to undertake the whole process without external advice. Wiltshire Council farms will be eligible for this funding, with tenants making the claim, however, it is not possible to double fund actions from different sources.

Local Nature Recovery

This scheme is aimed at local-level actions to make space for nature in the farmed landscape which can be undertaken by individual land managers although collaboration is encouraged. Funding will be available for:

- Managing feeding, shelter and breeding areas for wildlife on arable farms
- Managing, restoring and creating;
    - grassland habitats such as species-rich grassland on farms and in the wider countryside
    - wetland habitats such as ponds, lakes, reedbeds and fens
    - lowland heathland
    - coastal habitats such as sand dunes, salt marsh and shingle
    - upland and lowland peat and moorland
    - trees and woodland including agroforestry, traditional orchards and trees on farms – England Woodland Creation Offer primary scheme until 2025
- Targeted measures to support the recovery and reintroduction of particular wildlife species eg. creating and managing habitat and tackling non-native invasive species
- Nature-based water management solutions such as buffer strips, swales and natural flood management
- Restoration of rivers, flood plains, streams and riparian habitats

All farmers, foresters and land managers who can deliver these actions will be eligible for the scheme with agreements covering multiple years, determined by the actions being undertaken. Management plans will be involved in the delivery of these but how this will work has not been confirmed.

The overall aim is to provide a flexible, accessible scheme which is coherent with private schemes for BNG, nutrient neutrality and carbon offsetting. The scheme information explicitly states that the goal is for private funding to provide better outcomes for the farmer than the scheme.

The scheme is targeted for launch in 2023. Wiltshire Council's land holdings will be suitable for this funding. However, this funding cannot be stacked with biodiversity net gain funding, so care needs to be taken to design schemes carefully to avoid double counting.

Landscape Recovery Scheme

This scheme is aimed at larger, landscape scale projects with the following criteria for eligibility:

- 500-5000ha projects (can be collaborations)
- All land types eligible including protected areas and common land
- Farmers, forestry, individuals, estates or public bodies although public bodies will need to collaborate with other land managers
- Aim to work with land owners exiting Higher Level Stewardship agreements to ensure transition without penalty.

Applications can be made by a facilitator working on behalf of group of land managers. Successful applications will have a 2 year planning phase including:

- land management feasibility and implementation planning
- engaging local stakeholders and communities
- obtaining relevant statutory consents/permits
- putting in place suitable governance arrangements
    - creating a detailed monitoring and evaluation plan
    - collecting baseline data
    - engaging and securing private investment
    - deciding on the structure of private and public funds
    - negotiating terms of a long-term project public funding agreement
    - risk assessment, allocation, and mitigation planning

Again, the compatibility and importance of private funding is stressed in the scheme information but details are not available. Pilot scheme applications are being opened this year with a second round in 2023. Wiltshire Council, working with their farm tenants, could enter into partnerships with other land owners in the County to deliver landscape scale schemes. The Council is likely to own land in key locations which can contribute to landscape scale recovery.

Glossary

CiL – Community Infrastructure Levy. Community Infrastructure Levy is charged by local authorities on new developments and the funding raised can be spent on a range of infrastructure including transport, flood defences, schools, hospitals, recreation, and open spaces. There is a high demand for funds and local funding priorities will vary. Funds are allocated by local authorities.

CO2 – carbon dioxide

EIA – Environmental Impact Assessment GIS – Geographic Information Systems SSSI – Site of Special Scientific

FBT – Farm Business Tenancy

Interest SPA – Special Protection Area

SAC – Special Area for Conservation

RAMSAR - Convention on Wetlands of International Importance Especially as Waterfowl Habitat LWS – Local

Wildlife Site

PROWs – Public Rights of Way