River Sowy and King's Sedgemoor Drain Enhancements Scheme: Phase 1 Environmental Statement

ENVRESW001353-CH2-XX-400-RP-EN-1042

V3 August 2020

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Acting to reduce climate change and helping people and wildlife adapt to its consequences are at the heart of all that we do.

We cannot do this alone. We work closely with a wide range of partners including government, business, local authorities, other agencies, civil society groups and the communities we serve.

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Quality Assurance

Project name	River Sowy and King's Sedgemoor Drain Enhancements Scheme: Phase 1
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Author	Miriam Olivier, Will Maclennan

Approvals

Name	Signature	Title	Date	Version
Simon Keys	S J Keys	Divisional Director	06/08/2020	2
Gary Cutts	G B Cutts	Lead Project Manager	14/08/2020	3

EIA Quality Mark

This Environmental Statement, and the Environmental Impact Assessment (EIA) carried out to identify the significant environmental effects of the proposed development, was undertaken in line with the EIA Quality Mark Commitments.

The EIA Quality Mark is a voluntary scheme, operated by IEMA, through which EIA activity is independently reviewed, on an annual basis, to ensure it delivers excellence in the following areas:

- *EIA Management*
- *EIA Team Capabilities*
- *EIA Regulatory Compliance*
- *EIA Context & Influence*
- *EIA Content*
- *EIA Presentation*
- *Improving EIA practice*

To find out more about the EIA Quality Mark please visit: http://www.iema.net/eia-quality-mark/

Statement of competency

Environment leads

Simon Keys, BSc, MSc (1990)

Simon Keys has 30 years of experience in the fields of Environmental Impact Assessment (EIA) and Flood Risk Management as a consultant and regulator. Simon has worked on numerous EIAs for flood risk management projects in all capacities from writing to management and review. In 2016 Simon was appointed by the Environment Agency (EA) to the Yorkshire Regional Flood and Coastal Committee.

Miriam Olivier, MESci Environmental Geoscience (2011), PhD Geomicrobiology (2016)

Miriam is a full member of the Institute for Environmental Sciences (IES) and has four years' experience in environmental consultancy and regulation. She is experienced in most types of impact assessment including EIA, Strategic Environmental Assessment (SEA) and Equalities Impact Assessment (EQIA). Miriam works as an environmental coordinator and technical author (population and health, climate) for projects of various scale and stage of development across a wide range of sectors including flood risk management, water, highway, nuclear and renewables.

Water technical lead

Rebecca Westlake, BSc Hons Physical Geography (1997), MSc Coastal and Marine Resource Management (1998), LLM Environmental Law and Practice (2018), PhD Geomorphology (2007)

Rebecca Westlake has 23 years of experience in the field of geomorphology and Water Framework Directive as a consultant, regulator and an academic. She previously worked for the EA as a technical specialist in the Solent and South Downs Regional office. She has been a Chartered Scientist and Chartered Marine Scientist since 2009 (CSci, CMarSci) with IMaREST (Institute of Marine Science and Technology).

Flora and fauna technical lead

Richard Thompson

Richard has worked in consultancy (Halcrow/CH2M/Jacobs) since 2006. His responsibilities have included leading on botanical, habitat and protected species surveys, and the preparation of ecological impact assessments, inputs into Environmental Statements, mitigation method statements and habitat management plans. Richard is a full member of the Chartered Institute for Ecology and Environmental Management (CIEEM).

Cultural heritage technical lead

Nathan Thomas, BSc Archaeology (2006), MSc Archaeological Prospection (2008)

Member of the Chartered Institute for Archaeologists (MCIfA). Professional archaeologist and geophysicist since 2006. He has experience of a wide range of archaeological projects, including flood protection and coastal defence schemes for the EA.

Landscape technical lead

Daniel Mounsdon, BA Hons Landscape Architecture (2003), PGDip Landscape Architecture (2005)

Daniel has been a Chartered Member of the Landscape Institute (CMLI) since 2009 and has extensive experience creating integrated designs that bring together best practice approaches to habitat creation in river channels, floodplains and flood storage areas, the assimilation of flood defence works into sensitive landscapes, and the restoration or urban river corridors. Daniel has a wealth of experience with landscape and visual impact assessment (LVIA) over a wide range of development types, including large scale residential, infrastructure and highways, and is well versed in the current guidance described in the Guidance for Landscape and Visual Impact Assessment Third Edition (GLVIA3).

Population and health technical lead

Matthew Beacon, BA Environmental Management (2012), MSc Environmental Impact Assessment and Management (2013)

Matthew is a Chartered Environmentalist and full member of the Institute of Environmental Sciences with over five years' experience as an environmental consultant on a wide variety of projects for different sectors. Matthew has a proven high-quality delivery record on projects of differing sizes and complexity predominantly for the water and highways sectors and has also worked closely with regulators, government and private clients. Matthew has experience of writing technical chapters for population and human health for numerous environmental assessments and statements.

Noise technical lead

Richard Stait, BSc Mathematics and Statistics (1994), PG Diploma Acoustics and Noise Control (2004)

Richard Stait has over 25 years' experience in the assessment of the impacts of noise and vibration from large infrastructure projects, both from the construction and operation. Throughout the UK and in the Middle East, these include road and rail transport projects, flood defence schemes, and power and energy installations. He is a full member of the Institute of Acoustics (IoA).

Non-Technical Summary

Introduction

Following the significant flood event that affected Somerset in 2013/14, the Somerset Levels and Moors 20-year Flood Action Plan was developed.

This plan was published in March 2014 and set out six key objectives to tackle flooding in the region:

- Reduce the frequency, depth and duration of flooding
- Maintain access for communities and businesses
- Increase resilience to flooding for families, agriculture, businesses, communities and wildlife
- Make the most of the special characteristics of the Somerset Levels and Moors (the internationally important biodiversity, environment and cultural heritage)
- Ensure strategic transport connectivity, both within Somerset and through the county to the South West peninsula
- Promote business confidence and growth

It established the need for the River Sowy and King's Sedgemoor Drain (KSD) Enhancements Scheme. This project (which is referred to as the Proposed Scheme from now on) is Phase 1 of the River Sowy and King's Sedgemoor Drain Enhancements Scheme.

The Proposed Scheme will reduce fluvial flood risk in Somerset, protecting people and properties situated within the Somerset Moors and Levels downstream of Langport by increasing conveyance along the River Sowy and the King's Sedgemoor Drain (KSD). The Proposed Scheme is being developed and managed by the Environment Agency (EA), on behalf of the Somerset Rivers Authority (SRA), and falls under the definition of improvement works under the Environmental Impact Assessment (Land Drainage Improvement Works) (Amendment) Regulations 2017 (the EIA Regulations).

Scheme location

The Proposed Scheme is situated in Somerset within the Somerset Levels and Moors (see Figure 1, pii). The Somerset Levels and Moors are one of the largest remaining lowland wet grassland areas within the UK and, as such, has several international ecological designations such as the Somerset Levels and Moors Somerset Levels and Moors Special Protection Area (SPA) and Somerset Levels and Moors Ramsar site.

The Sowy and KSD system is approximately 21 km long, comprising mainly agricultural and conservation land with scattered residential properties and a few access roads that allow travel across the river corridor.

The Sowy and KSD are manmade structures that act as a flood relief channel for the River Parrett. Flood relief is achieved by diverting water from the River Parrett, just

downstream of Langport, into the Sowy which, in turn, connects to the KSD. The water is diverted via a number of spillways and sluice gates that can be used during times of high water (either naturally via the spillway or manually via opening the sluice gates). Diverting water from the River Parrett into the Sowy / KSD means that there is more capacity to drain water from the moors to reduce the duration and extent of flooding across the wider area.

The Somerset Levels and Moors are known for flooding which is often caused by either one ‘large’ high intensity storm or several ‘smaller’ low intensity storms. These storms then cause the water within the existing channels to overtop the river banks and the water is stored within the moors before it reaches the estuary. There is added difficulty with the drainage of the Somerset Levels and Moors during times of high tide as this further reduces the capacity of water within the River Parrett which means that less water is drained from the moors.

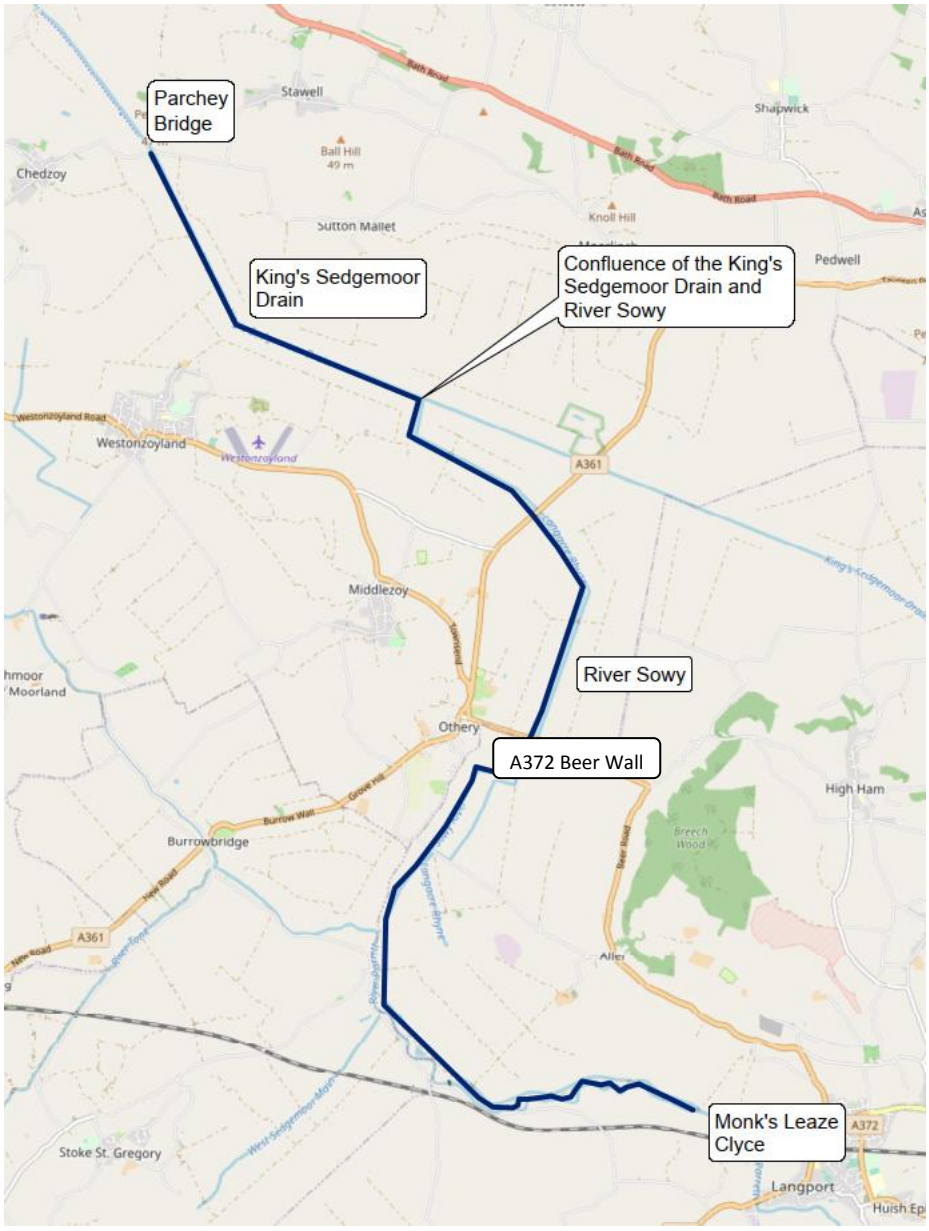

Figure 1 Location of the Proposed Scheme

EIA and other consents

The Environmental Impact Assessment (EIA) for the Proposed Scheme falls under the Environmental Impact Assessment (Land Drainage Improvement Works) (Amendment) Regulations 2017 (the EIA Regulations).

Due to the location of the Proposed Scheme (within close proximity to several designated ecological sites) a Habitat Regulations Assessment (HRA) has been undertaken in accordance with the Conservation of Habitats and Species Regulations 2017. Other environmental consents required for the Proposed Scheme, due to the location of the Scheme and because it involves works to a river, include a Site of Special Scientific Interest (SSSI) Assent, Water Framework Directive (WFD) Assessment, a Flood Risk Assessment Permit (FRAP), and European protected species licences.

Consultation to date

The Preliminary Environmental Information Report (PEIR) which set out the scope of the EIA was sent to key stakeholders in March 2020, comments from those key stakeholders were considered within the ongoing design and environmental assessment process. In addition, to inform the impact assessments, desktop studies and field surveys were carried out by relevant qualified technical specialists for each topic area.

Stakeholder engagement has been carried out to consult and share information on the Proposed Scheme with statutory consultees, stakeholders, businesses, community groups and local residents. After meeting with local land owners, a series of public consultation events were conducted over three consecutive evenings in February 2020 (17th – 19th), in order to present key information to the public. A total of 132 people attended the three events with the vast majority providing feedback that was either positive or gave constructive feedback on the Proposed Scheme. These comments have been taken into account where feasible within the ongoing scheme design and environmental assessment process.

Alternatives considered

In developing the preferred option for the Proposed Scheme a range of options were discussed.

Strategic level options

Strategic level alternatives considered for the full River Sowy and King's Sedgemoor Drain Enhancements Scheme included:

- '**Do nothing' scenario**': No works to enhance the capacity of the Sowy / KSD system and therefore continued risk to properties and infrastructure within the area.
- **'Do something' capacity enhancement options**: During 2014 a series of different options were considered that would act in combination to increase the capacity of the system without increasing any flood risk to any of the surrounding properties or infrastructure. A total of seven individual options were developed that consisted of three main aspects: (i) enhanced operation of Monk's Leaze Clyce, (ii) enhanced capacity of the Sowy and KSD system

or (iii) floodplain storage. These options were taken to public consultation in 2014 and 2015, where feedback highlighted that opinions were spread across the options with a slight preference for three of the seven options (enhancing operation of Monk's Leaze Clyce, widening the Sowy and KSD and removing channel constrictions at Dunball).

- '**Do something' capacity enhancement scenarios**: An Options Appraisal Report undertaken by CH2MHill identified three 'packages' of options that could be combined. The first package or 'scenario' focused on combination of enhancement via channel widening and embankment building. The second scenario considered was a 'comprehensive' scheme that aimed to achieve channel widening, bank raising, installation of pumps in certain locations and overall improvements to the KSD. The third and alternative scenario was to focus on land management including floodplain storage.

It was concluded that at a strategic level the 'Do something' capacity enhancement scenarios (outlined in the last bullet point above) were the preference for development, with the first scenario (channel widening and bank raising to achieve an increase in capacity of the KSD and Sowy system of up to 40%) being the preferred option.

Project level options

Project level design alternatives were also considered for the preferred option, which included consideration of different options for the re-profiling of the existing flood embankments between Monk's Leaze Clyce on the Sowy and Parchey Bridge on the KSD. These design alternatives considered:

- **Source of fill material required to support raising of the existing informal flood embankments**: Three options were considered in respect to sourcing the fill material required. These included getting the material from channel widening (and / or from the creation of additional channel bank features), via reworking the existing embankments or importing material from another location. At detailed design it was decided that material will be obtained on-site by reworking the existing embankments where possible, and importing where not, as material dug from the channel will likely not have the right properties to ensure the flood banks serve their purpose.
- **Transport of material required for bank raising within the Lower Sowy and Upper Sowy**: Three options were considered which included a barge along the Sowy and KSD, road haulage via tractor and trailer and road haulage via tipper truck. Due to time and space restrictions, road haulage was the preferred method with a mixture of tipper trucks on major roads and tractor and trailers along minor roads and access routes.
- **Design of re-profiled flood embankments**: Two options were considered, both of which focused on changes to the existing embankments. The first option focused on the slope of the embankment whilst the second focused on the width. The final outcome involved a combination both options.

Scheme description

Phase 1 (the Proposed Scheme i.e. the works covered within this ES) of the River Sowy and King's Sedgemoor Drain Enhancements Scheme focuses on raising the

existing embankments situated between the A372 Beer Wall on the River Sowy and Parchey Bridge on the KSD to a level such that the capacity of the Lower Sowy and KSD system in this stretch is increased by up to 40% (increased from 17m^3/s to 24m^3/s). This scheme also involves very minor 'filling' in of the existing embankments between the A372 Beer Wall and Monk's Leaze Clyce such that the capacity of the Sowy at this location is maintained at 17 m^3/s (see Figure 1, pii).

We will not divert more water from the Parrett to the Sowy/KSD system through Monk's Leaze Clyce as part of the Proposed Scheme. This will only occur once later phases of the full River Sowy and King's Sedgemoor Drain Enhancements Scheme have been completed, as and when funding becomes available.

As part of the Proposed Scheme the following work will take place:

- **Raising and re-profiling of existing informal flood embankments**: Existing flood embankments will be re-profiled to a consistent design as shown in Figure 2 (pvii). The material needed for this work will be sourced on site where possible from the KSD, otherwise imported from an off-site source under the Contaminated Land: Applications in Real Environments (CL:AIRE) Code of Practice (CoP).
- **Channel widening**: The Proposed Scheme involves the creation of channel bank features along the Lower Sowy and KSD. This includes two sections of two-stage channel (with a deeper channel centre and shallow 'shelved' channel sides), embayments (shelves) and backwaters (which will be another smaller channel located adjacent to the existing channel). A cross-section of a backwater feature can be seen in Figure 3 (pviii). These works will increase the diversity of habitats within these areas which will be of benefit for biodiversity and will support the obligations under the Water Framework Directive (WFD) to improve the condition of the watercourse.
- **Landscaping**: which includes tree planting and reseeding of embankments with neutral wet grassland or other grass mix if appropriate (which in turn will help with the stability of the soil on the embankments).
- **Additional works**: which include modification to existing outfall structures at Cossington Right Rhyne and Chilton Right Rhyne to ensure they provide a continuous defence level when combined with the other works associated with the Proposed Scheme.

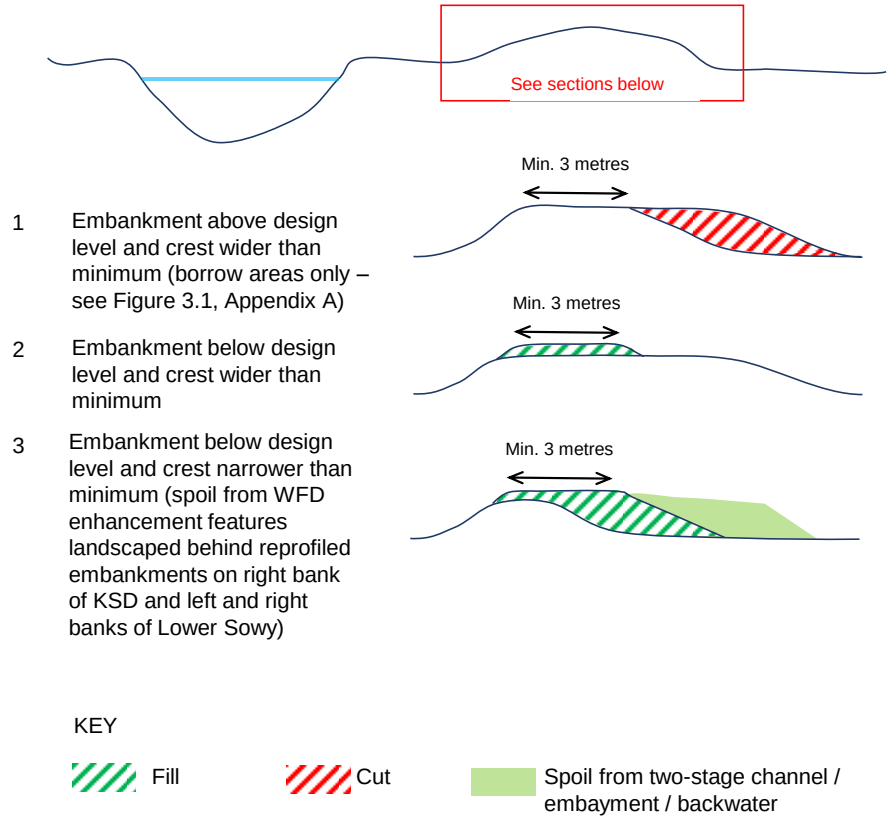

Figure 2 Schematic illustration of bank re-profiling process

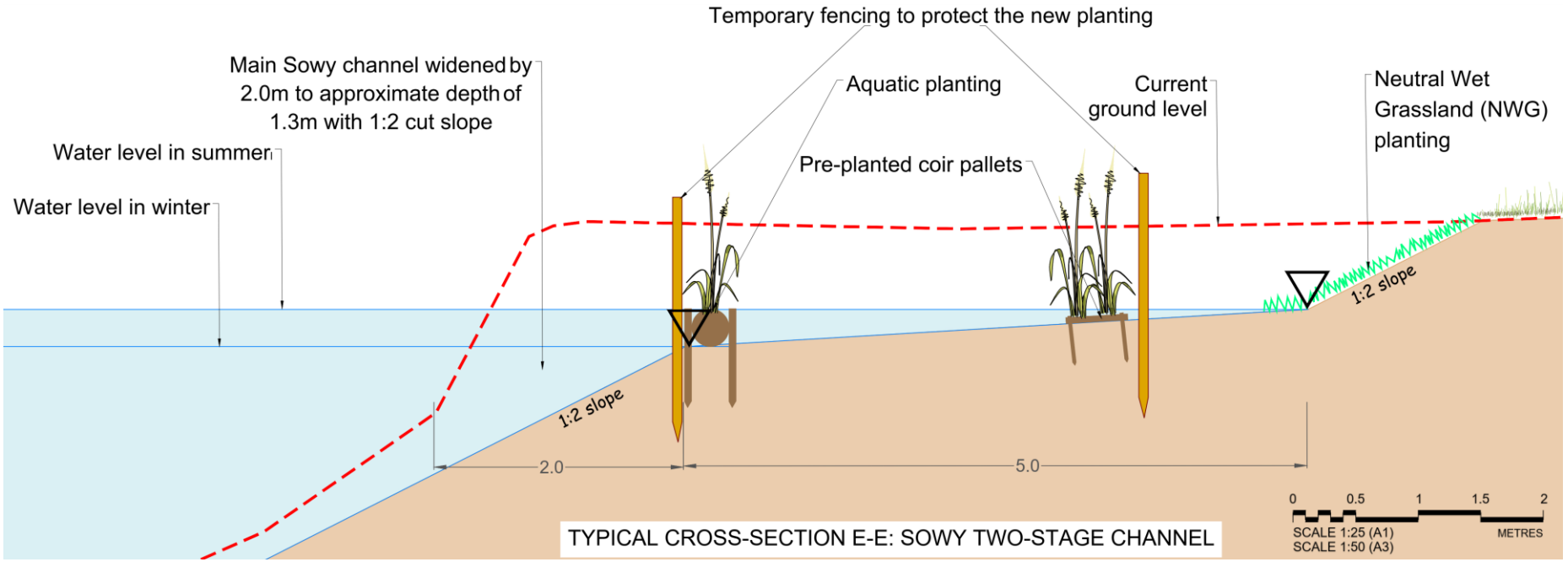

Figure 3 Example cross section of a two stage channel which will be created on the eastern side (right bank) of the Sowy

Note: It is currently proposed to plant the bank with a NWG seed mix, however alternative appropriate mix may be used if necessary.

The river bank on the Sowy typically looks like the dashed red line above. The sides of the bank are very steep, and then flatten off at the water's edge. The two-stage channels that will be created will make the river bank under the water less steep. They will have two sections, one steeper than the other. Once the wider shallow section has been dug out, coir rolls which are ready planted will be placed on the shelf and tied down with stakes.

Where the channel bank is affected by the construction works, it will be seeded with a grassland mix that has similar species to the grass currently present next to the channel. As the KSD and Sowy are manmade they are quite uniform in their appearance in the habitats that they provide at the moment. These channel bank features improve the number of different types of aquatic habitat available in the KSD and Sowy for wildlife such as invertebrates, water vole and fish.

Likely significant environmental effects and mitigation

The following chapter themes briefly state the residual environmental impacts and the actions we will take across the Proposed Scheme area. For any further detail please refer to the relevant chapters within the Environmental Statement.

Water: The Proposed Scheme is concluded to have an overall beneficial effect as it will help reduce flood risk in the local area and will improve the range of aquatic habitats in the KSD and Sowy.

Flora and Fauna: The construction of the Proposed Scheme could potentially have adverse impacts on ecological features including internationally designated sites and protected species. Specific mitigation has been included to minimise these effects during construction and operation of the Proposed Scheme in order to ensure there are no significant residual impacts. Such measures include:

- Creation of enhancement features which will contribute to the objective of 'good ecological' potential for these watercourses under the Water Framework Directive.
- Specific construction practices including but not limited to - appointment of an environmental site supervisor, plant and vehicle to be kept in good working order and use of biodegradable hydraulic fuels where possible
- Management of invasive non-native species
- A suite of mitigation measures to avoid adverse effects on the European protected site including a package of works involving refurbishment of structures used to sustain the existing Raised Water Level Areas for overwintering birds protected by the Somerset Levels and Moors SPA.
- Development of a Mitigation Action Plan in conjunction with Natural England and the Somerset Drainage Boards Consortium for the long term management of water levels within the Somerset Levels and Moors.

Cultural Heritage: Due to the setting of the Proposed Scheme (a landscape with high archaeological potential) archaeological monitoring will be implemented throughout the construction period where required to ensure that there are no significant residual effects on cultural heritage assets. Potential risks have been minimised through careful placement of WFD enhancement features to avoid areas of high archaeological risk.

Landscape: During construction there will be some temporary significant effects on a range of visual receptors. Operational impacts of the Proposed Scheme will be both short and long term. In the short term there will be localised moderate to negligible adverse and beneficial effects on both landscape character areas and visual receptors. In the long term there will be both adverse and positive effects on landscape character and visual amenity which overall are anticipated to balance out one another, leaving no significant residual effects.

Population and Health: During both construction and operation there are no significant effects anticipated on the surrounding population. During construction there will be minor adverse effects in the form of disruption to footpaths and recreational areas along the Sowy and KSD and for adjoining landowners and

agricultural businesses, however several mitigation measures have been identified to avoid or reduce these impacts where possible.

Noise: The assessment of noise and vibration has determined that construction traffic will have no significant impact on the surrounding sensitive receptors including residential properties, commercial buildings (e.g. offices), farmland, industrial premises etc. However, measures to control the noise from vehicles on the road network will be implemented within the Proposed Scheme area as best practice.

Cumulative Impacts: The assessment of cumulative impacts concludes that the Proposed Scheme is not likely to cause significant adverse effects, even in combination with other nearby schemes, once the mitigation mentioned above for potential adverse impacts on designated sites has been implemented.

Conclusions

With the mitigation identified in place, no significant adverse effects will occur as a result of the Proposed Scheme. Through consultation and by undertaking an EIA, we have sought to avoid or minimise any remaining residual impacts to an acceptable level. There will however be a significant beneficial impact as a result of the improved diversity of aquatic habitats with the KSD and Sowy which will contribute to the objective of 'good ecological' potential for these watercourses under the Water Framework Directive.

The Proposed Scheme is the first phase of the full River Sowy and King's Sedgemoor Drain Enhancements Scheme which is identified as required under the Somerset Levels and Moors 20 Year Flood Action Plan, and as such, will have a beneficial impact on flood risk for local communities.

Ongoing ES Consultation

Copies of this NTS and the Environmental Statement may be inspected online via a consultation website named Citizen Space. Citizen Space contains a copy of the statement and provides an online survey facility to record consultation responses as well. The web address for Citizen Space is:

https://consult.environment-agency.gov.uk/wessex/river-sowy-and-ksd-enhancements

With regret due to the Coronavirus, hard copies of the statement will not be available for inspection at any public location.

Any person wishing to make representations in relation to the likely environmental effects of the proposed improvement works should do so via the Citizen Space survey or to the following email address: sowy.ksd@environment-agency.gov.uk , within 30 days of publication of this document.

Should you have any problems with using the Citizen Space facility, you can reach the project team on 07950 955 527 for further assistance. If no representations are received in respect of the environmental effects of the proposal within this time period, then the proposal will proceed to be implemented. It is anticipated that works will commence in Autumn 2020.

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