



**Rivers Parrett and Tone Dredge – Bank Profile
Restoration**

Environmental Statement Addendum

Non-Technical Summary

July 2014



We are the Environment Agency. We protect and improve the environment and make it a better place for people and wildlife.

We operate at the place where environmental change has its greatest impact on people's lives. We reduce the risks to people and properties from flooding; make sure there is enough water for people and wildlife; protect and improve air, land and water quality and apply the environmental standards within which industry can operate.

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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Non-Technical Summary

Introduction

This Non-Technical Summary (NTS) describes the findings of an Environmental Impact Assessment (EIA) into the likely significant effects of the dredging of a section of the Rivers Parrett and Tone, including the construction of three stockpiles to store dredged material for up to a year and bank profile restoration. It provides a description of the existing environment, the likely environmental impacts and the measures which we (the Environment Agency) will implement to avoid or reduce further impact. This NTS is available to view both as a standalone document, and as part of the Environmental Statement (ES) and two subsequent addendums which together provide a comprehensive record of the EIA.

In February 2014 it was initially proposed that dredged material would be temporarily stockpiled for up to a month before being ploughed into land for agricultural benefit and this was assessed for the original EIA. In April 2014 however, it became apparent that dredged materials could potentially be used for future flood risk management works. This would require the construction of three larger stockpiles to store material for up to one year whilst such proposals were developed. Since this change was considered significantly different to the original proposals, an Addendum to the original ES was carried out to assess subsequent changes to the environmental impacts, and submitted as part of planning applications submitted to Taunton Deane Borough Council.

In July 2014, another addendum was produced to document the potential for any further environmental impacts associated with plans to restore bank profiles using dredged material along sections of the River Parrett. This NTS summarises the findings of the EIA and both subsequent addendums.

The locations for the proposed dredging works are shown in Figure 1 and the three proposed stockpile locations are shown on Figure 2. Figure 3 shows the proposed locations of bank profile restoration works.

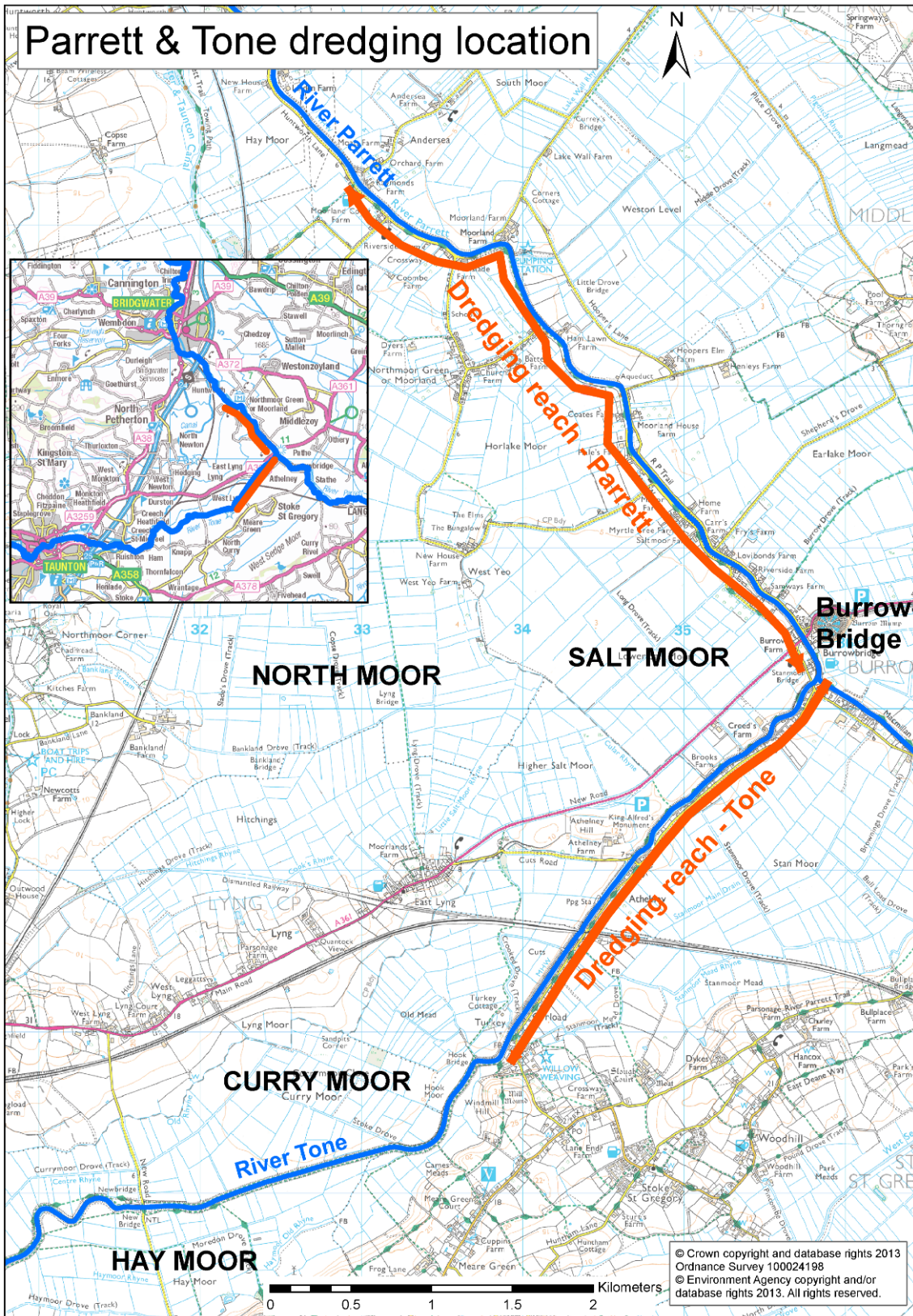


Figure 1: Dredging Location Plan

Background

Extended wet periods, rather than intense but short storms, are most likely to lead to problem flooding on the Levels and Moors (see Plate 1 below).

The prolonged wet weather and subsequent flooding began in mid-December 2013. Within the Levels and Moors over 100 properties were flooded internally and 11,000 hectares of agricultural land were under water. Over 200 homes in several communities, such as Muchelney, Oath and Thorney, were cut off, some for more than 2 months. There was major disruption to transport; with several A-roads blocked as well as strategic road and rail routes into the South West peninsula.

This project will improve river capacity in the Parrett and Tone rivers, which in combination with a network of ditches, rhynes and pumping stations drain a large part of the Somerset Levels and Moors. The rivers are tidally influenced and have a very shallow gradient which makes them particularly prone to siltation, primarily from the sea but also from the surrounding land. Through dredging, we will increase the flow capacity along approximately 8km of the Lower River Tone below Hook Bridge and the River Parrett from the confluence of the Tone to North Moor Pumping Station.

By increasing the channel capacity of the River Tone and River Parrett through a one-off dredge we will reduce the risk of flooding to over 100 properties, the road and rail network, and relieve existing flood frequency, extent and duration to land on Curry Moor, Hay Moor, North Moor and Salt Moor (which include both internationally and nationally designated nature conservation sites) (see Figure 4).

The bank restoration element will be delivered using dredged material in tandem with a series of isolated defence improvements within the same reach to help reduce the frequency, duration and extent of flooding for Curry Moor, Hay Moor and North Moor. The environmental impact of these isolated defence improvements are not covered in this report.



Plate 1: Flooding During the Winter of 2013/14

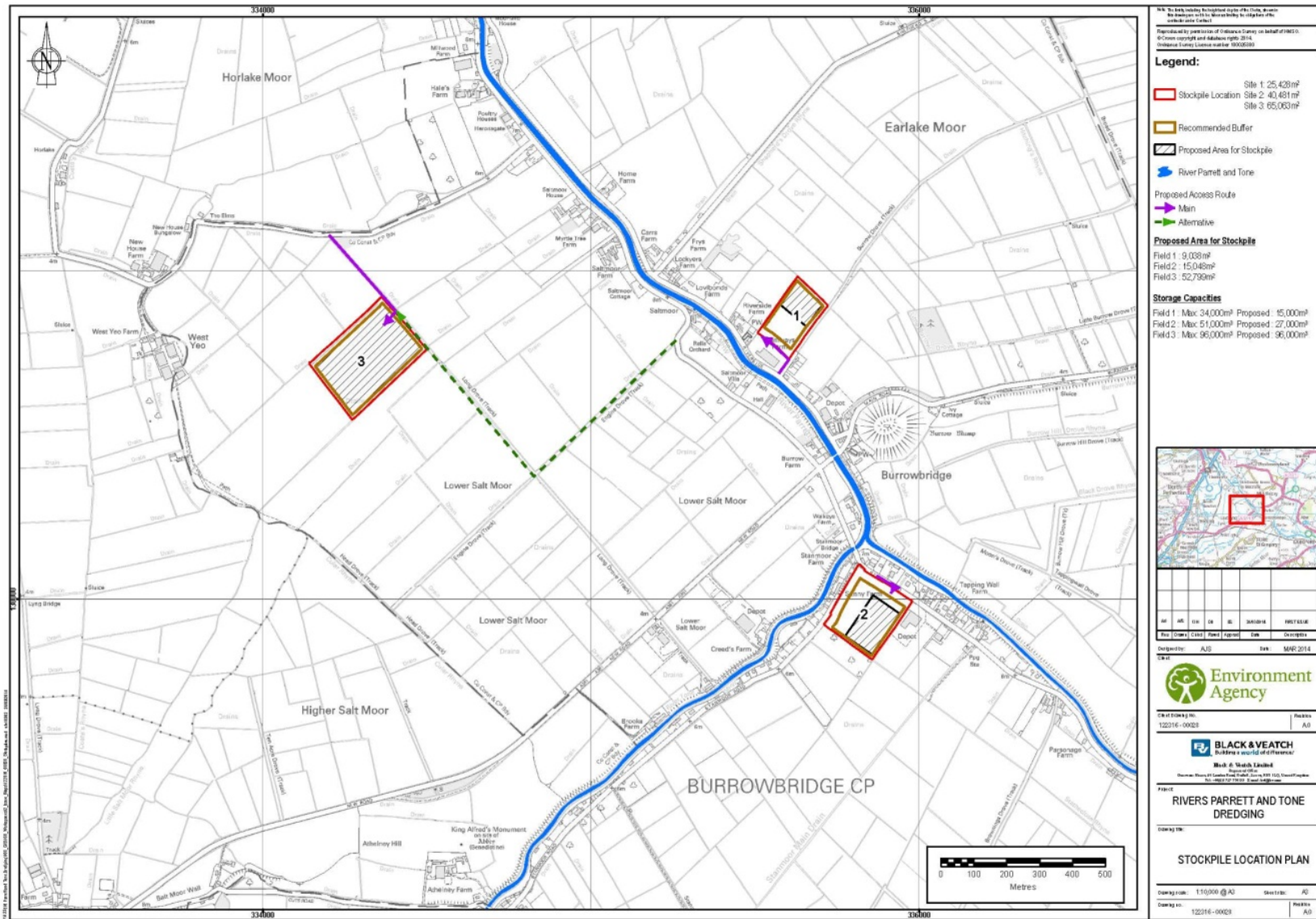


Figure 2: Proposed Stockpile Locations

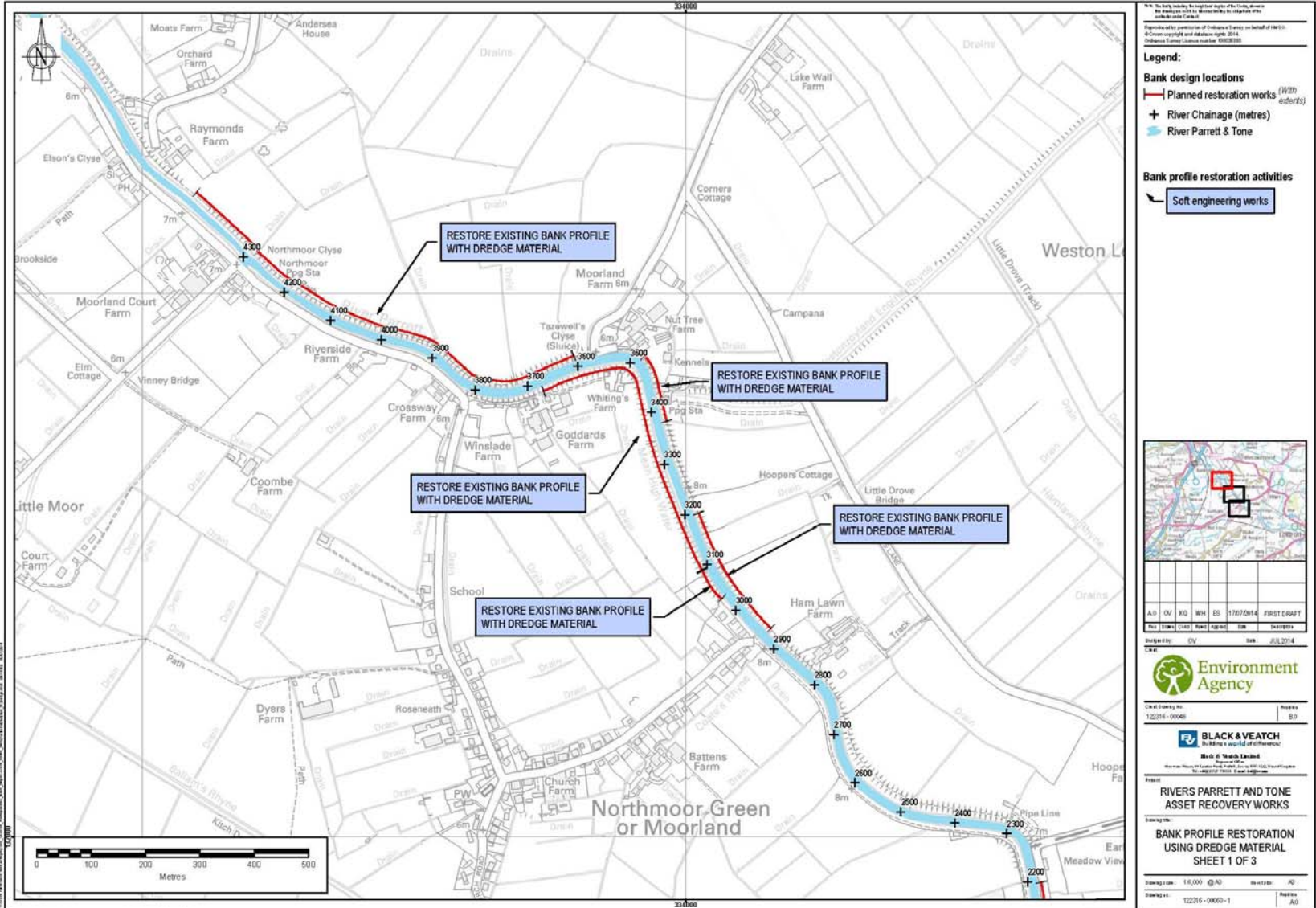


Figure 3: Proposed Locations of Bank Profile Restoration

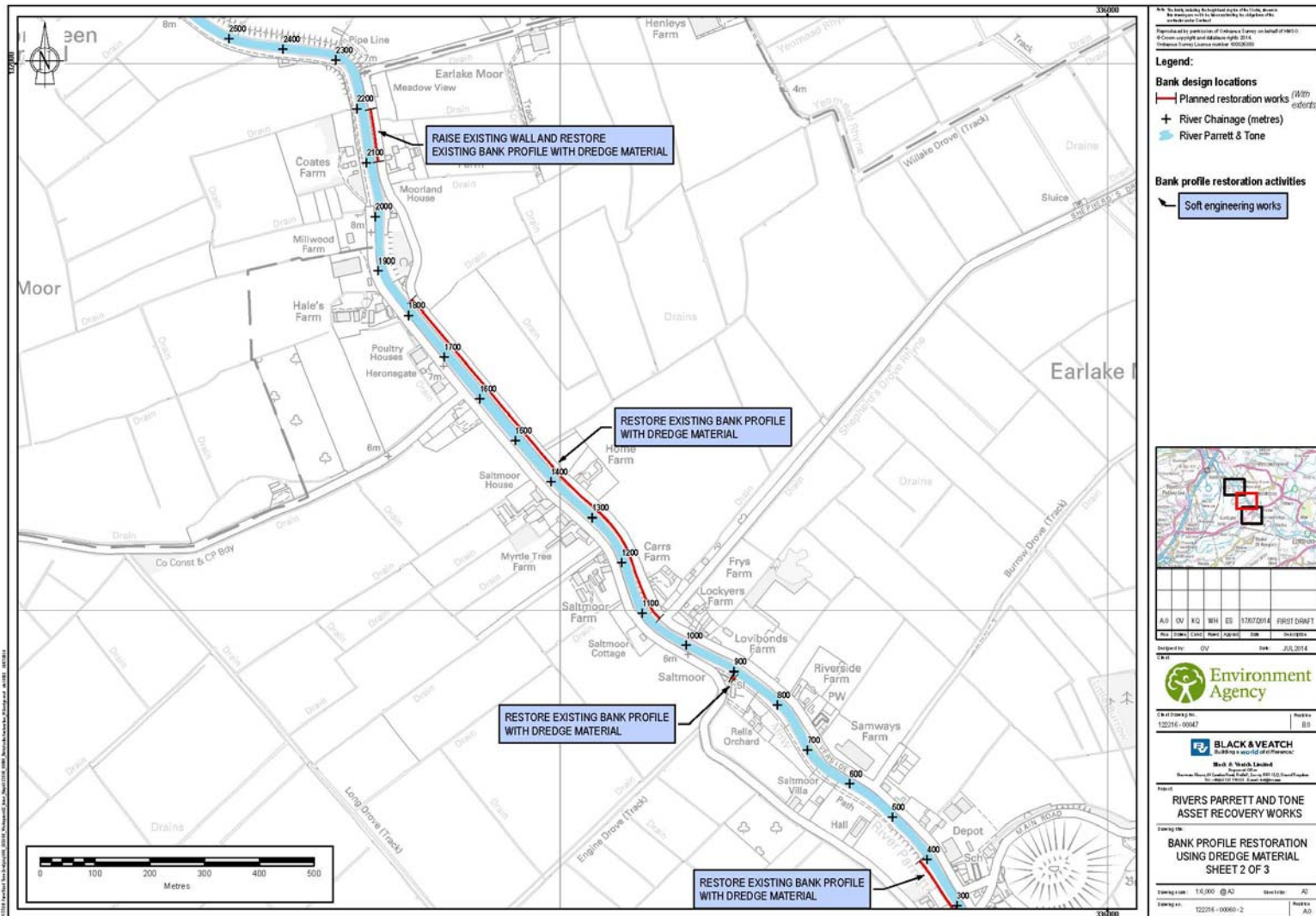


Figure 3b: Proposed Locations of Bank Profile Restoration

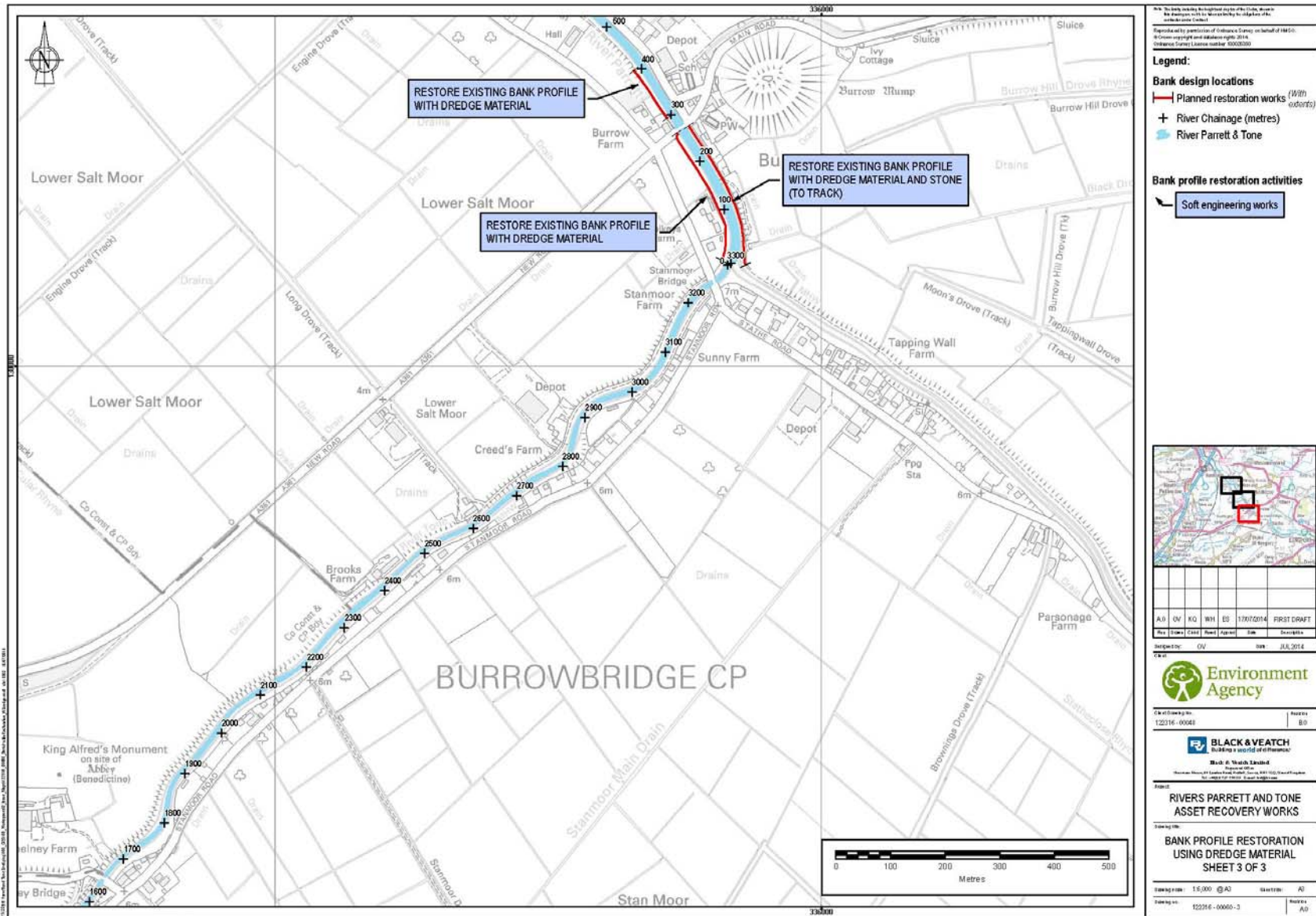


Figure 3c: Proposed Locations of Bank Profile Restoration

The Proposed Scheme

The aim of the project is to improve the channel capacity of the River Tone and the River Parrett, from downstream of Hook Bridge to North Moor Pumping Station, in order to reduce the frequency and duration of flood events, their impact and associated disruption.

We anticipate that the dredging, stockpiling and bank profile restoration works will occur between April and October 2014. Main decommissioning of the stockpiles is anticipated to be from April to October 2015. The benefits of the dredge scheme without maintenance are likely to last approximately 5 years before the river naturally re-silts. The benefits of the bank restoration will last for longer than 10 years without maintenance.

Method of Works

In total, approximately 235,000m³ of sediment will be removed from the river channel using a combination of mechanical plant; situated on the banks of the rivers or from pontoons where necessary.

Some of the dredged material will be used to restore sections of the adjacent banks of the River Parrett to approximately their 1960s profile. This will involve raising the embankments typically by 200-600mm. Additional dredged material that is tested and found to be suitable for future flood risk management works or as a soil improver will be stockpiled for up to a year in three agricultural fields (see Figure 2) (the main stockpiles).

The remainder of the dredged material will be stockpiled temporarily on the adjacent bank and, after testing for potential contamination, will either be moved by pipe or vehicles to where it can be spread or ploughed into farmland (see Plates 2 and 3). If the material is not suitable for spreading on land, it will be appropriately disposed of at a controlled waste disposal site.

Sites considered environmentally sensitive (such as for nature conservation, drainage, or archaeology) will be avoided. The majority of the land area required for spreading will be found within 1.5km of the dredging areas however a small proportion of the material may need to be spread on land up to 8km away.



Plate 2: Dredged material spread on farmland.



Plate 3: Dredged material waiting to be spread.

Up to 8 separate dredging teams (using mechanical plant such as that shown in Plates 4 and 5) will be employed simultaneously during this period, each team will have an assigned 'Environmental Clerk of Works' to monitor the implementation of required environmental actions. Four additional construction teams will be required for bank profile restoration. The bank profile restoration teams will follow on from the dredge teams so there will be no overlap in construction activity in any one location. The target date for completion of the bank profile restoration works is by the end of October 2014. Natural England will be consulted prior to any works beyond this date to review this risk to over-wintering birds.



Plate 4: Large long-reach excavator.



Plate 5: Amphibious excavator.

Two distinct construction methods will be used to restore the profile of the banks with the dredged material:

- Minor bank profile restoration will involve transporting dredge material to the flood bank in agricultural trailers, tipping (if space available) or unloading dredge material using an excavator onto the bank and then carrying out informal compaction of the bank by tracking over with the excavator.
- Engineered rebuilding of the embankment will require stripping/ cutting back the embankment, cutting a bench into the embankment, placing dredge material and compacting/re-forming with formal compaction plant.

Alternative Options Considered

This dredging project is an essential component of the 'Somerset Levels and Moors Flood Action Plan 2014 - A 20 year plan for a sustainable future' currently under development and led by Somerset County Council (commonly referred to as the '6 week plan'). This dredging project is one of several investments required to reduce the future frequency and duration of floods across the Levels and Moors.

The proposed Parrett and Tone dredge is a standalone component of the Plan and in tandem with other interventions will reduce the frequency, duration and extent of flooding for Curry Moor, Hay Moor and North Moor.

Within this context, the alternatives considered as part of this project related to:

- a. The location of the dredging.
- b. The methods employed to undertake the dredge.
- c. Management, reuse and disposal of dredged silt.

The preferred dredging location was chosen for the following reasons:

- The 8km length has accumulated the greatest build-up of silt since the 1960s Tone Valley Scheme.
- The length chosen will provide the greatest reduction in risk to the railway line, A361 and the 100 properties in Moorland/North Moor.
- Further upstream on the Tone the river cross section remains as it was from the 1960s scheme, so this section does not require dredging.
- Dredging further upstream on the Parrett could increase flows at the confluence, restricting the Tone discharge and thereby causing greater flood risk to Curry Moor and North Moor.
- Further downstream from the section to be dredged on the Parrett, the fluvial capacity is sufficient and does not cause the flooding in North Moor.

The bank profile restoration forms an integral part of the flood recovery works identified in response to the 2014 flooding of the Somerset Moors and Levels. Alternatives considered related to:

- a. The location of the bank profile restoration.
- b. The extent of the bank profile restoration.
- c. Management, reuse and disposal of dredged silt.

The preferred bank profile restoration locations were prioritised under the following criteria:

- Lengths where overtopping directly flooded property or major roads during the 2014 flooding.
- Lengths where overtopping flooded agricultural land or minor roads during the 2014 flooding.
- Lengths where topographic surveys revealed the bank was below design target level and could be restored to this level through the re-use of dredged material.

The three stockpile locations were chosen based on their proximity to dredging sites, land availability, landowner agreement and low environmental sensitivity. Land avoided included:

- Complex or sensitive drainage networks; areas with buried or overhead services.
- Areas designated for nature conservation interest.
- Designated heritage sites (Scheduled Monuments, Listed Buildings and visible features listed on the Somerset Historic Environment record).

Legislative Regime

The proposal to dredge the rivers and restore the profile of sections of the adjacent embankments, as described in the original ES and addendum for bank profile restoration, will be undertaken using our Permitted Development Powers and does not require planning approval. The original EIA was therefore carried out under the Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999 (as amended).

The proposals to temporarily store dredged material on agricultural land, prior to use as a soil improver and construction material, required planning permission. The ES Stockpiles Addendum was therefore carried out under The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (as amended), and supported the planning applications made to Taunton Deane Borough Council. By June 2014, the three proposed stockpile locations had all been granted planning permission.

The original ES and the ES Addendums include assessments of the likely significant environmental effects of the scheme following a review of existing data and consultation with key statutory bodies.

Various other legislative requirements and policy advice have informed the proposed design and a range of consents are required to deliver the Rivers Parrett and Tone Dredge scheme, including a Water Framework Directive (WFD) compliance assessment, Habitats Regulations Assessment (HRA) and assent for works with the potential to affect a Site of Special Scientific Interest. Following detailed assessments and identification of measures required to prevent or reduce certain impacts, we have concluded that the dredging works will comply with the WFD and will not significantly affect any sites that are designated for nature conservation.

Consultation

We have worked closely with our statutory stakeholders in developing the project plan and have held discussions on the potential effects and issues with the Department for Environment, Food & Rural Affairs (Defra), Natural England, English Heritage, the Marine Management Organisation, Somerset County Council, Taunton Deane Borough Council, Sedgemoor District Council and the Somerset Drainage Boards Consortium. In addition we have:

- Created a Communications Plan and have identified all those we need to engage, consult and inform.
- Published statutory notices in local papers; and released a press statement regarding the dredging project (on the 20th February 2014). These have contained information on how people can view and comment on the ES.
- Circulated briefing notes for local and Parish Councillors, stakeholders and the community to update them on the project and describe the locations where we intend to undertake dredging as well as rough timescales.
- Briefed the Wessex Regional Flood and Coastal Committee and the Somerset Drainage Boards Consortium.

During the 28 day consultation period for the original Environmental Statement we also:

- Met with the National Farmers Union (NFU), Countryside Land and Business Association (CLA) and Farming and Wildlife Advisory Group (FWAG) to brief them on the project.
- Met with local Non-Government Organisations (NGOs); the Somerset Wildlife trust and RSPB as well as holding a drop in session for Councillors.
- Held community engagement events as the project progresses.

Throughout the production of the ES Addendums for the stockpiles and the bank profile restoration works we have continued to consult with local landowners, internal Environment Agency Specialists, Taunton Deane Borough Council, and the local community. We have also met with Natural England to seek their views on the bank profile restoration works. Natural England was satisfied on the clarification that the bank profile restoration works:

1. would not affect the level of Curry Moor spillway;
2. would not affect the ability to flood Southlake Moor to be seasonally flooded for nature conservation; and
3. there would be no impact on the hydrology of West Sedgemoor or King Sedgemoor.

We will meet the Somerset Wildlife Trust and the RSPB to discuss the bank profile restoration proposals prior to commencing on site.

Our Approach

We undertook a scoping activity for the main works, to identify which environmental receptors could potentially be affected by the proposal and therefore needed to be included in the EIA.

The receptors scoped-in are:

- Population
- Land Use
- Flora and Fauna
- Water
- Landscape Character and Visual Amenity
- Historic Environment
- Traffic and Transport

We scoped out of the assessment any environmental receptors that were considered, by expert opinion, not to be significantly affected by the development. The receptors scoped-out are:

- Soils and Geology
- Air Quality
- Waste (effects of waste disposal will be assessed under other receptors)
- Noise and Vibration

The assessment also considered whether the scheme would give rise to cumulative impacts either through physical environmental change or through disruption to other known plans, developments or projects within the vicinity.

The scoping process was subsequently reviewed for production of the ES Addendums to take account of the proposed stockpiling and bank profile restoration works. This resulted in the following receptors being scoped in to the ES Addendums.

The receptors scoped-in to the ES Stockpile Addendum are:

- Population: effects on human beings from disturbance of noise, vibration and odour.
- Flora & Fauna: potential for effects on certain protected and notable species and designated conservation sites.
- Landscape and Visual Amenity: visual changes and effect on local landscape character from siting of stockpiles, and effects on local landscape character resulting from vehicle movements.
- Cultural Heritage: potential for damage to Listed Buildings.
- Traffic & Transport: effects of traffic movements on local roads.

The receptors scoped-in to the ES Bank Profile Restoration Addendum are:

- Population: effects on human beings from changed flood risk.

- Flora & Fauna: potential for effects on certain protected and notable species and designated conservation sites.
- Landscape and Visual Amenity: potential effects on visual amenity as a result of the increased height of the defences.
- Cultural Heritage: potential to cause degradation to historic flood banks and affect the setting of Listed Buildings.

Traffic & Transport was scoped out of the addendum for the bank profile restoration works as the impacts were not considered to be significantly different to those already assessed.

Significant Environmental Impacts and Mitigation

The EIA and ES Addendums were carried out to assess the likely significant effects of the proposed scheme. They have been prepared in accordance with all relevant legislation and follow consultation between our technical specialists and statutory bodies. The information used to compile the ES relies upon desktop studies, records of environmental surveys previously undertaken in the area and local knowledge. Project-specific field surveys could not be undertaken due to the flooding affecting the study area at the time for original EIA; however an ecological survey of the proposed stockpile sites was carried out for production of the ES Stockpile Addendum. Ecological monitoring on site of the ongoing dredging informed the assessment for the ES Bank Profile Restoration Addendum.

The assessment considered how changes to the existing environment caused by the proposed dredge, stockpiling, silt disposal and bank profile restoration would affect each of the environmental parameters scoped into the EIA (see 'Our Approach'). The significance of impact was assessed according to the predicted magnitude of the effects and the sensitivity of the receptors affected.

The EIA also contains a range of mitigation measures that will be implemented to prevent or reduce environmental impacts. These measures have been incorporated in to an Environmental Action Plan and will be delivered during the construction and operation phases. A summary of the main potential impacts and proposed mitigation is given in the following sections.

Human Population

One of the main benefits of the proposed dredging and bank profile restoration is to reduce the net flood risk to residential, commercial and agricultural areas. There is, however, the potential for increased overtopping of South Lake Moor and Aller Moor during extreme tidal events but there would still be an overall benefit to any properties affected. Modelling will be undertaken and the risk of increased overtopping will be reviewed once complete.

There is also the potential to adversely affect commercial glass eel fisheries due to a change in water quality and reduced access to the river during the last month of the licence period (April). The preparation of an Ecological Monitoring Plan to work alongside planned dredging methods will help ensure that this is not significant.

Appropriate measures will be undertaken to ensure that long distance footpaths, such as the Parrett Trail, East Deane Way and Macmillan Way remain open during the works. If it is considered unsafe to keep access along these paths open, temporary diversion routes will be made available and signposted in consultation with Somerset County Council.

A number of HGVs, tractors and trailers will be required to transport the dredged material to the stockpile locations, resulting in potentially significant noise and vibration disturbance to local residents. There is also the potential for an increase in odour levels during construction and decommissioning of the stockpiles. We will, however, work to minimise these impacts through a variety of good construction practices including covering stockpiles with a membrane, screening if required and consultation with the Local Authority Environmental Health Officers. Affected residents will be kept informed of any potential disturbance throughout the works.

Land Use

The reduction in flood risk will bring benefits to agricultural lands, the local road network and railway lines running through the area.

There are Environmental Stewardship schemes in place offering funding to encourage farmers to adopt agricultural practices to safeguard and enhance parts of the country with high landscape, wildlife or historic value. Spreading of the dredged silt in such areas will only be undertaken where this action does not threaten or contravene the individual management and payment options that the landowners are committed to within their stewardship agreements.

Agricultural land will be improved by the application of fertile, nutrient-rich sediment from the river bed, however if the dredged silts are saline in nature this has the potential to reduce its productivity. Checks will be undertaken before it is spread to ensure that its use would be of benefit to the agricultural community and their land. If assessed to contain unacceptable levels of contamination or salinity, the dredged material will be disposed of to a licenced waste disposal site or used for alternative beneficial purposes in accordance with the materials management plan. Any agricultural areas that are used for spreading will require the temporary cessation of farming activities however compensatory agreements will be put in place where required.

Flora and Fauna

There are a number of sites that have been designated for their international, national and local importance to nature conservation close to the proposed dredging works. These include Special Protection Areas, Special Areas of Conservation, Ramsar Sites (all international designations), Sites of Special Scientific Interest and National Nature Reserves (national designations) and Local Wildlife Sites (local designation). These habitats are known to support numerous protected and notable species.

The proposed dredging activities are an integral component of the 'Somerset Levels and Moors Flood Action Plan 2014' which is seeking to outline a sustainable future for the area in respect to its community and the natural environment. Acute impacts arising from the direct dredging and bank profile restoration activities to designated sites will be low, but measures will still be implemented to minimise any unavoidable risks, notable mitigation measures will comprise;

- Dredging, stockpiling and bank profile restoration works will be primarily undertaken in summer which avoids impacts to over-wintering birds, but where this isn't possible no works will take place within 250m of the designated sites in winter.
- No dredged sediment will be spread over designated sites.
- Waterside plants will be 'stripped and recovered' to encourage re-growth and re-planted where possible.

- A low flow channel will be left to minimise impact to fish.
- Access to the spreading areas will not be permitted through designated sites.
- Monitoring of habitats and wintering bird populations on Curry Moor for several years after dredging is completed and subsequent review of management practices if required.

The dredging, stockpiling and bank profile restoration works also have the potential to affect protected and notable species, primarily through destruction or disturbance to habitats, or impacts to their main food sources. Mitigation measures will be implemented (in addition to those noted above) to prevent or reduce impacts to water voles, otters, reptiles, badgers, great crested newts, nesting birds, fish and rare invertebrates. These measures are summarised below. This list is not exhaustive and not all measures apply to all protected/notable species, rather it is intended to give a broad overview of the range of specific actions that will be considered at sensitive sites:

- Pre-construction checks and/or surveys to confirm presence of species.
- Detailed mitigation strategies as appropriate, in consultation with Natural England, and other appropriate organisations such as the local wildlife trust.
- Licensed translocation, removal, or exclusion of a species from affected area if necessary.
- Creation of construction buffer zones around protected populations in situ.
- Sensitive removal of any vegetation potentially used as habitat.
- Protection of nesting birds.
- Use sensitive construction techniques to dredge the river and protect any food sources which protected species rely on (e.g. fish).
- Construction of new otter holts will be undertaken as part of the works.
- Dredging and stockpiling activities to be supervised by an ecologist. If species are found works may cease until appropriate action agreed and undertaken.
- Biosecurity measures to prevent the spread of non-native or invasive species.

Post project it is anticipated that many species will experience beneficial effects due to the likelihood that their habitat will flood less frequently or for shorter durations.

A Habitats Regulations Assessment (HRA) has been carried out as a separate, but associated, process to the Environmental Impact Assessment, and updated following proposals to restore the banks. The HRA focuses on effects to the features of the internationally designated sites. The HRA (which required the inclusion of a stage known as 'Appropriate Assessment') concluded that, subject to implementing a monitoring and management programme during and after dredging, the scheme would not have an adverse effect on the 'integrity' of the network of internationally designated sites.

Water

The Parrett and Tone rivers flow from their sources in the southwest and east of the catchment into a large lowland floodplain, before reaching the Bristol Channel through the Parrett Estuary. The lower reaches of the River Parrett and Tone are tidally influenced. This section is called the 'Parrett Transitional' water body in the South West River Basin Management Plan (a document required by the Water Framework Directive).

During dredging there will be some adverse effects to this section of the water body. This includes increased turbidity and subsequent reductions in light and dissolved oxygen levels which can adversely affect fish. In addition, the mobilisation of silt can also cause bacteria such as E Coli to flourish, which when combined with warm temperatures can affect the quality of bathing waters and cause indirect risks to human health. There are no bathing waters within the immediate vicinity of the dredging works but water quality at Burnham-on-Sea approximately 20km downstream has the potential to be affected.

To ensure these impacts are minimised, we will ensure that the water temperature will be closely monitored, and water quality regularly tested for elevated levels. Good construction practice and carefully designed and planned mitigation will be implemented such as favouring dry excavations where possible and stopping works during particularly high river temperatures.

On completion, the rivers will be wider which will draw in more tidal flows (and sediment) into the river, especially along the River Tone which is currently dominated by freshwater flows. This can affect water quality, which in turn can affect temperature and salinity and harm the ecology of the river. These impacts can also be reduced through good working practice including not dredging the full channel width and bed to leave a central low-flow channel.

The scheme, with the mitigation that has been developed, is considered to be compliant with the Water Framework Directive.

Landscape Character and Visual Amenity

Effects on the landscape character or visual amenity of the area will result from the need to temporarily stockpile dredged materials and the presence of additional vehicles in the local landscape. Stockpiles will be 2m in height on average and will be located at least 25m away from private households and 10m away from public access routes (such as the Parrett Trail) in order to minimise visual impacts. Main stockpiles will also be covered and sealed in black sheeting.

The reduction in views as a result of bank profile restoration was considered within the ES Addendum, however, the relatively small scale of the proposed re-profiling coupled with limited existing pre-construction views of the embankments, means that views will not be obstructed to a noticeable extent.

Historic Environment

The Somerset Levels are known to have been used by humans since the Neolithic period. The landscape includes large areas of former marshland and reed bed, reclaimed by people since at least the Roman period. The local historic landscape is comprised of remains of various field systems, trackways, medieval embankments and settlements and its significance reflected through the designation of numerous Scheduled Monuments such as Burrow Mump and an Anglo-Saxon site on Athelney Hill. There are also numerous Listed Buildings and non-designated features listed on the Somerset Historic Environment Record (HER) and there will inevitably be many other sites that are as yet undiscovered. Consultation has been undertaken with archaeological experts to assess the impact of the works, which will arise primarily during construction.

Good construction practice and the avoidance of topsoil stripping and spreading or stockpiling on known archaeological sites such as Scheduled Monuments and earthworks listed on the Somerset Historic Environment Record will ensure that any potential for impacts is kept to a minimum. Some historic sites exist as crop marks only and, in consultation with

the County Archaeologist, have been considered acceptable for the spreading or stockpiling of dredged material. At the main stockpile sites we will spread a layer of dredged material after the stockpiles have been removed to create a buffer between buried archaeology and future ploughing activities. Engineered rebuilding of the embankments (see 'Method of Works') has the potential to degrade the value of potentially historic river banks. Bank profile restoration works over known historic embankments will be avoided where possible, however, where it cannot be avoided works will be undertaken in consultation with the County Archaeologist and appropriate mitigation will be agreed if necessary.

There will be major benefits to features of historic interest (such as Listed Buildings) due to the improved standard of flood protection provided by the scheme.

Traffic and Transport

There will be a temporary increase in traffic during the works. The intention is to re-use dredged materials as close to their site of extraction as possible, mostly on agricultural land within 1.5km or to restore the existing bank profiles. This will provide localised agricultural benefit and minimise the distance travelled by vehicles. Some spreading sites may be up to 8km from the river and if dredged material is found to be contaminated it will be moved to a suitably licensed waste disposal site. Tractors and trailers will be used to transport the material to main stockpile sites, to other agricultural fields for spreading or to the banks for use in their restoration.

It is possible that some dredged material will be unsuitable for reuse as it may contain contaminants. When contaminants are found to be present, the material will be disposed of as waste, and transferred to an appropriate site by Heavy Goods Vehicles (HGV). This is likely to require transportation of materials over a larger distance.

A Traffic Management Plan will be introduced to consider and minimise these effects on local residents. The plan will include measures such as: agreed delivery/haulage routes; pre-construction condition surveys; delivery schedules to avoid peak traffic times; and, vehicle control measures (such as the use of 'banksmen' and road signage). Through use of the Traffic Management Plan and communication with the local community, the project will seek to reduce adverse effects on the local road network.

Cumulative Impacts

A desk-based review of planning applications and other Environment Agency improvement works within the Study Area has been undertaken. Other known planned developments in the area are small, localised and are not anticipated to give rise to significant effects when considered in combination with the proposed dredging scheme.

Environment Agency asset recovery works along the Rivers Parrett and Tone consist of a combination of 'hard' and 'soft' engineering techniques. The soft engineering constitutes the bank profile restoration works assessed within the ES addendum. The hard engineering works, however, are considered as separate civil engineering works, but will be undertaken over a broadly similar timescale to the dredging and bank profile restoration works. Hard engineering works will typically involve a combination of raising walls, installing and raising piles with reinforced concrete caps and construction of new hard defences. Exact details of these works are currently unknown, but their construction will take into account the potential impacts associated with interaction with the dredging and associated works.

Our assessment of changes to flood risk takes into account bank profile restoration for both hard and soft defences along the River Parrett. Additional minor capital works on the Tone, Rivers Parrett and Tone Dredge: - **Bank Profile Restoration** Non-Technical Summary Addendum xvii

between Hook Bridge and the confluence with the Parrett, would not have any further impact on the hydrology of Curry Moor.

The full extent of repair works required to surrounding infrastructure and services is still currently unknown. It is anticipated however that repairs by various parties such as the Local Authorities, Canal and Rivers Trust, Highways Agency and Network Rail will be required within the locality. As details of such work become clearer they will be considered for cumulative impact and appropriate mitigation measures developed where necessary.

Summary

Overall, the Environmental Statement has concluded that with appropriate mitigation and with good site management in place, it will be possible to avoid significant permanent negative environmental impacts resulting from the works. There will however, be some short and medium term adverse impacts. There will also be a significant temporary beneficial effect on flood risk to residential housing, commercial structures, agricultural land, listed buildings and transport links in the area. The main impacts have been highlighted in this NTS and are described in detail within the ES and subsequent addendums.

Scheme Progress and Next Steps

The consultation period for the original ES is now over and no objections were received. The comments received were considered during the detailed development of the main dredging works and correspondence was maintained with the respondents. In March 2014 we advertised a notice of our intention to proceed with the works and dredging commenced on site in April 2014.

The ES Addendum for the stockpiles was submitted to Taunton Deane Borough Council to support the three planning applications. Planning consent for all three sites was granted by June 2014 at the end of a public consultation period.

Bank profile restoration works are considered to fall under the Environment Agency's Permitted Development rights and therefore additional planning consent is not required. The ES Bank Profile Restoration Addendum will be advertised. We will review any comments received and, taking into account of due process for dealing with objections, bank profile restoration works will then commence imminently following this consultation period.

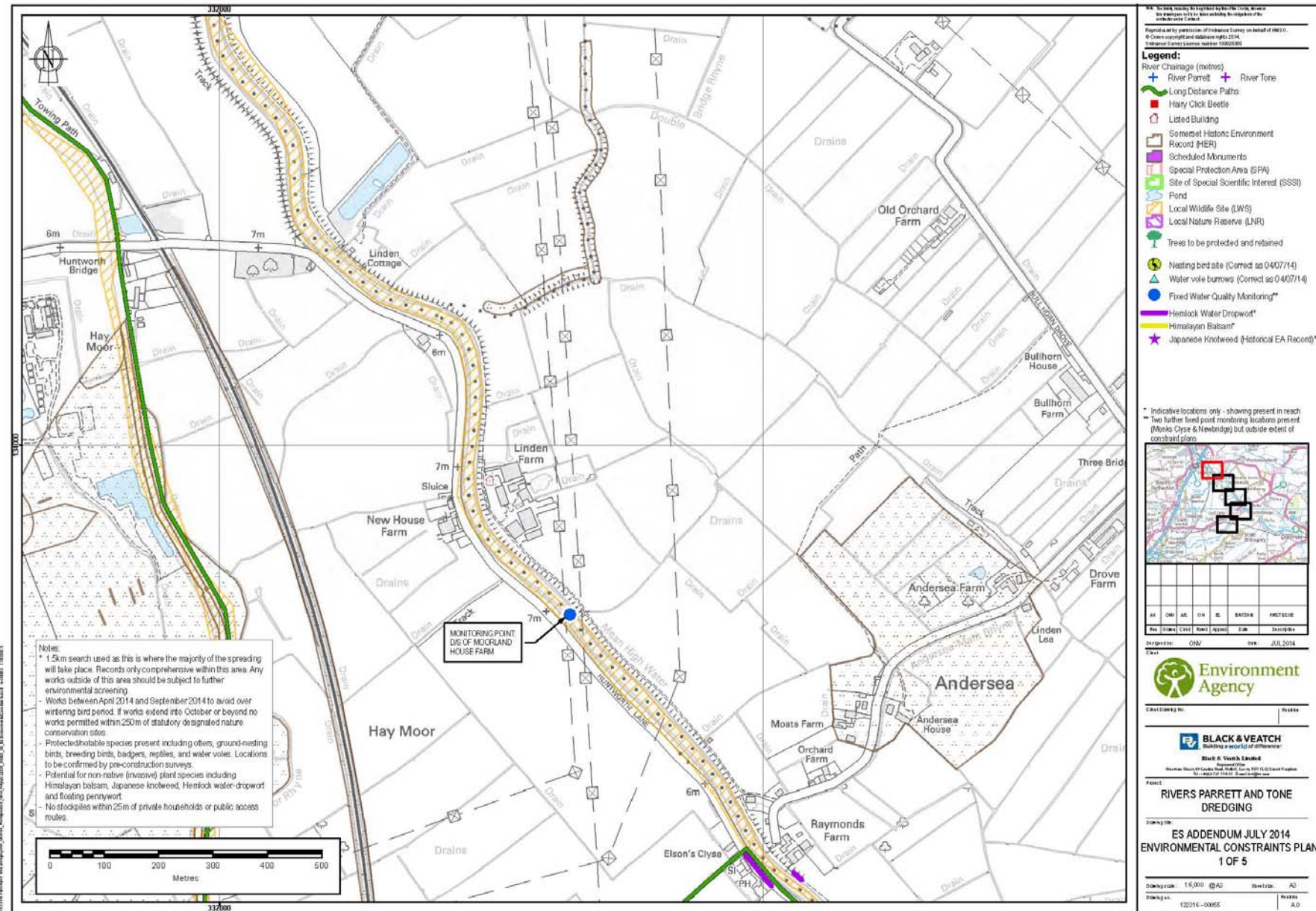


Figure 4: Environmental Constraints Plan

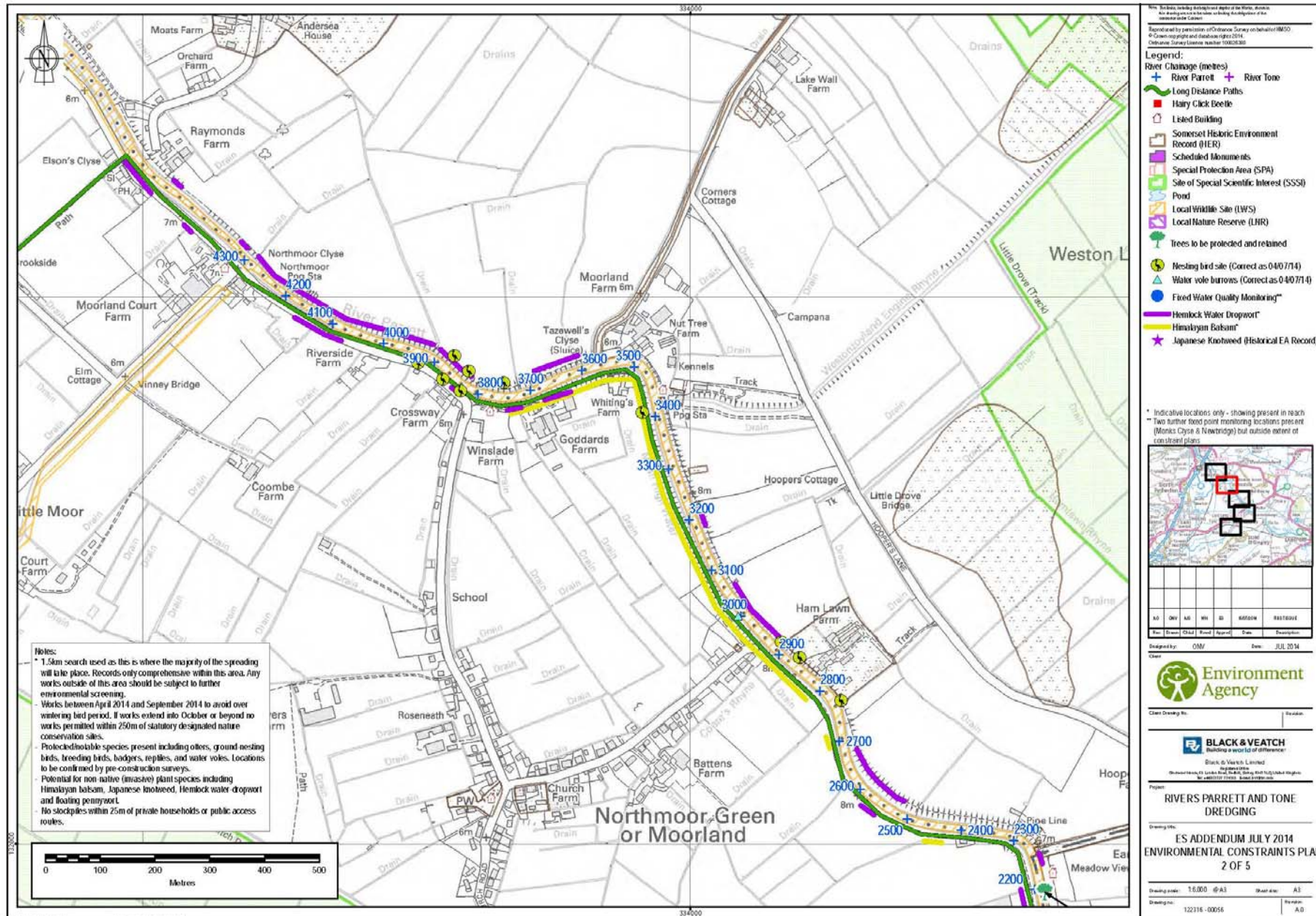


Figure 4a: Environmental Constraints Plan

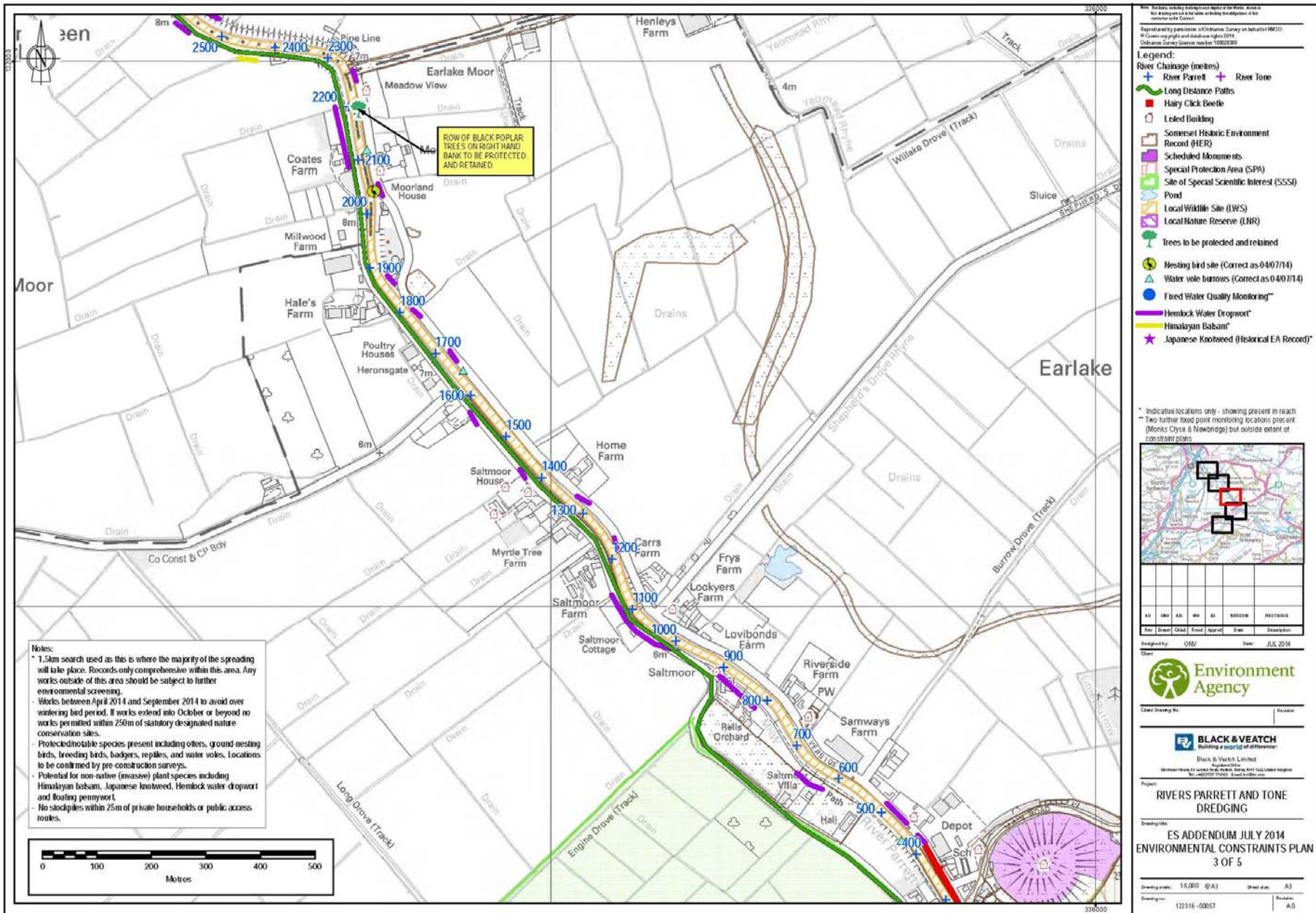


Figure 4b: Environmental Constraints Plan

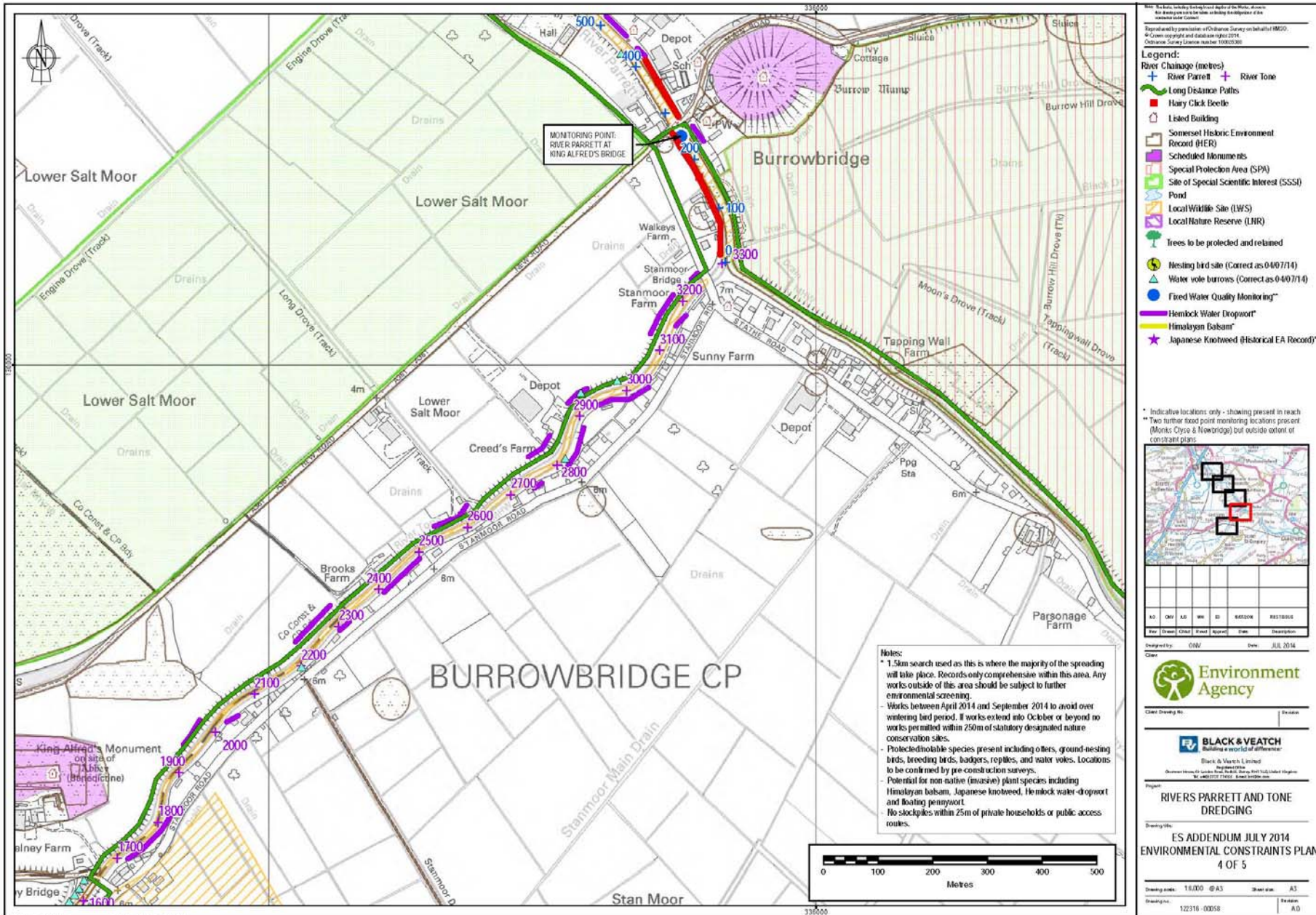


Figure 4c: Environmental Constraints Plan

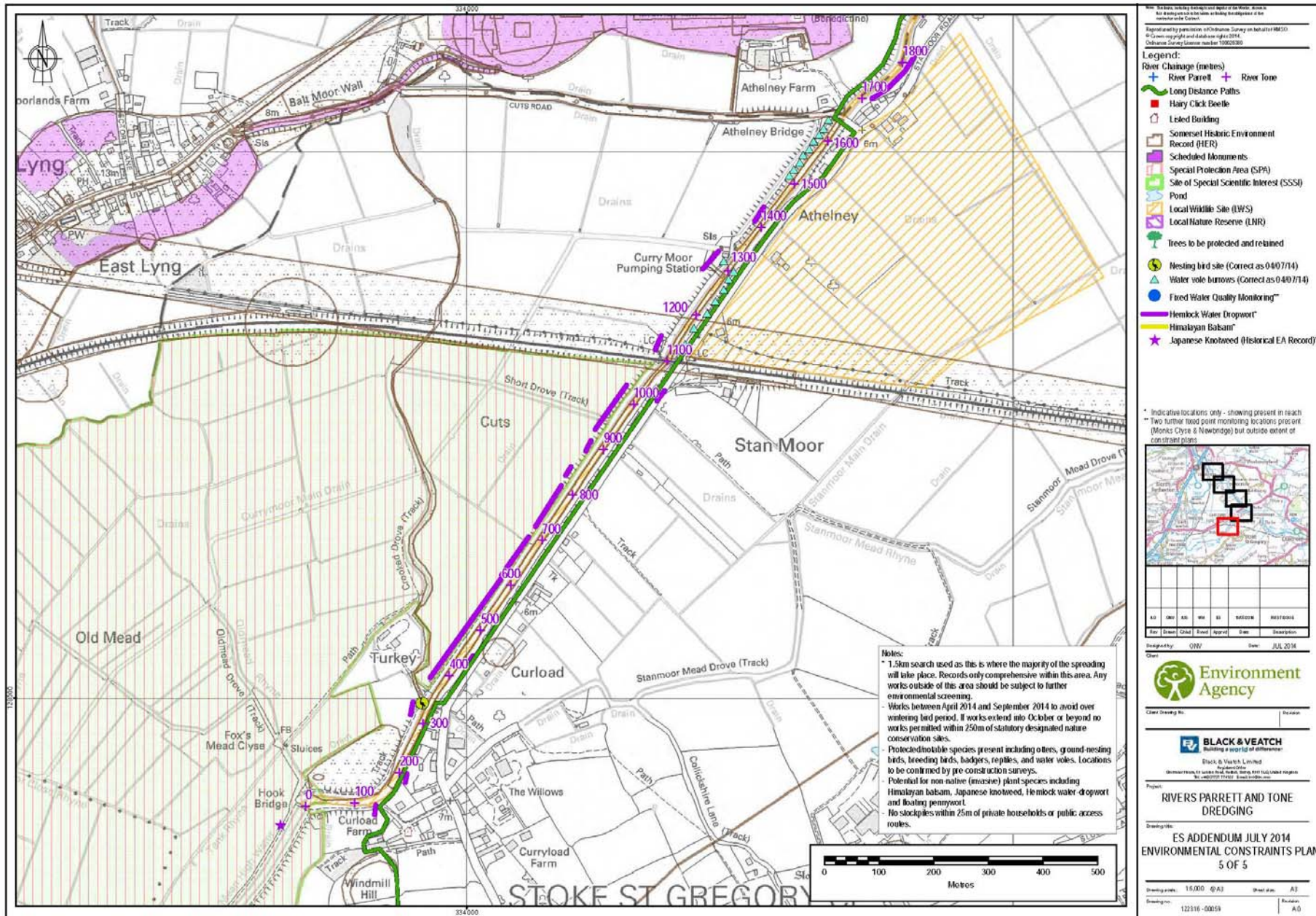


Figure 4d: Environmental Constraints Plan

Contact Us

This NTS and the full ES and Addendums are available to view at the Environment Agency's office in Bridgwater. To ensure that queries are dealt with appropriately, it is advisable to make an appointment by contacting the telephone number below.

*Environment Agency,
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Telephone: 0370 8506506

For further details of the Rivers Parrett and Tone Dredge scheme, please contact:

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