Oath to Burrowbridge Dredging and Associated Activities

Volume 3: Appendices Part 1

APPENDIX 1A: SCOPING REPORT

River Parrett Oath to Burrowbridge Dredging

Environmental Impact Assessment Screening and Scoping Report

Report Status: Final

Job Number: J00256

Client: Parrett Internal Drainage Board

Date: April 2019

DOCUMENT CONTROL

Report prepared for:

Client Name: Parrett Drainage Board Consortium

Main contributors:

Matt Johns BSc MSc CEnv FGS MCIEEM MIFM (Johns Associates, Director and Head of Environment & Planning)

Andy Wallace BEng MRes CEng MCIWEM (AW Water Engineering)

Reviewed & Issued by:

Liz Johns BSc MSc CEnv MCIEEM MRSB

Johns Associates Limited, The Old Brewery, Newtown, Bradford-on-Avon, BA15 1NF

T: 01225 723652 | E: info@johnsassociates.co.uk | W: www.johnsassociates.co.uk

DOCUMENT REVISIONS

Version	Details	Date
V1	Initial draft produced for client copy	July 2018
V2	Updated draft incorporating baseline data, stakeholder meeting feedback and design iteration, for client review and approval.	March 2019
V3	Final draft for approval	10th April 2019
V4	Final version issued	15th April 2019

Third party disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by Johns Associates at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. Johns Associates excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

TABLE OF CONTENTS

1 INTRODUCTION

1.1 BACKGROUND

1 This report has been prepared to support a separate request for a Screening Opinion and a Scoping Opinion from the Parrett Internal Drainage Board (PIDB), in accordance with the Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999.

2 During the winter of 2013/14 the Somerset Levels and Moors experienced a severe and prolonged flood. There have also been recent notable floods in spring/summer 2012 and winter 2012/13. As part of the response to these floods the Somerset Rivers Authority (SRA) was formed. The SRA's purpose is to deliver higher standards of flood protection than would be funded nationally, and to create better flood protection and resilience against further flooding by joint planning and delivery from SRA members. The SRA produced a Flood Action Plan (FAP) covering the next 20 years, of which Workstream 1 includes dredging and river management.

3 The SRA, or partner organisations, have delivered a number of schemes within the wider Parrett catchment that have successfully reduced the risk of flooding. These include improvements to pumping and localised flood defence improvements. These works have ensured that if a flood of a similar magnitude to 2013/14 were to occur again then the degree of flooding would be much reduced from that experienced during that event. However, significant flooding would still occur in some locations. In addition, all smaller events would reduce in frequency, duration and extent.

4 In 2014, the Environment Agency carried out dredging along 8km of the River Parrett and River Tone to increase the conveyance capacity of the river following the 2013/2014 winter flooding to reduce the likelihood and severity of future flooding to surrounding communities. The SRA carries out the ongoing maintenance dredging of the 2014 river profiles and also identifies further dredging locations for improved flow conveyance and flood management under Workstream 1. Hydraulic studies carried out by CH2M, HR Wallingford and AW Water Engineering investigated and proposed additional dredging locations and compared these locations in terms of flood risk conveyance benefits, constraints and costs. The River Parrett between Northmoor Pumping Station and the M5 and the River Parrett from Oath Lock downstream to its confluence with the River Tone were identified and assessed as the next most beneficial dredging locations. The M5 dredging location was assessed and various constraints were identified. The Oath to Burrowbridge location has been assessed and a viable dredging proposal developed.

5 Focused assessment of the Oath to Burrowbridge site and dredging proposal has demonstrated that the maximum flood risk benefits can be achieved with the minimum environmental impact by reducing the extent of river dredged and focusing operations on the downstream reach. Consequently, the proposed dredge includes the banks immediately downstream of Stathe Bridge (downstream of Beazleys spillway) to the confluence with the River Tone at Burrowbridge (approximately 2.2km and half the length of the original proposal). The EIA baseline assessment includes the entire site from Oath Lock to Burrowbridge.

6 As a member of the SRA, the Parrett Internal Drainage Board (PIDB) is proposing to undertake the dredging operations in the last part of 2019. The project aims to increase the conveyance of the channel within the dredged reach by 3-4 cumecs at low tide. The project will therefore contribute to:

- relieving existing flood extents, durations and frequencies on several upstream moors including those on the River Sowy and Kings Sedgemoor Drain;

- reducing the duration of flooding to the surrounding road network; and
- reducing the flooding impacts on the wider community and businesses.

7 In addition to these direct benefits, this scheme, (alongside the other improvement works undertaken within the FAP), will confer further benefits which are less readily quantified. By increasing the capacity of the channel this will increase the overall flexibility in the system, and allow greater opportunities for more flexible operation within the system. This can be especially important when flood events are localized more on one catchment than another, or if emergency works need to be undertaken. Also, by increasing the flow passing Burrowbridge there will be an increase in channel velocities during low tides. This will increase the natural erosion of sediment that happens in the downstream channel, reducing the need for maintenance dredging.

8 The proposed dredging will be within the extents shown in Figure 1 below.

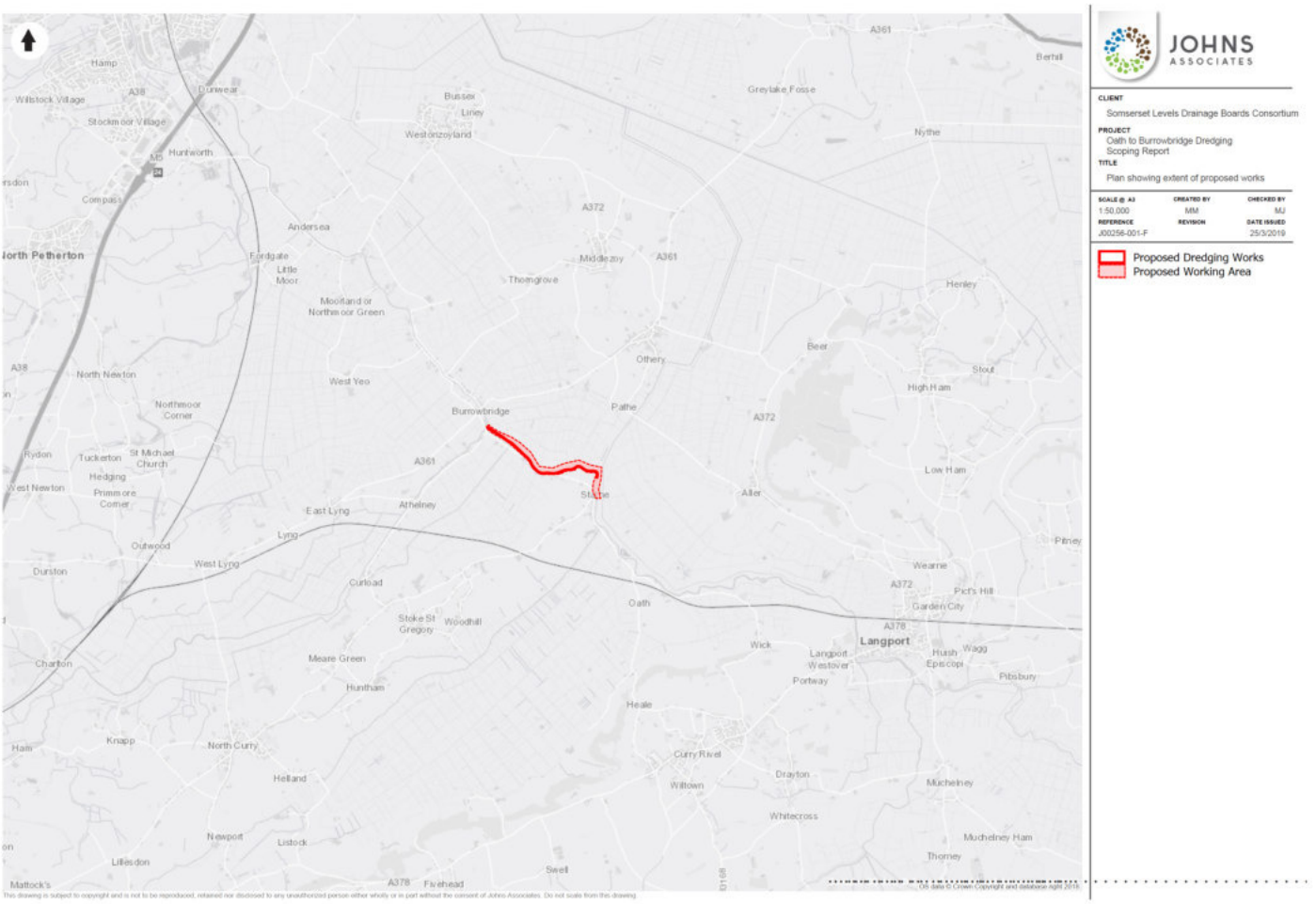


Figure 1. Plan showing extent of dredging and proposed working area

1.2 PURPOSE OF THIS REPORT

9 The proposed works could result in likely significant environmental effects in the absence of suitable scheme design to avoid such effects or through appropriate mitigation. Consequently, the proposed works is considered to fall under the Environmental Impact Assessment (Land Drainage Improvement Works) Regulations (SI 1999 No. 1783)

(the 'Land Drainage EIA Regulations'), which have been subject to significant revisions in 2005[1] and in 2017[2]. The 1999 Regulations, and subsequent amendments, are referred to as the 'Land Drainage EIA Regulations' within this report.

10 Environmental Impact Assessment (EIA) is process that ensures that the environmental effects of a proposed development are fully considered and taken into account, before it proceeds. The EIA process is impartial and systematic and it draws on a detailed understanding of current environmental conditions (the baseline), information gathered during consultation, and from a detailed understanding of potential effects from the development. This knowledge allows effects to be 'designed' out (e.g. avoiding dredging adjacent to residential properties) and where this is not possible, allow suitable mitigation (e.g. providing alternative habitats for animals or improving water level management) to be identified and included in the development proposal. Once these have been agreed and the final design has been 'frozen' an assessment of likely effects is carried out. This focuses on those effects that are considered to be significant. The findings of an EIA are reported in a document called and Environmental Statement (ES), which has to meet certain legal standards, which broadly set the main headings, topics that need to be considered, organisations that need to be consulted, stages of the project, timescales and types of effects and mitigation that need to be taken into account.

11 Under the Land Drainage EIA Regulations, the Drainage Body (in this case, PIDB) is required, taking into consideration the selection criteria in Schedule 2, to determine whether the proposed works are likely to have significant effects on the environment (Reg. 4); and therefore, whether formal Environmental Impact Assessment is required for this project. The process of determining whether proposed works require Environmental Impact Assessment (EIA) or not is known as 'screening'.

12 This report has been prepared to inform the EIA screening decision i.e. it considers and assesses whether the proposed works are likely to have significant effects on the environment in the absence of appropriate detailed design work to avoid such effects and/or the integration of appropriate mitigation.

13 **This report therefore supports the advice to the PIDB that their Screening Opinion should be that an EIA is required**.

14 This report goes on to describe those environmental effects which are likely to be significant and that should be taken forward for further detailed assessment within the EIA including consideration of changes in the design and embedded/integrated environmental measures that will be adopted to minimise any residual effects. This process is known as 'scoping'.

15 The key aim of the scoping process as reported within this document, is to identify the likely significant effects of the proposed works, describing those that need to be considered in depth as part of the EIA. By following the full EIA process, PIDB will ensure that any potentially significant effects on the environmental resulting from proposed pioneering dredging of the River Parrett are considered, and where appropriate, mitigated. By default, the scoping process also identifies those effects which are not likely to be significant and can therefore be eliminated (or 'scoped out') from the EIA.

16 This document is intended as an informal Scoping Report that meets the requirements of the Environmental Impact Assessment (Land Drainage Improvement Works) Regulations (SI 1999 No. 1783). It therefore has been

1 The Environmental Impact Assessment (Land Drainage Improvement Works) (Amendment) Regulations 2005 (SI 2005 No 1399)

2 The Environmental Impact Assessment (Land Drainage Improvement Works) (Amendment) Regulations 2017 (SI 2017 No 585).

produced to support advice to the PIDB for its Scoping Opinion on the content of the EIA. The PIDB may wish to engage with other statutory consultees to inform its Scoping Opinion (e.g. Natural England and the Environment Agency).

17 It will also be used as best practice dictates, by the project team to assist with proper targeting of the EIA and ES, supported by the Screening Opinion from the PIDB. It is also intended that this information will help to engage stakeholders during consultation, which in turn will feed into the developed scope of assessment and the remainder of the EIA process.

18 However, it should be noted that the PIDB has indicated that it does not intend to make a formal request under Regulation 8 to the Appropriate Authority (the Secretary of State) for its formal opinion as to the information that should be included within an ES.

1.3 STUDY AREA CONTEXT

19 The Study Area for the EIA will include the maximum potential extent of dredged river, locations where dredged material will be placed, access routes, compounds and the areas which could have resultant changes in water levels. The general Study Area is shown in Figure 2 and covers:

- The River Parrett between Oath Lock and its confluence with the River Tone, immediately to the south of Burrowbridge;
- 1km radius around this stretch of the river;
- For receptors where there are additional potential environmental pathways comprising changes to water levels within different moors (e.g. a potential change in splash conditions required by wintering water birds or flood depth and/or duration), the Study Area has been expanded.

20 The Study Area is predominantly rural in nature with a mixture of mainly livestock grazing with some arable land, populated with small villages, hamlets and farms. The River Sowy flood relief channel runs parallel to the River Parrett in the southern extent of the proposed dredging works. The A361 crosses the Parrett to the north of the proposed dredging works at Burrowbridge. A main railway line runs adjacent to the River Parrett immediately to the south of the proposed dredging works. The River Parrett Trail and Macmillan Way long-distance footpaths run along the right-hand bank of the River Parrett throughout the extent of the proposed dredging works.

21 The Study Area encompasses land of international importance for wildlife, designated as part of the Somerset Levels and Moors Special Protection Area and Ramsar Site (including component Sites of Special Scientific Interest Southlake Moor and West Sedge Moor, which lie immediately adjacent to the proposed dredging works). In addition, the non-statutorily-designated local wildlife site Aller Moor Site of Nature Conservation Importance (rhyne and wet meadow site with an important wintering bird population) lies adjacent to the right-hand bank in the southern stretch of river to be dredged.

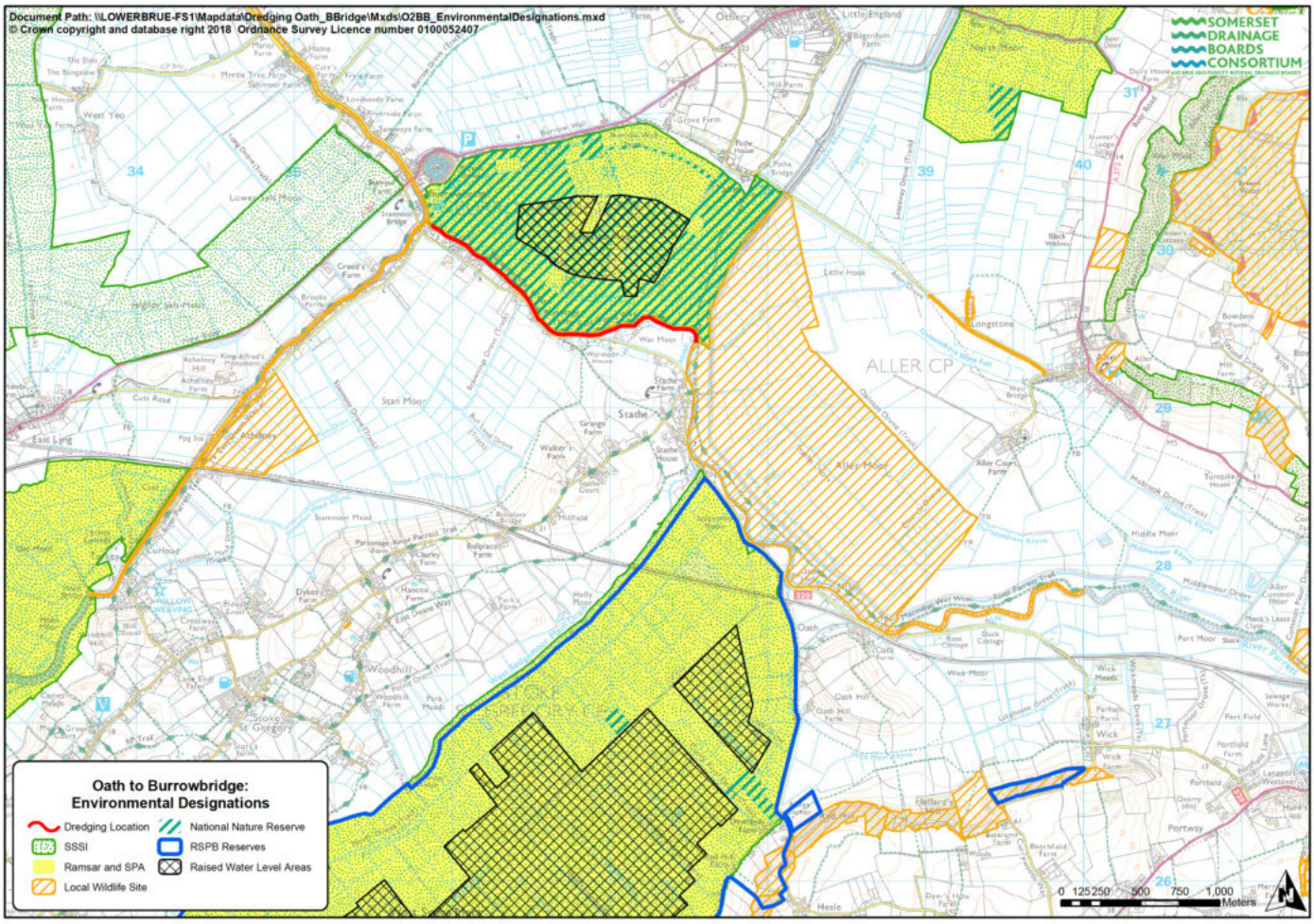


Figure 2. Plan showing extent of dredging, surrounding 1km study area, and key environmental designations

Other recent flood alleviation projects

22 A number of works aimed at alleviating flooding have recently been completed in the immediate area (since 2014) delivering considerable benefits to residents, landowners and tenants and to infrastructure through the overall flood risk reduction achieved. The past projects completed along the Parrett and Tone since the flooding of 2013/2014 include those listed below. The extent of dredging works on the Parrett and Tone since 2014 is shown in Figure 3 below.

- Completion of the dredging of the 8km reach between Hook Bridge on the River Tone and Northmoor Pumping Station on the River Parrett by the Environment Agency.
- Dredging of the 750m reach of the River Parrett downstream of Northmoor Pumping Station by the Environment Agency.
- SRA maintenance dredging of the EA profiles in 2015 using excavators and in 2016 and 2017 using hydro-dynamic dredging techniques (water injection dredging or WID);
- The Asset Recovery Programme (ARP) improvement works to the flood banks.
- Improvement works to several pump stations, including the works associated with bringing in temporary pumps.

- The revised operating rules for the pumping stations following the 'Trigger point' project.
- Works at Beer Wall (A372) to increase the capacity of the culverts under the road.
- Changes to the operation of the River Sowy and Kings Sedgemoor Drain during flood events.

23 The EA are currently delivering improvements to the River Sowy and Kings Sedgemoor Drain on behalf of the SRA. This project is being delivered in phases with the aim to increase the amount of flow that can be conveyed through this system from the River Parrett prior to the formal spillways (Allermoor and Beazleys) being overtopped. Upstream of Langport this project will deliver similar impacts to the dredging being considered by this report.

24 Awareness of the SRA Flood Action Plan and ongoing programme for flood alleviation since 2014 is an important part of the cumulative impacts assessment within the EIA process and cover both past and present cumulative impacts.

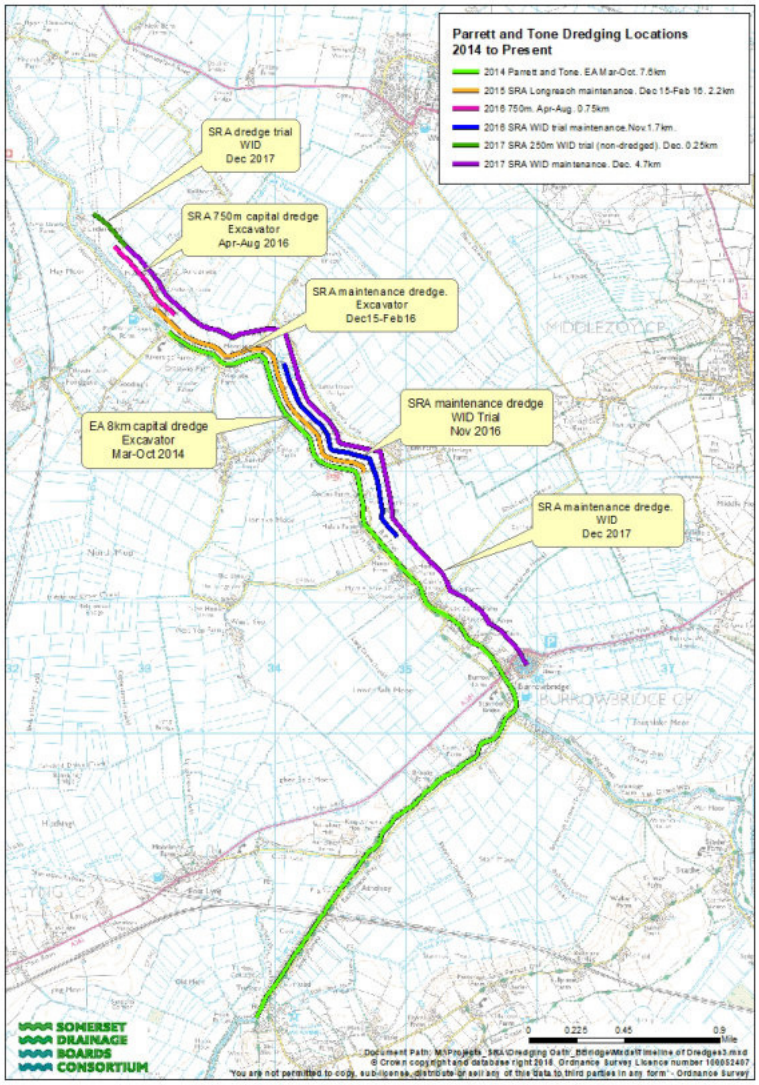


Figure 3. Extent of dredging works on the Rivers Parrett and Tone 2014 – present day

1.4 PROPOSED WORKS

25 The site under consideration comprises approximately 2.2km of the banks of the River Parrett between Beazley's spillway and its confluence with the River Tone (see Figure 1). This represents a shortened section of the overall Site from Oath Lock to Burrowbridge and is based on the outcome of environmental surveys, environmental, engineering and safety assessments, and the detailed hydraulic modelling indicating the areas with the maximum potential for improvement to flood conveyance. No dredging is proposed between Oath Lock and Beazleys spillway within this programme of works. Over part of the length of these works, the right bank acts as both a flood bank to contain flows within the river, and a reservoir bank to contain floodwater within Southlake Moor. The possible works to this length of bank are limited due to these functions.

26 The works will comprise excavation to increase the flow capacity in the Parrett by approximately 3-4 cumecs at low tide within the dredged reach by excavating accumulated silt back to the design gradient of the bank, to form a two-stage channel. 22,000m^3 of silt will be removed in total from the banks within the 2.2km of dredging works. All arisings from the excavation are proposed to be deposited on the landward side of the right flood bank crest (facing downstream) under conditions of D1 and U1 waste exemptions. The level of the bank crest is not to be raised above existing levels. A sample cross-section showing the proposed excavation and placement of arisings is shown as Figure 3.

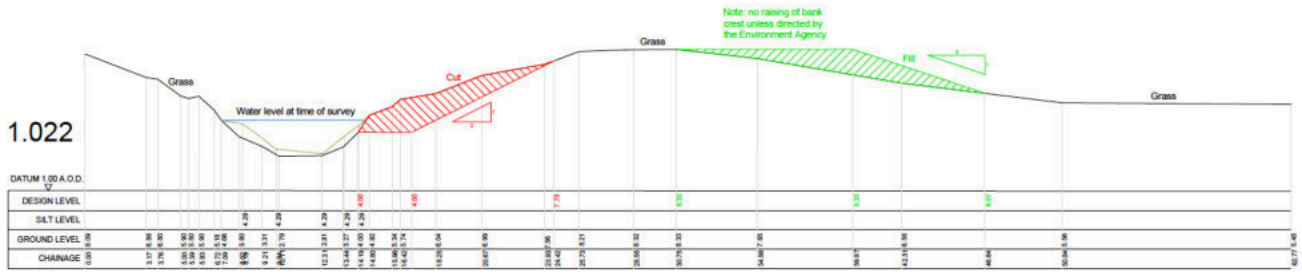


Figure 3. Sample cross section illustrating the works

27 Excavation will remove recent accumulations of silt on the upper banks only. No dredging below the lower flow channel (thalweg) is proposed. A 'reedy fringe' of 1-2m width of marginal vegetation (typically dominated by reed canary grass *Phalaris arundinacea*) will be left along all of the left-hand bank and up to 1000m of the right-hand bank to ensure critical habitat for aquatic fauna is retained at all times. Strip and recover/replanting of reed turf and rhizomes for a further 1-2m of bankface will be provided behind the reedy fringe wherever feasible. Re-establishment of vegetation beyond this will be achieved using a suitable seedmix.

28 Bank re-profiling will be managed sensitively, in order to reduce environmental impacts, mitigate impacts on the working bank and aid ecological recovery.

29 Long-reach excavators, meeting all current environmental and operating standards and Environment Agency specifications, working from, or near, the bank crest will be used for the cut and fill earthworks. Topsoil will be stripped from the landward bank where excavated material is to be deposited to form a raised bund along the proposed toe line for fill material. Topsoil will also be stripped from the 'cut' area and added to this bund. Machines will then excavate to the design profile, swinging round to place arisings in the 'fill' location to the rear of the flood bank.

30 The fill material will be allowed to dry out as necessary before it is graded and consolidated to the design profile. The stripped topsoil will then be dressed back over the fill material. Light harrowing will then be undertaken before seeding of the fill area.

31 It should be noted that the two-stage channel excavation will create marginal berms and areas of shallow water, which have potential to substantially increase habitat diversity, particularly for fish populations. In addition, morphological diversity will be retained on the river bank wherever possible. The bank surface will not be finished to a smooth compacted surface: final roughing up with a toothed bucket will help assist vegetation become established on the bank which will then assist with bank stability.

32 Vegetation recovery behind the retained reedy fringe will comprise reseeding using local native grass dominated species. A stockproof fence and hedge will be provide at the outer toe of the regraded bank to provide additional habitat features and to support appropriate and timely access of grazing livestock to the banks. Restoration of poor quality rhynes will be implemented. The proposed hedge and rhyne works will provide a greater than 2:1 compensation of where these habitats necessarily will be modified through the proposals.

33 Dredging plant will access the right banks within the Working Area via the flood embankment of the River Sowy (accessed from Stathe Bridge). It is proposed that the long reach excavators will only work from the crest of the right bank to remove sediment from both the right and left of the channel (reaching across the channel) and deposit silt on the rear downslope of the right bank.

34 A site compound will be provided adjacent to the working area and will include a welfare unit for staff, staff parking for vehicles, a storage container and fuel bowser. It is anticipated that the mobile fuel bowser will be transported to the excavators along the banks as necessary. The mobile fuel bowser will be deployed in accordance with good practice EA guidance, with necessary spillage procedures and kits in place.

35 The works will commence in August 2019, with dredging commencing in September 2019. It is anticipated that all works will be completed within ten weeks, although there is potential for the works to over-run. Further activity to finalise bank profiles, vegetation restoration/management, deliver wider ecological enhancement and commence post works monitoring will occur in 2020.

1.5 CONSENTING REGIME

1.5.1 Planning Acts

36 The proposal to dredge the watercourse is considered to be improvement works that are a development activity. All proposed works (dredging and deposition of dredged arisings) will take place on the banks of the River Parrett, defined as a main river and under the statutory authority of the Environment Agency. The works will be carried out by the PIDB using powers delegated by the Environment Agency through a Public Sector Cooperation Agreement (PSCA). As such, the works fall within the Environment Agency's permitted development rights under Class D of Part 13 (water and sewerage) of Schedule 2 to the Town and Country Planning (General Permitted Development) (England) Order 2015:

*Class D – development by the Environment Agency (**58**)*

"Development in, on or under any watercourse or land drainage works and required in connection with the improvement, maintenance or repair of that watercourse or those works."

1.5.2 Environmental Impact Assessment

37 'Improvement works', as defined under Regulation 2(1) of the Environmental Impact Assessment (Land Drainage Improvement Works) Regulations (SI 1999 No. 1783) (as amended in 2005[3] and 2017[4]) (the 'Land Drainage EIA Regulations'), are works which are:

(i) *the subject of a project* ***to deepen, widen, straighten, or otherwise improve or alter, any existing watercourse*** *or remove or alter mill dams, weirs, or other obstructions to watercourses, or raise, widen, or otherwise improve or alter, any existing drainage work; and*

(ii) permitted development by virtue of Class C or Class D of Part 13 (water and sewerage) of Schedule 2 to the Town and Country Planning (General Permitted Development) (England) Order 2015.

38 The proposal to dredge the watercourse and return it to its baseline condition, are considered to be improvement works as per the bold highlighted definition above; and are further considered to be permitted development. Therefore, the Land Drainage EIA Regulations apply to these works.

39 It is the 'Drainage Body' who is responsible for implementing the Land Drainage EIA Regulations. The 'Drainage Body' as defined by the Land Drainage EIA Regulations comprises a public authority initiating improvement works, which can include an internal drainage board. As it is PIDB initiating the works, it is therefore PIDB who are responsible for implementing the Land Drainage EIA Regulations and assessing whether any likely significant environmental effects are likely to arise due to the works. In the event that formal EIA is required (screening), it is PIDB [5] who will decide whether the improvement works should proceed, taking into account the necessary mitigation measures (or conditions) that the works should be subject to.

40 This document has been prepared to record the initial screening and scoping stages of the EIA process (see Sections 4 and 5).

1.5.3 Environmental Permits

41 Placement of dredging arisings on the rear of the flood bank will be undertaken in accordance with the Environmental Permitting Regulations 2010 as amended). The deposition of dredging waste will be covered by a D1 exemption to deposit dredged waste from inland waters and is therefore exempt from the requirement for an Environmental Permit. Sediment sampling has been carried out and confirms the waste code of the dredged arisings and the suitability for use under a D1 exemption.

42 The D1 exemption requires that all deposition is carried out under one mechanical action and allows for up to 50,000m3 of silt deposition over every metre of inland water dredged. The D1 exemption also allows for the temporary stockpiling of material for up to 1 year should this be required (only 6 months is allowed under the permitted development rights).

3 The Environmental Impact Assessment (Land Drainage Improvement Works) (Amendment) Regulations 2005 (SI 2005 No 1399).

4 The Environmental Impact Assessment (Land Drainage Improvement Works) (Amendment) Regulations 2017 (SI 2017 No 585).

5 Under Regulation 12A of the Environmental Impact Assessment (Land Drainage Improvement Works) (Amendment) Regulations 2017 (SI 2017 No 585), SBDC may only progress the determination of whether the improvement works should proceed if there is no extant objection in relation to the likely significant environmental effects of the works.

43 It is not anticipated that there will be a requirement to manage the dredging waste in more than 1 mechanical action.

44 A U1 waste exemption would also be registered, allowing the dredged waste to be used in construction (i.e. river bank structural support) and for specific spillway works.

1.5.4 SSSI Assent

45 The improvement works are partly located within the boundary of Southlake Moor Site of Special Scientific Interest (SSSI). In addition, the works have the potential to damage the condition or special features of other SSSIs, including Curry and Hay Moors SSSI and West Sedgemoor SSSI.

46 As such, these works would require advice and approval (known as assent) from Natural England before carrying out the improvement works. However, where works are carried out under statutory permission (Environment Agency powers) they do not require a formal application for SSSI assent but instead require consultation with Natural England prior to works commencing. Consultation has been started with Natural England for this purpose.

1.5.5 Habitats Regulations

47 The SSSIs referred to above are also internationally designated as part of a network of 'Natura 2000' sites: the Somerset Levels and Moors Special Protection Area (SPA) and Ramsar Site.

48 As the improvement works, in the absence of mitigation, could result in impacts to the SPA and Ramsar site, a Habitats Regulations Assessment (HRA) will be required under the Conservation of Habitats and Species Regulations (2017). It will be necessary to demonstrate that the improvement works will not adversely affect the integrity of the SPA and Ramsar site, known as Appropriate Assessment.

49 PIDB are a 'Competent Authority' under the Habitats Regulations and will therefore undertake Habitats Regulations Assessment, consulting with Natural England as required by Regulation 63. Coordination with Natural England in accordance with Regulation 67 will also be required, as Natural England are also a Competent Authority with regards to these improvement works.

50 This document has been prepared to jointly inform the proposed scope of the Stage 1 HRA.

1.5.6 Water Framework Directive

51 Public bodies, including PIDB, must, in exercising their functions so far as affecting a river basin district, have regard to the river basin management plan prepared under The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003.

52 As such, PIDB will be required to undertake a Water Framework Directive (WFD) Compliance Assessment to demonstrate that the improvement works support the objectives of the South West River Basin Management Plan (RBMP).

2 METHODOLOGY

2.1 APPROACH TO DEFINING THE BASELINE

53 The assessment of potentially significant effects requires a comparison to be made between the likely environmental conditions in the presence of the proposed improvement works and in its absence (i.e. the 'baseline').

54 The '**current baseline'** represents the conditions on the ground at the time of preparation of the Environmental Statement (ES) (detailed surveys conducted in late spring/ summer 2018, which have informed the detailed design iteration including engineering and hydrological investigations and this screening/scoping report and to be updated in late spring 2019).

55 In the context of the River Parrett and River Tone, a number of recent flood alleviation measures have been implemented since the flooding of 2013/2014 and had an impact on the fluvial environment. The current environmental baseline is therefore inclusive of these recently completed projects and the considerable betterment provided, in particular, those listed below:

- 2014 Environment Agency Phase 1 and 2 8km capital dredge of the River Parrett and Tone.
- 2015 Environment Agency 750m capital dredge.
- The Asset Recovery Programme (ARP) improvement works to the flood banks.
- Improvement works to several pump stations, including the works associated with bringing in temporary pumps.
- The revised operating rules for the pumping stations following the 'Trigger point' project.
- Works at Beer Wall (A372) to increase the capacity of the culverts under the road
- Changes to the operation of the River Sowy and Kings Sedgemoor Drain during flood events.
- Ongoing SRA maintenance dredging to retain the 2014/15 dredge river cross sectional profiles.
- Other flood alleviation works completed between 2015 and 2019.

56 This allows for the potential impacts of the proposed Oath to Burrowbridge dredge to be considered in the context of the cumulative changes to the system since the floods of 2013/2014 and the ongoing flood alleviation works.

57 The **current Environmental baseline** therefore comprises the status of the River Parrett at the time of preparing this EIA investigation (2019).

58 The Land Drainage EIA Regulations (Schedule 1) also require analysis of the likely evolution of the baseline scenario without implementation of the improvement works as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

59 As such, when assessing the potential environmental effects of the proposed improvement works, account has also been taken of the 'do-nothing scenario' and the '**future baseline'**. This ensures that ongoing trends and changes to the baseline environment, as a result of both natural and manmade processes, can be factored into the assessment.

60 The **future baseline** scenario for the River Parrett and Tone environment could be reasonably considered to include the ongoing maintenance dredging operations to retain the conveyance capacity achieved on the rivers since

2014 for the remainder of the SRA 20 Year Flood Action Plan duration (15 years). The exact location and quantity of future dredging maintenance will be informed by silt monitoring, refinements in methodology and lessons learnt. The future baseline should therefore expect maintenance dredging to be continued as per present operations over the short-medium term. Some consideration should be given to a 'no maintenance' future scenario that could result from a change to policy, funding or over a longer timescale.

61 As described above, the Environmental Impact Assessment will therefore include consideration of two baseline scenarios:

- Current baseline
- Future baseline

2.2 APPROACH TO DETERMINING LIKELY SIGNIFICANT EFFECTS

62 Decisions about the likely significant effects of the proposed improvement works have been based upon professional judgement, with reference to the project description, and using information about:

- the receptors (people and environmental resources) that could be affected by the proposed improvement works;
- the activities involved in undertaking the proposed improvement works;
- changes that could result from these activities (e.g. changes in water quality or land cover as a result of the proposed improvement works);
- the expected magnitude and other characteristics of the environmental changes that could result from these activities and that could affect important receptors;
- the susceptibility of important receptors to exposure to these changes e.g. how biodiversity receptors might be affected by changes in land cover); and
- the extent to which the design of the proposed improvement works avoids or reduces any potential effects.

63 If the information available at the time at which this document has been prepared does not enable a robust conclusion to be reached that a potential effect is **not** likely to be significant, the precautionary principle is assumed i.e. it is assumed that the potential environmental effect is likely to be significant.

2.3 CUMULATIVE IMPACT ASSESSMENT

64 There is a requirement under the Land Drainage EIA Regulations to consider the cumulative effects of the proposed improvement works. This will identify whether any of the individual effects of the proposed improvement works would combine to create a cumulative effect greater than the sum of the individual effects.

65 The cumulative effects assessment process considers this in two ways:

- **Intra-project effects**: Typically, these effects occur when different activities associated with a project act upon the same environmental receptor. In determining such effects, consideration would be given to the sensitivity of the receptor and the magnitude of environmental change. Consideration is given to both the interaction of significant effects and the interaction of different impacts from project activities even if individually they are not significant.
- **Inter-project effects**: Consideration will be given to whether there is the potential for the effects of the proposed improvement works and effects of other 'major' developments to combine and result in a significant environmental effect. Only potential cumulative impacts arising from 'known' developments or

projects will be considered, i.e. only those projects that are within the public domain and for which sufficient information is available.

66 In the first instance, a list of developments or projects to be included within the cumulative impact assessment will be compiled and agreed. These projects will be screened in or out for further assessment. Following early consultation with relevant bodies, the following major developments have been proposed for inclusion within the cumulative impacts assessment:

- Ongoing agreed maintenance dredging.
- SRA Sowy Scheme (partial assessment only of hydraulic impacts).

67 The potential impacts of the proposed improvement works in-combination with following river projects on the River Parrett and Tone will be assessed via reference to the relevant baselines, as described in section 2.1 above:

2.4 CONSULTATION

68 A range of statutory and non-statutory consultees have been engaged to inform the scope of the EIA (and also the HRA and WFD assessment). A summary of the consultation undertaken to date has been provided in Table 1 below. Consultation with these and other organisations and with the public will continue iteratively throughout the EIA process.

Table 2.1. Summary of consultation

Organisation	Date	Summary of consultation undertaken
South West Historic Trust	27/3/18	Phone conversation and email from Dr Richard Brunning (Senior Historic Officer) confirming that there are no apparent impacts to the historic environment from the dredging of material from the river, the deposition of the dredged material onto the existing floodbanks or the use of heavy machinery on the floodbanks. Working compounds should be sited to avoid known archaeological sites, especially the deserted medieval hamlets on the north bank of the river.
Natural England	2/5/18	Meeting (Mark Jones, Donna Gowler, Stephen Parker) to discuss scope of HRA; HRA monitoring undertaken to-date relating to previous dredging works; best way to progress mitigation and monitoring required for European sites; projects that need to be assessed 'in-combination'. It was agreed that Stephen would undertake initial assessment of breeding bird surveys and BTO WeBS data to assess whether there is a demonstrable link between dredging and decline in habitat suitability for wintering water birds.
	May 2018	Consultation with Natural England to agree the approach to water vole survey; and potential approaches to mitigation. Included an email from Mark Jones (8/5/8) confirming possible approach to licensing; and an email from Claire Howe (17/5/15) on required extent and scope of water vole survey.
	29/6/18	Meeting (Mark Jones, Stephen Parker) for initial discussion on the outcome of the hydraulic modelling with regards to water levels on the moors during low magnitude flood events (and the potential impacts on SPA conditions/target water levels for over wintering birds). It was agreed to further process the data for further analysis during the next meeting.

Organisation	Date	Summary of consultation undertaken
	11/7/18	Meeting to further discuss potential impacts on the water levels in the moors and SPA conditions for over wintering birds. First review of water level management plans to identify options for water level mitigations.
Environment Agency	28/02/2018	Meeting (John Rowlands, John Phillips and Gemma Mahoney) to discuss initial proposals, constraints and agree necessary baseline ecological surveys and assessments.
	Jan – Mar 2018	Email and meetings between AW Engineering (PIDB hydraulic modelling consultants) and the Environment Agency modelling team discussions to agree the modelling approach, modelling scope.
	10/5/18	Discussion and email to John Philips to establish monitoring data available from previous dredging projects; and to agree survey methodology for benthic invertebrate surveys.
	May – June 2018	Ongoing emails and telephone conversations with Gemma Mahoney and John Phillips to discuss WFD assessment/mitigations and potential impacts on Hairy Click Beetle (protected species) as a result of proposed works.
	25/6/18	Meeting with John Rowlands to discuss modelling outputs and potential impacts on flood risk benefits/dis-benefits to receptors in the moors. Decision to develop a summary paper of flood risk consequences and consult further with SRA board.
	11/7/18	Meeting to discuss desired objectives of change for water level management and agree necessary mitigations.
Royal Society for the Protection of Birds (RSPB)	May 2018	Email correspondence outlining the nature of the project and intended project timelines. Request for further consultation discussions.
Somerset Wildlife Trust (SWT)	27/6/18	Meeting with Anne Halpin to detail the intended project, the surveys carried out, potential mitigations to remove impacts and ongoing EIA proposals. Agreed to send Scoping Report for comment when prepared.
British Waterways Trust	May 2018	Telephone conversations outlining the nature of the project and the EIA process for consultation.
PIDB and SRA	June 2018 – March 2019	Extensive ongoing internal discussions and meetings to further develop the project design to develop an optimum scheme with minimal significant environmental effects.
Environment Agency	June 2018 – March 2019	Extensive ongoing internal discussions and meetings to further develop the project design to develop an optimum scheme with minimal significant environmental effects.
Natural England	June 2018 – March 2019	Extensive, ongoing internal discussions and meetings to further develop the project design to develop an optimum scheme with minimal significant environmental effects.

3 SUMMARY ENVIRONMENTAL BASELINE

69 A brief description of the environmental baseline, as understood at this screening/ scoping stage has been provided below.

3.1 POPULATION AND HUMAN HEALTH

70 The immediate Study Area in the vicinity of the worlds (Figure 2) encompasses a number of small villages and hamlets as well as numerous farms. The hamlet of Stathe is located on the left-hand bank approximately half way along the dredged stretch. There are a number of properties (40-50) that are located adjacent to the river on the dredged stretch. The village of Burrowbridge is located at the downstream (northern) end of the works.

71 The wider area affected by changes to fluvial flooding and water levels as a result of the proposed works includes properties, businesses, infrastructure (e.g. road network) and agricultural land within or adjacent to the Parrett catchment moors upstream of the proposed works, and on the Sowy and Kings Sedgemoor Drain moors.

72 The Study Area is spatially dominated by aspects of the rural economy, such as fields of grazing livestock and arable land. Much of the land is floodplain which is grazed typically by cattle and sheep. Much of the land within the Study Area is covered by the Environmental Stewardship and Countryside Stewardship agri-environment schemes that provide funding to farmers to deliver effective environmental management. Much of the land within the Study Area is covered by Entry Level and Higher Level schemes as part of the overall Environmental Stewardship Scheme. The Environmental Stewardship scheme is now closed to new applicants, although the existing schemes below will run until the end of the agreement (10 years for most Higher Level schemes and 4 years for Entry Level). The new Countryside Stewardship (CS) scheme was introduced during late 2016; and several farms within the Study Area are now covered by Mid and Higher Tier CS schemes.

73 However, it should be noted that the most recent Census data for the area shows a spread of economic activity in which the local population are engaged. The most dominant industry in terms of numbers employed in the area, and in Somerset as a whole, is the wholesale and retail trade. Human health and social work and education are also notably high employment areas. Agriculture, forestry and fishing account for a relatively small proportion of employment (Somerset County Council Partnership Intelligemce Unit, 2011)

74 The main fisheries use of the Parrett and Tone is the glass eel fishery. This operates from the 14th February to the 25th May annually. Licences are issued by the Environment Agency on an unlimited basis (i.e. there is no limit to the number issued). In 2013, 169 licences were issued, which resulted in the capture of 4,000kg of glass eels. This comprises 90% of the Environment Agency south-west region, and 40% of the total UK glass eel catch. The economic value of the fishery fluctuates annually, depending on the prevailing market price of glass eels, which is in turn a reflection of supply (i.e. natural abundance and catches). Thus, in 2013 the value was £100/kg, which, given the capture of 4,000kg would have given the fishery a value of £400,000. In May 2018, the Environment Agency reported the current legal market value of glass eels as £150/kg. However, in other years the market value has risen as high as £250-£300/kg.

3.1.1 Recreation

75 Long Distance Paths are recreational trails which can, to varying degrees, be used for a range of non-motorised travelling options (including walking, cycling and horse riding). Typically, they will be at least 31 miles

(50km) long and will take the user more than a day to walk, but many are much longer than this. The Long-Distance Paths in the Study Area (see Figure 2) are comprised of a mix of Public Rights of Way (PRoWs) and permitted paths.

76 There are three Long Distance Paths within the Study Area – these are the River Parrett Trail, East Deane Way and Macmillan Way West (as shown on Figure 2). These paths are all in close proximity to the proposed dredging locations along the River Parrett; and run along the right-hand bank of the channel for the entire dredging stretch. The Parrett Trail section immediately adjacent to the dredging works is majority permitted path (2105m). This section of path is permitted by Natural England as the landowner. A small section of path adjacent to planned dredging works (immediate downstream of Beasleys spillway and Stathe Bridge) is a PRoW footpath (approx. 50m).

3.1.2 Tourism

77 Burnham-on-Sea is a designated beach for bathing and is tested by the Environment Agency regularly under the EU Bathing Water Directive (2006/7/EC). Burnham-on-Sea is located approximately 3km downstream of the confluence of the River Parrett with the Severn Estuary. The confluence is approximately 30km from the downstream extent of the dredging area.

78 Many tourism-related businesses in Burnham-on Sea are reliant on the quality of the beach and bathing water and could suffer if the bathing water quality does not satisfy the requirements of the new Directive in 2015.

79 A water quality warning is currently in place for Burnham Jetty North and bathing is therefore not advised at this area due to poor water quality (based on monitoring results from 2014 to 2017). This bathing water is subject to short term pollution. Short term pollution is caused when heavy rainfall washes faecal material into the sea from livestock, sewage and urban drainage via rivers and streams. At this site, the risk of encountering reduced water quality increases after rainfall and typically returns to normal after 1-3 days. The Environment Agency makes daily pollution risk forecasts based on rainfall patterns and will issue a pollution risk warning if heavy rainfall occurs to enable bathers to avoid periods of increased risk. 63 warnings advising against swimming due to an increase risk of short term pollution were issued in 2017 for Burnham Jetty North bathing water (Environment Agency, n.d.).

80 The Somerset Levels are a popular destination for walkers, cyclists, ornithologists, photographers, for arts and crafts and broader tourism.

3.2 TRAFFIC AND TRANSPORT

81 The local road network incorporates one main road (the A361) which runs through Burrowbridge immediately to the north of the proposed dredging works. Through its connections with the A372 and A38, this road provides connectivity for local communities within the Study Area to nearby towns such as Taunton, Bridgwater and Glastonbury; as well as providing an important access route for emergency services. The A361 crosses the River Parrett at Burrowbridge immediately to the north of the proposed dredging works.

82 There are also a large number of interconnected secondary local roads within the Study Area. Many of the secondary roads are below 4m in width and serve to connect small communities and farms with the rest of the road network and surrounding villages. In places, the secondary roads also form part of Long Distance Paths.

83 Of these secondary local roads, Stathe Road runs alongside the left-hand bank of the River Parrett for the entire dredging stretch, before it crosses the River Tone close to its confluence with the Parrett at Burrowbridge (Stanmoor Bridge). There are no other road bridges associated with this stretch of the River Parrett.

84 Much of the local road network (including the A361) was flooded during the recent flooding events, in particular the winter flooding of 2013/14. Flood risk to this road has been significantly improved as a result of the flood risk benefits achieved by the 2014/15 capital dredges and the further SRA improvement works. However, the road remains at risk of future flooding in extreme events.

85 A major railway line runs through the Study Area east-west, connecting London to Devon and Cornwall (through Taunton). A second line runs through North Moor connecting Bristol to towns in Devon and Cornwall. This line was closed during the 2013/14 flood event, but significant improvement works have been undertaken to the line since this time to increase its resilience to flooding.

3.3 GEOLOGY AND SOILS

86 The superficial deposits underlying the area of proposed works comprises alluvium. This normally comprises soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. A stronger, desiccated surface zone may be present.

87 The bedrock geology comprises the Mercia Mudstone Group, comprising dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thin beds of gypsum/anhydrite widespread; sandstones are also present. The Mercia Mudstone Group outcrops near to the left-hand bank of the Parrett at Stathe (British Geological Society , n.d.).

88 Soil type in the Study Area comprises loamy and clayey floodplain soils with naturally high groundwater. The surrounding areas on marginally higher ground such as Stoke St Gregory are characterized by slightly acid loamy and clayey soils with impeded drainage. Outside of the Study Area, isolated areas of fen peat soils are located on some of the nearby moors such as West Sedgemoor and Kings Sedgemoor.

89 According to the provisional Agricultural Land Classification (ALC) of England & Wales, agricultural land may be graded with regards to its quality. This takes into account the limitations of the land, typical cropping range and the expected level and consistency of yield. The most productive and versatile land falls into grades 1, 2 and sub-grade 3a, and collectively comprises about one third of agricultural land in England and Wales. Land which falls into sub-grade 3b is considered moderate quality. Grade 4 and 5 land is considered poor, or very poor, producing very low yields. The provisional ALC within the Study Area (Natural England, 2010) shows that Grade 3 agricultural land is the dominant land use in the Study Area with small areas of Grade 2 (good) and Grade 4 (poor) agricultural land also being present.

3.4 SEDIMENT QUALITY

90 Extensive sampling, chemical analyses and screening of the sediment within the site of the proposed dredging has been completed in 2018 to ensure that there is no risk to human health or the environment from the deposited sediment. Options for spreading the sediment to agricultural land and waste disposal have also been explored. Geotechnical analysis in the form of Particle Size Distribution testing has been carried out to determine the grading of the sediment.

91 Overall the sediment appears to be of good chemical quality, with no exceedances of any of the screening criteria recorded in any of the samples. The sediment can be classified as 'Dredging spoil not containing hazardous substances' with the European Waste Code (EWC) 170506. Based on the analyses carried out, the sediment is suitable for bankside retention, and does not pose a risk to human health. The sediment passed the SSV and PTE screening criteria, indicating that there are no contaminants present which would be detrimental to agricultural land.

From the testing carried out to date, it appears that the sediment contains no anthropogenic contaminants of concern which would complicate disposal.

3.5 WATER ENVIRONMENT

3.5.3 Catchment

92 The Parrett and Tone rivers and associated tributaries flow from their source in the Quantock and Brendon Hills, Blackdown Hills and Dorset Heights to the southwest and east of the catchment and flow in a north and westerly direction into an extensive lowland floodplain, before flowing out into the Bristol Channel through the Parrett Estuary.

93 The watercourses in this catchment are typically steep, narrow and unconstrained in the uplands; while further downstream they are slower moving and heavily constrained by flood embankments, particularly through the low-lying, flat floodplain characteristic of the Somerset Levels and Moors, where the lowland rivers are known as 'high-level carriers'. These are watercourses that are embanked on both sides, fully or partially straightened and counter-drained on either side. Their normal water levels are set above the level of the surrounding floodplain. The whole lowland area of the catchment is heavily dependent on a controlled system of drainage and water level management, which has been in place for hundreds of years.

94 The lower reaches of the River Parrett and Tone are tidally influenced for about 30-40km inland depending on the height of the tide. The flood tide brings in sediment up the watercourse from the Severn Estuary. These tidal sections are depositional in nature and their sediment dynamics and modified physical form control the nature of flows and the habitats for flora and fauna. During periods of high fluvial flow following rainfall, the river will erode some of this sediment and convey it towards the Severn Estuary. Generally, this only occurs within the lower parts of the channel, but will also often lead to slumping of the deposited sediment above this level.

95 The capacity of the main river, tributaries and drainage channels to discharge fluvial flows can be significantly reduced by high tidal water levels backing up flow in the tidal River Parrett and Tone. Due to the very low gradient of the lowland river system and current system of management in this area, the lowland rivers readily (annually) overtop their embankments so that floodwater is temporarily stored in the moors before it slowly drains away or is pumped back into the river system.

96 The underlying rock types influence the catchment's response to rainfall, with relatively fast run-off from the impermeable uplands in the east and water-logged conditions dominating the lowlands. The area does not have any major aquifers so groundwater flooding is not a major risk; however, flooding in lowland areas, can take a long time to drain away.

3.5.4 Hydrogeology

97 The area is underlain by the Tone and Somerset Streams groundwater body. The bedrock is Mercia Mudstone which is not an aquifer. At the Curry Moor pumping station, a borehole indicates that the depth to bedrock is about 15m. Soft alluvial clays and silts overlie a well- defined peat layer. Below this there is firm alluvial clay above the Mudstone. None of these materials are considered to be aquifers.

3.5.5 Water Framework Directive

98 The Study Area falls within the South West River Basin District and within the River Parrett WFD catchment. The proposed dredging works will be undertaken within the Parrett Transitional water body (ID GB540805210900), which is classified in the 2015 South West River Basin Management Plan (RBMP) (Department for Environment, Food & Rural Affairs and the Environment Agency, 2015) as a heavily modified water body (HMWB) for the purpose of flood protection. The water body is currently assessed as being moderate overall status (moderate ecological and good chemical), with a target of good potential by 2027. The classification of the water body as heavily modified under the WFD recognises the importance of the water body for flood protection, but dictates that any works must not prevent delivery of measures that have been identified to improve the water body's ecological potential.

99 The RBMP identifies that the major causes of water quality issues within the catchment are diffuse run- off from agricultural land as well as discharges from sewage treatment works. Fine solids running off land or from sewage discharges can carry an excess of nutrients that cause an imbalance in the river leading to algal blooms and water quality problems. Too much fine sediment can also settle in the river bed, preventing a good flow of oxygen for benthic fauna and flora. The specific methods and timings proposed by this pioneer dredging project have been partially selected to minimise such effects on water quality.

100 The River Parrett discharges at Bridgwater Bay where there are six designated Bathing Waters in neighbouring catchments, including the 'Burnham Jetty North' (Burnham-on-Sea) Bathing Water Quality Area (see Section 3.1.2 above). Burnham is a sand and mud beach, approximately 2.2 kilometres wide with a shallow slope backed by a sea defence wall. The beach has a very large tidal range so it can be up to half a kilometre to the sea at low tide.

3.5.6 Flood Management

101 During fluvial flooding, there is wide scale inundation of the moor areas in the Parrett catchment. Depending on the moor, this flooding can either drain back to the river by gravity when river levels recede, or has to be pumped back into the river. Flooding happens to a large area of moors upstream of Langport, which acts to restrict the flow passing this point in a flood. Pumping out of these moors is restricted partially based on when the spillways are overtopping on the rivers downstream of Langport.

102 The flood water that does continue downstream of Langport either passes into the River Sowy via Monks Leaze Clyse sluice or the spillways, or continues down the River Parrett. Flood water in the River Sowy is discharged into the Kings Sedgemoor Drain, which then discharges into the River Parrett at low tides at Dunball Sluice. The River Parrett is joined by the River Tone at Burrowbridge. During flood conditions, flow passes over spillways and banks from the River Tone into Curry and Hay Moors. The amount of overtopping will be partially influenced by the flows within the River Parrett.

103 During very extreme flood events (as happened in 2013/14), flood water can then pass from Curry Moor into Salt and North Moors via Athelney spillway and Lyng Cutting. This can lead to flooding to the communities of Moorland and Fordgate.

104 The works that have been undertaken by the SRA and partner organisations following the 2013/14 flood have significantly reduced the risk of flooding. The greatest reductions in flood risk have been to Curry, Hay, North and Salt Moors. The impact is most pronounced on North Moor, where, if the 2013/14 flooding was to be repeated, the scale of flooding would be dramatically reduced.

3.6 LANDSCAPE AND VISUAL

3.6.7 National Character Area

105 The Study Area is within National Character Area (NCA) number 142: Somerset Levels and Moors. This NCA extends from the Bristol Channel coastline between Stolford and (but not including) Clevedon and inland in stretches loosely encompassing the Rivers Parrett, Brue, Axe and Kenn. This area includes Bridgwater, Weston-Super-Mare, Burnham-on- Sea and the majority of Street.

106 Key characteristics of this NCA as defined by Natural England include the following:

- Flat, open landscape of wet pasture, arable and wetland divided up by wet ditches or 'rhynes'.
- Absence of dispersed farmsteads or any buildings on levels and moors. Nucleated settlements on ridges/islands.
- Surrounded, and divided up, by low hills, ridges and islands which form distinctive skylines.
- Peat working and nature reserves contrasting with the rectilinear planned landscape of the Moors.
- Dramatic and prominent hills such as Barrow Mump, rising above the Levels and Moors.
- Sparse tree cover on Levels and Moors contrasting with woodland, hedges and orchards of surrounding hills.
- Sparsely populated Moors but settlements common on hills, ridges and islands.
- Historic landscape strongly evident in features ranging from prehistoric track- ways and lake villages to post-medieval enclosures and peat working.
- International nature-conservation significance for wetland, waders and waterfowl.
- Raised rivers and levées, with main roads and causeways flanked by houses.
- Flooding in winter over large areas.

3.6.8 Local landscape character assessment

107 The stretch of the River Parrett within the Study Area falls within the scope of the Taunton and Deane Landscape Character Assessment; and comprises Landscape Character Area 6A: Curry and West Sedge Moors (Taunton Deane Borough Council, 2011). Wrapping around the North Curry Sandstone Ridge, this is a strikingly flat landscape forming part of the much more expansive Levels and Moors landscape type, which stretches from South to North Somerset and forms the largest area of lowland wetland in Britain. The landscape has been systematically reclaimed from natural marsh (or fenland) that would have once been frequently flooded by the sea.

108 Key characteristics of Landscape Character Area 6A as defined by Taunton and Deane Borough Council include the following:

- Low-lying landscape of drained inland marshland (Moors) predominantly defined by an agricultural land use of dairying and stock rearing.
- Strong sense of human intervention in the landscape due to hierarchy of water channels – draining the land and controlling flooding.
- Strikingly flat landform with a regular, geometric pattern of enclosure (boundaries often defined by drainage channels or 'rhynes').
- Large areas of standing water in the winter, providing important habitat for wild fowl and wading birds.

- Internationally important landscape – a designated Ramsar site, Special Protection Area and Environmentally Sensitive Area. There are a number of SSSI sites and an area designated as a National Nature Reserve.
- Fields of withies, associated with a long tradition of willow weaving.
- Lines of pollarded willows - aligning rhynes, droves and roads – create strong landscape pattern and sense of place.
- Burrow Mump – a natural (although modified) landform feature with its ruined chapel is a prominent landmark, offering extensive views across the Moors.
- Limited, linear settlement at Burrowbridge, Stathe and Curload - Athelney – following the course of main water channels.

109 The strength of landscape character is judged to be strong. The dramatically flat landform, the engineered drainage system of ditches, rhynes and embanked rivers, the fields of withies, the pollarded willows and areas of standing water combine to make a very recognisable, distinct landscape. Landscape condition is judged to be moderate overall (poor in places).

110 Between Stathe and Oath Lock, the River Parrett lies partly within South Somerset District. The South Somerset Landscape Character Assessment (South Somerset District Council, 1993) concurs that the local landscape is typified by 'great grassy vistas' lying almost at sea level. Although most of the landscape is classified as 'open moor', parts of West Moor have been characterised as 'semi-open moor' due to the presence of withy beds of osier willow supplying the basket industry.

3.7 ECOLOGY

3.7.9 International statutorily designated sites

111 The location of statutorily-designated sites within the Study Area is shown on Figure 2 above.

112 The Somerset Levels and Moors Special Protection Areas (SPA) and Ramsar sites comprise a number of discrete areas of moorland. The SPA and Ramsar sites have the same boundaries. The moors are wet during the winter, with water entering the moors from rivers either via overtopping flood banks or via water control structures. The interest features for each site are summarised in Table 3.1 below:

Table 3.1. Somerset Levels and Moors SPA and Ramsar Site

Interest Feature	SPA	Ramsar
Bewick's swan Cygnus columbianis bewickii (over winter)	X	X
European golden plover *Pluvialis apricaria* (over winter)	X	
Eurasian teal *Anas crecca* (over winter)	X	X
Northern lapwing *Vanellus vanellus* (over winter)	X	X
Eurasian wigeon *Anas penelope* (over winter) *	X	
Northern shoveler *Anas clypeata* (over winter) *	X	
Internationally important assemblage of waterfowl (over winter)	X	X
17 species of British Red Data Book invertebrates		X

113 The River Parrett flows into the Severn Estuary Special Area of Conservation (SAC) at Bridgwater Bay, towards the western extent of the estuary. The SAC is designated for the following habitat and species interest features:

- Estuaries
- Mudflats and sandflats not covered by seawater at low tide
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
- Sandbanks which are slightly covered by sea water all the time
- Reefs
- Sea lamprey Petromyzon marinus
- River lamprey Lampetra fluviatilis
- Twaite shad *Alosa fallax*.

114 The Severn Estuary SPA and Ramsar sites cover approximately the same extent as the Severn Estuary SAC. The interest features for each site are summarised in Table 3.2 below:

Table 3.2. Severn Estuary SPA and Ramsar Site

Interest Feature	SPA	Ramsar
Bewick's swan Cygnus columbianis bewickii (over winter)	X	X
Eurasian teal *Anas crecca* (over winter)		X
Gadwall *Anas strepera* (over winter)	X	X
White-fronted goose *Anser albifrons* (over winter)	X	X
Dunlin *Calidris alpina* (over winter)	X	X
Shelduck *Tadorna tadorna* (over winter)	X	X
Redshank *Tringa totanus* (over winter)	X	X
Internationally important assemblage of waterfowl (over winter)	X	X
Immense tidal range		X
Unusual estuarine communities		X
Run of migratory fish between sea and river via estuary		X
Migratory birds in spring and autumn		X
Fish of the whole estuarine and river system		X

115 The Somerset Levels and Moors SPA and Ramsar sites are ecologically linked to the Severn Estuary SPA and Ramsar sites. This is because the Severn Estuary populations of wintering waterfowl use the Somerset Levels and Moors as an alternative wintering site.

116 Species of migratory fish designated under the Severn Estuary Ramsar site include salmon *Salmo salar*, sea trout *S. trutta*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alosa alosa*, twaite shad *A. fallax*, and eel *Anguilla anguilla*.

117 Some migratory fish from the Severn Estuary will make use of the Parrett catchment for their freshwater life stages. However, other than for glass eels, there is no formal long-term survey data on the species which utilise the Parrett. The PIDB has commissioned some fisheries surveys to inform this EIA and this will form part of the final baseline assessment. However, whilst the proportion of the populations of the Severn Estuary that rely on the other major rivers entering the Severn is significant (the Wye and Usk are known to host freshwater life stages of the species concerned in significant numbers), the support that the river habitat of the Parrett provides is likely to be significantly less, because:

- the lowland reach of the Parrett is heavily modified, and arguably less inherently suitable to lamprey and shad; and
- the Parrett is much smaller (thus offering less habitat of any type).

3.7.10 National statutorily designated sites

Southlake Moor SSSI

118 Southlake Moor SSSI (also designated as part of the Somerset Levels and Moors SPA and Ramsar Site – see above) is located at Burrowbridge, where the River Tone joins the River Parrett. Part of the SSSI is also designated within the Somerset Levels National Nature Reserve (NNR). The land is below sea level in the basin of the River Parrett. The water table is high throughout the greater part of the year with the system of ditches and rhynes being penned at high levels during summer. When conditions in the River Sowy are suitable, it may be flooded deliberately in winter by means of a sluice in the river bank

119 The majority of the site is permanent grassland with a wide range of grassland types resulting from varying topographic and management conditions. There is a considerable variation in species composition. A range of ditch clearing methods are used resulting in diverse aquatic communities, a good submerged flora and a notable invertebrate assemblage.

120 When the moor is flooded, large numbers of waterfowl may be present; with up to 22,000 wigeon, 250 Bewick's swan and good numbers of pochard *Aythya farina*, teal and tufted duck *Aythya fuligula*. When floods recede, large flocks of lapwing *Vanellus vanellus* and snipe *Gallinago gallinago* return to feed; with dunlin and black-tailed godwit *Limosa limosa* often present. Much of the moor remains moist into the spring and early summer, providing suitable conditions for breeding snipe, redshank and lapwing

121 Regular signs of otter are seen on the banks of the River Parrett. The ditches on the east side of the site contain a population of the palmate newt.

North Moor SSSI

122 North Moor SSSI lies to the west of the proposed dredging works at Burrowbridge. The site is designated for its nationally important grazing marsh and ditch system. A range of neutral grassland types supporting common and scarce plants has developed mainly due to variations in soil and management practices. Although some fields are managed as short-term grass leys and a few are under arable cropping, most of the site is in permanent pasture

123 Aquatic plant communities present are exceptionally diverse with good populations of nationally sparse species. The main community type is characterised by a combination of emergent species, floating species and submerged species. The ditches have a rare aquatic invertebrate community which includes two nationally rare species. The meadows and ditches contain at least twenty-five nationally-notable invertebrate species.

124 The site has special interest in its breeding and wintering bird populations. There are good populations of breeding lapwing and whinchat *Saxicola rubetra* on the central part of the moor. In winter, the wet grasslands support large flocks of lapwing, snipe, dunlin and golden plover *Pluvialis apricaria* with small numbers of additional species when flooding occurs.

125 The ditches and rhynes are known to be used by otter.

West Sedgemoor SSSI

126 West Sedgemoor SSSI (also designated as a component part of the Somerset Levels and Moors SPA and Ramsar Site – see above) lies immediately to the west of the River Parrett between Stathe and Oath Lock. The site comprises numerous small, low lying fields and meadows separated by narrow water-filled rhynes and ditches. Many of the meadows have a diverse flora including indicator species such as meadow rue *Thalictrum flavum*, meadow thistle *Cirsium dissectum*, marsh arrowgrass *Triglochin palustris* and marsh ragwort *Senecio aquaticus*. The rhynes exhibit a rich flora including locally rare species such as flowering rush *Butomus umbellatus*, frogbit *Hydrocharis morsus-ranae* and fine-leaved water-dropwort *Oenanthe aquatica*.

127 A rich invertebrate fauna is present including scarce water beetles, dragonflies and bugs. The site also supports good populations of waterfowl, especially waders. Breeding birds include snipe, lapwing, redshank, curlew, water rail, yellow wagtail and whinchat. Large numbers of wintering birds visit and feed on the moor during the winter months including particularly lapwing, snipe and Bewick's swan; and significant numbers of passage waterfowl, notably whimbrel, are recorded in Spring.

Curry and Hay Moors SSSI

128 Curry and Hay Moors SSSI is located adjacent to the River Tone. The river overtops annually, flooding the fields in winter. Vegetation in the grazing meadows consists almost entirely of agriculturally improved swards. A small number of hay meadows are herb-rich. The flora and fauna of the ditches is of national importance. Over 70 bankside vascular plants have been recorded. Over 100 species of aquatic invertebrates inhabit the ditches including one nationally rare soldier fly and 13 nationally scarce species.

129 In winter, the flooded fields provide food for large numbers of waterfowl with several thousand lapwing, hundreds of snipe and smaller numbers of golden plover and dunlin regularly present. Over 200 Bewick's swans have been recorded in the past, at the time making this site an internationally important wintering ground for this species. It is understood that this is no longer the case (Stephen Parker, Natural England, Pers. comm. 2018). Large numbers of wigeon, teal and pochard regularly winter on the flooded field

130 Raptor species including short-eared owl *Asio flammeus*, merlin *Falco columbarius* and peregrine *Falco peregrinus* regularly hunt over the site in winter. Vertebrate species present include grass snake *Natrix natrix* and common frog *Rana temporaria*. Otter are regularly recorded on the site.

Bridgwater Bay SSSI

131 See above under Severn Estuary SPA, Ramsar and SAC.

3.7.11 Locally-designated sites

132 Three non-statutory sites designated at the local level are located within or immediately adjacent to the dredging stretch as follows (see Figure 2 above):

- The River Parrett, Middle Moor to Screech Owl Site of Nature Conservation Importance (SNCI) (the designation covers the entire works area). Comprises river with legally protected species (otter) and rare invertebrate species.
- The River Tone and Tributaries SNCI located immediately to the west of Burrowbridge. This site has been designated as it is considered to: be the best example in the county of a whole river from source to saline

limit of each river type; comprise a section of river with a minimum of modification to bed and water level and a high proportion of semi-natural habitats on both banks; have high biological quality; and show regular recent use by otter, including all bankside wetland, scrub and woodland.

- Aller Moor SNCI, located immediately to the east of the River Parrett between Stathe and Oath Lock. Supports rhyne and wet meadow habitats; and an important wintering bird population.

3.7.12 Habitats of principal importance (NERC Act, Section 41)

133 There are several habitats of principal importance within the Study Area, including 'Rivers'. 'Coastal and floodplain grazing marsh' comprises the dominant habitat type surrounding the River Parrett. In addition, a collection of lowland meadows is present over 300m from the River Parrett, to the south-east of Burrowbridge. Habitats recorded are described here. Running water

3.7.13 On-site habitats

134 A detailed vegetation and habitat mapping survey has been completed in May/June 2018 in accordance with the standardised system for classifying and mapping British Habitats Handbook for Phase 1 Habitat survey –a technique for environmental audit (Joint Nature Conservancy Council, 2010). Appendix A contains habitat maps illustrating the type and distribution of habitats within the study area.

135 Aquatic macrophytes growing submerged within running water are limited in species diversity, with fennel pondweed *Potomogeton pectinatus* occurring abundantly at the edges of the channel in slower flowing water, in localised stands. Additional macrophytes present, at occasional abundance, include unbranched bur-reed *Sparganium emersum* and sea club-rush *Bolboschoenus maritimus*, suggesting a brackish influence in the Site.

136 Marginal vegetation occurs throughout the site along the base of the banks of the River Parrett, to a height of approximately 1-2m from the water level at the time of survey. The banksides are typically 5m in height, at an approximate angle of 45 degrees. Vegetation at the margins of the River Parrett is species poor and predominantly consists of reed canary-grass *Phalaris arundinacea*, which occurs abundantly and is dominant in some places. Stands of locally abundant common comfrey are also present, and species such as Himalayan balsam *Impatiens glandulifera*, common nettle *Urtica dioica* and bindweed *Calystegia sp.* are present at a constant frequent abundance across the habitat type. Himalayan balsam, a WCA 1981 Schedule 9 invasive species, is predominantly concentrated downstream of target note 1 (Stathe Bridge) upon the north (right hand) bank of the river but is also present upon the south bank (left hand bank) as smaller plants at the time of survey. This plant was also recorded as being generally present on the north (right hand bank) upstream of target note 1 (Stathe Bridge). Due to the small size of Himalayan balsam plants at the time of survey, unidentified stands may be present within the south bank (left hand bank) and its tall ruderal sward upstream of target note 1. Further survey later in the summer of 2018 would confirm a full extent of this species. No evidence was recorded of Japanese knotweed (*Fallopia japonica*) or giant hogweed (*Heracleum mantegazzianum*). A small number of additional marginal species are present in local areas, increasing the plant species diversity in places. Species including purple loosestrife *Lythrum salicaria*, water mint *Mentha aquatica*, gypsywort *Lycopus europaea* and brooklime *Veronica beccabunga* occur at occasional to rare abundance.

137 Above the height of variation in water level within the river, marginal vegetation on the banksides succeeds into tall ruderal vegetation, supporting common and competitive species which are typical of drier soils and nutrient enriched conditions. Common nettle *Urtica dioica* and broad-leaved dock *Rumex obtusifolius* are dominant in local swathes, particularly on northern most bank tops towards the south west of the Site near Oath. Additional ruderal species include Himalayan balsam, hogweed *Heracleum sphondylium*, cow parsley *Anthriscus sylvestris*, hemlock *Conium maculatum* and teasel *Dipsacus fullonum*, occurring at frequent to occasional abundance. Tall ruderal

vegetation on banks which are adjacent to gardens on the southern (left hand) bank are typically managed through cutting. Vegetation on the northern (right hand) banks are typically managed through grazing by cattle.

138 Neutral semi-improved grassland occurs towards the northwest of the Site, on the right-hand bank top. The grassland is grazed by cattle and composed of fields interspersed with a network of wet ditches. A number of species indicative of wet grassland are present, such as hard rush *Juncus inflexus*, marsh foxtail *Alopecurus pratensis* and sweet-grass *Glyceria sp.* The grassland varies in quality between fields, with some areas supporting a more species-poor sward typical of poor semi-improved grassland, and other areas supporting a greater species diversity with an equal cover of forb and grass species and a sward height of up to 20cm. Areas of poorer-quality semi-improved grassland are characterised by frequent perennial rye-grass *Lolium perenne*, cock's-foot *Dactylis glomerata*, creeping buttercup *Ranunculus repens* and white clover *Trifolium repens*, and occasional creeping thistle *Cirsium arvense*, common nettle and docks, all of which are species typical of nutrient enriched conditions. Areas of good quality semi-improved grassland support species indicative of wet soils with a neutral pH. Fine leaved grass species such as abundant red fescue *Festuca rubra* and frequent smooth meadow grass *Poa pratensis* and meadow foxtail *Alopecurus pratensis* are joined by a range of common forb species such as frequent meadow buttercup *Ranunculus acris*, red clover *Trifolium pratense*, common cat's-ear *Hypochaeris radicata* and ribwort plantain *Plantago lanceolata* and occasional meadow vetchling *Lathyrus pratensis* and common sorrel *Rumex acetosa*.

139 Improved, species poor, grassland occurs on well-trodden paths at the top of the right-hand bank along the public right of way. Constant species within the habitat, such as perennial rye-grass and cock's-foot, are joined by species tolerant of disturbed conditions, such as greater plantain *Plantago major* and annual meadow-grass *Poa annua*. Cattle grazed fields towards the south west of the site, on the right-hand bank, are also improved for agricultural purposes and support a species poor sward consisting of competitive species such as perennial rye-grass, white clover and dandelion *Taraxacum officinale agg*.

140 A small number of standing trees occur on the bank tops of the river. Trees which could be assessed from areas accessed during the survey are numbered on the Phase 1 Habitat map. Species included sycamore *Acer pseudoplatanus*, ash *Fraxinus excelsior*, yew *Taxus baccata*, hawthorn *Crataegus monogyna*, elder *Sambucus nigra* and willow *Salix fragilis* and *salix sp.* Only five small willow trees overhang the river channel, all other trees are situated on the bank top with the canopy not directly overhanging the river channel.

141 Hedgerows occurring across field ditches and at road boundaries are defunct in nature, and outgrown. Hedgerows are composed of mostly native species, with frequent hawthorn. It was not possible to assess entire lengths of hedgerows due to access restrictions, and as such these hedgerows may be native and species-rich.

142 Scattered willow scrub occurs frequently on small areas of bank top towards Burrowbridge.

143 Roads used for vehicular access located within approximately 10m of the left-hand bank top are composed of bare soil or tarmac, with no establishment of plant species

3.7.14 Species

144 Surveys during spring and summer 2018 by Johns Associates (unless otherwise stated) have shown the following notable species to be associated with the stretch of the River Parrett between Oath Lock and Burrowbridge.

145 No current evidence was found of water voles upstream of Stathe (although this section comprises suitable habitat and may be colonised by water voles in the future). The survey found a good population of water vole

downstream of Stathe, prediminantly associated with the left-hand bank. There was very limited evidence of water vole on the right-hand bank, likely to be limited by cattle grazing.

146 An otter survey found no evidence of holts or resting places, but evidence of otter was recorded in several places indicating recent use of the river corridor (including fresh spraints, fish remains, footprints, scratch marks).

147 No potential bat roosts associated with the proposed working area were located between Stathe Bridge and the confluence with the River Tone.

148 No optimal great crested newt breeding or resting habitats (including overwintering habitat) are associated with the proposed working area. Potential breeding habitat is located within the wider area (e.g. rhynes) although more extensive areas of optimal habitat are separated by the Sowy Flood Relief Channel and the River Tone/Parrett channel.

149 The fish habitat survey found the habitat was generally limited by lack of channel diversity and lack of shade from overhanging trees. However, good habitat for fish was present within the channel in places (submerged vegetation) and with shelter provided by continuous belts of emergent vegetation. The river is considered to have potential to support river lamprey (ammocoetes) as well as a range of coarse fish. The river is known to support large numbers of migrating elver (glass eel) as well as other migratory species, including salmon and sea trout (population extent unknown).

150 An assessment of the potential for rare and conservation notable species of invertebrates associated with the Ramsar site was completed to inform part of the ecological baseline. This identified the potential for the presence of three species associated with records from ditches close to Burrow Bridge but outside of the working area namely: *Hydaticus transversalis*, *Dytiscus dimidiatus*, and *Hydrophilus piceus*, although proposed works to ditches are very limited. A further species *Lejops vittata* may be associated with stands of sea club rush, located within the lower part of the River Parrett channel (the Thalweg), which will not be affected by the proposals.

151 Fish surveys conducted by Loughborough University on behalf of the PIDB, within the study area recorded the presence of: thin-lipped grey mullet *Chelon ramada*, common bleak *Alburnus alburnus*, roach *Rutilus rutilus*, gudgeon *Gobio gobio*, bass *Dicentrarchus labrax*, pike *Esox Lucius*, common bream *Abramis brama*, chub *Squalius cephalus*, flounder *Paralichthys dentatus*, European eel *Anguilla Anguilla*, perch *Perca fluviatilis*, three-spined stickleback *Gasterosteus aculeatus* and rudd *Scardinius erythrophthalmus*.

152 Surveys for the endangered hairy click beetle *Synaptus filiformis* was completed by AEcol in 2018. The survey recorded 26 adults from 21 locations along the River Parrett between 500 m downstream of Oath Lock and 250 m downstream of Burrowbridge. The species was found to be associated with shallowly sloping tidal terraces, where dense stands of reed canary-grass are subject to flooding on the highest tides. Of an overall seven locations in which the species has historically occurred, it was recorded at three in 2018.

153 Aquatic macroinvertebrate surveys conducted in 2018 confirmed there were no notable or rare species found in any of the samples and all were characteristic of lowland waterbody habitat at or around the tidal limit with low diversity. However, relatively high numbers of the brackish shrimp *Gammarus zaddachi* were recorded from all four samples, with a maximum count of 429 individuals from sample S3. Biological Monitoring Working Party scores were generally low, although sample S1 contained some higher-scoring taxa (including blackfly larvae, water beetles, alderfly larvae and the cased caddisfly larva *Anabolia nervosa*), which explains the higher score of 81. All samples had a very similar ASPT, indicating a similar assemblage across the four sites.

154 Seven active badger setts have been recorded by Country Contracts in 2018, from the immediate vicinity of the river corridor, mostly associated with flood defence embankments.

155 A bird habitat survey found no evidence of nesting kingfisher. Two singing Cetti's warbler were recorded singing on the left-hand bank downstream of Stathe. Breeding was not confirmed and territories held by this species are large, however, nesting within riparian vegetation is possible.

3.8 HISTORIC ENVIRONMENT

156 A review of online resources, including Historic England's National Heritage List for designated heritage assets and information from the Somerset Historic Environment Record (HER), has established that a small number of statutorily designated heritage assets are located along this section of the River Parrett, including two Listed Buildings and the Burrow Mump Scheduled Monument. These are located at sufficient distance from the proposed dredging activities that they are deemed unlikely to be affected.

157 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.

158 There is evidence for human activity along the River Parrett from the prehistoric period onwards. In the vicinity of the proposed scheme, an undated enclosure (potentially associated with later prehistoric activity) and Roman period remains have been recorded. Prehistoric timber piles and post-Roman peat deposits have also been retrieved from river banks. The landscape was extensively utilised in the medieval period, with evidence of river straightening, drainage of the levels and associated industries (watermill) recorded along the scheme, together with areas of settlement (at Burrowbridge and to the south-east, where deserted hamlets along the river have been identified). Later activity is associated with local industries (withy boilers which facilitated basketry and brickworks).

4 SCREENING

159 Under the Land Drainage EIA Regulations, PIDB is required, taking into consideration the selection criteria in Schedule 2, to determine whether the proposed improvement works are likely to have significant effects on the environment (Reg. 4).

160 This report sets out its view on the screening results based on the criteria set out in Schedules 2 and 2A of the Land Drainage EIA Regulations, which are summarised below.

4.1 CHARACTERISTICS OF IMPROVEMENT WORKS

161 The scale of the works relates to 2.2km of river, with 22,000m^3 of sediment to be removed, resulting in approximately 3-4 cumecs of additional conveyance in the Parrett at Burrowbridge at low tide. These are relatively small-scale works in the context of the whole catchment and the Somerset Levels, taking into account the quantum of maintenance dredging that occur annually in both the rivers and rhynes.

162 In addition, the Parrett Transitional (TRaC) is a heavily modified water body and regular management is required for the purposes of flood protection. Whilst this stretch of river has not been dredged in the recent past, it has been dredged within the last 50 years, as evidenced by the lack of in-channel diversity. **Providing mitigation is put in place to ensure no conflict with WFD objectives, the dredging will not result in major impacts to river ecology.**

4.2 LOCATION OF IMPROVEMENT WORKS

163 The proposed improvement works are located in a sensitive environmental area. In particular, a network of statutorily-designated sites of nature conservation importance are located in close proximity to the improvement works, including the Somerset Levels and Moors SPA and Ramsar Site, Southlake SSSI, Curry and Hay Moors SSSI and West Sedgemoor SSSI. These sites are highly sensitive and have low tolerance or absorption capacity to environmental change.

4.3 TYPES AND CHARACTERISTICS OF THE POTENTIAL IMPACT

164 Although impacts will mostly occur over a short time period, the magnitude and spatial extent has the potential to be large e.g. impacts on international sites. In addition, some impacts could be long duration (e.g. change to hydrological regime for Curry Moor).

165 The scoping exercise reported in Section 5 demonstrates that there are some likely significant impacts arising from the works that need further detailed assessment and/or the integration/ embedding of mitigation as part of the fundamental design of the project to avoid negative significant effects.

4.4 SCREENING DETERMINATION

166 In summary, the results of this EIA Screening have identified that the proposed improvement works are likely to have significant effects on the environment in the absence of changes to the design and/or mitigation.

167 Therefore, this report has been produced to support a separate request to the PIDB that it provides its formal Screening Opinion on the need to undertake an EIA under the Land Drainage EIA Regulations, and to publish this conclusion that an EIA is required (Reg.6). If PIDB concludes that EIA is required, it will then undertake the EIA and prepare an Environment Statement (Reg.7), carrying out the appropriate publicity (Reg.10) and consultation.

5 SCOPING

5.1 ENVIRONMENTAL FACTORS

168 Assuming PIDB concludes that EIA is required through its Screening Opinion, Regulation 12 (2) of the Land Drainage EIA Regulations requires PIDB to assess the significance of the likely effects on a series of environmental factors; and Schedule 1, paragraph 4 specifies those environmental factors which must be considered within an ES.

169 Table 5.1 lists the environmental factors outlined in Regulation 12 (2) and Schedule 1 of the Land Drainage EIA Regulations and highlights where these have been considered in this Scoping Report and the subsequent Environmental Statement (ES).

Table 5.1. Environmental topics and where they are addressed within Section 5.3

Environmental Factor (Land Drainage EIA Regulations)	**Where this factor is addressed in Section 5.3 (table reference no)**
Population	Population & Human Health The Water Environment Landscape and Visual Air Quality Traffic and transport
Human health	Population & Human Health The Water Environment Landscape and Visual Air Quality Traffic and transport
Biodiversity	Biodiversity
Land	Land Quality
Soil	Land Quality
Water	The Water Environment
Air	Air Quality
Climate	Climate change and sustainability
Material Assets	Traffic and transport Cultural heritage
Cultural heritage	Cultural heritage
Landscape	Landscape and Visual

5.2 SCOPING PROCESS

170 Scoping is a critical stage early in the EIA process. It provides an opportunity to identify and assess the key environmental impacts and issues of concern, facilitated by thorough consultation. Scoping should ensure that a progressively decreasing range of issues is considered as part of the EIA, but in increasing detail. It should ensure that a balance is struck between ensuring all potentially significant effects are considered whilst making sure that insignificant impacts are eliminated from further study.

171 The emphasis of EIA should be on the "main" or "significant" environmental effects to which a development is likely to give rise; and the Environmental Statement (ES) should be proportionate and not be any longer than is

necessary to assess properly those effects. Impacts which have little or no significance for the proposed works should need only very brief treatment to indicate that their possible relevance has been considered.

172 This overall approach has been applied to the potential effects arising from the proposed improvement works: the table in Section 5.1 records the results of the environmental scoping study.

173 The following potential causes of environmental effects were identified and 'numbered' for ease of reporting in the table:

1. Dredging;
2. Vegetation clearance / tree removal;
3. Machinery / vehicle movement;
4. Deposit and spreading of dredging arisings;
5. Siting of a compound; and
6. Operational effect of dredging (e.g. impact on flood risk).

174 Where a receptor or sub-receptor has been **scoped in** for further environmental assessment this has been recorded using a ✓, where a receptor or sub-receptor has been **scoped out** of requiring further environmental assessment this has been recorded using a X.

5.3 SCOPING OF POTENTIAL ENVIRONMENTAL EFFECTS ASSOCIATED WITH DREDGING OF THE RIVER PARRETT

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
Population & human health					
Local residents/ businesses	3, 5	Machinery/vehicle movements associated with the works, as well as the location of the site compound/s could result in temporarily increased levels of noise and vibration.	Construction traffic movements on the highways network will be minimal and will be limited to initial delivery of plant to the dredging area (as all dredging arisings will be managed *in-situ* by placing on the rear of the flood embankment). Excavators and dump trucks will be operating at any one time over a short period of time. These machines would be distributed over the entire 2.2km site; and therefore, there will be no risk of multiple machines working alongside each other at the same location. The works will be undertaken during normal considerate construction working hours using best construction practice. The works are typical of frequent routine operations in the same location for annual maintenance dredging of rhynes and weed control.	X	Not applicable
Local community	6	Changes in hydraulic benefits to people, land and property.	The proposed dredge has the potential to reduce flooding to an area of around 65km^2. Within, or in close proximity to this area there are approximately 200 homes that will receive some additional hydraulic benefit as a result.	✓	Flood modelling and assessment
	6	Changed in hydraulic benefits to people, land and property.	The proposed dredge has the potential to reduce the hydraulic benefit already delivered to a small area associated with Curry Moor.	✓	Flood modelling and assessment

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
Local community	1, 2, 3	Health and safety risks to public.	Previous high river flows and flood conditions will already have presented a health & safety risk to the public. Risks to the public during the works can be managed by good site practice e.g. use of banksmen and warning notices on site to restrict public access to site for the duration of the works. Risk to bank stability through previous flooding and proposed dredging will be assessed and mitigated as part of detailed design.	X	Not applicable
Local economy	6	Changed flood risk to businesses benefitting the local economy including the agricultural community.	Reduced flood risk to agricultural land and associated agricultural infrastructure, will enable more continual grazing and reduce risk of death/loss of livestock. Reduced risk of road flooding will result in reduced road traffic delays with improved communications/logistics for business. Potential significant positive effect.	✓	Flood modelling and assessment of area and associated economic activity, informing final scheme design to maximize positive benefits and minimise any negative effects.
Local economy	1	Potential for dredging to result in temporary increased sediment load and release of contaminants (over and above those experienced in the baseline conditions). The indirect result of this could be changes to turbidity, dissolved oxygen levels and damage to eels/elver and other fish in the commercial fishery.	There is a potential risk of the dredging works mobilising sediment and releasing contaminants at levels over and above those within the baseline water column. Mitigation for these impacts is being developed (e.g. timing the works to avoid the elver season).	✓	Development of suitable dredging methodology, mitigation and schedule to avoid significant negative effects.

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
Local economy	1	Potential for dredging to result in release of contaminants (over and above those in the baseline water column) reducing quality of the bathing waters downstream at Burnham-on-Sea; and therefore, affecting the tourism industry	The sediment load in the river during the works is anticipated to be raised at the commencement of the works. However, sediments are likely to settle and it can be anticipated that there will be reducing sediment load in the water column as the works progress. The findings of the sediment analysis did not identify the presence of substances/concentrations that would affect human health. No impacts to bathing waters and associated tourism are predicted. Mitigation measures to reduce and monitor the amount of sediment loading are being developed, based on tried and tested methods.	X	Not applicable
Local economy	4	Deposit and spreading of dredged arisings on neighbouring agricultural land may affect its suitability as grazing land depending on the type/level of contamination and salinity.	All dredging arisings will be placed on the rear of the flood embankment and will not be spread on adjacent agricultural land Sediments have been tested prior to dredging which has demonstrated that they are non-hazardous and suitable for agricultural use prior to depositing on river banks. Therefore, potential for contamination to affect agricultural land has been scoped out.	X	Not applicable
Recreational users	1, 2, 3	Restricted access to the River Parrett Trail, East Deane Way and Macmillan Way West Long Distance Paths and other PRoWs whilst dredging is undertaken.	It is anticipated that the works will affect access to the path along the righthand banks (the River Parrett Trail, East Deane Way and Macmillan Way West Long Distance Paths) where dredging is being undertaken. Machinery/vehicle movements may also affect other PRoWs where these intersect with site access routes.	✓	Assessment of alternative routing and implications for users of the right-hand bank footpath within the proposed dredging area, during the period of works.

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
Air Quality					
Local air quality	1, 3	Emissions to air from machinery and vehicles required for the dredging activity	Excavators and dump trucks will be operating over a short period of time (these machines would be distributed over the entire 2.2km site; and therefore, there will be no risk of multiple machines working alongside each other at the same location); and the resulting emissions (including NOx and PM10) are considered to be small-scale and temporary, resulting in negligible change to local air quality	X	Not applicable.
	4	Generation of dust during or immediately after placement of dry sediment, particularly in windy conditions.	Sediments have been tested prior to dredging and have been confirmed as non-hazardous. As such, any dust generated will not contain pollutants harmful to human health. The potential nuisance impacts from generation of dust will be managed through good construction practice and are therefore scoped out.	X	Not applicable.
Climate change and sustainability					
Climatic factors	6	Generation of gases (such as carbon dioxide) that have potential to increase the effects of global warming	No significant generation of climate gases is predicted due to the works. As such, the works themselves are not considered likely to have a significant effect on climate change and this element is scoped-out of further assessment.	X	Not applicable.
	6	Benefit of improved resilience to the anticipated impacts of climate change (increased rainfall and associated flooding).	The works in isolation are not anticipated to result in a significant impact in terms of improved resilience to climate change. However, when considered cumulatively with the package of measures to be implemented as part of the SRA	✓	Evaluation of climate change effects and incorporation of

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
			Strategic Flood Action Plan, all schemes are predicted to result in improved resilience to climate change.		adaptive features, within the ES, using guidance from UK Government.
Traffic & Transport					
A roads and local roads	6	Improved hydraulic benefit.	Likely positive effect from reduced flooding.	✓	Will be considered under 'Population'
	3	Possible temporary disruption to local traffic flow and tracking of debris onto roads.	Construction traffic movements on the highways network will be minimal and will be limited to initial delivery of plant to the dredging area (as all dredging arisings will be managed *in-situ* by placing on the rear of the flood embankment). No significant difference to existing use of road network predicted.	X	Not applicable
Railway line	1, 3	Potential effects on the railway line from dredging activity or movement of plant and vehicles.	It is not anticipated that the dredging works (including vehicle movements) will affect the railway line in any way.	X	Not applicable
The Water Environment					
Altered flood conveyance within the River Parrett Burrowbridge to Oath Lock	6	Changed flood risk to people, land and property	Addressed under Population and Human Health above	✓	See above
		Changes to frequency, depth and duration of flooding on moors, resulting in impacts to habitats and bird and invertebrate populations	Addressed under Biodiversity below.	✓	See below
Water Framework Directive Compliance (Parrett	1, 2	Potential 'deterioration' in WFD status of the biological quality elements (BQEs) (NB fish, aquatic flora, benthic invertebrates, included in the 'Biodiversity'	Statement of WFD compliance for relevant WFD water bodies (directly affected and up or downstream where relevant) needs to be made – with reference to specific assessments reported on other EIA receptors (including flora and fauna	✓	Water Framework Directive (WFD) Compliance Assessment

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
Transitional; Parrett River)		receptors indicated below). As well as the direct effects of damage/removal on BQEs, potential changes in hydromorphological and physico-chemical (water quality) conditions during and after dredging may have indirect effects on the BQEs. Dredging may affect the implementation of WFD 'mitigation measures' for heavily modified water bodies as stated in the River Basin Management Plan. Dredging may affect bathing water quality (addressed under Population and Human Health: Tourism above)	and designated sites, hydrogeology and contamination/ tourism/bathing waters) where relevant. Assessment of contribution to or conflict with RBMP mitigation measures required. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.		
Hydrogeology	6	Changes to the hydro-geological regime; including changes to groundwater recharge and groundwater levels within surrounding sensitive moor land.	There are likely to be very localised, short duration and low magnitude changes on hydro-geology as a result of the changes to the flooding regime brought about by the dredging activity and the nature of the changes to the water level management put in place.	X	Not applicable
Biodiversity					
Statutorily-designated sites: Natura 2000 Sites (SAC, SPA & Ramsar sites); Southlake Moor, West Sedgemoor,	1	Dredging and material disposal will take place within Southlake and potentially West Sedgemoor (part of the Somerset Levels and Moors SPA and Ramsar site).	Direct habitat loss will be limited to loss of species-poor improved grassland on the flood embankment and a small area to the rear of the bund. This will quickly regenerate, and no significant impact due to direct habitat loss is predicted. Potential for eutrophication of ditches due to high phosphate content in runoff from dredging	✓	Water Framework Directive (WFD) Compliance Assessment

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
North Moor, Curry and Hay Moors SSSI			arisings. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.		
	1, 2, 6	Potential for indirect impacts from disturbance (wintering water birds); temporary short-term changes in water quality affecting mobile species (particularly fish); temporary medium-term changes to river habitat used by mobile species (fish); and, changes to water levels on moors (resulting in decreased habitat quality for wintering water birds and Ramsar invertebrates, with a subsequent impact on populations).	Scoped into assessment. Outcomes of Appropriate Assessment will inform the EIA. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Analyse modelling results, working with NE and hydrological expert to assess likely degree of change to 'splashy conditions' on the moors. Use monitoring results from previous dredging to inform impact assessment. Where impacts are still uncertain, progress monitoring and the necessary commitment to mitigation (e.g. commence process of change to water level management plans)
Non-statutorily designated sites	1, 2	Potential for direct impacts such as habitat loss or degradation; or, indirect impacts such as changes to habitats as a result of altered water or sediment regimes.	Aller Moor SNCI could be affected through direct habitat loss; or through potential for eutrophication of ditches due to high phosphate content in runoff from dredging arisings. River Parrett, Middle Moor to Screech Owl SNCI	✓	Analyse modelling results, working with NE and hydrological expert to assess likely degree of change

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
			could be affected through direct habitat loss; and the impacts of reduced water quality on fish and benthic invertebrates during dredging. There is some potential for indirect effects to the River Tone and tributaries (altered flow regime). Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.		to 'splashy conditions' on the moors. Use monitoring results from previous dredging to inform impact assessment. Where impacts are still uncertain, progress monitoring and the necessary commitment to mitigation (e.g. commence process of change to water level management plans)
Habitats, including NERC habitats of Principal Importance	1, 2	Potential for direct impacts such as habitat loss or degradation; or, indirect impacts such as changes to habitats as a result of altered water or sediment regimes.	See above under non-statutorily-designated sites. Additional potential for impacts to coastal and floodplain grazing marsh at Stan Moor. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Ecological Impact Assessment within ES Provision of compensatory hedgerows and other associated mitigation assessment in the ES. Develop Construction Environmental Management Plan.

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
					Landscape and Ecological Management Plan.
Water vole	1, 2, 6	Potential for damage to water vole habitat and any re-established burrows within the dredging areas.	The design of the dredging works will be modified to minimise the impact to these species as far as possible. The works will also be designed to ensure effective restoration of riverine habitat to ensure quick recovery of the study area by these species. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others. Nevertheless, the detailed potential impact on these species populations needs to be assessed.	✓	Water Framework Directive (WFD) Compliance Assessment Development of method of working that meets the requirements and standards for a Natural England water vole licence, demonstrating no negative effects and legal compliance. Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Otter	1, 2	Potential for damage to resting places or any re-established holts within the dredging areas.		✓	Water Framework Directive (WFD) Compliance Assessment. Develop Construction Environmental Management Plan. Landscape and

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
					Ecological Management Plan.
Reptiles	2, 3, 4, 5	Potential for killing or injury of reptiles (especially grass snakes) through destruction of hibernation and/or foraging and basking areas.		✓	Ecological Impact Assessment within ES Development of method of working to avoid injury / killing offences and avoiding areas of suitable resting/breeding habitats.
Badgers	2, 3, 4, 5	Potential for destruction of setts or disturbance to badgers as a result of plant and vehicle movements and location of spreading areas and site compounds.		✓	Ecological Impact Assessment within ES Implementation of suitable measures under a Natural England licence to avoid harm and legal offences. Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
Great crested newt	2, 3, 4, 5	Potential for killing or injury of GCN or impairment to their ability to breed; either through destruction of hibernation and/or foraging and commuting areas (including through rough grassland connecting breeding ponds).		✓	Ecological Impact Assessment within ES Development of method of working to avoid injury / killing offences and avoiding areas of suitable resting/breeding habitats. Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Wintering birds (see also international statutorily designated sites above)	1, 3, 4	Disturbance	The works are located in close proximity to important sites for populations of wintering birds. The works are programmed for October to avoid impacts where possible, however, there is scope for the works to continue into November. As such, this potential impact has been scoped-in. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Appropriate Assessment. Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Fish (see also international statutorily designated sites above)	1	Potential for killing of fish as a direct result of the dredging activity (i.e. fish being caught up in the dredging activity). Also, potential for dredging to result in increased sediment load and	Potentially significant impacts from these effects. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and	✓	Water Framework Directive (WFD) Compliance Assessment.

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
		release of contaminants (over and above those experienced in the baseline conditions). The indirect result of this could be changes to turbidity, dissolved oxygen levels and damage to fish's gills, impacts on fish habitats, spawning grounds, feeding grounds and effects on migration.	others.		Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Rare and scarce invertebrates (see also international statutorily designated sites above)	1, 2, 4	Direct loss of invertebrates (including the locally resident and nationally notable Hairy Click Beetle) as a result of removal with the dredged sediment and/ or removal of emergent and marginal vegetation.	Although there are many species of notable/rare invertebrates within the nearby protected areas, a detailed habitat review by an entomological expert has concluded that the designated invertebrate assemblages are associated with the small rhynes and ditches in the moors, not the main river channels. Direct impact of habitat loss on the invertebrate assemblage associated with rhynes and ditches is very limited but will be been scoped in for further assessment. There is potential for eutrophication of ditches due to high phosphate content in runoff from dredging arisings. Changes in vegetation community within the rhynes may also result in changes to the invertebrate community, so this has been scoped into the assessment. Survey has shown that a colony of Hairy Click Beetle is associated with the working areas. Options for avoiding or translocating habitat will be considered. The potential for a direct impact is scoped-in to future assessment. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and	✓	Ecological Impact Assessment within ES Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
			others.		
Non-native invasive species	1, 2, 3, 4, 5	Spreading of invasive species and pathogens (e.g. Ash dieback) within the working area (and potentially beyond).	A large population of Himalayan balsam is associated with the left bank downstream of Stathe, and the dredging works have the potential to cause the spread of this species. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Ecological Impact Assessment within ES Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Dormouse	2	Potential for killing or injury of dormice and/ or damage to dormouse habitat as a result of vegetation clearance (in particular hedgerows or stands of dense scrub).	Although dormouse could be present, as well connected or extensive sections of hedgerows and stands of dense connected scrub will not be removed for the works, and a precautionary work method statement can be adopted, this species has been scoped-out of future assessment. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	X	Not applicable.
Breeding birds	2, 3, 4, 5	Loss of nesting habitat (such as habitats used by Cetti's warblers, sedge warblers, reed warblers and blackbirds) and/ or damage to nests caused by land clearance for site access, storage areas or other clearance of vegetation associated with the Works.	Works are timed for the autumn period to avoid impacts to breeding birds. Marginal vegetation is expected to recover quickly. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	X	Not applicable.
Rare or scarce aquatic plants	1, 2	Potential for direct loss or degradation of conditions for notable species of plants	Survey results have confirmed the absence of notable plants from the works area, therefore potential direct effects on notable plant	✓	Develop Construction Environmental

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
			populations have been scoped-out. However, there is potential for eutrophication of ditches within Southlake and West Sedgemoor SSSIs due to high phosphate content in runoff from dredging arisings. This could result in loss of rare/ scarce aquatic plants from the affected ditches. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.		Management Plan. Landscape and Ecological Management Plan.
Land quality					
Soil resource	2, 3, 4, 5	Vehicle movements over saturated soils can cause long-term degradation to the structure of the soil. Soil erosion is much more likely under waterlogged conditions especially where vegetative matter has been removed from the surface. Ground cover removal to facilitate the works (including storage and site compounds) and vehicle movements could result in compaction and erosion, leading to changes to the soil structure and fertility and functionality of the soil resource.	Works have been timed for the autumn period when conditions are much more likely to be dry. Soils will be protected through standard, good working practice and ground protection methods if necessary.	X	Not applicable.
Waste and potential contamination	1, 2, 4	Generation of arisings from dredging, and waste from vegetation clearance removal; and potential ground contamination arising from placement on the rear	Sediments have been tested prior to dredging to demonstrate that they are non-hazardous prior to depositing on river banks.	X	Results of sediment testing will be provided within the Water Environment chapter

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
		of the flood embankment.			
Cultural heritage					
Designated sites	1, 2, 3, 4, 5	Potential for direct damage to a Scheduled Monument or Listed Building.	All such designated sites are located outside the works area. No potential for impacts to the curtilage of a Listed Building.	X	Not applicable.
Known archaeological sites	1, 2, 3, 4, 5	Potential for degradation of archaeological sites through inappropriate spreading of dredging arisings and tracking of machinery	Confirmation from Dr Richard Brunning (Senior Historic Environment Officer at the South West Heritage Trust) that there are no apparent impacts to the historic environment from the dredging of material from the river, the deposition of the dredged material onto the existing floodbanks or the use of heavy machinery on the floodbanks. Working compounds will be sited to avoid known archaeological sites, especially the deserted medieval hamlets on the north bank of the river.	X	Not applicable.
Previously undiscovered archaeology or heritage sites	1, 2, 3, 4, 5	Potential for damage to previously unknown archaeology or heritage sites by tracking of machinery and siting of compounds and material spreading areas.	The area has been previously dredged (in the 1960s). The project will not result in the widening or deepening of the channel beyond the widths and depths originally dredged in the 1960s. See above in terms of consultation with the South West Heritage Trust.	X	Not applicable.
Landscape and visual					
Change to, and deterioration in condition or quality of local landscape character	1, 2, 3, 4, 5	Changes in channel morphology. Loss of vegetation on banks / temporary scarring until revegetates. Possible secondary effects such as undercutting of banks.	Channel will become wider, but not more so than it has previously been following past widening and dredging works. No change to the fundamental nature of the landscape character is anticipated and any changes to be at a localised level. De-vegetation to be temporary.	X	Not applicable.
Visual	1, 2, 3,	Potential visual intrusion to	Visual intrusion will be temporary and slight.	X	Not applicable.

Resource/ Environmental Receptor	Cause of potential effect	Description of potential effect	Scoping justification	Scoping outcome ✓: Scoped in X: Scoped out	Methods of assessment
intrusion	4, 5	residential receptors associated with the left bank; and users of the long distance path running along the right flood embankment. Visual intrusion arising due to dredging works, placement of dredged materials and siting of compounds	The works are typical of frequent routine operations in the same location for annual maintenance dredging of rhynes and weed control.		

6 ES CONTENTS

175 Following the results of the scoping exercise set out in Section 4, the following chapters will therefore be produced as part of the Environmental Statement:

- ES Non-Technical Summary (NTS) – a summary of the key issues and findings of the EIA
- ES Volume 1 – will comprise the full text of the EIA with chapter headings as follows.
  - Chapter 1 Introduction and the EIA Team.
  - Chapter 2. Description of Development Proposals
  - Chapter 3. The Consenting Regime
  - Chapter 4. Need and Alternatives
  - Chapter 5. Approach to Preparing the ES
  - Chapter 6. Policy and Legal Content
  - Chapter 7. Population
  - Chapter 7. The Water Environment
  - Chapter 8. Biodiversity
  - Chapter 10. Cumulative Effects
  - Chapter 11. Summary of Significant Effects and Proposed Mitigation
  - Glossary
- ES Volume 2 - Figures
- ES Volume 3 – Technical Appendices (providing supplementary information for the various technical studies)
  - This will also include:
    - Baseline Studies
    - Habitats Regulations Assessment
    - WFD Assessment

APPENDIX A – HABITAT MAPS

JOHNS ASSOCIATES

CLIENT

Somserset Levels Drainage Boards Consortium

PROJECT

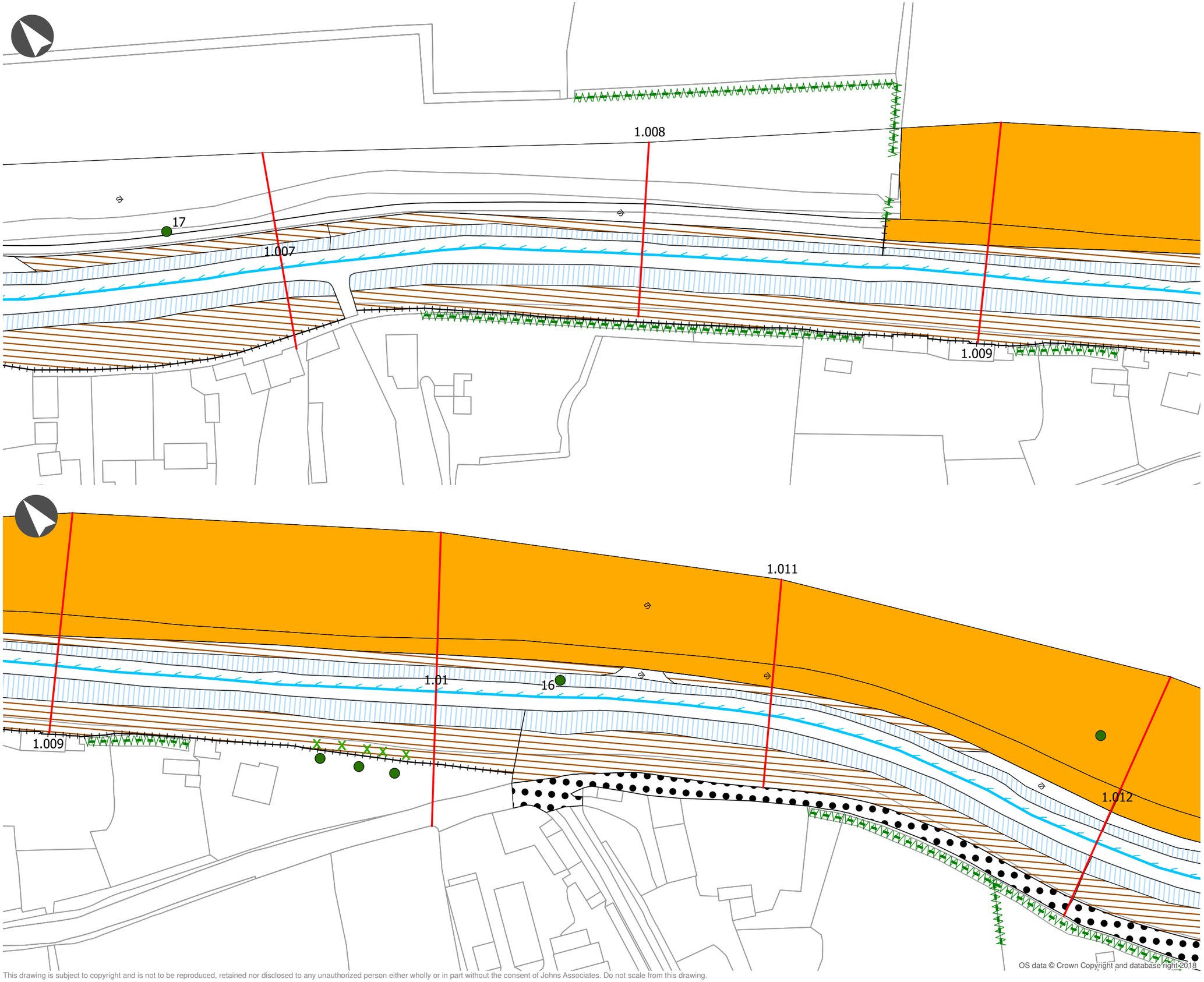
Oath to Burrowbridge Dredging

TITLE

Survey sheets 1 and 2

SCALE @ A3	CREATED BY	CHECKED BY
1:1,000	MM	JW
REFERENCE	**REVISION**	**DATE ISSUED**
J00256.P1.s1/s2		15/6/2018

- Broadleaved tree
- Scrub
- Target note
- G2 - Running water
- J2.2.1 - Defunct hedge - native species-rich
- J2.4 - Fence
- SI — B2.2 - Neutral grassland - semi-improved
- SI — B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- F2.1 - Marginal and inundation - marginal vegetation



JOHNS ASSOCIATES

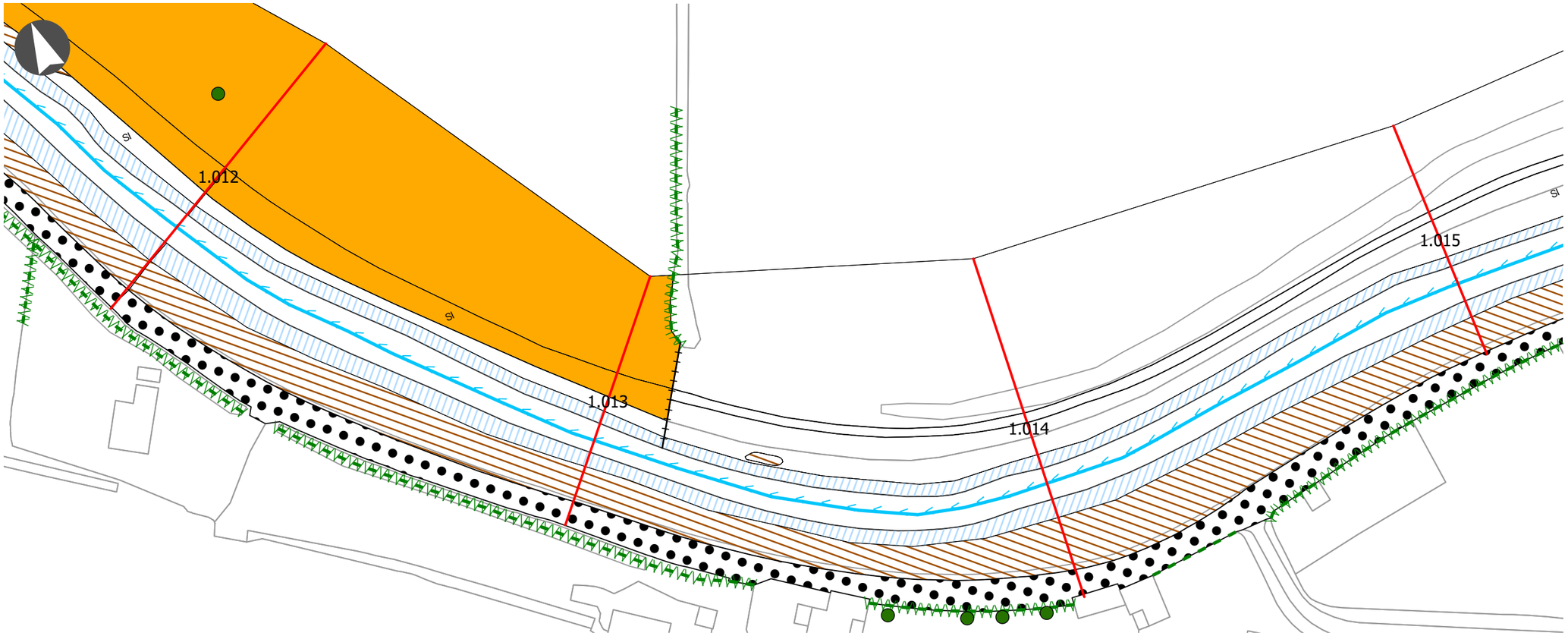
CLIENT
Somserset Levels Drainage Boards Consortium

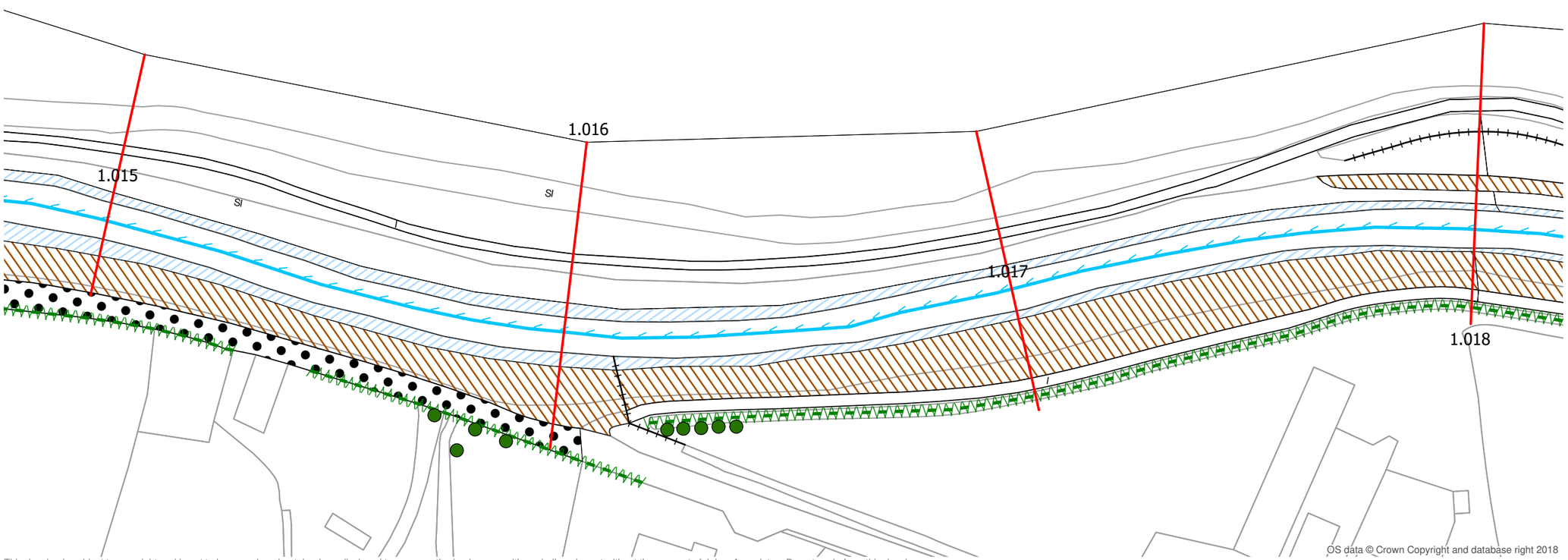
PROJECT
Oath to Burrowbridge Dredging

TITLE
Survey sheets 3 and 4

SCALE @ A3	CREATED BY	CHECKED BY
1:1,000	MM	JW
REFERENCE	**REVISION**	**DATE ISSUED**
J00256.P1.s3/s4		15/6/2018

- Broadleaved tree
- Scrub
- Target note
- G2 - Running water
- J2.2.1 - Defunct hedge - native species-rich
- J2.4 - Fence
- B2.2 - Neutral grassland - semi-improved
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- F2.1 - Marginal and inundation - marginal vegetation
- J4 - Bare ground





JOHNS ASSOCIATES

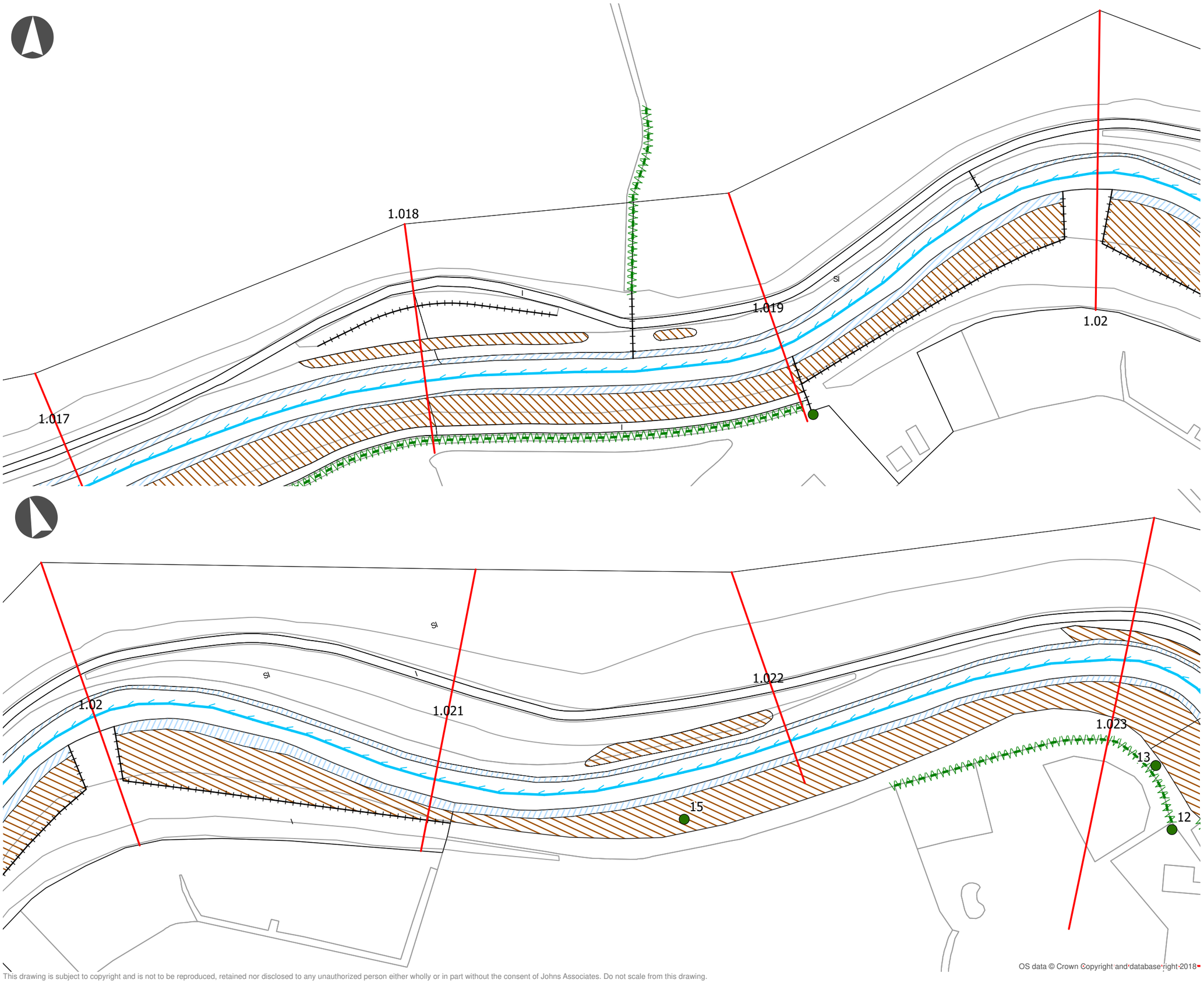
CLIENT
Somserset Levels Drainage Boards Consortium

PROJECT
Oath to Burrowbridge Dredging

TITLE
Survey sheets 5 and 6

SCALE @ A3	CREATED BY	CHECKED BY
1:1,000	MM	JW
REFERENCE	**REVISION**	**DATE ISSUED**
J00256.s5/s6		15/6/2018

- Broadleaved tree
- Scrub
- Target note
- G2 - Running water
- J2.2.1 - Defunct hedge - native species-rich
- J2.2.2 - Defunct hedge - species-poor
- J2.4 - Fence
- SI B2.2 - Neutral grassland - semi-improved
- I B4 - Improved grassland
- SI B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- F2.1 - Marginal and inundation - marginal vegetation
- J4 - Bare ground



JOHNS ASSOCIATES

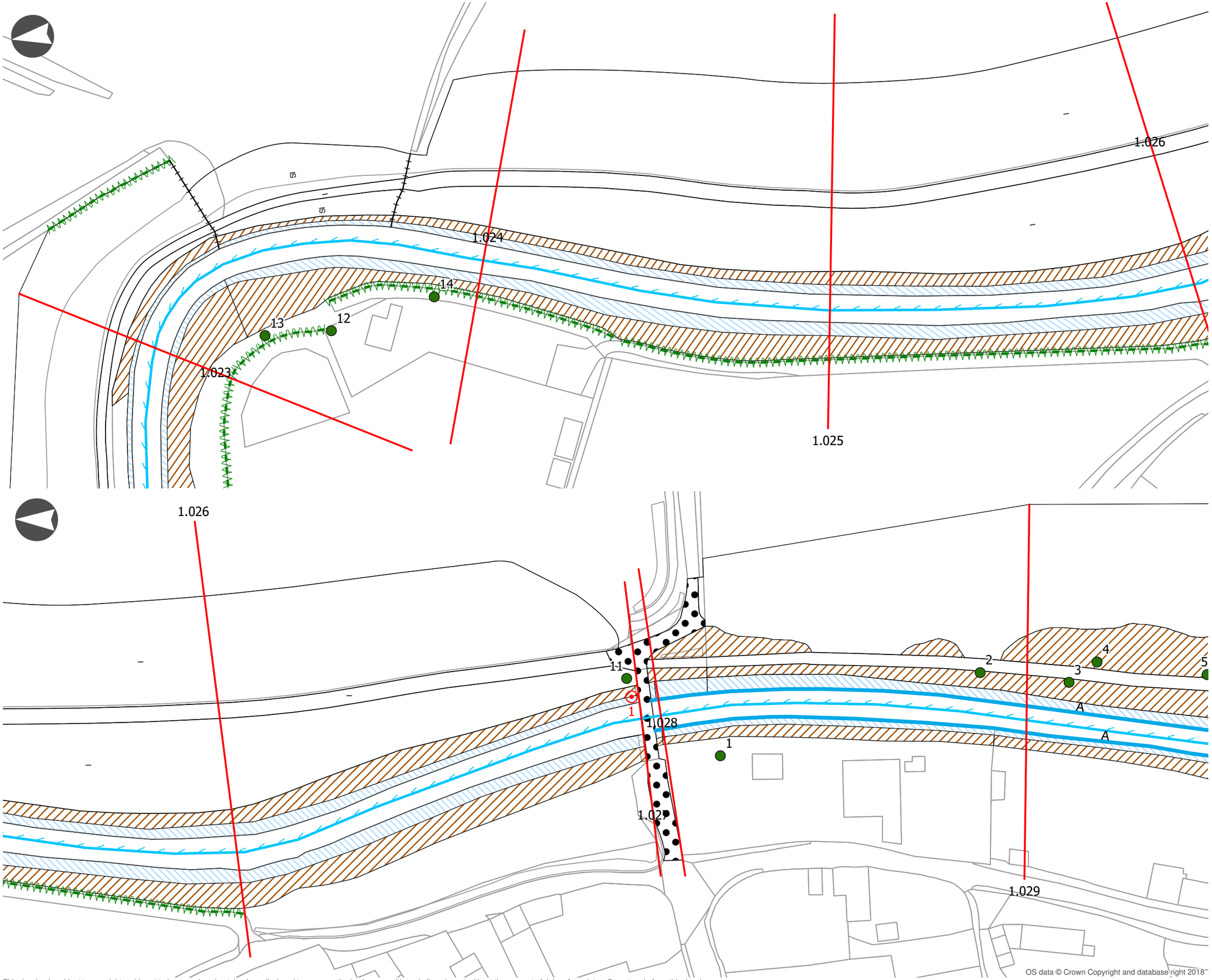
CLIENT
Somserset Levels Drainage Boards Consortium

PROJECT
Oath to Burrowbridge Dredging

TITLE
Survey sheets 7 and 8

SCALE @ A3	CREATED BY	CHECKED BY
1:1,000	MM	JW
REFERENCE	**REVISION**	**DATE ISSUED**
J00256.s7/s8		15/6/2018

- Broadleaved tree
- Scrub
- Target note
- G2 - Running water
- J2.2.1 - Defunct hedge - native species-rich
- J2.4 - Fence
- I — B4 - Improved grassland
- SI — B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- F2.1 - Marginal and inundation - marginal vegetation



JOHNS ASSOCIATES

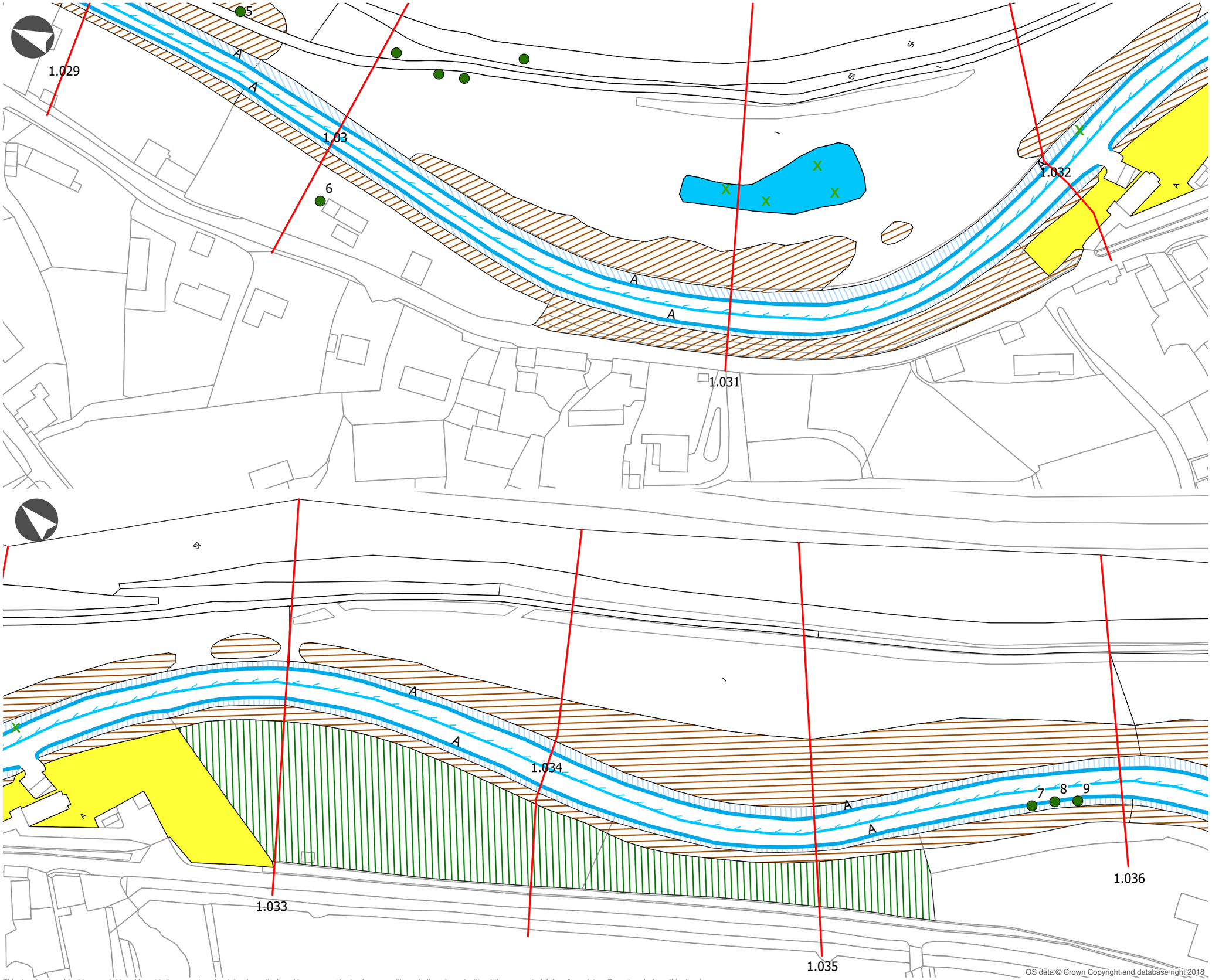
CLIENT
Somserset Levels Drainage Boards Consortium

PROJECT
Oath to Burrowbridge Dredging

TITLE
Survey sheets 9 and 10

SCALE @ A3	CREATED BY	CHECKED BY
1:1,000	MM	JW
REFERENCE	**REVISION**	**DATE ISSUED**
J00256.s9/s10		15/6/2018

- Broadleaved tree
- Scrub
- Target note
- G2 - Running water
- J2.2.1 - Defunct hedge - native species-rich
- A — Aquatic macrophytes
- I — B4 - Improved grassland
- SI — B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- F2.1 - Marginal and inundation - marginal vegetation
- J4 - Bare ground



JOHNS ASSOCIATES

CLIENT
Somserset Levels Drainage Boards Consortium

PROJECT
Oath to Burrowbridge Dredging

TITLE
Survey sheets 11 and 12

SCALE @ A3	CREATED BY	CHECKED BY
1:1,250	MM	JW
REFERENCE	**REVISION**	**DATE ISSUED**
J00256.s11/s12		15/6/2018

- Broadleaved tree
- Scrub
- Target note
- G2 - Running water
- Aquatic macrophytes
- A1.1.2 - Broadleaved woodland - plantation
- B4 - Improved grassland
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- F2.1 - Marginal and inundation - marginal vegetation
- J1.2 - Cultivated/disturbed land - amenity grassland

JOHNS ASSOCIATES

CLIENT
Somserset Levels Drainage Boards Consortium

PROJECT
Oath to Burrowbridge Dredging

TITLE
Survey sheets 13 and 14

SCALE @ A3	CREATED BY	CHECKED BY
1:1,750	MM	JW
REFERENCE	**REVISION**	**DATE ISSUED**
J00256.s13/s14		15/6/2018

- Broadleaved tree
- Scrub
- Target note
- G2 - Running water
- Aquatic macrophytes
- A1.1.2 - Broadleaved woodland - plantation
- A2.2 - Scrub - scattered
- B4 - Improved grassland
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- F2.1 - Marginal and inundation - marginal vegetation
- G1 - Standing water
- J4 - Bare ground
- Oath_To_Burrowbridge

APPENDIX 1B: CONSULTATION REPORT

Oath to Burrowbridge Dredging

Analysis of Responses to Initial Consultation and Reg 6 Notification

J00372/ 1

Parrett Internal Drainage Board

Date: 01/07/19

DOCUMENT CONTROL

Report prepared for:

Parrett Internal Drainage Board

Main contributors:

Matt Maynard BSc MSc

GIS Consultant

Reviewed by:

Mari Webster BSc MSc MRTPI

Associate Director

Issued by:

Matt Maynard BSc MSc

Consultant

Suites 1 & 2, The Old Brewery, Newtown, Bradford on Avon, Wiltshire, BA15 1NF

T: 01225 723652 | E: info@johnsassociates.co.uk | W: www.johnsassociates.co.uk

DOCUMENT REVISIONS

Version	Details	Date
V 1.1	Draft for client comment	June 2019
V2	Final draft for Issue	02/07/19

Third party disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by Johns Associates at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. Johns Associates excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

TABLE OF CONTENTS

1 INTRODUCTION

1.1 The Parrett Internal Drainage Board (Parrett IDB) are proposing to carry out pioneer dredging (Improvement Works) on a 2.2km section of the River Parrett between Stathe bridge and Burrowbridge in the later part of 2019. In order to carry out the proposed works the Parrett IDB needed to satisfy the requirements of the Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999 (As amended) ('the Regulations' or 'Regulation' within this report).

1.2 In accordance with Regulation 4, the Parrett IDB resolved to accept the recommendations of the Johns Associates EIA Screening and Scoping Report on 25 April 2019. The Parrett IDB determined that the proposed works were likely to have significant effects on the environment due to their location[1] and potential impact (Schedule 2 (3)(a), (f), (g), and (h)) in the absence of changes to the design and / or mitigation.

1.3 The Parrett IDB carried out an effective and comprehensive approach to engagement with stakeholders and statutory bodies on the proposed works from an early stage[2]. As well as seeking to engage with local communities affected by the proposed works through an initial consultation which ran from 1st May 2019 until 1st June 2019.

1.4 In accordance with Regulation 6, the Parrett IDB published a notice[3] on 29 May 2019 detailing the determination that had been made under Regulation 4.

1.5 This report contains an overview of the initial consultation event as well as analysis of the responses received through it and in relation to the Regulation 6 notification. It also provides an update on additional engagement that has taken place with stakeholders and statutory bodies to date. It therefore provides the basis on which the PIDB can form its Scoping Opinion for the Environmental Impact Assessment of the proposed Improvement Works.

[1] See Schedule 2 (2)(c)(i) and (v) of the regulations for full detail on these criteria, and Section 4 of the Johns Associates EIA Screening and Scoping Report.

[2] See Section 4 of this report for full details

2 INITIAL CONSULTATION (1 MAY 2019 – 1 JUNE 2019)

Overview and engagement strategy

2.1 The initial consultation followed the production of an EIA Screening and Scoping Report by Johns Associates and sought to engage the local community by making details of the project available alongside the remaining steps of the process it needed to go through before it would be able to proceed.

2.2 The Somerset Rivers Authority and the Parrett IDB produced a press release providing a summary of the projected timetables for the project as well as its strategic purpose. Display boards were produced detailing: the historic and ongoing strategic context for the project, the extent and methods proposed to carry out the works, the potential effects and the EIA process used to determine their significance, and what the next steps would be.

2.3 The press release, EIA Screening and Scoping Report, display boards, and feedback forms were made available online through the Somerset Drainage Board Consortium's and Somerset River Authority's web pages throughout the period of the initial consultation.

2.4 The press release was passed through to the Newsquest Media Group and Reach Regionals Limited at the start of the consultation period.

2.5 The Parrett IDB sent the press release and EIA Screening and Scoping Report by email to the following consultation bodies: Natural England, the Environment Agency, the Somerset Rivers Authority, the RSPB, Somerset Wildlife Trust, South West Heritage Trust, and every parish council within the Parrett IDB administrative area.

2.6 Two events were scheduled as part of the consultation event which were attended by members of the project team from the Somerset Rivers Authority, Environment Agency, Parrett Internal Drainage Board, and Johns Associates:

- 14 May 2019 at Burrowbridge Coronation Hall between 12:00 and 19:00. The material from this event were left in place for the Burrowbridge Parish Council Annual General Meeting which followed it.
- 15 May 2019 at Great Bow Wharf in Langport between 12:00 and 19:00.

2.7 In total, 33 attendees were recorded at both events (20 on 14 May, 13 on 15 May) with at least 50 attendees present for some or all of the Burrowbridge Parish Council Annual General Meeting.

2.8 Responses were received in both electronic and paper formats by post, email, online through the Survey123 form, and in person at the consultation events:

Post	*Email*	*Online*	*In Person*	***Total***
2	*4*	*10*	*2*	***18***

Analysis of responses received relating to initial consultation

2.9 The majority of responses, 72% (13[4]), indicated that they were supportive of the project but several sought clarifications on the potential impacts of the project on boating or navigation on the Parrett during the period of works. All of these responses indicated the respondents wished to be kept informed on the progress of the project

2.9.1 How will the proposed works impact navigation along the River Parrett?

Prior to the commencement, and for the duration, of the proposed dredging works the Parrett IDB will

engage with local boating organisations to keep them informed of the proposed works. Navigation along the Parrett will be incorporated into any risk assessments and corresponding protocols will be adopted to reduce identified risks,

2.10 One of the remaining responses[5] indicated that they had no comment on the project, only that they wished to be informed on its progress.

2.11 Each of the remaining 4 responses raised specific issue(s) to be considered, or provided specific suggestions or improvements; however some of these related to, or raised, issues beyond the scope of the project[6]. These responses raised the following issues:

2.11.1 Were other locations considered for dredging, and why was this location chosen?

The SRA carries out the ongoing maintenance of the 2014 river profiles and also identifies further dredging locations for improved flow conveyance and flood management under Workstream 1. Hydraulic studies carried out by CH2M, HR Wallingford and AW Water Engineering investigated and proposed additional dredging locations and compared these locations in terms of flood risk conveyance benefits, constraints and costs. The River Parrett between Northmoor Pumping Station and the M5 and the River Parrett from Oath Lock downstream to its confluence with the River Tone were identified and assessed as the next most beneficial dredging locations. The M5 dredging location was assessed and various constraints were identified. The Oath to Burrowbridge location has been assessed and a viable dredging proposal developed.[7]

2.11.2 What information determined that the project would be effective?

Refer to the response to 2.11.1 above for a summary of the modelling work undertaken, the Oath to Burrowbridge location was determined to be the most beneficial.

2.11.3 How has climate change been factored into the modelling for the project?

The assessment has used actual data from recent flood events, rather than attempt to assess what the actual annual probability is of each event. No allowance for climate change has therefore been included. In theory, climate change will lead to these flood events becoming more frequent, although there is some uncertainty on how much impact there will be on the sort of long duration events (like 2013/14) that cause extensive flooding on the Levels.

2.11.4 Have additional / alternative flood alleviation measures been considered?

This issue was raised both in the context of the project and the context of flood management within the wider Somerset area. In the context of the project such measures were not considered as they were beyond its scope. In the context of the wider Somerset area the SRA coordinates a number of Workstreams which are delivered by partner organisations and in 2017/18 spent £3.6m on projects designed to enhance flood protection and resilience.[8]

2.11.5 Was a fixed barrage south of Dunball considered as an alternative option to dredging?

In the context of the project this measure was not considered. Refer to the response to 2.11.4 above for further information on projects underway in the region.

2.11.6 Was compulsory purchase / relocation from flood plains considered as an alternative option to dredging?

In the context of the project this measure was not considered. Refer to the response to 2.11.4 above for further information on alternatives considered within the region.

2.11.7 Do existing derelict structures along the River Parrett have the capacity to contribute to flood

[6] See Responses 15-18 in Appendix 1 for full response text

[7] Johns Associates Environmental Impact Assessment EIA Screening and Scoping Report, Section 1.1, Paragraph 4 summarises locations considered, Paragraph 5 summarises why this location was chosen

[8] Somerset Rivers Authority (2018), 2017-18 End of Year Report, Part 2, Pages 3-6 summarise the works delivered that year, with

alleviation?

In the context of the project this measure was not considered. Refer to the response to 2.11.4 above for further information on SRA workstreams within the region.

2.11.8 How will dredged silt be used or disposed of?

All arisings from the excavation are proposed to be deposited on the landward side of the right flood bank crest (facing downstream) under conditions of D1 and U1 waste exemptions. The level of the bank crest will not be raised above existing levels.[9]

2.12 Statutory bodies have continually provided feedback to inform the development of the plan and have been engaged by the project team on a comprehensive range of issues during the production of the EIA Screening and Scoping Report as well as following its completion. Engagement which informed the EIA Screening and Scoping Report is detailed in section 2.4 of that report, an update of this information has been provided in Section 4 of this document.

2.13 The responses that have been received will be incorporated into the Environmental Statement and where amendments have been made that correspond with these responses it will be clearly indicated.

[9] Johns Associates (2019). Environmental Impact Assessment EIA Screening and Scoping Report. Section 1.4. Paragraphs 26-33

3 REGULATION 6 NOTIFICATION (28 MAY 2019 – 7 JUNE 2019)

3.1 On the 25 April 2019 the Parrett IDB made a resolution to accept the recommendation of the EIA Screening and Scoping Report that the proposed improvement works are likely to have significant effects on the environment due to their location[10] and potential impact (Schedule 2 (3)(a), (f), (g), and (h)) in the absence of changes to the design and / or mitigation.

3.2 The Parrett IDB then published a notice in accordance with Regulation 6 in both the Western Daily Press and Somerset County Gazette on the 28 and 29 May 2019 respectively.

3.3 The notice and EIA Screening and Scoping Report were available online through the Somerset Drainage Board Consortium web page and was available as a hard copy at the Langport Library; with directions that comments or questions could be submitted in writing either by email or post.

3.4 The Parrett IDB sent the notice and an electronic copy of the EIA Screening and Scoping Report to the following consultation bodies: Natural England, the Environment Agency, Historic England, South Somerset District Council, Mendip District Council, Sedgemoor District Council, Taunton Deane District Council, Somerset County Council, the RSPB, Somerset Wildlife Trust, and the South West Heritage Trust.

3.5 Two responses were received during this notification period from Historic England and Sedgemoor District Council.

3.6 Sedgemoor District Council reviewed the EIA Screening and Scoping Report and confirmed that they agreed both with the recommendation that an EIA would be required, and that the selection of Chapters and Topics to be scoped in and out of the Environmental Statement was proportionate.

3.7 Historic England stated that on the basis of the information provided they did not wish to offer any comments.

3.8 The responses that have been received will be reported in the Environmental Statement.

3.9 This report forms the basis for the PIDB to issue its EIA Scoping Opinion which will be taken forward into the Environmental Statement.

[10] See Schedule 2 (2)(c)(i) and (v) of the regulations for full detail on these criteria, and section 4 of the Johns Associates EIA

4 STAKEHOLDER ENGAGEMENT

4.1 The tables below provide summaries of the engagement that has taken place to date with statutory consultees, project partners, and key stakeholders.

Table 4.1. Summary of engagement with Natural England

Organisation	Date	Summary of consultation undertaken
Natural England	02/05/2018	Meeting (Mark Jones, Donna Gowler, Stephen Parker) to discuss scope of HRA; HRA monitoring undertaken to-date relating to previous dredging works; best way to progress mitigation and monitoring required for European sites; projects that need to be assessed 'in-combination'. It was agreed that Stephen would undertake initial assessment of breeding bird surveys and BTO WeBS data to assess whether there is a demonstrable link between dredging and decline in habitat suitability for wintering water birds.
	May 2018	Consultation with Natural England to agree the approach to water vole survey; and potential approaches to mitigation. Included an email from Mark Jones (8/5/8) confirming possible approach to licensing; and an email from Claire Howe (17/5/15) on required extent and scope of water vole survey.
	29/06/2018	Meeting (Mark Jones, Stephen Parker) for initial discussion on the outcome of the hydraulic modelling with regards to water levels on the moors during low magnitude flood events (and the potential impacts on SPA conditions/target water levels for over wintering birds). It was agreed to further process the data for further analysis during the next meeting.
	11/07/2018	Meeting to further discuss potential impacts on the water levels in the moors and SPA conditions for over wintering birds. First review of water level management plans to identify options for water level mitigations.
	June 2018 – March 2019	Extensive, ongoing internal discussions and meetings to further develop the project design to develop an optimum scheme with minimal significant environmental effects.
	04/06/2019	Meeting with Natural England, RSPB and SWT to provide an update on the proposed works and an overview of the EIA Screening and Scoping Report.
	06/06/2019	Meeting with Natural England land tenants to discuss the proposed works and Agri Payments
	10/06/2019	Meeting with Natural England, RSPB and SWT to explore potential mitigation from the SPA through the HRA
	12/06/2019	Meeting with Natural England regarding SPA mitigation and the HRA with Donna Gowler and Steve Parker assessing impacts on functionally linked land and potential timetables for mitigation.

Table 4.2 Summary of engagement with the Somerset Wildlife Trust

Organisation	Date	Summary of consultation undertaken
Somerset Wildlife Trust (SWT)	27/06/2018	Meeting with Anne Halpin to detail the intended project, the surveys carried out, potential mitigations to remove impacts and ongoing EIA proposals. Agreed to send Scoping Report for comment when prepared.
	04/06/2019	Meeting with Natural England, RSPB and SWT to provide an update on the proposed works and an overview of the EIA Screening and Scoping Report.
	10/06/2019	Meeting with Natural England, RSPB and SWT to explore potential mitigation for the SPA through the HRA

Table 4.3 Summary of engagement with the RSPB

Organisation	Date	Summary of consultation undertaken
Royal Society for the Protection of Birds (RSPB)	May 2018	Email correspondence outlining the nature of the project and intended project timelines. Request for further consultation discussions.
	04/06/2019	Meeting with Natural England, RSPB and SWT to provide an update on the proposed works and an overview of the EIA Screening and Scoping Report.
	10/06/2019	Meeting with Natural England, RSPB and SWT to explore potential mitigation for the SPA through the HRA

Table 4.4 Summary of engagement with the Environment Agency

Organisation	Date	Summary of consultation undertaken
Environment Agency	28/02/2018	Meeting (John Rowlands, John Phillips and Gemma Mahoney) to discuss initial proposals, constraints and agree necessary baseline ecological surveys and assessments.
	Jan – Mar 2018	Email and meetings between AW Engineering (PIDB hydraulic modelling consultants) and the Environment Agency modelling team discussions to agree the modelling approach, modelling scope.
	10/05/2018	Discussion and email to John Philips to establish monitoring data available from previous dredging projects; and to agree survey methodology for benthic invertebrate surveys.
	May – June 2018	Ongoing emails and telephone conversations with Gemma Mahoney and John Phillips to discuss WFD assessment/mitigations and potential impacts on Hairy Click Beetle (protected species) as a result of proposed works.
	25/06/2018	Meeting with John Rowlands to discuss modelling outputs and potential impacts on flood risk benefits/dis-benefits to receptors in the moors. Decision to develop a summary paper of flood risk consequences and consult further with SRA board.
	11/07/2018	Meeting to discuss desired objectives of change for water level management and agree necessary mitigations.
	June 2018 – March 2019	Extensive ongoing internal discussions and meetings to further develop the project design to develop an optimum scheme with minimal significant environmental effects.
	18/04/2019	Email correspondence with John Rowlands with feedback collated from himself, Gemma Mahoney and John Philips on the EIA Screening and Scoping Report. This feedback related to the potential impact of the works in terms of timing on both bathing water and on fish spawning and migration and suggested appropriate steps that could be taken to mitigate these potential impacts.
	03/05/2019	Email correspondence with John Rowlands with feedback collated from himself, Gemma Mahoney and John Philips on the EIA Screening and Scoping Report. This feedback raised queries regarding the mitigation measures considered – whether ongoing maintenance was included as part of the assessment, whether additional reed planting should be included, how any tree removal may be mitigated, ensuring seed mixes are representative of existing habitat, and whether submerged vegetation was appropriately considered.
	May 2019	Attendance at both exhibition sessions for the proposed works by John Rowlands.
	07/06/2019	Email and phone correspondence to confirm that topsoil does not now need to be stripped prior to the works which addresses concerns raised by Dr Richard Brunning regarding buried archaeological remains.
	03/05/19	Written feedback on the EIA Screening and Scoping Report from Gemma Mahony. Include consideration of maintenance activity in the ES, including temporary and permenant habitat loss and associated mitigation / compensation measures.. Undertake additional reed-root replanting beyond the retained fringe including strip and recover planting on the lower gradient sections of the staged channel. Confirm the seed mix used to replace the bankside grassland will be representative of the grassland being removed through the works and will seek to enhance the vegetation communities. Confirm how the loss of riparian trees will be accounted for e.g. replacement on a 3:1 basis. Ensure the submerged vegetation habitat used by invertebrates and as juvenile, feeding and refuge fish habitat is appropriately represented and that potential changes in conditions do not reduce the abundance of this habitat.
	13/06/19	Email from Gemma Mahony confirming discussions with John Phillips around the need for permanent cattle fencing and regulatory compliance. WFD The project will retain a little less than half of the habitat currently present on the banks and the retained habitat is largely un-impacted by grazing. As such, failure to retain improved habitat will not prevent WFD compliance. Hairy Click Beetle The majority of HCB habitat is present on the LHB which will largely be retained.

Organisation	Date	Summary of consultation undertaken
		committed to undertaking translocations at these sites. This is acceptable mitigation if appropriate retrospective monitoring is included. Protected species Low numbers recorded and retention of the majority of the LHB provides alternate habitat if animals are displaced. The main risk of not fencing is that resource is spent on achieving a staged channel/vegetation retention but the desired priority reedbed habitat fails to develop due to grazing pressures/poaching. Permanent or temporary fencing is not an option, however small alterations to cattle management could reduce the risk and degree of damage to the banks. This may not be possible due to the value of the grazing in the early season however Natural England has suggested it will consider the options and perhaps broach the topic with the graziers to see if there is a practicable solution.
	28?06/19	Wessex Enquiries response to request raised by I Sturdy PIDB. From a fisheries point of view there doesn't seem to be too many issues with the methodology due to the fact the dredge will mainly be taking place on the upper sections of the riverbank and none below the lower flow channel. If any dredging take place below the water level at the time of works, any materials must first be deposited on the crest of the river bank, nearest to the river to allow eels of all age ranges and lamprey the chance to return back into the river unharmed. The material can then be moved to the landward side of the bank after a minimum of 30 minutes to ensure all fish have had an appropriate chance to retreat back to the water. A banksman should also be on hand whenever dredging is taking place below the water level to assist the fish in returning to the river. The banksman should be equipped with a hand net and bucket of clean water for the capture of any eels/elvers or lamprey that are stuck in the removed silt. If any glass eels or elvers are caught, best practice would be to return them into the river upstream of Oath lock. Any mature silver eels should be released back into the river downstream of the works as they will be migrating to sea.

Table 4.5 Summary of engagement with the PIDB and SRA

Organisation	Date	Summary of consultation undertaken
PIDB and SRA	June 2018 – March 2019	Extensive ongoing internal discussions and meetings to further develop the project design to develop an optimum scheme with minimal significant environmental effects.
	April 2019 – May 2019	Coordination of material prepared for initial consultation on the proposed works. Attendance at both drop-in sessions by representatives of the SRA and PIDB

Table 4.6 Summary of engagement with the Inland Waterways Association

Organisation	Date	Summary of consultation undertaken
Inland Waterways Association	May 2018	Telephone conversations outlining the nature of the project and the EIA process for consultation.

Table 4.7 Summary of engagement with the Flooding on the Levels Action Group

Organisation	Date	Summary of consultation undertaken
Flooding on the Levels Action Group	08/05/2019	Meeting with Flooding on the Levels Action Group to provide an overview of the proposed works and the EIA Screening and Scoping Report.

Table 4.8 Summary of engagement with Historic England

Organisation	Date	Summary of consultation undertaken
Historic England	29/05/2019	Notified of intent to prepare an environmental statement in accordance with Regulation 6. Had no comment.

Table 4.9 Summary of engagement with the South West Heritage Trust

Organisation	Date	Summary of consultation undertaken
South West Heritage Trust	27/03/2018	Phone conversation and email from Dr Richard Brunning (Senior Historic Environment Officer) confirming that there are no apparent impacts to the historic environment from the dredging of material from the river, the deposition of the dredged material onto the existing floodbanks or the use of heavy machinery on the floodbanks. Working compounds should be sited to avoid known archaeological sites, especially the deserted medieval hamlets on the north bank of the river.
	18/04/2019	Email correspondence with Dr Richard Brunning regarding EIA Screening and Scoping Report detailing that the scheme would not have a significant adverse effect on the historic environment provided the site compound can be positioned to avoid known heritage sites. The topsoil stripping that precedes deposition of silt could have a significant adverse effect on archaeological remains along the banks – mitigation that was suggested could be topsoil stripping in those areas be carried out under archaeological supervision.

Table 4.10 Summary of engagement with the Sedgemoor District Council

Organisation	Date	Summary of consultation undertaken
Sedgemoor District Council	29/05/2019	Notified of intent to prepare an environmental statement in accordance with Regulation 6. Agreed with recommendations made, decision and approach to writing the environmental statement.

Table 4.11 Summary of engagement with the Parish Councils

Organisation	Date	Summary of consultation undertaken
Parish Councils within the Parrett IDB administrative area	08/05/2019	Engaged as part of initial consultation, provided with EIA Screening and Scoping Report and explanatory press release and provided digital, paper, and online feedback forms.
Burrowbridge Parish Council	14/05/2019	Following consultation event on this date, material and feedback forms were made available for the duration of the Annual General Meeting.

5 APPENDIX 1: RESPONSES TO THE INITIAL CONSULTATION

RESPONSE: 1

Respondent Name	Mrs Jacky Ash

Do you have any comments to make about this consultation?
Dredging is vital I believe for our area

RESPONSE: 2

Respondent Name	Mrs Kate Houghton

Do you have any comments to make about this consultation?
Dredging is extremely important as the river parrett is gradually getting narrower and narrower and will allow more water to go out with the tide

RESPONSE: 3

Respondent Name	Mr Marc Fuller

Do you have any comments to make about this consultation?
I am in favour of dredging this section of the river Parrett. As a resident very close to this stretch of river, I see daily how restricted it had become.

RESPONSE: 4

Respondent Name	Mrs Sue Hayward

Do you have any comments to make about this consultation?
I think it a wonderful idea that is long overdue

RESPONSE: 5

Respondent Name	Mr Darren Honeywill

Do you have any comments to make about this consultation?
Yes to dredging the river parrot/ Tone. It only works if its kept up to date regularly.

RESPONSE: 6

Respondent Name	Mr Simon Porter

Do you have any comments to make about this consultation?
I am fully in favour of dredging this section of the River Parrett. I would also like to see further boat use encouraged on this river by the environment agency

RESPONSE: 7

Respondent Name	Mr Stephen Tunstall

Do you have any comments to make about this consultation?
Fully support the proposal

RESPONSE: 8

Respondent Name	Mr Paul Belding

Do you have any comments to make about this consultation?
I attended the consultation on 15th May at the Old Wharf in Langport. I was fortunate to have a long discussion with firstly Rob Kidsin and then John Rowlands. Both were clear and enthusiastic with their explanations and I felt fully briefed by the whole experience. I am most grateful for their time and look forward to the start of the project. I would also like to record my thanks to the excellent facilitators who could not have been more helpful and charming.

RESPONSE: 9

Respondent Name	Mr Nick Frost

Do you have any comments to make about this consultation?
Yes. This project seems to have been very thoroughly thought out and seems bound to improve the overall Floodwater drainage of The Levels. I support it wholeheartedly.

RESPONSE: 10

Respondent Name	Mrs Vera Budge

Do you have any comments to make about this consultation?
Having seen an article in the Western Daily Press this morning, I would like to endorse this plan and hope that the proposition will be implemented as soon as possible. I was one of the residents at Thorney cut off by the flood of 2014 for two months. It was a particularly difficult time for me personally, having a husband suffering from MND and a business to run at the same time, the complications of not being able to 'get out' was very stressful. I therefore hope that all possible procedures can be used to prevent another occurrence of the flood of 2014 and the problems this raises for those effected and those responsible for their welfare.

RESPONSE: 11

Respondent Name	Mr David Spicer

Do you have any comments to make about this consultation?
Very good presentation as a flood victim the sooner the better

RESPONSE: 12

Respondent Name	Cllr Ian Dyer

Do you have any comments to make about this consultation?
This is a great project. Thanks for taking the time to meet the public. Press on ASAP. Well done.

RESPONSE: 13

Respondent Name	Mr Ray Alexander – Inland Waterways Association

Do you have any comments to make about this consultation?
The Inland Waterways Association (IWA) supports in principle the proposed dredging as set out in the Parrett Internal Drainage Board's proposals "Oath to Burrowbridge Pioneer Dredging". We would, however, note that there is a public right of navigation at all times on the River Parrett between Burrowbridge and Oath (as indeed there is upstream of Oath and downstream of Burrowbridge). Furthermore, it is our understanding that there is no navigation authority for the river between Burrowbridge and Oath and thus it

We would therefore suggest that your consultation should address the short term impact that the physical dredging works may have on the right of navigation and the resultant steps that you will take to notify potential and actual boaters and to reduce or eliminate the risks to such boaters whilst the dredging works are in progress. We do, of course, appreciate that navigation on this section of the River Parrett occurs infrequently but nevertheless it does take place from time to time.
On a separate point, we note that Page 20 para 2, table 2.1 of the Environmental Impact Assessment EIA Screening and Scoping Report refers to "The British Waterways Trust". We believe that this should actually refer to the Inland Waterways Association, as it was around this time that we had a telephone conversation with a member of your staff (Eleanor Maxfield) following our registering an interest in the dredging proposals at the Langport Water Forum event in April 2018.

RESPONSE: 14

Respondent Name	Mr Mark Vearncombe

Do you have any comments to make about this consultation?
Not sure yet as no idea if it will be useful!

RESPONSE: 15

Respondent Name	Miss Cara Naden

Do you have any comments to make about this consultation?
What guarantees will there be that dredging will prevent flooding? Had this been modelled with the Met Office & predicted sea level rises & increased rainfall due to the climate breakdown? Is the dredging to be regularly undertaken? What impact will it gave on eroding the banks with more volumes of water going down the water course? The Dutch are allowing rivers to flood moors & floodplains & have moved people & businesses out of the flood zones. Has this been looked at for the floodplains of the river Parrett? Not all the flooding is due to the river bursting its bank – are natural mitigation solutions being included such as slow the flow, increased tree planting & reducing upland maize growing? Is the dredged silt no longer classified as contaminated so can be used to raise the banks & surrounding land? However this will not stop land flooding if repeat rain fall as happened in 2014 floods. How will this be managed?

RESPONSE: 16

Respondent Name	Mr Roger Mason

Do you have any comments to make about this consultation?
Why are the intended dredging efforts, being concentrated on dumping water into the River Sowy, which then drains down into the King's Sedgemoor Drain. We saw in 2014 that the volume of water created a level that prevented the Kingsmoor River from draining into the King's Sedgemoor Drain. The result and consequence of this was the flooding of land on the eastern side of Bawdrip that formerly had not been subject to flooding. Why are you not continuing the dredging of the River Parrett to allow for a better flow in both directions, River Sowy and River Parrett. The view of the River Parrett at Huntworth is more like viewing nothing more than a rhine as it is so silted. The River Parrett through Bridgwater is so badly silted it shouts total neglect.

RESPONSE: 17

Respondent Name	Mr Ian Robert Macnab

Do you have any comments to make about this consultation?
It was good to meet with friends and discuss our shared love of the Rivers and Environment. I asked about Rusted and disused structures on the now tidal upper Parrett. I was interested to hear that these were more for navigation. I wondered if reversed they might have a use as flood relief? If got freed up there may be capacity not at present used in Back waters and Ditches. Also freshening stagnant areas. If a text were to come to me as a flood warden to give clyde no 7 a tweak, I would be happy to peddle off on my bike and sort it out to save an inch on Langports flood banks? Just a thought? I have concerns about banks eroding on the stretch of the Parrett between Cocklemoor and Black (Huish) Bridge, also fallen trees and branches dragging in the water, whilst just now some of this might be a good habitat for ducks and moorhens nesting. I wonder if we might be able to help with some clearance. I wonder if all inhabitants of the River are respected and cared for and the flood defenses considered, we could communicate more and all work together for the health and wellbeing of our country side. Enhancing our lovely river for all to enjoy.

RESPONSE: 18

Respondent Name	Mr Norman Allen

Do you have any comments to make about this consultation?
Fixed barage just south of Dunball. This would stop the tide going up and taking silt into the river and prevent the need for dredging south of the barage. If a lock was formed to connect up the KSD, the canal and the docks could be re-opened and it would also connect to the R. Tone with the full length of the R. Parrett. I estimated that we could have 76 miles of boating which would enhance tourist wise and the equivalent of the Norfolk Broads of the West Country. Consequently the river south of the barage would be fresh water only. I understand this was turned down because the effluent coming off the fields would pollute the river. There are equal number of fields adjoining the KSD and Huntspill river which have not been polluted and as some are national fishing rivers.

6 APPENDIX 2: REGULATION 6 NOTICE

REGULATION 6 NOTIFICATION OF DETERMINATION THAT IMPROVEMENT WORKS ARE LIKELY TO HAVE SIGNIFICANT EFFECTS ON THE ENVIRONMENT – THE ENVIRONMENTAL IMPACT ASSESSMENT (LAND DRAINAGE IMPROVEMENT WORKS) REGULATIONS 1999 (AS AMENDED)

This notice has been prepared by the Parrett Internal Drainage Board ('PIDB') in accordance with the requirements of The Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999 (As Amended), referred to as 'the Regulations' in this notice.

The PIDB is proposing to carry out dredging and associated activities along 2.2km of the River Parrett between Stathe bridge and Burrowbridge, and have made a determination as required by Regulation 4, taking into account the criteria set out in Schedules 2 and 2A of the Regulations, that the proposed improvement works are likely to have significant effects on the environment due to their location (Schedule 2, 2. (c) (i) and (v)) and potential impact (Schedule 2, 3. (a), (f), (g), and (h)) in the absence of changes to the design and/or mitigation. This is summarised in Section 4 of the EIA Screening and Scoping Report.

The PIDB must make a determination of whether the proposed improvement works should proceed, and the PIDB intends to prepare an Environmental Statement to assess the significance of the likely effects on a series of environmental factors outlined in Section 5 of the EIA Screening and Scoping Report.

The EIA Screening and Scoping Report can be downloaded from the Somerset Drainage Boards Consortium Projects web page:

http://somersetdrainageboards.gov.uk/operations/projects/

and is available for viewing at the Langport Library, Whatley, Langport, TA10 9RA between 29 May and 7 June 2019 during its normal opening times:

Monday, Tuesday, Friday 9.30am to 4.30pm

Thursday 9.30am to 5pm

Saturday 9.30am to 12.30pm

Comments or questions can be submitted to the Parrett Internal Drainage Board by post or email up until the 7 June 2019:

Post: Bradbury House, 33-34 Market Street, Highbridge, Somerset, TA9 3BW

Email: admin@somersetdbs.co.uk

Once the Environmental Statement has been prepared it will undergo a statutory consultation of 30 days in accordance with Regulation 10.

7 APPENDIX 3: RESPONSES TO THE REGULATION 6 NOTIFICATION

RESPONSE: 1

Respondent Name	Ms Stephanie Parker-Stephenson – Sedgemoor District Council

Do you have any comments to make about this consultation?
I acknowledge receipt of your letter by this office on 30th May 2019. I have reviewed the Environmental Impact Assessment EIA Screening and Scoping Report prepared by Johns Associates and can confirm that, given the proposal will affect highly sensitive internationally designated sites, I agree with their recommendation that an Environmental Impact Assessment is required. I also agree with the proportionate approach they have taken to the identification of causes of effects and the selection of Chapters and Topics proposed to be scoped in and out of the Environmental Statement.

RESPONSE: 2

Respondent Name	Ms Amanda Gardham – English Heritage

Do you have any comments to make about this consultation?
Thank you for your email of 29 May 2019 regarding the Environmental Impact Assessment your organisation intends to carry out in connection with the dredging and associated activities along 2.2km of the River Parrett. On the basis of the information we have to date, we do not wish to offer any comments. We suggest you seek the views of your specialist conservation and archaeological advisers if relevant. It is not necessary for us to be consulted on this application again unless there are material changes to the proposals. If, however, you would like detailed advice from us, please contact us to explain your request. Yours Sincerely Amanda Gardham on behalf of Hugh Beamish

APPENDIX 1C: SCOPING OPINION

PARRETT INTERNAL DRAINAGE BOARD
PART OF THE SOMERSET DRAINAGE BOARDS CONSORTIUM

BRADBURY HOUSE, 33-34 MARKET STREET
HIGHBRIDGE, SOMERSET, TA9 3BW
TEL: 01278 789906
FAX: 01278 792914
EMAIL: admin@somersetdbs.co.uk

Our Ref: O2BB/IDS/MG

Date: 02 July 2019

To whom it may concern

Oath to Burrowbridge Pioneer dredging - Environmental Statement

This document sets out the Parrett Internal Drainage Board's final and formal scope of assessment in support of the Oath to Burrowbridge Dredging Project in accordance with the requirements of the Environmental Impact Assessment (Land Drainage Improvement) Works Regulations 1999 (as amended). This has taken into account the initial EIA Screening and scoping Report prepared by Johns Associates earlier in 2019, and the outputs of extensive consultation with a wide range of consultation bodies and partners including the Environment Agency and Natural England and informal public consultation events.

As such, only those aspects of the project where likely significant effects are predicted remain 'Scoped In' to this final scope of assessment for more detailed evaluation and requiring inclusion of any associated integrated mitigation, (including recent confirmation of changes to the scheme design to avoid potential significant effects and the outcome of recent meetings to agree the delivery of strategic mitigation by the PIDB, Environment Agency and Natural England).

Although certain topics have been scoped out (e.g. because of negligible potential for 'significant' effects) appropriate mitigation has been included in the contractors method statement and dredging protocols where necessary (e.g. controls on environmental nuisance such as construction noise, archaeological watching brief during topsoil strip, personnel and signage to help walkers and individuals using the channel by boat).

Yours faithfully

Tony Bradford
Chairman of Parrett Internal Drainage Board

Parrett Internal Drainage Board
Bradbury House, 33-34 Market Street, Highbridge, Somerset TA9 3BW
Tel: 01278 789906
Fax: 01278 792914
Email: admin@somersetdbs.co.uk
Web: www.somersetdrainageboards.gov.uk

PARRETT INTERNAL DRAINAGE BOARD
PART OF THE SOMERSET DRAINAGE BOARDS CONSORTIUM

BRADBURY HOUSE, 33-34 MARKET STREET
HIGHBRIDGE, SOMERSET, TA9 3BW
TEL: 01278 789906
FAX: 01278 792914
EMAIL: admin@somersetdbs.co.uk

Our Ref: O2BB/IDS/MG

Date: 02 July 2019

To whom it may concern

Oath to Burrowbridge Pioneer dredging - Environmental Statement

This document sets out the Parrett Internal Drainage Board's final and formal scope of assessment in support of the Oath to Burrowbridge Dredging Project in accordance with the requirements of the Environmental Impact Assessment (Land Drainage Improvement) Works Regulations 1999 (as amended). This has taken into account the initial EIA Screening and scoping Report prepared by Johns Associates earlier in 2019, and the outputs of extensive consultation with a wide range of consultation bodies and partners including the Environment Agency and Natural England and informal public consultation events.

As such, only those aspects of the project where likely significant effects are predicted remain 'Scoped In' to this final scope of assessment for more detailed evaluation and requiring inclusion of any associated integrated mitigation, (including recent confirmation of changes to the scheme design to avoid potential significant effects and the outcome of recent meetings to agree the delivery of strategic mitigation by the PIDB, Environment Agency and Natural England).

Although certain topics have been scoped out (e.g. because of negligible potential for 'significant' effects) appropriate mitigation has been included in the contractors method statement and dredging protocols where necessary (e.g. controls on environmental nuisance such as construction noise, archaeological watching brief during topsoil strip, personnel and signage to help walkers and individuals using the channel by boat).

Yours faithfully

Tony Bradford
Chairman of Parrett Internal Drainage Board

Parrett Internal Drainage Board
Bradbury House, 33-34 Market Street, Highbridge, Somerset TA9 3BW
Tel: 01278 789906
Fax: 01278 792914
Email: admin@somersetdbs.co.uk
Web: www.somersetdrainageboards.gov.uk

Table 1.1 PIDB Final Scope of Assessment

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Final scoping outcome Scoped in ✓	Methods of assessment
Population				
Local community	Changes in hydraulic benefits to people, land and property.	The proposed dredge has the potential to reduce flooding to an area of around 65km^2. Within, or in close proximity to this area there are approximately 200 homes that will receive some additional hydraulic benefit as a result.	✓	Flood modelling and assessment
	Changed in hydraulic benefits to people, land and property.	The proposed dredge has the potential to reduce the hydraulic benefit already delivered to a small area associated with Curry Moor.	✓	Flood modelling and assessment
Local economy	Changed flood risk to businesses benefitting the local economy including the agricultural community.	Reduced flood risk to agricultural land and associated agricultural infrastructure, will enable more continual grazing and reduce risk of death/loss of livestock. Reduced risk of road flooding will result in reduced road traffic delays with improved communications/logistics for business. Potential significant positive effect.	✓	Flood modelling and assessment of area and associated economic activity, informing final scheme design to maximize positive benefits and minimise any negative effects.
Local economy	Potential for dredging to result in temporary increased sediment load and release of contaminants (over and above those experienced in the baseline conditions). The indirect result of this could be changes to turbidity, dissolved oxygen levels and damage to eels/elver and other fish in the commercial fishery.	There is a potential risk of the dredging works mobilising sediment and releasing contaminants at levels over and above those within the baseline water column. Mitigation for these impacts is being developed (e.g. timing the works to minimise impacts and provision of fish rescue support).	✓	Development of suitable dredging methodology, mitigation and schedule to avoid significant negative effects.
Climate change and sustainability				
	Benefit of improved resilience to the anticipated impacts of climate change (increased rainfall and associated flooding).	The works in isolation are not anticipated to result in a significant impact in terms of improved resilience to climate change. However, when considered cumulatively with the package of measures to be implemented as part of the SRA Strategic Flood Action Plan, all schemes are predicted to result in improved resilience to climate change.	✓	Consideration of the in-combination flood resilience benefits of the scheme with the Environment Agency's Sowy/King's Sedgemoor Drain project and on-going maintenance dredging and as part of the wider Somerset Rivers Authority 20 Year Flood Action Plan

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Final scoping outcome Scoped in ✓	Methods of assessment
Traffic & Transport				
A roads and local roads	Improved hydraulic benefit.	Likely positive effect from reduced flooding.	✓	Will be considered under 'Population' and Water Environment
The Water Environment				
Altered flood conveyance within River Parrett downstream from Staithe Bridge to confluence with River Tone	Changed flood risk to people, land and property	Addressed under Population and Water Environment	✓	See above
	Changes to frequency, depth and duration of flooding on moors, resulting in impacts to habitats and bird and invertebrate populations	Addressed under Biodiversity below and within the WFD Assessment.	✓	See below
Water Framework Directive Compliance (Parrett Transitional; Parrett River)	Potential 'deterioration' in WFD status of the biological quality elements (BQEs) (NB fish, aquatic flora, benthic invertebrates, included in the 'Biodiversity' receptors indicated below). As well as the direct effects of damage/removal on BQEs, potential changes in hydromorphological and physico-chemical (water quality) conditions during and after dredging may have indirect effects on the BQEs. Dredging may affect the implementation of WFD 'mitigation measures' for heavily modified water bodies as stated in the River Basin Management Plan. Dredging may affect bathing water quality (addressed under Population: Tourism above)	Statement of WFD compliance for relevant WFD water bodies (directly affected and up or downstream where relevant) needs to be made – with reference to specific assessments reported on other EIA receptors (including flora and fauna and designated sites, hydrogeology and contamination/ tourism/bathing waters) where relevant. Assessment of contribution to or conflict with RBMP mitigation measures required. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Water Framework Directive (WFD) Compliance Assessment
Biodiversity				
Statutorily-designated sites: Natura 2000 Sites (SAC, SPA & Ramsar sites); Southlake Moor, West	Dredging and material disposal will take place within Southlake and potentially West Sedgemoor (part of the Somerset Levels and Moors SPA and Ramsar site).	Direct habitat loss will be limited to loss of species-poor improved grassland on the flood embankment and a small area to the rear of the bund. This will quickly regenerate, and no significant impact due to direct habitat loss is predicted.	✓	Water Framework Directive (WFD) Compliance Assessment

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Final scoping outcome Scoped in ✓	Methods of assessment
Sedgemoor, North Moor, Curry and Hay Moors SSSI		Potential for eutrophication of ditches due to high phosphate content in runoff from dredging arisings. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.		
	Potential for indirect impacts from disturbance (wintering water birds); temporary short-term changes in water quality affecting mobile species (particularly fish); temporary medium-term changes to river habitat used by mobile species (fish); and, changes to water levels on moors (resulting in decreased habitat quality for wintering water birds and Ramsar invertebrates, with a subsequent impact on populations).	Scoped into assessment. Outcomes of Appropriate Assessment will inform the EIA. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Analyse modelling results, working with NE and hydrological expert to assess likely degree of change to 'splashy conditions' on the moors. Use monitoring results from previous dredging to inform impact assessment. Where impacts are still uncertain, progress monitoring and the necessary commitment to mitigation (e.g. commence process of change to water level management plans)
Non-statutorily designated sites	Potential for direct impacts such as habitat loss or degradation; or, indirect impacts such as changes to habitats as a result of altered water or sediment regimes.	Aller Moor SNCI could be affected through direct habitat loss; or through potential for eutrophication of ditches due to high phosphate content in runoff from dredging arisings. River Parrett, Middle Moor to Screech Owl SNCI could be affected through direct habitat loss; and the impacts of reduced water quality on fish and benthic invertebrates during dredging. There is some potential for indirect effects to the River Tone and tributaries (altered flow regime). Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Analyse hydrological modelling results, working with NE and EA and hydrological expert to assess likely degree of change to 'splashy conditions' on the moors. Use monitoring results from previous dredging to inform impact assessment. Where impacts are still uncertain, progress monitoring and the necessary commitment to mitigation (e.g. commence process of change to water level management plans)
Habitats, including NERC habitats of Principal Importance	Potential for direct impacts such as habitat loss or degradation; or, indirect impacts such as changes to habitats as a result of altered water or sediment regimes.	See above under non-statutorily-designated sites. Additional potential for impacts to coastal and floodplain grazing marsh at Stan Moor. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Ecological Impact Assessment within ES Provision of compensatory hedgerows and other associated mitigation assessment in the ES. Develop Construction Environmental Management Plan ahead of works commencing.

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Final scoping outcome Scoped in ✓	Methods of assessment
				Landscape and Ecological Management Plan prior to completion of works.
Water vole	Potential for damage to water vole habitat and any re-established burrows within the dredging areas.	The design of the dredging works will be modified to minimise the impact to these species as far as possible. The works will also be designed to ensure effective restoration of riverine habitat to ensure quick recovery of the study area by these species. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others. Nevertheless, the detailed potential impact on these species populations needs to be assessed.	✓	Water Framework Directive (WFD) Compliance Assessment Development of method of working that meets the requirements and standards for a Natural England water vole licence, demonstrating no negative effects and legal compliance. Develop Construction Environmental Management Plan ahead of works commencing. Landscape and Ecological Management Plan prior to completion of works.
Otter	Potential for damage to resting places or any re-established holts within the dredging areas.	Presence of otter within the works area.	✓	Water Framework Directive (WFD) Compliance Assessment. Develop Construction Environmental Management Plan ahead of works commencing. Landscape and Ecological Management Plan prior to completion of works.
Reptiles	Potential for killing or injury of reptiles (especially grass snakes) through destruction of hibernation and/or foraging and basking areas.	Potential for common reptiles within the works area. Suitable potential habitat within 250m of works area, adopt a precautionary approach.	✓	Ecological Impact Assessment within ES Development of method of working to avoid injury / killing offences and avoiding areas of suitable resting/breeding habitats.
Badgers	Potential for destruction of setts or disturbance to badgers as a result of plant and vehicle movements and location of spreading areas and site compounds.	Presence of badger setts close to/within the works area	✓	Ecological Impact Assessment within ES Implementation of suitable measures under a Natural England licence or Precautionary Method of Works to avoid harm and legal offences. Develop Construction Environmental Management Plan ahead of works commencing. Landscape and Ecological Management Plan prior to completion of works.

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Final scoping outcome Scoped in ✓	Methods of assessment
Great crested newt	Limited potential for killing or injury of GCN or impairment to their ability to breed; either through destruction of hibernation and/or foraging and commuting areas (including through rough grassland connecting breeding ponds).	No records or evidence of presence. Suitable potential foraging habitat within 250m of works area, adopt a precautionary approach.	✓	Ecological Impact Assessment within ES Development of non-licensable method of working to avoid injury / killing offences and avoiding areas of suitable resting/breeding habitats. Develop Construction Environmental Management Plan ahead of works commencing. Landscape and Ecological Management Plan prior to completion of works.
Wintering birds (see also international statutorily designated sites above)	Disturbance	The works are located in close proximity to important sites for populations of wintering birds. The works are programmed for Autumn to avoid impacts where possible, however, there is scope for the works to continue into November/December. As such, this potential impact has been scoped-in. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Habitat Regulations Assessment (Appropriate Assessment) Develop Construction Environmental Management Plan ahead of works commencing. Landscape and Ecological Management Plan prior to completion of works.
Fish (see also international statutorily designated sites above)	Potential for killing of fish as a direct result of the dredging activity (i.e. fish being caught up in the dredging activity). Also, potential for dredging to result in increased sediment load and release of contaminants (over and above those experienced in the baseline conditions). The indirect result of this could be changes to turbidity, dissolved oxygen levels and damage to fish's gills, impacts on fish habitats, spawning grounds, feeding grounds and effects on migration.	Potentially significant impacts from these effects. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Water Framework Directive (WFD) Compliance Assessment. Ecological Impact Assessment within ES Develop Construction Environmental Management Plan ahead of works commencing. Landscape and Ecological Management Plan prior to completion of works.
Rare and scarce invertebrates (see also international statutorily designated sites above)	Direct loss of invertebrates (including the locally resident and nationally notable Hairy Click Beetle) as a result of removal with the dredged sediment and/ or removal of emergent and marginal vegetation.	Although there are many species of notable/rare invertebrates within the nearby protected areas, a detailed habitat review by an entomological expert has concluded that the designated invertebrate assemblages are associated with the small rhynes and ditches in the moors, not the main river channels. Direct	✓	Ecological Impact Assessment within ES Develop Construction Environmental Management Plan ahead of works commencing. Landscape and Ecological Management Plan prior to completion

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Final scoping outcome Scoped in ✓	Methods of assessment
		impact of habitat loss on the invertebrate assemblage associated with rhynes and ditches is very limited but will be been scoped in for further assessment. There is potential for eutrophication of ditches due to high phosphate content in runoff from dredging arisings. Changes in vegetation community within the rhynes may also result in changes to the invertebrate community, so this has been scoped into the assessment. Survey has shown that a colony of Hairy Click Beetle is associated with the working areas. Options for avoiding or translocating habitat will be considered. The potential for a direct impact is scoped-in to future assessment. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.		of works.
Non-native invasive species	Spreading of invasive species and pathogens (e.g. Ash dieback) within the working area (and potentially beyond).	A large population of Himalayan balsam is associated with the left bank downstream of Stathe, and the dredging works have the potential to cause the spread of this species. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Ecological Impact Assessment within ES Develop Construction Environmental Management Plan ahead of works commencing. Landscape and Ecological Management Plan prior to completion of works.
Rare or scarce aquatic plants	Potential for direct loss or degradation of conditions for notable species of plants	Survey results have confirmed the absence of notable plants from the works area, therefore potential direct effects on notable plant populations have been scoped-out. However, there is potential for eutrophication of ditches within Southlake and West Sedgemoor SSSIs due to high phosphate content in runoff from dredging arisings. This could result in loss of rare/ scarce aquatic plants from the affected ditches. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Ecological Impact Assessment within ES Develop Construction Environmental Management Plan ahead of works commencing. Landscape and Ecological Management Plan prior to completion of works.

Oath to Burrowbridge Dredging

Scope of Environmental Statement following consultation and Reg 6 notification.

J00406/ 1

Parrett Internal Drainage Board

Date: 20/06/19

DOCUMENT CONTROL

Report prepared for:

Parrett Internal Drainage Board

Main contributors:

Reviewed by:

Issued by:

Suites 1 & 2, The Old Brewery, Newtown, Bradford on Avon, Wiltshire, BA15 1NF

T: 01225 723652 | E: info@johnsassociates.co.uk | W: www.johnsassociates.co.uk

DOCUMENT REVISIONS

Version	Details	Date
V 1.0	Draft for client review	June 2019

Third party disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by Johns Associates at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. Johns Associates excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

TABLE OF CONTENTS

1 INTRODUCTION

1.1 The Parrett Internal Drainage Board (Parrett IDB) are proposing to carry out pioneer dredging (Improvement Works) on a 2.2km section of the River Parrett between Stathe bridge and Burrowbridge in the later part of 2019. In order to carry out the proposed works the Parrett IDB needed to satisfy the requirements of the Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999 (As amended) ('the Regulations' or 'Regulation' within this report).

1.2 In accordance with Regulation 4, the Parrett IDB resolved to accept the recommendations of the Johns Associates EIA Screening and Scoping Report on 25 April 2019. The Parrett IDB determined that the proposed works were likely to have significant effects on the environment due to their location[1] and potential impact (Schedule 2 (3)(a), (f), (g), and (h)) in the absence of changes to the design and / or mitigation.

1.3 The Parrett IDB carried out an effective and comprehensive approach to engagement with stakeholders and statutory bodies on the proposed works from an early stage[2]. As well as seeking to engage with local communities affected by the proposed works through an initial consultation which ran from 1st May 2019 until 1st June 2019.

1.4 In accordance with Regulation 6, the Parrett IDB published a notice[3] on 29 May 2019 detailing the determination that had been made under Regulation 4.

1.5 This report sets out how the scope of the Environmental Statement approved by the PIDB in April, has evolved through consultation with statutory bodies, interest groups and members of the public. It contains an overview of the initial consultation event provides an update on additional engagement that has taken place with stakeholders and statutory bodies to date. It therefore provides the basis on which the PIDB can form its final 'Scoping Opinion' for the Environmental Impact Assessment of the proposed Improvement Works.

[1] See Schedule 2 (2)(c)(i) and (v) of the regulations for full detail on these criteria, and Section 4 of the Johns Associates EIA Screening and Scoping Report.

[2] See Section 2 of this report for full details

2 CONSULTATION CARRIED OUT TO INFORM SCOPE OF ES

Overview and engagement strategy

2.1 The initial consultation followed the production of an EIA Screening and Scoping Report by Johns Associates and sought to engage the local community and consultation bodies by making details of the project available alongside the remaining steps of the process it needed to go through before it would be able to proceed.

2.2 The Somerset Rivers Authority and the Parrett IDB produced a press release providing a summary of the projected timetables for the project as well as its strategic purpose. Display boards were produced detailing: the historic and ongoing strategic context for the project, the extent and methods proposed to carry out the works, the potential effects and the EIA process used to determine their significance, and what the next steps would be.

2.3 The Parrett IDB sent the press release and EIA Screening and Scoping Report by email to the following consultation bodies: Natural England, the Environment Agency, the Somerset Rivers Authority, the RSPB, Somerset Wildlife Trust, South West Heritage Trust, and every parish council within the Parrett IDB administrative area.

2.4 Two events were scheduled as part of the consultation event which were attended by members of the project team from the Somerset Rivers Authority, Environment Agency, Parrett Internal Drainage Board, and Johns Associates:

- 14 May 2019 at Burrowbridge Coronation Hall between 12:00 and 19:00. The material from this event were left in place for the Burrowbridge Parish Council Annual General Meeting which followed it.
- 15 May 2019 at Great Bow Wharf in Langport between 12:00 and 19:00.

2.5 In total, 33 attendees were recorded at both events (20 on 14 May, 13 on 15 May) with at least 50 attendees present for some or all of the Burrowbridge Parish Council Annual General Meeting.

2.6 Responses were received in both electronic and paper formats by post, email, online through the Survey123 form, and in person at the consultation events:

Post	*Email*	*Online*	*In Person*	***Total***
2	*4*	*10*	*2*	***18***

Analysis of responses received relating to initial consultation

2.7 The majority of responses, 72%, indicated that they were supportive of the project but several sought clarifications on the potential impacts of the project on boating or navigation on the Parrett during the period of works. All of these responses indicated the respondents wished to be kept informed on the progress of the project.

2.8 Full analysis of consultation responses are detailed within the Oath to Burrowbridge Dredging 'Analysis of responses to Initial Consultation and Reg 6 Notification (Johns Associates. 2019. Oath to Burrowbridge Dredging. Analysis of Responses to Initial Consultation and Reg 6 Notification).

3 STAKEHOLDER RESPONSES

3.1 The tables below provide summaries of the engagement that has taken place to date with statutory consultees, project partners, and key stakeholders.

Table 3.1. Summary of engagement with Natural England

Organisation	Date	Summary of consultation undertaken
Natural England	02/05/2018	Meeting (Mark Jones, Donna Gowler, Stephen Parker) to discuss scope of HRA; HRA monitoring undertaken to-date relating to previous dredging works; best way to progress mitigation and monitoring required for European sites; projects that need to be assessed 'in-combination'. It was agreed that Stephen would undertake initial assessment of breeding bird surveys and BTO WeBS data to assess whether there is a demonstrable link between dredging and decline in habitat suitability for wintering water birds.
	May 2018	Consultation with Natural England to agree the approach to water vole survey; and potential approaches to mitigation. Included an email from Mark Jones (8/5/8) confirming possible approach to licensing; and an email from Claire Howe (17/5/15) on required extent and scope of water vole survey.
	29/06/2018	Meeting (Mark Jones, Stephen Parker) for initial discussion on the outcome of the hydraulic modelling with regards to water levels on the moors during low magnitude flood events (and the potential impacts on SPA conditions/target water levels for over wintering birds). It was agreed to further process the data for further analysis during the next meeting.
	11/07/2018	Meeting to further discuss potential impacts on the water levels in the moors and SPA conditions for over wintering birds. First review of water level management plans to identify options for water level mitigations.
	June 2018 – March 2019	Extensive, ongoing internal discussions and meetings to further develop the project design to develop an optimum scheme with minimal significant environmental effects.
	04/06/2019	Meeting with Natural England, RSPB and SWT to provide an update on the proposed works and an overview of the EIA Screening and Scoping Report.
	06/06/2019	Meeting with Natural England land tenants to discuss the proposed works and Agri Payments
	10/06/2019	Meeting with Natural England, RSPB and SWT to explore potential mitigation from the SPA through the HRA
	12/06/2019	Meeting with Natural England regarding SPA mitigation and the HRA with Donna Gowler and Steve Parker assessing impacts on functionally linked land and potential timetables for mitigation.

Table 3.2 Summary of engagement with the Somerset Wildlife Trust

Organisation	Date	Summary of consultation undertaken
Somerset Wildlife Trust (SWT)	27/06/2018	Meeting with Anne Halpin to detail the intended project, the surveys carried out, potential mitigations to remove impacts and ongoing EIA proposals. Agreed to send Scoping Report for comment when prepared.
	04/06/2019	Meeting with Natural England, RSPB and SWT to provide an update on the proposed works and an overview of the EIA Screening and Scoping Report.
	10/06/2019	Meeting with Natural England, RSPB and SWT to explore potential mitigation for the SPA through the HRA

Table 3.3 Summary of engagement with the RSPB

Organisation	Date	Summary of consultation undertaken
Royal Society for the Protection of Birds (RSPB)	May 2018	Email correspondence outlining the nature of the project and intended project timelines. Request for further consultation discussions.
	04/06/2019	Meeting with Natural England, RSPB and SWT to provide an update on the proposed works and an overview of the EIA Screening and Scoping Report.

		the SPA through the HRA

Table 3.4 Summary of engagement with the Environment Agency

Organisation	Date	Summary of consultation undertaken
Environment Agency	28/02/2018	Meeting (John Rowlands, John Phillips and Gemma Mahoney) to discuss initial proposals, constraints and agree necessary baseline ecological surveys and assessments.
	Jan – Mar 2018	Email and meetings between AW Engineering (PIDB hydraulic modelling consultants) and the Environment Agency modelling team discussions to agree the modelling approach, modelling scope.
	10/05/2018	Discussion and email to John Philips to establish monitoring data available from previous dredging projects; and to agree survey methodology for benthic invertebrate surveys.
	May – June 2018	Ongoing emails and telephone conversations with Gemma Mahoney and John Phillips to discuss WFD assessment/mitigations and potential impacts on Hairy Click Beetle (protected species) as a result of proposed works.
	25/06/2018	Meeting with John Rowlands to discuss modelling outputs and potential impacts on flood risk benefits/dis-benefits to receptors in the moors. Decision to develop a summary paper of flood risk consequences and consult further with SRA board.
	11/07/2018	Meeting to discuss desired objectives of change for water level management and agree necessary mitigations.
	June 2018 – March 2019	Extensive ongoing internal discussions and meetings to further develop the project design to develop an optimum scheme with minimal significant environmental effects.
	18/04/2019	Email correspondence with John Rowlands with feedback collated from himself, Gemma Mahoney and John Philips on the EIA Screening and Scoping Report. This feedback related to the potential impact of the works in terms of timing on both bathing water and on fish spawning and migration and suggested appropriate steps that could be taken to mitigate these potential impacts.
	03/05/2019	Email correspondence with John Rowlands with feedback collated from himself, Gemma Mahoney and John Philips on the EIA Screening and Scoping Report. This feedback raised queries regarding the mitigation measures considered – whether ongoing maintenance was included as part of the assessment, whether additional reed planting should be included, how any tree removal may be mitigated, ensuring seed mixes are representative of existing habitat, and whether submerged vegetation was appropriately considered.
	May 2019	Attendance at both exhibition sessions for the proposed works by John Rowlands.
	07/06/2019	Email and phone correspondence to confirm that topsoil does needs to be stripped prior to the works which confirms the need for an archaeological watching brief, as a precaution, resolving queries raised by Dr Richard Brunning regarding buried archaeological remains.

Table 3.5 Summary of engagement with the PIDB and SRA

Organisation	Date	Summary of consultation undertaken
PIDB and SRA	June 2018 – March 2019	Extensive ongoing internal discussions and meetings to further develop the project design to develop an optimum scheme with minimal significant environmental effects.
	April 2019 – May 2019	Coordination of material prepared for initial consultation on the proposed works. Attendance at both drop-in sessions by representatives of the SRA and PIDB

Table 3.6 Summary of engagement with the British Waterways Trust

Organisation	Date	Summary of consultation undertaken
British Waterways Trust	May 2018	Telephone conversations outlining the nature of the project and the EIA process for consultation.

Table 3.7 Summary of engagement with the Flooding on the Levels Action Group

Organisation	Date	Summary of consultation undertaken
Flooding on the Levels Action Group	08/05/2019	Meeting with Flooding on the Levels Action Group to provide an overview of the proposed works and the EIA Screening and Scoping Report.

Table 3.8 Summary of engagement with Historic England

Organisation	Date	Summary of consultation undertaken
Historic England	29/05/2019	Notified of intent to prepare an environmental statement in accordance with Regulation 6. Had no comment.

Table 3.9 Summary of engagement with the South West Heritage Trust

Organisation	Date	Summary of consultation undertaken
South West Heritage Trust	27/03/2018	Phone conversation and email from Dr Richard Brunning (Senior Historic Environment Officer) confirming that there are no apparent impacts to the historic environment from the dredging of material from the river, the deposition of the dredged material onto the existing floodbanks or the use of heavy machinery on the floodbanks. Working compounds should be sited to avoid known archaeological sites, especially the deserted medieval hamlets on the north bank of the river.
	18/04/2019	Email correspondence with Dr Richard Brunning regarding EIA Screening and Scoping Report detailing that the scheme would not have a significant adverse effect on the historic environment provided the site compound can be positioned to avoid known heritage sites. The topsoil stripping that precedes deposition of silt could impact on archaeological remains along the banks – mitigation that was identified was topsoil stripping in those areas of higher sensitivity to be carried out under archaeological supervision.

Table 3.10 Summary of engagement with the Sedgemoor District Council

Organisation	Date	Summary of consultation undertaken
Sedgemoor District Council	29/05/2019	Notified of intent to prepare an Environmental Statement in accordance with Regulation 6. Agreed with recommendations made, decision, scope and approach to writing the Environmental Statement.

Table 3.11 Summary of engagement with the Parish Councils

Organisation	Date	Summary of consultation undertaken
Parish Councils within the Parrett IDB administrative area	08/05/2019	Engaged as part of initial consultation, provided with EIA Screening and Scoping Report and explanatory press release and provided digital, paper, and online feedback forms.
Burrowbridge Parish Council	14/05/2019	Following consultation event on this date, material and feedback forms were made available for the duration of the Annual General Meeting.

4 EXTENDED SCOPE

The extended Scope of Assessment is set out below in Table 4.1. It is based on the original Scope of Assessment set out in the EIA Screening and Scoping Report issued to the BIDB Board and approved by the Board in March 2019 and the outcome of the Initial Consultation and Reg 6 Notification reported in Johns Associates 2019. In accordance with the requirements of the EIA Regulations, only those aspects of the project where likely significant effects are predicted remain 'Scoped In' to the final extended Scope of Assessment. Although certain topics have been scoped out (e.g. because of negligible potential for 'significant' effects, appropriate mitigation will have been included in the contractors method statement and dredging protocols where necessary (e.g. controls on environmental nuisance such as construction noise, archaeological watching brief during topsoil strip, personnel and signage to help walkers and individuals using the channel by boat).

Table 4.1 Extended Scope of Assessment

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Scoping outcome Scoped in ✓: X: Scoped out	Methods of assessment
Population				
Local community	Changes in hydraulic benefits to people, land and property.	The proposed dredge has the potential to reduce flooding to an area of around 65km^2. Within, or in close proximity to this area there are approximately 200 homes that will receive some additional hydraulic benefit as a result.	✓	Flood modelling and assessment
	Changed in hydraulic benefits to people, land and property.	The proposed dredge has the potential to reduce the hydraulic benefit already delivered to a small area associated with Curry Moor.	✓	Flood modelling and assessment
Local economy	Changed flood risk to businesses benefitting the local economy including the agricultural community.	Reduced flood risk to agricultural land and associated agricultural infrastructure, will enable more continual grazing and reduce risk of death/loss of livestock. Reduced risk of road flooding will result in reduced road traffic delays with improved communications/logistics for business. Potential significant positive effect.	✓	Flood modelling and assessment of area and associated economic activity, informing final scheme design to maximize positive benefits and minimise any negative effects.
Local economy	Potential for dredging to result in temporary increased sediment load and release of contaminants (over and above those experienced in the baseline conditions). The indirect result of this	There is a potential risk of the dredging works mobilising sediment and releasing contaminants at levels over and above those within the baseline water column. Mitigation for these impacts is being developed (e.g. timing the works to avoid the elver season)	✓	Development of suitable dredging methodology, mitigation and schedule to avoid significant negative effects.

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Scoping outcome Scoped in ✓: X: Scoped out	Methods of assessment
	turbidity, dissolved oxygen levels and damage to eels/elver and other fish in the commercial fishery.			
Recreational users	Restricted access to the River Parrett Trail, East Deane Way and Macmillan Way West Long Distance Paths and other PRoWs whilst dredging is undertaken.	It is anticipated that the works will affect access to the path along the righthand banks (the River Parrett Trail, East Deane Way and Macmillan Way West Long Distance Paths) where dredging is being undertaken. Machinery/vehicle movements may also affect other PRoWs where these intersect with site access routes.	✓	Assessment of alternative routing and implications for users of the right-hand bank footpath within the proposed dredging area, during the period of works.
Climate change and sustainability				
	Benefit of improved resilience to the anticipated impacts of climate change (increased rainfall and associated flooding).	The works in isolation are not anticipated to result in a significant impact in terms of improved resilience to climate change. However, when considered cumulatively with the package of measures to be implemented as part of the SRA Strategic Flood Action Plan, all schemes are predicted to result in improved resilience to climate change.	✓	Consideration of the in-combination flood resilience benefits of the scheme with the Environment Agency's Sowy project
Traffic & Transport				
A roads and local roads	Improved hydraulic benefit.	Likely positive effect from reduced flooding.	✓	Will be considered under 'Population'
The Water Environment				
Altered flood conveyance within River Parrett downstream from Staithe Bridge to confluence with River Tone	Changed flood risk to people, land and property	Addressed under Population	✓	See above
	Changes to frequency, depth and duration of flooding on moors,	Addressed under Biodiversity below and within the WFD Assessment.	✓	See below

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Scoping outcome Scoped in ✓: X: Scoped out	Methods of assessment
	habitats and bird and invertebrate populations			
Water Framework Directive Compliance (Parrett Transitional; Parrett River)	Potential 'deterioration' in WFD status of the biological quality elements (BQEs) (NB fish, aquatic flora, benthic invertebrates, included in the 'Biodiversity' receptors indicated below). As well as the direct effects of damage/removal on BQEs, potential changes in hydromorphological and physico-chemical (water quality) conditions during and after dredging may have indirect effects on the BQEs. Dredging may affect the implementation of WFD 'mitigation measures' for heavily modified water bodies as stated in the River Basin Management Plan. Dredging may affect bathing water quality (addressed under Population: Tourism above)	Statement of WFD compliance for relevant WFD water bodies (directly affected and up or downstream where relevant) needs to be made – with reference to specific assessments reported on other EIA receptors (including flora and fauna and designated sites, hydrogeology and contamination/ tourism/bathing waters) where relevant. Assessment of contribution to or conflict with RBMP mitigation measures required. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Water Framework Directive (WFD) Compliance Assessment
Biodiversity				
Statutorily-designated sites: Natura 2000 Sites (SAC, SPA & Ramsar sites); Southlake Moor, West Sedgemoor, North Moor, Curry and Hay Moors SSSI	Dredging and material disposal will take place within Southlake and potentially West Sedgemoor (part of the Somerset Levels and Moors SPA and Ramsar site).	Direct habitat loss will be limited to loss of species-poor improved grassland on the flood embankment and a small area to the rear of the bund. This will quickly regenerate, and no significant impact due to direct habitat loss is predicted. Potential for eutrophication of ditches due to high phosphate content in runoff from dredging arisings. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and	✓	Water Framework Directive (WFD) Compliance Assessment

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Scoping outcome Scoped in ✓: X: Scoped out	Methods of assessment
	Potential for indirect impacts from disturbance (wintering water birds); temporary short-term changes in water quality affecting mobile species (particularly fish); temporary medium-term changes to river habitat used by mobile species (fish); and, changes to water levels on moors (resulting in decreased habitat quality for wintering water birds and Ramsar invertebrates, with a subsequent impact on populations).	Scoped into assessment. Outcomes of Appropriate Assessment will inform the EIA. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Analyse modelling results, working with NE and hydrological expert to assess likely degree of change to 'splashy conditions' on the moors. Use monitoring results from previous dredging to inform impact assessment. Where impacts are still uncertain, progress monitoring and the necessary commitment to mitigation (e.g. commence process of change to water level management plans)
Non-statutorily designated sites	Potential for direct impacts such as habitat loss or degradation; or, indirect impacts such as changes to habitats as a result of altered water or sediment regimes.	Aller Moor SNCI could be affected through direct habitat loss; or through potential for eutrophication of ditches due to high phosphate content in runoff from dredging arisings. River Parrett, Middle Moor to Screech Owl SNCI could be affected through direct habitat loss; and the impacts of reduced water quality on fish and benthic invertebrates during dredging. There is some potential for indirect effects to the River Tone and tributaries (altered flow regime). Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Analyse hydrological modelling results, working with NE and EA and hydrological expert to assess likely degree of change to 'splashy conditions' on the moors. Use monitoring results from previous dredging to inform impact assessment. Where impacts are still uncertain, progress monitoring and the necessary commitment to mitigation (e.g. commence process of change to water level management plans)
Habitats, including NERC habitats of Principal Importance	Potential for direct impacts such as habitat loss or degradation; or, indirect impacts such as changes to habitats as a result of altered water or sediment regimes.	See above under non-statutorily-designated sites. Additional potential for impacts to coastal and floodplain grazing marsh at Stan Moor. Extensive consultation, liaison and development of positive mitigation measures is	✓	Ecological Impact Assessment within ES Provision of compensatory hedgerows and other associated mitigation assessment in the ES.

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Scoping outcome Scoped in ✓: X: Scoped out	Methods of assessment
		Agency, Natural England and others.		Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Water vole	Potential for damage to water vole habitat and any re-established burrows within the dredging areas.	The design of the dredging works will be modified to minimise the impact to these species as far as possible. The works will also be designed to ensure effective restoration of riverine habitat to ensure quick recovery of the study area by these species. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others. Nevertheless, the detailed potential impact on these species populations needs to be assessed.	✓	Water Framework Directive (WFD) Compliance Assessment Development of method of working that meets the requirements and standards for a Natural England water vole licence, demonstrating no negative effects and legal compliance. Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Otter	Potential for damage to resting places or any re-established holts within the dredging areas.	Presence of otter within the works area.	✓	Water Framework Directive (WFD) Compliance Assessment. Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Reptiles	Potential for killing or injury of reptiles (especially grass snakes) through destruction of hibernation and/or foraging and basking areas.	Potential for common amphibians within the works area.	✓	Ecological Impact Assessment within ES Development of method of working to avoid injury / killing offences and avoiding areas of suitable resting/breeding habitats.
Badgers	Potential for destruction of setts or disturbance to badgers as a result of plant and vehicle movements and location of spreading areas and site compounds.	Presence of badger setts close to/within the works area	✓	Ecological Impact Assessment within ES Implementation of suitable measures under a Natural England licence to avoid harm and legal offences. Develop Construction Environmental Management

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Scoping outcome Scoped in ✓: X: Scoped out	Methods of assessment
				Ecological Management Plan.
Great crested newt	Potential for killing or injury of GCN or impairment to their ability to breed; either through destruction of hibernation and/or foraging and commuting areas (including through rough grassland connecting breeding ponds).	Suitable habitat within 250m of works area.	✓	Ecological Impact Assessment within ES Development of non-licensable method of working to avoid injury / killing offences and avoiding areas of suitable resting/breeding habitats. Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Wintering birds (see also international statutorily designated sites above)	Disturbance	The works are located in close proximity to important sites for populations of wintering birds. The works are programmed for Autumn to avoid impacts where possible, however, there is scope for the works to continue into November/December. As such, this potential impact has been scoped-in. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Appropriate Assessment. Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Fish (see also international statutorily designated sites above)	Potential for killing of fish as a direct result of the dredging activity (i.e. fish being caught up in the dredging activity). Also, potential for dredging to result in increased sediment load and release of contaminants (over and above those experienced in the baseline conditions). The indirect result of this could be changes to turbidity, dissolved oxygen levels and damage to fish's gills, impacts on fish habitats, spawning grounds,	Potentially significant impacts from these effects. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Water Framework Directive (WFD) Compliance Assessment. Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Scoping outcome Scoped in ✓: X: Scoped out	Methods of assessment
	effects on migration.			
Rare and scarce invertebrates (see also international statutorily designated sites above)	Direct loss of invertebrates (including the locally resident and nationally notable Hairy Click Beetle) as a result of removal with the dredged sediment and/ or removal of emergent and marginal vegetation.	Although there are many species of notable/rare invertebrates within the nearby protected areas, a detailed habitat review by an entomological expert has concluded that the designated invertebrate assemblages are associated with the small rhynes and ditches in the moors, not the main river channels. Direct impact of habitat loss on the invertebrate assemblage associated with rhynes and ditches is very limited but will be been scoped in for further assessment. There is potential for eutrophication of ditches due to high phosphate content in runoff from dredging arisings. Changes in vegetation community within the rhynes may also result in changes to the invertebrate community, so this has been scoped into the assessment. Survey has shown that a colony of Hairy Click Beetle is associated with the working areas. Options for avoiding or translocating habitat will be considered. The potential for a direct impact is scoped-in to future assessment. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Ecological Impact Assessment within ES Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.
Non-native invasive species	Spreading of invasive species and pathogens (e.g. Ash dieback) within the working area (and potentially beyond).	A large population of Himalayan balsam is associated with the left bank downstream of Stathe, and the dredging works have the potential to cause the spread of this species. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Ecological Impact Assessment within ES Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.

Resource/ Environmental Receptor	Description of potential effect	Scoping justification	Scoping outcome Scoped in ✓: X: Scoped out	Methods of assessment
Rare or scarce aquatic plants	Potential for direct loss or degradation of conditions for notable species of plants	Survey results have confirmed the absence of notable plants from the works area, therefore potential direct effects on notable plant populations have been scoped-out. However, there is potential for eutrophication of ditches within Southlake and West Sedgemoor SSSIs due to high phosphate content in runoff from dredging arisings. This could result in loss of rare/ scarce aquatic plants from the affected ditches. Extensive consultation, liaison and development of positive mitigation measures is underway with the Environment Agency, Natural England and others.	✓	Develop Construction Environmental Management Plan. Landscape and Ecological Management Plan.

5 APPENDIX 1: REGULATION 6 NOTICE

REGULATION 6 NOTIFICATION OF DETERMINATION THAT IMPROVEMENT WORKS ARE LIKELY TO HAVE SIGNIFICANT EFFECTS ON THE ENVIRONMENT – THE ENVIRONMENTAL IMPACT ASSESSMENT (LAND DRAINAGE IMPROVEMENT WORKS) REGULATIONS 1999 (AS AMENDED)

This notice has been prepared by the Parrett Internal Drainage Board ('PIDB') in accordance with the requirements of The Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999 (As Amended), referred to as 'the Regulations' in this notice.

The PIDB is proposing to carry out dredging and associated activities along 2.2km of the River Parrett between Stathe bridge and Burrowbridge, and have made a determination as required by Regulation 4, taking into account the criteria set out in Schedules 2 and 2A of the Regulations, that the proposed improvement works are likely to have significant effects on the environment due to their location (Schedule 2, 2. (c) (i) and (v)) and potential impact (Schedule 2, 3. (a), (f), (g), and (h)) in the absence of changes to the design and/or mitigation. This is summarised in Section 4 of the EIA Screening and Scoping Report.

The PIDB must make a determination of whether the proposed improvement works should proceed, and the PIDB intends to prepare an Environmental Statement to assess the significance of the likely effects on a series of environmental factors outlined in Section 5 of the EIA Screening and Scoping Report.

The EIA Screening and Scoping Report can be downloaded from the Somerset Drainage Boards Consortium Projects web page:

http://somersetdrainageboards.gov.uk/operations/projects/

and is available for viewing at the Langport Library, Whatley, Langport, TA10 9RA between 29 May and 7 June 2019 during its normal opening times:

Monday, Tuesday, Friday 9.30am to 4.30pm

Thursday 9.30am to 5pm

Saturday 9.30am to 12.30pm

Comments or questions can be submitted to the Parrett Internal Drainage Board by post or email up until the 7 June 2019:

Post: Bradbury House, 33-34 Market Street, Highbridge, Somerset, TA9 3BW

Email: admin@somersetdbs.co.uk

Once the Environmental Statement has been prepared it will undergo a statutory consultation of 30 days in accordance with Regulation 10.

APPENDIX 1D: STATEMENT AND CERTIFICATE OF COMPETANCY

PARRETT INTERNAL DRAINAGE BOARD
PART OF THE SOMERSET DRAINAGE BOARDS CONSORTIUM

BRADBURY HOUSE, 33-34 MARKET STREET
HIGHBRIDGE, SOMERSET, TA9 3BW
TEL: 01278 789906
FAX: 01278 792914
EMAIL: admin@somersetdbs.co.uk

Our Ref: O2BB/IDS/MG

Date: 02 July 2019

To whom it may concern

Oath to Burrowbridge Pioneer dredging

The Parrett Internal Drainage Board (PIDB) has appointed Johns Associates Limited (JAL), supported by AW Water Engineering Services Ltd (AWWESL) to provide professional consultancy support on the Proposed Improvement Works that involves dredging circa 22,000m3 of sediment from 2.2 kilometres of the River Parrett between Stathe and Burrowbridge.

Part of these duties include the preparation of this Environmental Statement (ES) under The Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999 (As Amended). PIDB confirms to the best of its knowledge that JAL and AWWESL are competent experts within the meaning of the EIA Regulations (as amended).

This is based on the professional experience of the company and its staff, individual memberships of professional bodies, relevant professional experience and qualifications. The relevant experience of the individuals that contributed to this ES can be found in a separate Statement of Competency (located in Volume 3: Appendix 1C of this ES).

Yours faithfully

Tony Bradford
Chairman of Parrett Internal Drainage Board

Parrett Internal Drainage Board
Bradbury House, 33-34 Market Street, Highbridge, Somerset TA9 3BW
Tel: 01278 789906
Fax: 01278 792914
Email: admin@somersetdbs.co.uk
Web: www.somersetdrainageboards.gov.uk

STATEMENTS OF COMPETANCY

Matthew Johns BSc MSc CEnv MCIEEM FGS MIFM – Director Johns Associates. EIA Project Manager and co-author of Chapters 1-10.

Matthew is a highly experienced environmental consultant and Chartered Environmentalist, specialising in Environmental Impact Assessment, biodiversity and hydrology. This includes EIA of agricultural schemes, water transfer schemes, waste water treatment works, afforestation, inland navigation, airport development, urban regeneration, and landfilling. A key skill is in predicting multidisciplinary environmental effects and reducing potential negative effects and project risk through good design by working with engineers, designers, architects, landscape architects and other professionals, alongside strong communication and consultation skills. He has acted as Expert Witness. Key sectors include Government Agencies, Local Authorities, Water Companies, Professionals, Aviation, Property, Estate Management and Industry. Matt also has a strong background and current experience in aquatic and terrestrial ecology, protected species licencing and mitigation, alongside the robust delivery of management and monitoring mechanisms. He is a Member of the Chartered Institute of Ecology and Environmental Management, Institute of Fisheries Management, Fellow of the Geological Society and Member of the River Restoration Centre.

Liz Johns BSc MSc CEnv MCIEEM MRSB – Director Johns Associates. EIA Author of Chapter 6 and Technical Review.

Liz is a Chartered Environmentalist and a qualified ecologist with over 20 years' experience in both the public and private sectors. She is an experienced aquatic ecologist with a strong background in aquatic resource management and ecology, including river and wetland restoration and management, protected species surveys and she holds a range of protected species licences. Liz worked as an ecologist for the Environment Agency across three regions before moving into environmental consultancy. Liz has extensive experience in project management, site survey, protected species survey, Ecological Impact Assessment; the production of Ecology chapters of Environmental Statements, HRA and the development of detailed mitigation strategies and associated site management plans. She was a member of the Chartered Institute of Ecology & Environmental Management External Affairs Committee (CIEEM EAC) for a number of years.

Tessa Pepler BSc MSc MCIEEM Principal Ecologist Johns Associates. EIA Author of Chapter 6.

Tessa has worked as a professional ecological consultant and project manager since 2005, with extensive survey experience including site appraisals such as extended Phase 1 Habitat surveys, botanical surveys, protected species surveys and BREEAM assessments. Tessa is a full Member of the Chartered Institute of Ecology and Environmental Management. responsible for the design and delivery of a wide range of multi-species and habitat related ecological mitigation and enhancement projects. She is a very experienced assessor (Ecological Impact Assessment and Assessment of European sites to inform Appropriate Assessment) and has been involved in several strategic developments in the UK providing advice and interpretation of ecological data to masterplanning and presenting ecological constraints and opportunities clearly. She currently holds a Class 1 protected species

licences for Bats, Great Crested Newts and Dormice and produced and submitted numerous Mitigation Licences to Natural England for bats and great crested newts.

Andy Wallace BEng MRes CEng CWEM MCIWEM Director AW Water Engineering Ltd. EIA Author of Chapter 7.

Andy Wallis is a chartered civil engineer with over twenty years' experience in the water engineering industry. Andy's training and experience has a particular focus on river engineering, flood risk, hydrology, hydraulic modelling and drainage. He is very experienced in working for both the public and private sector and is very familiar with the latest guidance and procedures. He is an experienced user of the main hydraulic modelling packages both in 1D and 2D river and sewer modelling, and has led several training courses on hydraulic modelling. He is able to combine his engineering and hydraulic knowledge to ensure all hydraulic modelling is fit for its intended purpose and also to provide the link between modellers and designers. He has undertaken numerous hydrology studies, often in complicated catchments, and has contributed to several R&D studies. Through his work in the South West of England he has gained a thorough knowledge of the region's hydrology, including the challenges of working on steep permeable catchments.

Andy has undertaken many review studies ranging from small planning applications to the review of major flood defence schemes. He can be relied upon to provide impartial and professional comments and advice. He is closely involved with academia and has lectured at the University of West of England and is an Industrial Liaison Panel member of the Civil Engineering department at the University of Bath. During the winter 2013/14 floods in Somerset he took a lead role both during and after the floods providing advice on measures to reduce the level of flood risk. This included significant involvement with the media and politicians.

Mari Webster BSc MS MRTPI – Associate Director Johns Associates EIA Co-author of Chapters 1-5 and regulatory review.

Mari has over 15 years of planning experience in both the public and private sectors. She has managed projects and determined applications relating to major EIA schemes including mineral extraction and subsequent restoration schemes, new school and Academy developments, strategic waste management facilities, renewables and waterfront development. She has also been involved in the formulation of planning policy and led public consultation events and liaison committees. Mari is a chartered member of the Royal Town Planning Institute (RTPI)

Matt Maynard BSc MSc – Environmental Consultant Johns Associates. EIA Co-author of Chapter 8, Author of the NTS and production of drawings/figures.

Matt has seven years of experience working to find innovative solutions to technical problems in environmental and planning projects. His projects have included a wide range of data analysis and manipulation including processing and managing consultation representations for the Wiltshire Core Strategy, phosphate discharge modelling in the Hampshire Avon, drone based habitat mapping and site habitat and risk assessment. Prior to joining Johns Associates, Matt worked at Wiltshire Council with the Monitoring and Evidence Team. He was responsible for maintaining the SHLAA and the upkeep of housing and employment monitoring systems.

Jacob Scoble Bsc GradCIWEM – Assistant Environmental Consultant Analysis Production of graphics and figures.

Jacob joined Johns Associates as an Assistant Environmental Consultant in June 2018 after completing his undergraduate degree in Geography, which provided a strong theoretical and practical foundation in physical geographical and geomorphological processes, field investigations, data management and reporting. Jacob has a diverse skillset resulting from his Physical Geography background, this had a main focus on GIS and Hydrology, resulting in a good understanding of geomorphological processes and features. This diverse background enables him to work on a range of different projects – from geomorphology, hydrology to GIS to ecology and landscape planning.

APPENDIX 1E: GLOSSARY OF TECHNICAL TERMS

Alluvial Floodplain	Flat land area adjacent to a stream, composed of unconsolidated sedimentary deposits (alluvium) and subject to periodic inundation by the stream
Appropriate Assessment	Assessment of the potential adverse effects of a plan or project (in combination with other plans or projects) on Special Areas of Conservation and Special Protection Areas.
Aquiclude	Any geological formation that absorbs and holds water but does not transmit it at a sufficient rate to supply springs, wells
Aquifer	An underground layer of water-bearing permeable rock, rock fractures or unconsolidated materials (gravel, sand, or silt).
Baseline Assessment	Characteristics of e.g. an environment feature at a point in time for example prior to any works commencing
Biodiversity	Diversity of living organisms
Biodiversity Action Plan	Species/habitat specific targets, actions and requirements forming national priorities and also often found at a local level.
Biological Quality Elements	These are supporting features (phytoplankton, macrophytes, phytobenthos, benthic invertebrate fauna and fish) that together with physical and chemical criteria, define the ecological status of rivers, takes, transitional and coastal waters.
Birds of Conservation Concern	List of UK bird species of conservation importance
Borehole	A narrow shaft bored in the ground, either vertically or horizontally.
Channel Profile	Semi-natural or artificial shape of the channel.
Competent Authority	Any person or organization that has the legally delegated or invested authority, capacity, or power to perform a designated function.
Confluence	Junction of two river channels
Constraint	Limiting factor
Construction Environmental Management Plan	Plan prepared to guide the implementation of construction specifications and environmental mitigation, control and protection measures, including management and monitoring.
Conveyance	Capacity and movement of water e.g. in a river channel
Countryside Stewardship Scheme	Agri-environment scheme run by the United Kingdom Government
Culvert	Pipe typically conveying water under a road etc
Cumec	Cubic metres per second
Cumulative Effects Assessment	Cumulative effects assessment (CEA) is a sub-discipline of environmental impact assessment that is concerned with assessing the collective effects of human activities and natural processes on the environment and considers the effects of more than one project on the environment and also a combination of effects arising from within a project on the environment.
Design Profile	Agreed designed shape e.g. of the river channel

Dredged Arisings	The soil/sediment removed from the working area to be reused elsewhere
Ecological Impact Assessment	Assessment of changes and effects from a project, development or improvement works on species, habitats or protected sites
Ecological Management	Measures introduced to deliver specific ecological measures
Enhancement Measures	Measures that provide additional environmental or societal benefits above those required to respond to negative effects
Environmental Impact (Assessment)	The assessment of the environmental consequences (positive and negative) of a plan, policy, program, or actual projects prior to the decision to move forward with the proposed action
Environmental Impact Assessment	Regulatory process of evaluating the likely environmental effects of a proposed project or development.
Environmental Measures	Measures embedded into the proposed improvement works.
Environmental Permit	Permission given by e.g. the Environment Agency to undertake certain activities with certain conditions, that otherwise would be potentially prohibited (e.g. because of pollution).
Environmental Statement	Report produced to report on the outcome of Environmental Impact Assessment
Erosion	Process of change affecting e.g. river banks or bed resulting in sediment being removed and made available to be transported downstream
Functionally Linked Land	Land that is deemed to be hydrologically connected to adjacent designated and important wetlands.
Habitats Regulations Assessment	Assessment that considers the impacts of plans and proposed development on Natura 2000 sites. It is required under the Conservation of Habitats and Species Regulations (as amended)
Heavily Modified Water Body	The Water Framework Directive recognises that in some cases the benefits of alterations in the natural form/function of a river etc need to be retained. If a series of criteria are fulfilled, it allows designation of the water body as “artificial” or “heavily modified”, e.g. reservoirs, canals or canalised rivers
Hydromorphology	Hydrological (water flow, energy etc) and geomorphological (surface features) processes and attributes of rivers, lakes, estuaries and coastal waters.
Improvement Works	Works to improve the flow of water through a river channel i.e. the proposed dredging works
Internal Drainage Board	Public body that manages water levels in a certain area.
Local Nature Reserves	Statutory site of nature conservation importance
Local Wildlife Site	Statutory site of nature conservation importance
Marginal Berm	Deposition of sediment at the side of the channel usually forming a flat area over time.
Mitigation	Measures to reduce negative effects to an acceptable level.
Mitigation Measures	Measures over and above what is embedded in the proposed improvement works
National Nature Reserves	Statutory site of nature conservation importance

National Planning Policy Framework	Top tier of planning policy in England that also takes into account flood risk and ecology.
Natura 2000	European network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types which are protected in their own right.
Non-Statutory Designated Sites	Habitats/land not afforded legal protection but typically protected by policy
Non-Technical Summary	Plain English written summary of the Environmental Statement
Parrett IDB District	Area of the River Parrett and associated land that is managed by the Parrett Internal Drainage Board
Parrett Transitional Water Body	Formal name for the River Parrett and its catchment as defined in the Water Framework Directive, reflecting this part of the river system is tidal (transitional).
Permitted Development Rights	National grant of planning permission which allow certain building works and changes of use to be carried out without having to make a planning application.
Phase 1 Habitat Survey	Method for undertaking systematic habitat mapping
Priority Habitats and Species	List of important habitats and species included in the Natural Environment and Rural Communities Act 2006
Professional Judgement	Application of decision making based on professional experience, academic learning and peer knowledge.
Public Sector Cooperation Agreement	The Public Sector Cooperation Agreement (PSCA) provides arrangements for the Environment Agency (EA) and an Internal Drainage Board (IDB), Lead Local Flood Authority (LLFA), District Council (DC) or other Risk Management Authority (RMA) to deliver flood risk maintenance works and similar activities by a partnership approach.
Raised Water Level Areas	Areas of elevated water level/depth arising from natural processes or the operation of man-made structures
Ramsar site	A wetland site designated to be of international importance under the Ramsar Convention. The Convention on Wetlands, known as the Ramsar Convention
Receptor	Organism, feature or location experiencing an environmental effect
Rhizomes	Underground plant growth/storage/anchoring parts.
Rhyne	Local name for ditch
River Basin Management Plan	River basin management plans (RBMPs) set out how organisations, stakeholders and communities will work together to improve the water environment.
Scoping Report	Report produced to inform the content of an Environmental Statement
Screening	Process to determine whether a project should be regulated/managed/delivered in accordance with the EIA Regulations.
Significant Environmental Effects	Those effects that form the focus of Environmental Impact Assessment and used to confirm how serious the implications of a project could be.
Site of Nature Conservation Interest	Non statutorily designated site of nature conservation

Site of Special Scientific Interest	Nationally important legally protected and designated site of nature conservation importance.
Special Area of Conservation	A designation of land under the European Union Directive on Habitats and Species.
Special Protection Area	A designation of land under the European Union Directive on the Conservation of Wild Birds.
Splash Conditions	Term used to describe levels of water that promote the use of certain habitats by wintering birds.
SSSI Assent	Permission given by Natural England for undertaking works on a Site of Special Scientific Interest.
Statutory Consultees	Organisations or individuals that need to be consulted though a regulatory (or equivalent) requirement to inform the EIA process
Statutory Designated Sites	Habitats/land afforded legal protection and typically protected by policy
Super Output Area	Super Output Areas are a geographic hierarchy designed to improve the reporting of small area statistics in England and Wales
Thalweg	The lowest/fastest/most efficient flow path through a river channel and also could be the lower flow channel.
Transitional Water Body	Waters between the land and sea, including estuaries, lagoons,
Two-Stage Channel	A river channel having two (or more) discrete channels that can concentrate water during low flow conditions and also contain higher flood flows.
UK Red Data Book	List of UK species of conservation importance
Water Framework Directive Regulatory Compliance Assessment	Assessment of potential effects of a project on a waterbody designated under the Water Framework Directive
Water Injection Dredging	Method of resuspension of deposited sediment using a jet of water usually delivered from a boat.
Water Level Management	Management of the levels of water in river channels, ditches and as standing water on land.
Water Level Management Plan	Formal plan / methods to implement water level management
Wintering bird	Bird using a habitat for specific functions during the winter time
Zones of Influence	The spatial areas that potentially could experience changes and environmental effects arising from a project, development or improvement works.

APPENDIX 1F: LIST OF ABBREVIATIONS

Acronym	Term
ARP	Asset Recovery Programme
BAP	Biodiversity Action Plan
BoCC	Birds of Conservation Concern
BQE	Biological Quality Elements
BUA	Built Up Area
CD	Compact Disc
CEA	Cumulative effects assessment
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CO	Conservation Objectives
CSS	Countryside Stewardship Scheme
D1	D1 Waste Exemption
Defra	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EC	European Community
EcIA	Ecological Impact Assessment
EEA	European Economic Area
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
FAP	20 Year Flood Action Plan
GCN	Great Crested Newt
HE	Historic England
HRA	Habitats Regulations Assessment
IEMA	Institute of Environmental Management and Assessment
KSD	King's Sedgemoor Drain
LEMP	Landscape and Ecological Management Plan
LiDAR	Light Detection and Ranging
LNR	Local Nature Reserves
MAGIC	Multi-Agency Geographic Information for the Countryside
MSOA	Medium Super Output Area
NE	Natural England
NERC	Natural Environment and Rural Communities Act
NNR	National Nature Reserves
NOx	Nitrogen Oxides
NPPF	National Planning Policy Framework
NTS	Non-Technical Summary
ONS	Office for National Statistics
PIDB	Parrett Internal Drainage Board
PM10	Particles at or smaller than 10 microns
PRoW	Public Right of Way
PSCA	Public Section Cooperation Agreement
RBMP	River Basin Management Plan
RHS	River Habitat Survey

RSPB	Royal Society for the Protection of Birds
RWLA	Raised Water Level Areas
SAC	Special Area of Conservation
SCC	Somerset County Council
SDC	Sedgemoor District Council
SERC	Somerset Environmental Records Centre
SNCI	Site of Nature Conservation Interest
SPA	Special Protection Area
SRA	Somerset Rivers Authority
SSSI	Site of Special Scientific Interest
SWT	Somerset Wildlife Trust
U1	U1 Waste Exemption
UK	United Kingdom
UK RDB	UK Red Data Book
WCA	Wildlife and Countryside Act
WFD	Water Framework Directive
WID	Water injection dredging
WLMP	Water Level Management Plan
ZoI	Zone of influence