

Oath to Burrowbridge Dredging and Associated Activities

Volume 3: Appendices Part 4



APPENDIX 6B: EXTENDED PHASE 1 HABITAT SURVEY

SOMERSET LEVELS DRAINAGE BOARD CONSORTIUM

Oath to Burrowbridge Ecology Surveys

Phase 1 Habitat and Invasive Plants Assessment

1 INTRODUCTION

Johns Associates was commissioned by Somerset Levels Drainage Board Consortium in March 2018, to undertake a range of ecology surveys prior to completion of an Environmental Impact Assessment and a Habitat Regulations Assessment for a dredging project, aiming to identify optimal silt management works on the River Parrett between Oath lock and Burrowbridge. An update survey was completed in June 2019 confirming no notable changes had occurred. A Phase 1 habitat survey forms part of this suite of ecological surveys, with resulting habitat descriptions, species lists and photos detailed within this technical note.

This survey also took particular note of invasive non-native species of plants, notably those associated with the river corridor and listed on Schedule 9 of the Wildlife and Countryside Act (and other domestic legislation) and the EU Regulation (1141/2014) on invasive alien (non-native) species.

The Wildlife and Countryside Act 1981 (WCA) is the principal legislation dealing with non-native species. The WCA has been amended in relation to England and Wales by various pieces of legislation, including the Wildlife and Countryside Act 1981 (Variation of Schedule 9) (England and Wales) Order 2010, the Natural Environment and Rural Communities Act 2006 and the Countryside and Rights of Way Act 2000.

EU Regulation (1141/2014) on invasive alien (non-native) species imposes restrictions on a list of species known as 'species of Union concern', published in Commission Implementing Regulation 2016/1141. These are species whose potential adverse effects across the European Union are such that concerted action across Europe is required.

The assessed length of the River Parrett, hereafter is referred to as the 'Site', comprises a 4km stretch located between Oath lock to Burrowbridge (ST38302787 (51.046920, -2.8814175) to ST35843018 (51.067393, -2.9170342)), near Bridgewater, Somerset. The river is situated adjacent to residential housing and agricultural land of the Somerset Levels. The survey location is shown on Figure 1.

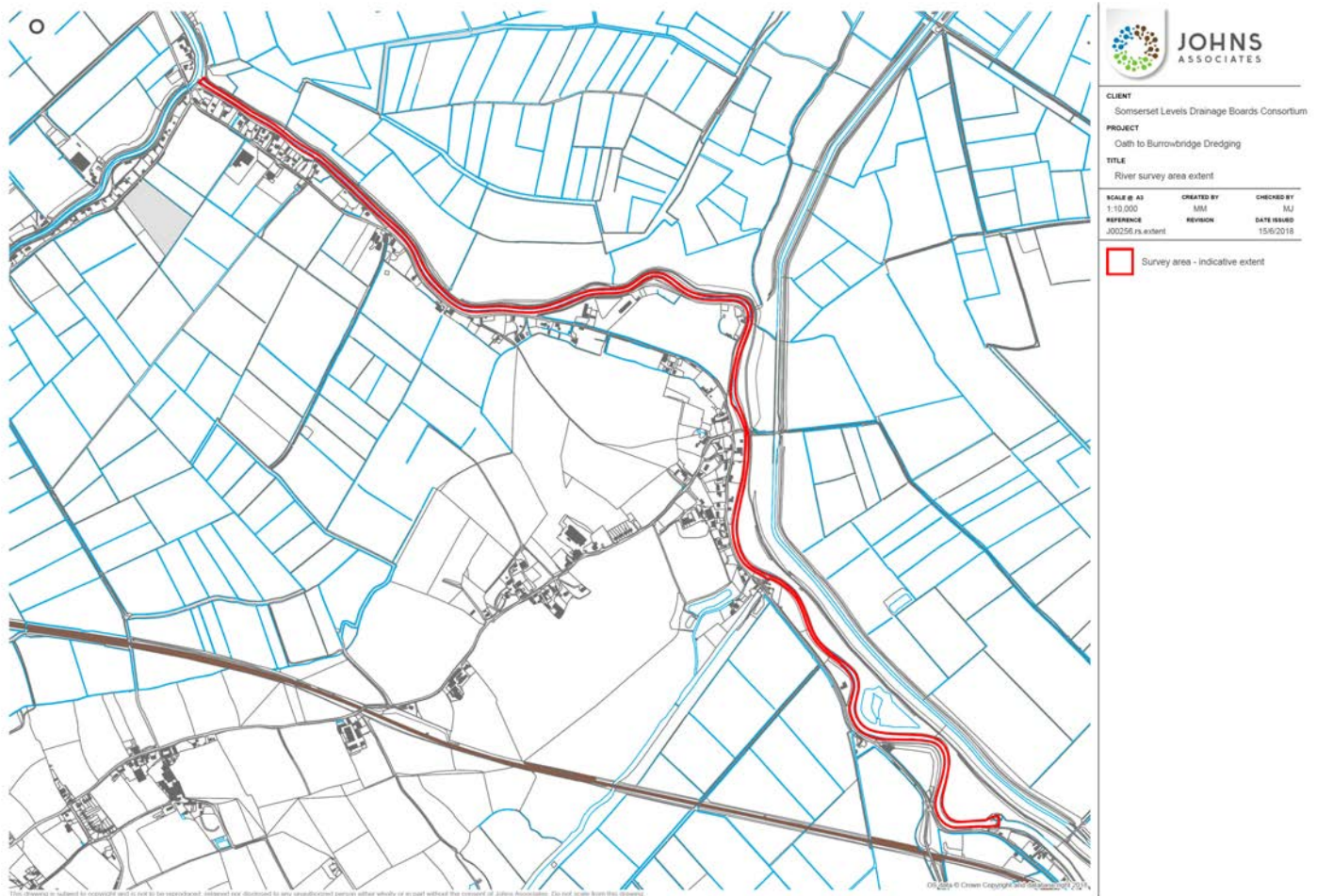


Figure 1 Survey Area

2 METHOD

2.1 PHASE 1 HABITAT SURVEY

The survey identified the habitat types currently present across the Site (comprising the channel of the River Parrett and a buffer 15m in width from the bank top), and in immediately adjacent areas. The survey followed 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). The main output of this survey was a set of annotated habitat maps (Appendix A) and target notes (Section 3.2) together with descriptions of the recorded habitat types (Section 3.1). All flora follow the nomenclature detailed in New Flora of the British Isles (3rd Edition) (Stace, 2010). Flora, where appropriate, are given a descriptive score of abundance using the DAFOR scale, for which:

- D – Dominant
- A – Abundant
- F – Frequent
- O – Occasional

- R – Rare
- L – Locally (to be used as a prefix for any of the above)
- V – Very (to be used as a prefix for any of the above)

This Vegetation and Invasive Species report should be read in conjunction with the Fixed-Point Photography and Vegetation Cross Sections (Johns Associates, 2018), which incorporates the use of standard River Habitat Survey methodology and also the Fish Habitat Survey report (Johns Associates, 2018) to provide an overall characterisation of the site between Oath lock and Burrowbridge. All three surveys make use of the transect locations in the EA 2014 Londig & Browning survey.

2.2 LIMITATIONS, CONSTRAINTS & ASSUMPTIONS

The findings of this report are valid at the time of writing (May 2018). Should there be delays to the project timetable and/or implementation of the proposed development, updated desk study and/or survey work may be required. In this instance, advice should be sought to ensure the data, recommendations and conclusions set out in this report remain valid.

Access to some areas of the Site was limited due to presence of cattle and private domestic gardens. The survey was carried out from the public right of way on the northern bank of the river and from the river channel throughout the Site. As such, it is considered that the majority of the Site was accurately assessed with the exception of domestic gardens, in which some trees and habitats could not be assessed.

The survey was undertaken in May 2018 and in June 2019, which is considered to be within the optimal time of year for this type of survey. However, some later-flowering species present in the vegetation communities may have been missed, although this limitation is considered to be minor since most plant species are evident at the time of survey and a reasonable overall picture of the vegetation communities and associated ecological value was gained. Water conditions (reasonable level of turbidity, current and varying depth) could have concealed some submerged plants, including non-native invasive species.

No other limitations or constraints with regard to the field survey or desk study were encountered.

3 RESULTS

Phase 1 habitat maps are contained in Appendix A to this report. Target notes are contained in Section 3.2. The cross sections shown on the maps as red lines are from the EA 2014 Longdin & Browning survey.

3.1 HABITATS

3.1.1 Running water

The River Parrett flows in a north-west direction, from Oath to Burrowbridge. The lock located at Oath marks the limit of tidal influence within the river. The channel has an approximate width of 8m, and an approximate depth of at least 2m within the centre of the channel (subject to tidal and flood water influence). Water has limited turbidity, although is thought to be eutrophic.

Aquatic macrophytes growing submerged within running water are limited in species diversity, with fennel pondweed *Potamogeton pectinatus* occurring abundantly at the edges of the channel in slower flowing

water, in localised stands (see Plate 1). 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. Broken strands of Canadian pondweed *Elodea canadensis*, a WCA 1981 Schedule 9 invasive species were observed flowing downstream indicating this plant could exist at a potentially rare abundance in areas of slower flowing water. Species present are listed in

Table 1.

Light recreational use of the river is evident through use of small boats by adjacent residents. Poaching by cattle of the river margin in areas where cattle and horses are grazed is evident in places.



Plate 1 Running water with stands of *Potamogeton pectinatus*

Table 1 Species found within running water, and their abundance

Species Name	Common Name	Abundance (DAFOR)
<i>Potamogeton pectinatus</i>	<i>Fennel pondweed</i>	LA
<i>Sparganium emersum</i>	<i>Unbranched bur-reed</i>	O
<i>Bolboschoenus maritimus</i>	<i>Sea club-rush</i>	LO
<i>Hydrocharis morsus-ranae</i>	<i>Frogbit</i>	R

Species Name	Common Name	Abundance (DAFOR)
<i>Schoenoplectus sp.</i>	<i>Club-rush</i>	R
<i>Elodea canadensis</i>	<i>Canadian pondweed</i>	R

3.1.2 Marginal

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 (see Plate 2). 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 (Staithe 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 (Staithe 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. All species present are listed in Table 2.



Plate 2 Marginal vegetation upon the base of banks, dominated by *Phalaris arundinacea*

Table 2 Species found within marginal vegetation, and their abundance

Species Name	Common Name	Abundance (DAFOR)
<i>Phalaris arundinacea</i>	Reed canary-grass	A
<i>Symphytum officinale</i>	Common comfrey	LA
<i>Impatiens glandulifera</i>	Himalayan balsam	F
<i>Convolvulus sp.</i>	Bindweed	F
<i>Urtica dioica</i>	Common nettle	F
<i>Lythrum salicaria</i>	Purple loosestrife	O
<i>Iris pseudacourus</i>	Yellow flag-iris	O
<i>Epilobium sp.</i>	Willowherb	LO
<i>Chenopodium sp.</i>	Goosefoot	LO
<i>Equisetum sp.</i>	Horsetail	LO

Species Name	Common Name	Abundance (DAFOR)
<i>Mentha aquatica</i>	Water mint	LO
<i>Persicaria amphibia</i>	Amphibious bistort	LO
<i>Lycopus europaeus</i>	Gypsywort	R
<i>Pulicaria dysenterica</i>	Common fleabane	R
<i>Veronica beccabunga</i>	Brooklime	R

3.1.3 Tall ruderal

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 (see Plate 3). 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. Species present are listed in Table 3.

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.



Plate 3 Tall ruderal vegetation, with dominant *Urtica dioica* and frequent *Impatiens glandulifera*

Table 3 Species found within tall ruderal vegetation, and their abundance

Species Name	Common Name	Abundance (DAFOR)
<i>Urtica dioica</i>	Common nettle	LD
<i>Rumex obtusifolius</i>	Broad-leaved dock	LD
<i>Heracleum sphondylium</i>	Hogweed	F
<i>Convolvulus sp.</i>	Bindweed	F
<i>Impatiens glandulifera</i>	Himalayan balsam	F
<i>Anthriscus sylvestris</i>	Cow parsley	LF
<i>Rumex crispus</i>	Curled dock	LF
<i>Conium maculatum</i>	Hemlock	LF
<i>Oenanthe crocata</i>	Hemlock water-dropwort	LF
<i>Symphytum officinale</i>	Common comfrey	O

Species Name	Common Name	Abundance (DAFOR)
<i>Dipsacus fullonum</i>	Teasel	O
<i>Arctium minus</i>	Lesser burdock	O
<i>Phalaris arundinacea</i>	Reed canary-grass	O
<i>Lamium album</i>	White dead-nettle	LO

3.1.4 Semi-improved grassland

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. Species present are listed in Table 4, and an example photograph is presented as Plate 4.

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*.



Plate 4 Semi-improved grassland, grazed by cattle

Table 4 Species found within semi-improved grassland, and their abundance

Species Name	Common Name	Abundance (DAFOR)
<i>Alopecurus geniculatus</i>	Marsh foxtail	VLA
<i>Festuca rubra</i>	Red fescue	VLA
<i>Alopecurus pratensis</i>	Meadow foxtail	F
<i>Taraxacum officinale</i> agg.	Dandelion	F
<i>Dactylis glomerata</i>	Cock's-foot	LF
<i>Lolium perenne</i>	Perennial rye-grass	LF
<i>Poa pratensis</i>	Smooth meadow-grass	LF
<i>Ranunculus repens</i>	Creeping buttercup	LF
<i>Ranunculus acris</i>	Meadow buttercup	LF
<i>Trifolium repens</i>	White clover	LF

Species Name	Common Name	Abundance (DAFOR)
<i>Trifolium pratense</i>	Red clover	LF
<i>Hypochaeris radicata</i>	Common cat's-ear	LF
<i>Achillea millefolium</i>	Yarrow	LF
<i>Plantago lanceolata</i>	Ribwort plantain	LF
<i>Prunella vulgaris</i>	Self-heal	LF
<i>Potentilla reptans</i>	Creeping cinquefoil	LF
<i>Cirsium arvense</i>	Creeping thistle	O
<i>Urtica dioica</i>	Common nettle	O
<i>Rumex crispus</i>	Curled dock	O
<i>Bellis perennis</i>	Common daisy	O
<i>Rumex obtusifolius</i>	Broad-leaved dock	LO
<i>Equisetum arvense</i>	Field horsetail	LO
<i>Lathyrus pratensis</i>	Meadow vetchling	LO
<i>Rumex acetosa</i>	Common sorrel	LO
<i>Agrostis stolonifera</i>	Creeping bent	LO
<i>Schedonorus arundinaceus</i>	Tall fescue	LO
<i>Cerastium fontanum</i>	Mouse-ear chickweed	LO
<i>Glyceria</i> sp.	Sweet-grass	VLO
<i>Juncus inflexus</i>	Hard rush	VLO
<i>Elymus repens</i>	Common couch	R
<i>Senecio jacobaea</i>	Common ragwort	R

3.1.5 Improved grassland

Improved, species poor, grassland occurs on well-trodden paths at the top of the right hand bank along the public right of way (see Plate 5). 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. A full species list is presented in Table 5.



Plate 5 Improved grassland upon public right of way

Table 5 Species found within improved grassland, and their abundance

Species Name	Common Name	Abundance (DAFOR)
<i>Dactylis glomerata</i>	Cock's-foot	F
<i>Lolium perenne</i>	Perennial rye-grass	F
<i>Trifolium repens</i>	White clover	F
<i>Taraxacum officinale</i> agg.	Dandelion	F
<i>Poa annua</i>	Annual meadow-grass	LF
<i>Arrhenatherum elatius</i>	False oat-grass	O
<i>Alopecurus pratensis</i>	Meadow foxtail	O
<i>Ranunculus repens</i>	Creeping buttercup	O

Species Name	Common Name	Abundance (DAFOR)
<i>Potentilla anserina</i>	<i>Silverweed</i>	LO
<i>Plantago major</i>	<i>Greater plantain</i>	LO

3.1.6 Standing trees (broadleaf/coniferous)

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 and described in

Table 6. 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 (see Plate 6), all other trees are situated on the bank top with the canopy not directly overhanging the river channel.



Plate 6 Willow tree rooted in / overhanging river channel

Table 6 Description of trees located within 15m of the river channel

Tree Number	Common Name	Description
1	Sycamore	Approximate age 60 years. Canopy diameter 20m, does not overhang channel.
2	Ash	Approximate age 100 years. Canopy diameter 15m, does not overhang channel.
3	Yew (& live elder)	Approximate age 100 years (dead). Canopy diameter 8m, does not overhang channel.
4	Yew	Approximate age 100 years. Canopy diameter 20m, does not overhang channel.
5	Unknown	Does not overhang channel.
6	Unknown	A fruit tree. Canopy diameter 6m, does not overhang channel.
7	Crack willow	Approximate age 10 years. Overhangs channel by 3m length and 1m width. Canopy height <10m.
8	Crack willow	Approximate age 10 years. Overhangs channel by 6m length and 3m width. Canopy height <10m.
9	Crack willow	Approximate age 10 years. Overhangs channel by 3m length and 2m width. Canopy height <10m.
10	Crack willow	Approximate age 10 years. Overhangs channel by 2m length and 5m width. Canopy height <10m.
11	Crack willow	Approximate age 10 years. Canopy diameter 5m, does not overhang channel.
12	Willow	Approximate age 30 years. Canopy diameter 20m, does not overhang channel.
13	Hawthorn	Approximate age 40 years. Canopy diameter 8m, does not overhang channel.
14	Willow	Approximate age 30 years. Canopy diameter 10m, does not overhang channel.
15	Willow	Approximate age 30 years. Canopy diameter 15m, does not overhang channel.
16	Willow	Approximate age 10 years. Overhangs channel by 4m length and 4m width. Canopy height <10m.
17	Hawthorn	Canopy does not overhang channel.
18	Hawthorn	Canopy does not overhang channel.

3.1.7 Hedgerow – Species-poor defunct

A small number of hedgerows bordering domestic gardens are composed of a single, possibly ornamental, shrub species.

3.1.8 Hedgerow – Species-rich defunct

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 (see Plate 7). 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.



Plate 7 Defunct hedgerow, with frequent *Crataegus monogyna*

3.1.9 Standing open water

Two areas of standing open water occur on a raised area of ground within approximately 15m of the bank top. No evidence of a source feeding water into the pond was identified, and as such the pond is likely to overlie an impermeable soil, such as clay. Water depth was shallow at approximately 30cm depth at the time of survey, with gradually sloping banks into the centre of the pond. Emergent species included frequent common spike-rush *Eleocharis palustris*, sweet-grass and reed canary-grass (see Plate 8).



Plate 8 Standing open water, with overlying willow scrub and emergent vegetation

3.1.10 Scattered scrub

Scattered willow scrub occurs frequently across the surface of the large pond located at the south west of the Site, and also on small areas of bank top towards Burrowbridge.

3.1.11 Bare ground

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.

3.2 TARGET NOTES

- 1) Stand of Himalayan balsam *Impatiens glandulifera*, a WCA 1981 Schedule 9 invasive non-native species, occurring at the base of the bridge. Approximately 10 stems cover an area of 1m². Downstream of this location the species occurs constantly at frequent abundance, particularly upon the northernmost (left hand) bank. The species is also present upstream of this point, most notably throughout the left-hand bank. It's more extensive presence upstream of this location on the southern (right hand) bank is possible since plants were small at the time of survey and may be growing at the base of dense tall ruderal vegetation upon the banks, hidden from direct view.
- 2) Occurrence of Canadian pondweed *Elodea canadensis*, a WCA 1981 Schedule 9 invasive non-native species, was noted as free floating and broken strands, indicating possible presence as growing submerged in slow flowing water of the river at a rare abundance.

Author:



Jasmine Walters BSc (Hons) GradCIEEM

Assistant Ecologist

Johns Associates Ltd

Suites 1 & 2, The Old Brewery

Newtown

Bradford on Avon

Wiltshire

BA15 1NF

T: 01225 723652

W: johnsassociates.co.uk

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.

APPENDIX A – PHASE 1 HABITAT SURVEY MAPS















JOHNS
ASSOCIATES

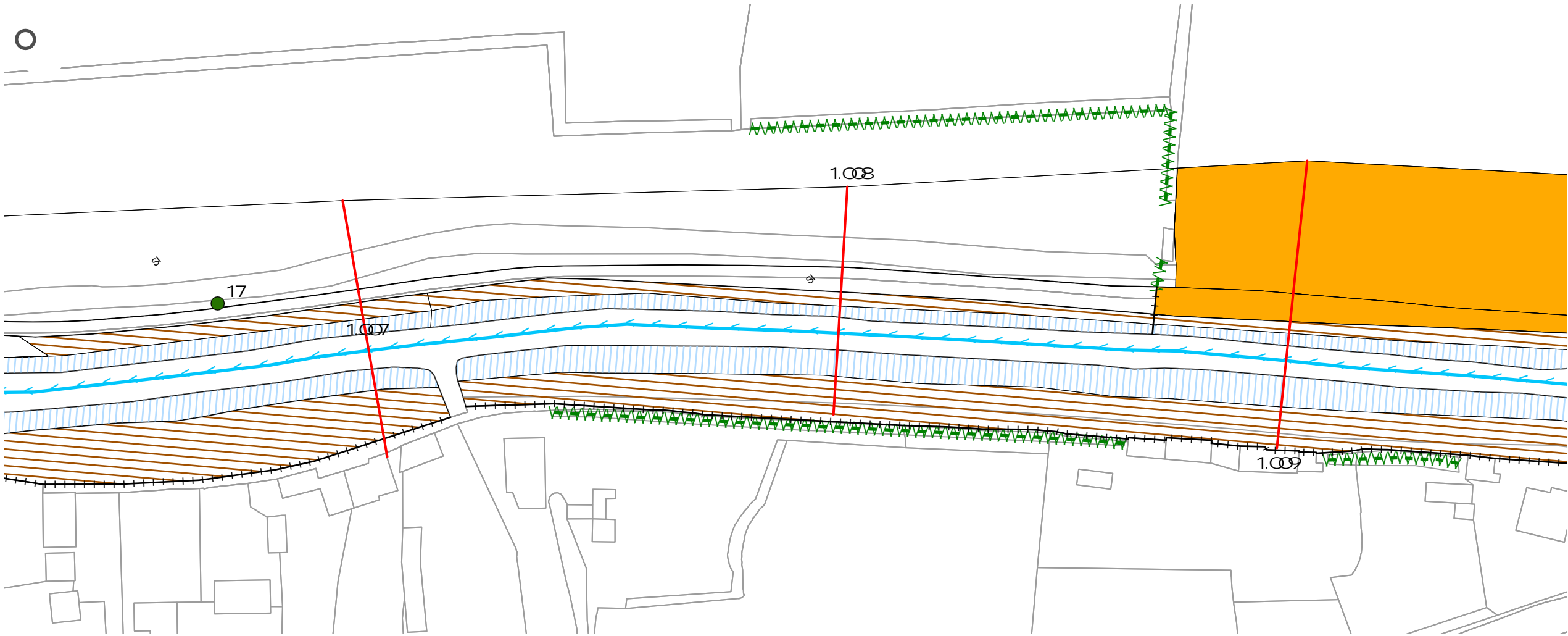
CLIENT
Somerset Levels Drainage Boards Consortium

PROJECT
Oath to Burrowbridge Dredging

TITLE
Survey sheets 1 and 2

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



JOHNS
ASSOCIATES

CLIENT

Somerset Levels Drainage Boards Consortium

PROJECT

Oath to Burrowbridge Dredging

TITLE

Survey sheets 3 and 4

SCALE @ A3

1:1,000

CREATED BY

MM

CHECKED BY

JW

REFERENCE

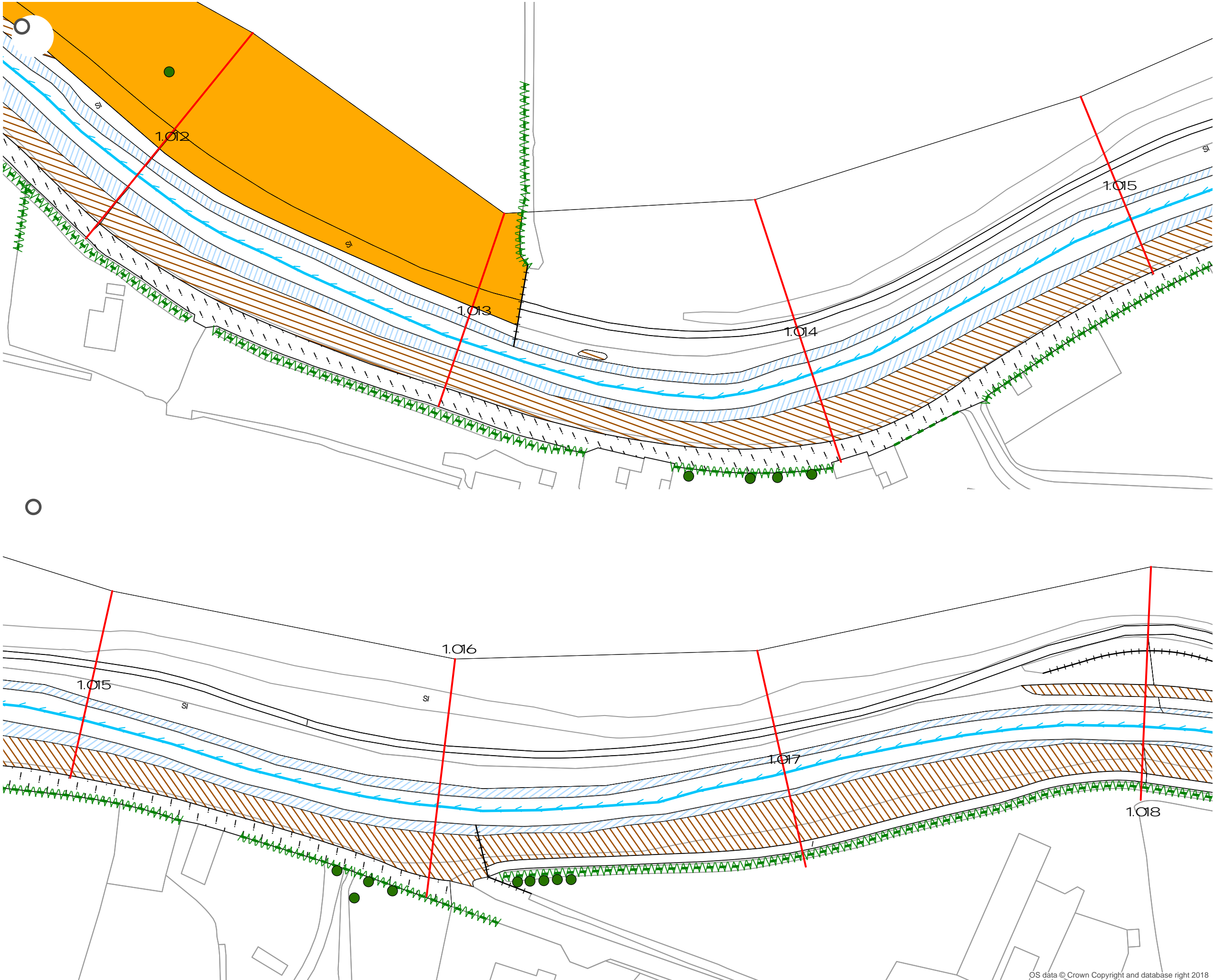
J00256.P1.s3/s4

REVISION

DATE ISSUED

15/6/2018

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



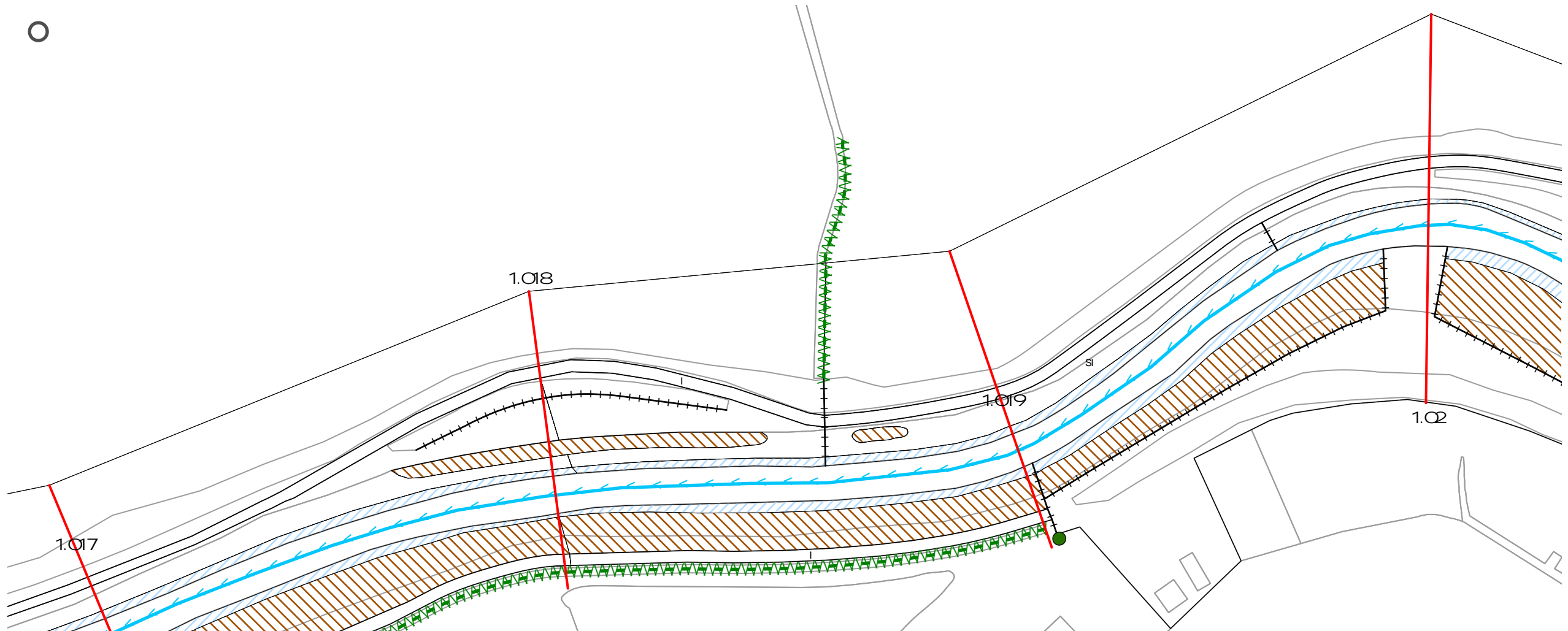
JOHNS
ASSOCIATES

CLIENT		
Somerset Levels Drainage Boards Consortium		
PROJECT		
Oath to Burrowbridge Dredging		
TITLE		
Survey sheets 5 and 6		

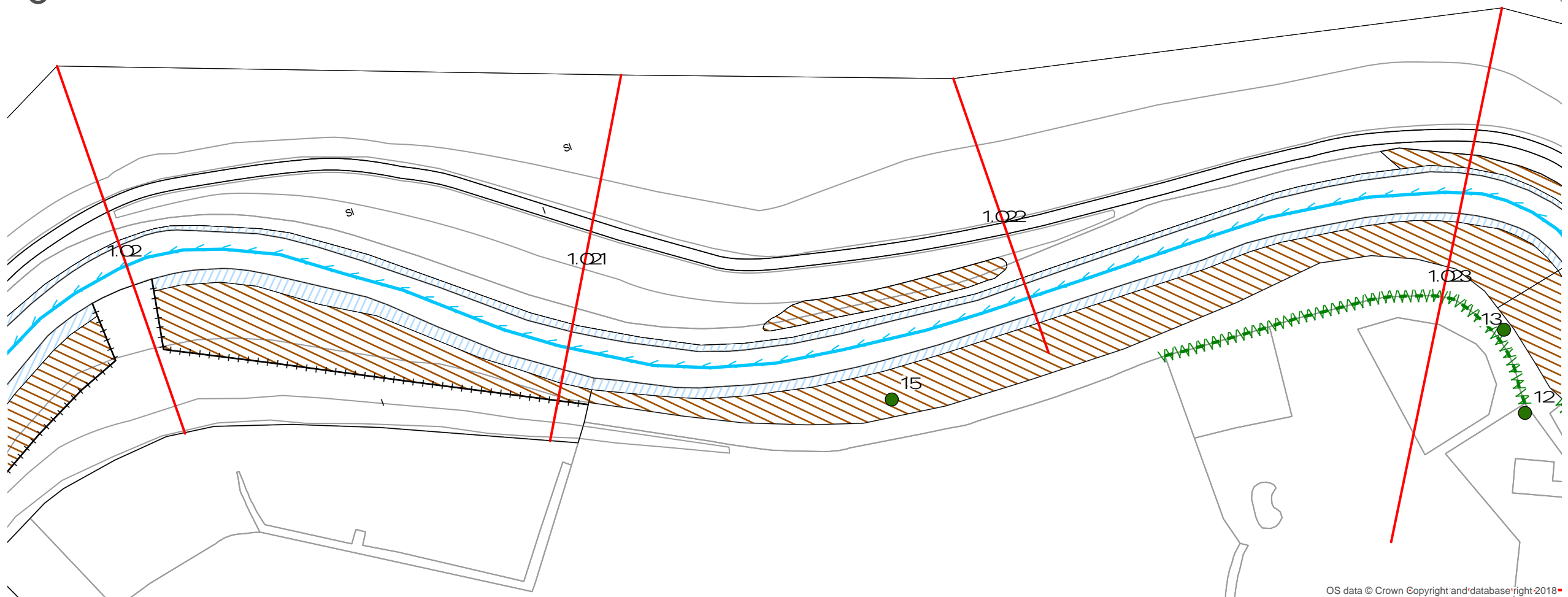
SCALE @ A3	CREATED BY	CHECKED BY
1:1,000	MM	JW
REFERENCE	REVISION	DATE ISSUED
J00256.s5/s6		15/6/2018

- 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
- B2.2 - Neutral grassland - semi-improved
- B4 - Improved grassland
- B6 - Poor semi-improved grassland
- C3.1 - Other tall herb and fern - ruderal
- F2.1 - Marginal and inundation - marginal vegetation
- J4 - Bare ground

O



O



JOHNS
ASSOCIATES

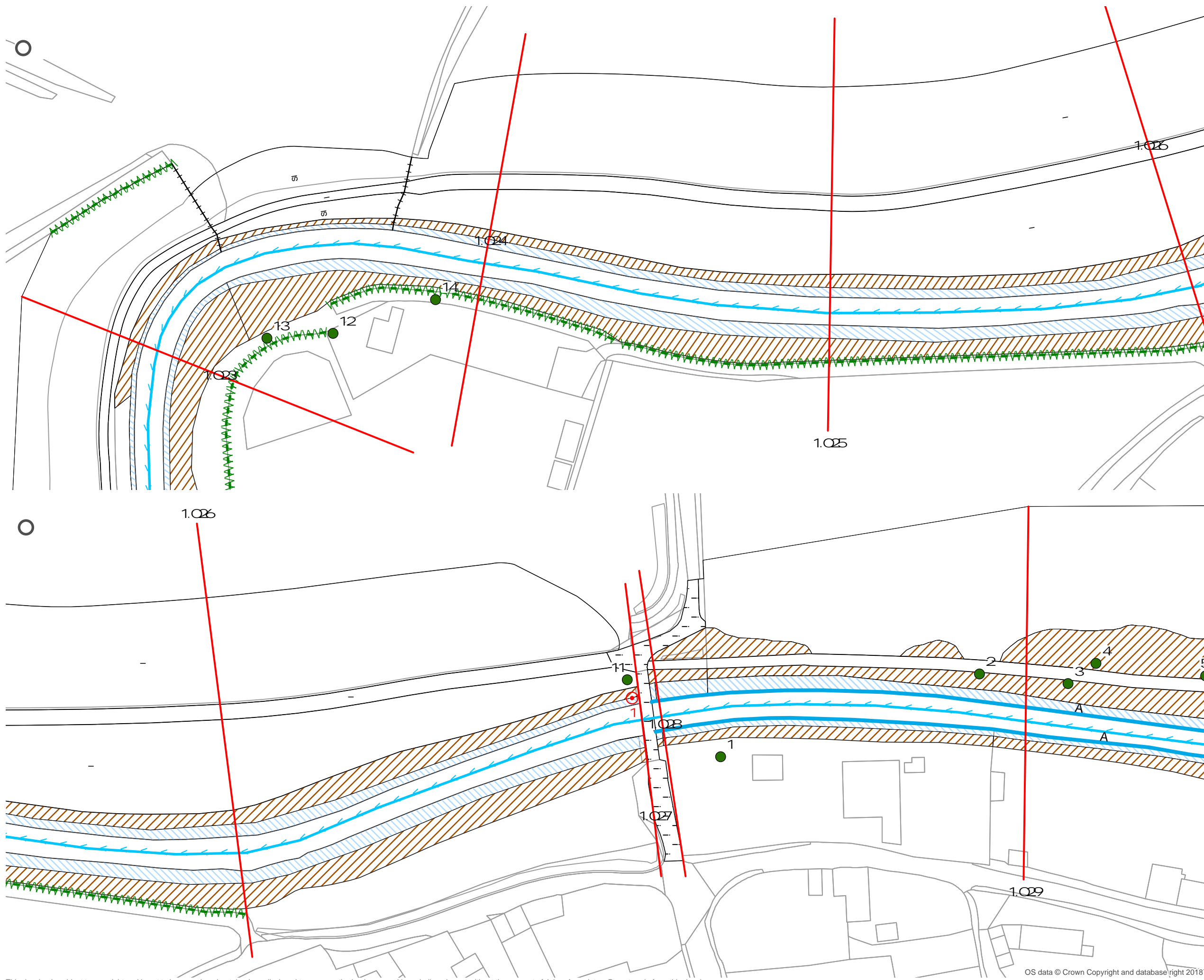
CLIENT
Somerset Levels Drainage Boards Consortium

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
- W W W 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



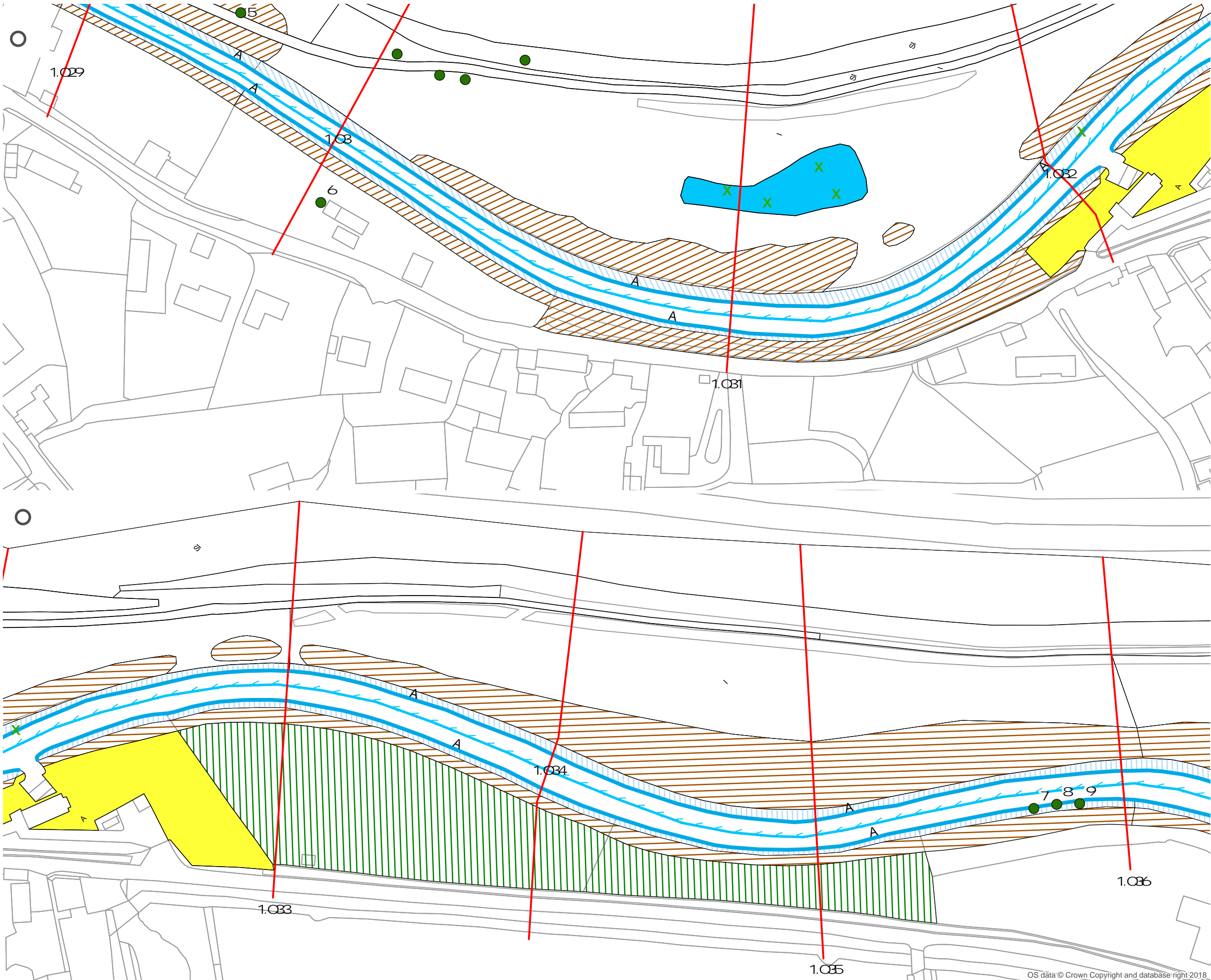
CLIENT
Somerset Levels Drainage Boards Consortium

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
- W W 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
- I J4 - Bare ground

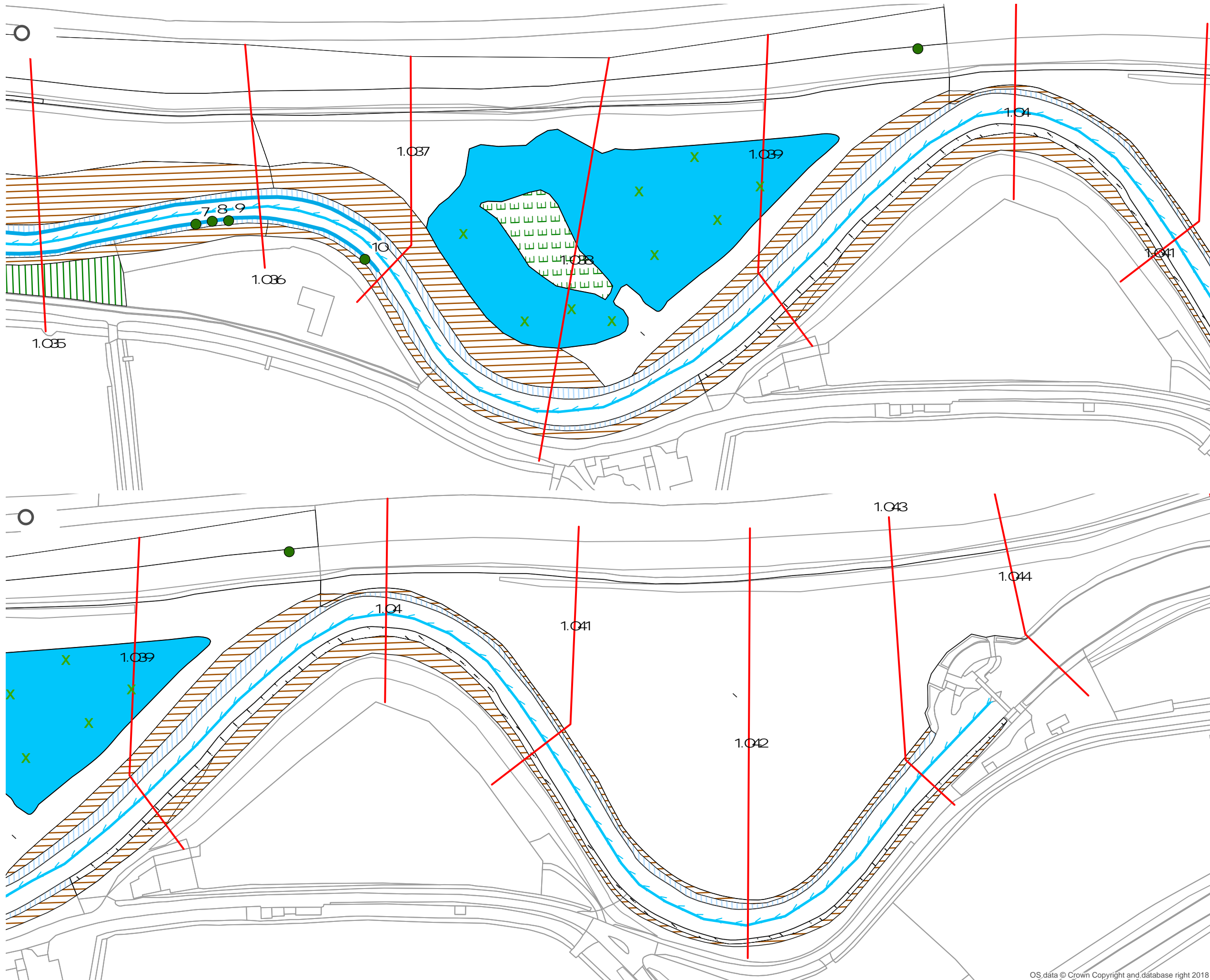


JOHNS
ASSOCIATES

CLIENT	Somerset 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



CLIENT
Somerset 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 6C: AMPHIBIANS

SOMERSET LEVELS DRAINAGE BOARDS CONSORTIUM

River Parrett

Oath to Burrow Bridge Ecology Surveys: Great Crested Newt Desk Top Study

1 INTRODUCTION

Johns Associates was commissioned by the Somerset Levels Drainage Boards Consortium (SLDBC) to undertake a detailed desk-based study of the presence/ likely absence of great crested newt (*Triturus cristatus*) associated with a 4km stretch of the River Parrett upstream of its confluence with the River Tone (hereafter referred to as the Site), and an associated 500m buffer from each bank top. Proposals to dredge this section of the River Parrett have the potential to impact a range of ecological habitats and species if not considered early in the planning process. In particular, terrestrial habitats within a riparian corridor of approximately 30m from the outer toe of the riverine embankments was considered in detail.

2 LEGAL PROTECTION

The great crested newt is a European protected species included on the Conservation of Habitats and Species Regulations 2017 and is also fully protected under the Wildlife and Countryside Act 1981.

It is illegal to¹ *inter alia*:

- capture, kill, disturb or injure great crested newts (on purpose or by not taking enough care)
- damage or destroy a breeding or resting place (deliberately or by not taking enough care)
- obstruct access to their resting or sheltering places (deliberately or by not taking enough care)

¹ www.gov.uk

- possess, sell, control or transport live or dead great crested newts, or parts of great crested newts

If found guilty of an offence the penalty could be an unlimited fine and up to 6 months in prison.

3 SITE LOCATION & CONTEXT

The Site is located along a section of the River Parrett between Burrowbridge (National Grid Reference [NGR] ST 35842 30207) and Oath (NGR ST 38308 27900). The stretch is approximately 4km in length.

The surrounding landscape is predominantly coastal and floodplain grazing marsh with areas of lowland meadows and semi-improved and improved neutral grassland (Figure 1). Numerous ditches and drains are present within the immediate local area, with permanently wet and ephemeral ponds and other standing waterbodies.

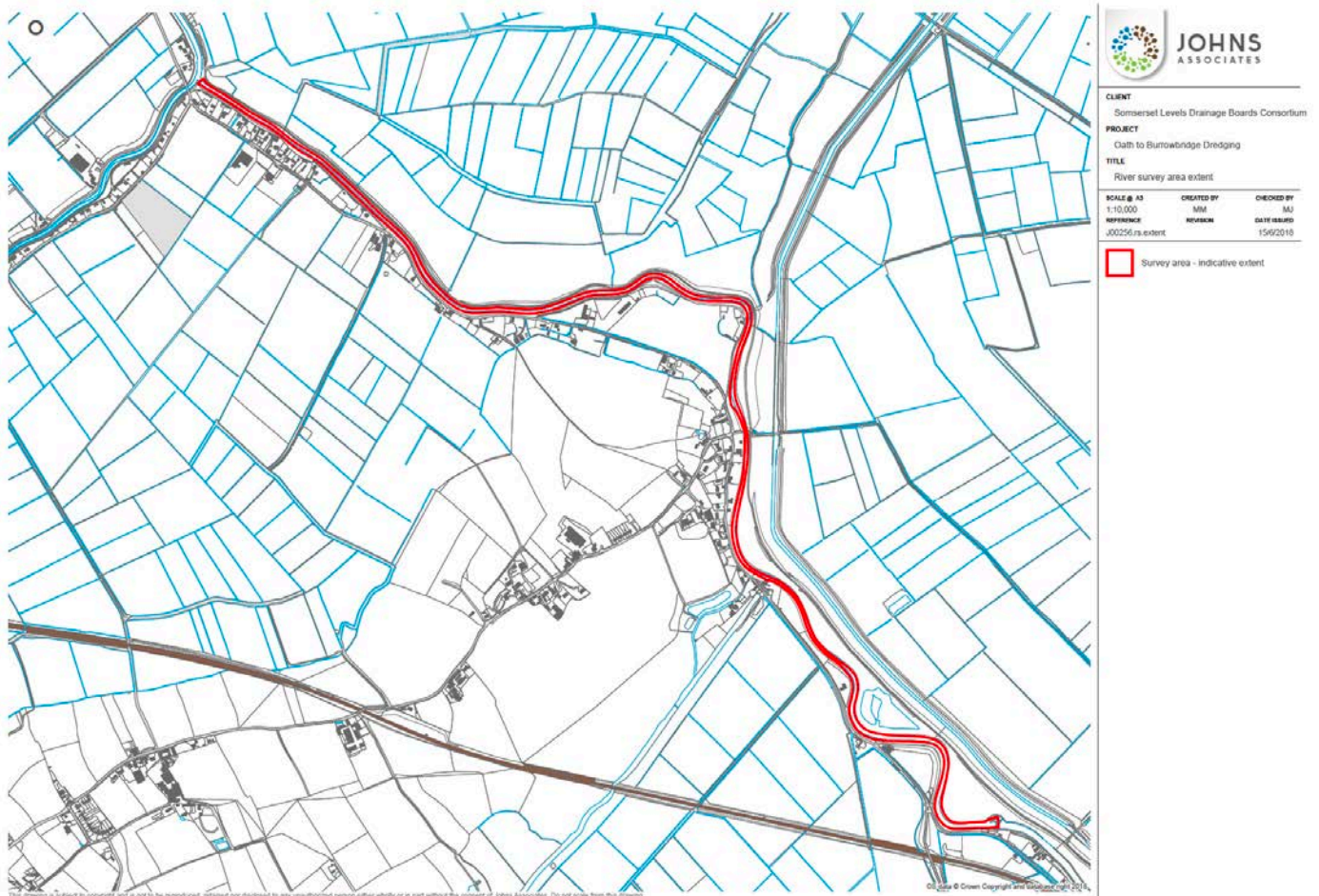


Figure 1: Main Site location between the confluence of the River Tone and the River Parrett to Oath Lock.

4 METHODOLOGY

4.1 DESK STUDY

A detailed great crested newt desk top study was undertaken for the 4km length of the River Parrett and a buffer of 500m from each bank top. A combination of Ordnance Survey 1:25000 mapping, aerial imagery, google maps and other open source data was used to highlight possible breeding habitat (e.g. ponds, rhynes). Further investigation to help refine candidate potential breeding habitat was then completed, which utilized those features associated with Habitat Suitability Index methodology and historic evidence from google earth. Potential barriers to migration (e.g. major roads, urban areas, fast flowing watercourses etc.) were also identified. A review of historical data was also completed, (where such information was available), and field notes relating to habitat suitability for great crested newt were taken incidentally during the course of other ecological field surveys.

A GIS plan showing the location of all watercourses within 500m of the Site plus a 250m buffer from each of these watercourses was produced to enable this information to be illustrated graphically. 250m was selected for the buffer as this represents the generally accepted limit of migration of this species from breeding habitat (in accordance with Natural England guidance). This enabled the identification of candidate sites (e.g. ponds within 250m of the Site with no obstructions to possible migration to the works area) that may require more detailed assessment.

An online search of the NBN Atlas and Magic.gov.uk was performed to identify any records of great crested newt from the local area.

4.2 LIMITATIONS

The results of the great crested newt desk study are valid at the time of writing (June 2018). Should there be delays to the project timetable and/or implementation of the proposed dredging works, an update desk study and/or field survey may need to be completed. In this instance, advice should be sought as to the validity of the data, recommendations and conclusions contained herein.

5 RESULTS

5.1 DESK STUDY

Figure 2 highlights those waterbodies present within 500m of the Site. It also shows a 250m buffer around each of these waterbodies (light blue shaded area) – an area often cited as being associated with great crested newt meta-populations using multiple waterbodies and intervening terrestrial habitats. The red line indicates the 4km stretch of the River Parrett to be dredged.

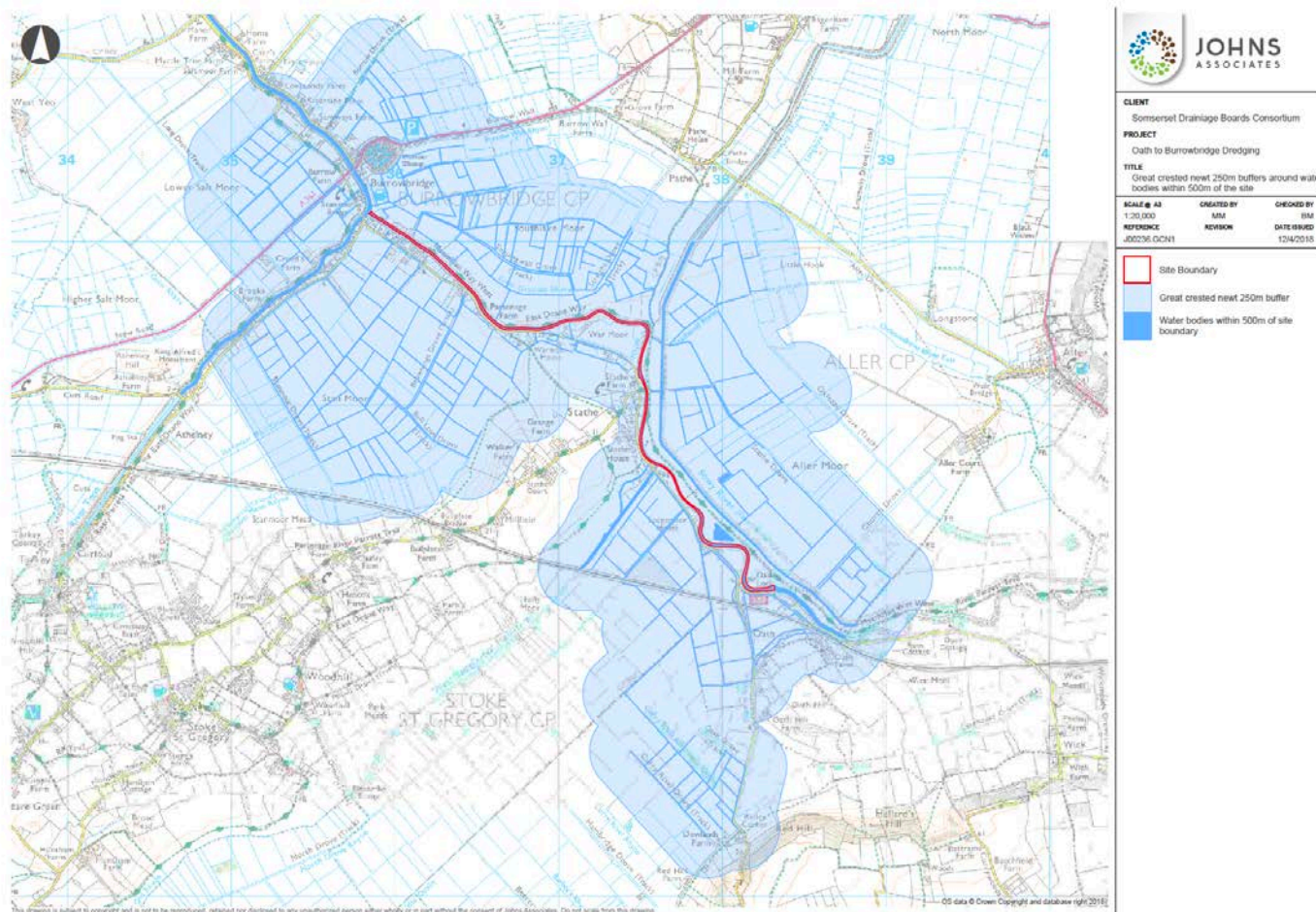


Figure 2: Great crested newt 250m buffers around waterbodies within 500m of the Site

The review of OS mapping highlighted a large number of waterbodies present within 500m of the Site. The buffer shows the area within which great crested newts could be present.

The main A361 road to the north of the Site would represent a significant barrier to newt migration, which effectively allows all waterbodies north of this road to be discounted from further assessment. At certain times, the tidally influenced River Parrett and the River Tone could represent a greater potential barrier to effective newt migration (e.g. flood flows during spring migration), although passage may be possible at other times. It is highly unlikely that the Rivers Parrett or Tone offer suitable breeding opportunities due to flow conditions, elevated salinity and fish predation.

The section of the Sowey River which falls within the 250m buffer is cannalised in nature, and whilst fish are present within this watercourse, the flow is such that it is not considered to represent a significant barrier to newt migration and potentially, breeding may be viable.

The search of the NBN Atlas failed to return any historic records of great crested newt from within a 5km radius of the start and end points of this stretch of the River Parrett. Similarly, a review of the Magic.gov.uk

website for great crested newt development licences issued by Natural England for sites within 2km of the Site also failed to return any positive results.

Whilst this may suggest this species is absent from the wider local area, this lack of records may be due to a paucity of survey effort/ species recording within the area, rather than an absence of the species itself.

A number of standing waterbodies potentially suitable for breeding great crested newt are present adjacent to the right-hand bank of the River Parrett between Oath Lock and Staithe Bridge.

Terrestrial riparian habitat associated with the River Parrett, including embankments adjacent to these features are considered to offer good quality terrestrial habitat for this species, providing key functions such as foraging, resting and in some locations, such as along hedge-lines (subject to inundation from flood water), hibernation.

Seasonal conditions associated with the River Parrett include full inundation by riverine flows to bank top and at times overbank flow. This reduces the likelihood of the inside bank being suitable for successful great crested newt hibernation. Standing or flowing water associated with the outer bank and adjacent land will also reduce the likelihood of successful hibernation in these locations. More elevated positions will, however, retain the potential for year-round suitability for great crested newt.

6 CONCLUSIONS

No records of great crested newt were identified for an area extending up to 5km from the Site. It is known, however, that this species is present in the wider area and therefore should be assumed to be present within 250m of the River Parrett between Oath Lock to Burrowbridge. Although some barriers to newt migration were identified during the course of the desk study, waterbodies to the west and east of the Site (i.e. those present close to the right-hand bank of the River Parrett) had no such barriers to migration and therefore, where suitable terrestrial habitat exists, this could support great crested newt. Whilst seasonal flow conditions make it less likely for great crested newt to be present within/on the embanked River Parrett from Oath Lock to Burrowbridge, local topographical variations, combined with habitat features could promote the presence of this species year-round.

Author: Liz Johns BSc MSc CEnv MCIEEM MRSB, Director

Johns Associates Ltd
The Old Brewery
Newtown
Bradford on Avon BA15 1NF
T: 01225 723652
W: johnsassociates.co.uk

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.

APPENDIX 6D: KINGFISHER AND NESTING BIRDS

SOMERSET LEVELS DRAINAGE BOARDS CONSORTIUM

River Parrett

Oath to Burrow Bridge Ecology Surveys: Kingfisher Habitat Assessment and Nesting Bird Survey

1 INTRODUCTION

Johns Associates was commissioned by the Somerset Levels Drainage Boards Consortium (SLDBC) to undertake a survey to identify potential nesting habitat for kingfisher (*Alcedo atthis*) and the presence of nesting birds along approximately 4km of the River Parrett upstream of its confluence with the River Tone (hereafter referred to as the Site).

2 LEGAL PROTECTION

All wild birds in England, their nests and eggs are protected by law and it is thus an offence, with certain exceptions to:

- Intentionally kill, injure or take any wild bird.
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built.
- Intentionally take or destroy the egg of any wild bird.
- Have in one's possession or control any wild bird, dead or alive, or any part of a wild bird, which has been taken in contravention of the Act or the Protection of Birds Act 1954.
- Have in one's possession or control any egg or part of an egg which has been taken in contravention of the Act or the Protection of Birds Act 1954.
- Use traps or similar items to kill, injure or take wild birds.
- Have in one's possession or control any bird of a species occurring on Schedule 4 of the Act unless registered, and in most cases ringed, in accordance with the Secretary of State's regulations.
- Intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

The following birds were observed during the survey documented in this technical note and are fully protected under Schedule 1 of the Wildlife and Countryside Act 1981 and are a priority conservation species as relevant to the site:

- Kingfisher (*Alcedo atthis*)
- Cetti's Warbler (*Cettia cetti*)

It is illegal to ¹*inter alia*:

- to intentionally or recklessly disturb birds and/or their young at, on or near an 'active' nest

It is therefore imperative that the location of potential nest sites is identified to ensure that no offences are committed during the proposed works.

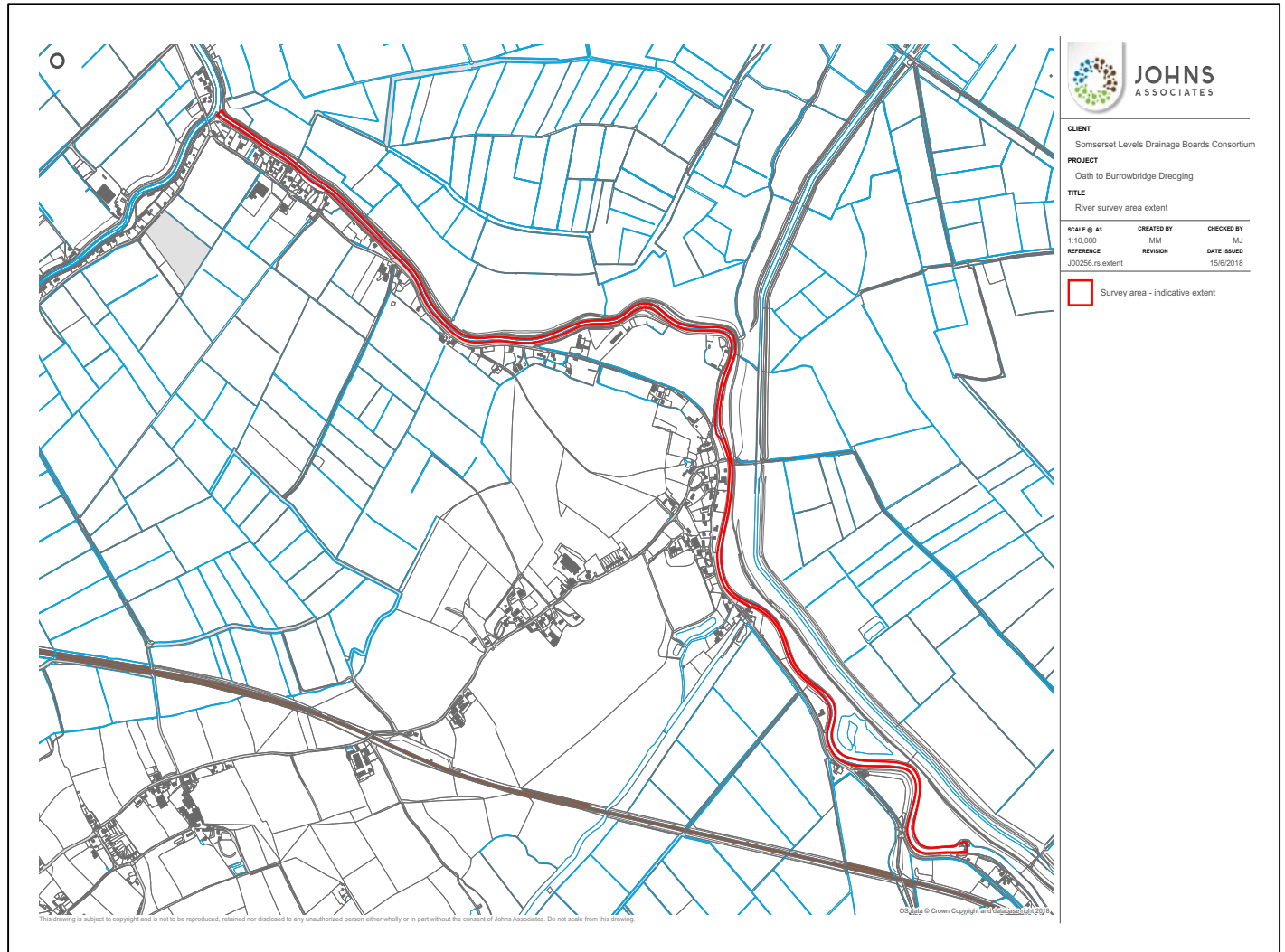
3 SITE LOCATION & CONTEXT

The Site is located along a section of the River Parrett between Burrowbridge (National Grid Reference [NGR] ST 35842 30207) and Oath (NGR ST 38308 27900). The survey stretch was approximately 4km in length.

The surrounding landscape is predominantly coastal and floodplain grazing marsh with areas of lowland meadows and semi-improved and improved neutral grassland (Figure 1).

¹ www.gov.uk

Figure 1 Site location between the confluence of the River Tone and the River Parrett to Oath Lock.



4 METHODOLOGY

4.1 DESK STUDY

Information provided by the Somerset Levels Drainage Boards Consortium was reviewed for previous records of breeding birds from the survey stretch and the wider local area.

4.2 SITE SURVEY

4.2.1 Kingfisher Potential Nesting Habitat

A kingfisher survey designed to identify any birds present or suitable nesting habitat within the zone of influence of the works was undertaken by Matt Johns and Ben Mitchell from Johns Associates on 24th and 25th May 2018. The weather was dry and sunny, with good visibility of both riverbanks. An update survey was conducted in June 2019 and concluded no change from the 2018 findings.

The survey was carried out from the channel (using an inflatable boat with electric outboard engine) and also from the public right of way, which runs along the left-hand bank (LHB) of the River Parrett at this location.

In order to identify potential kingfisher nesting habitat on the banks of the river within the stretch surveyed, banks were systematically inspected for characteristic vertical bankside faces and presence of burrows.

Burrow that were identified during the survey were compared to the criteria in Table 1.

Table 1 Nest hole parameters (cm)	Mean	Min	Max
Internal height of burrow entrance	7.6	5.3	13
Internal width of burrow entrance	6.2	4.5	12
Tunnel depth	55	24.5	85
Distance from bank top	69.6	20	270
Distance from bank base	141	52	313
Height of wall in nest location	192.7	75	410

Additional notes of habitat suitability (or otherwise) were made and representative photographs taken. Photographic evidence of any positive signs of this species was also recorded. Signs of rat, mink and other small mammals were also noted.

4.2.2 Nesting bird survey

A nesting bird survey was undertaken concurrently with the kingfisher survey by Matt Johns and Ben Mitchell from Johns Associates on 24th and 25th May 2018 and updated in June 2019. The same stretch of the River Parrett was surveyed, both from the channel (by boat) and from the public right of way which runs along the LHB at this location.

In order to establish the distribution of nesting birds along this stretch of the River Parrett, banks were systematically searched for characteristic signs of nests and any associated bird species exhibiting alarming or territorial behavior were noted. Additional notes of habitat suitability (or otherwise) were made and representative photographs taken.

4.3 LIMITATIONS

Access was possible by boat to the entire survey stretch of the River Parrett. Survey conditions were considered ideal, with both banks clearly visible from the channel with low wind and ambient noise. The LHB could be surveyed from a public footpath which ran along the top of the bank at this location. The right-hand bank (RHB) was predominantly surveyed from the channel, owing to the presence of domestic gardens to which no access was permitted.

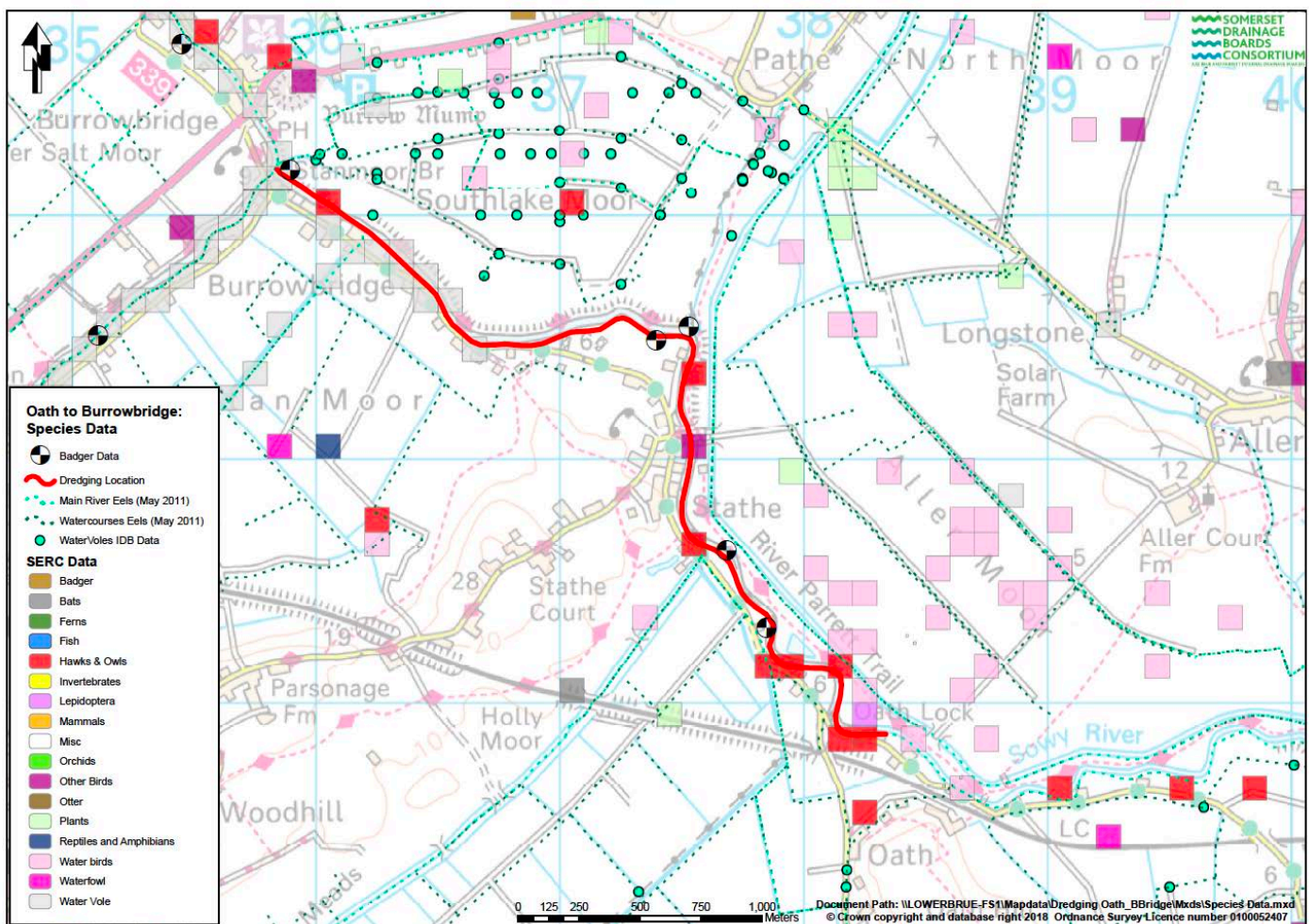
The results of the kingfisher and nesting bird surveys are valid at the time of writing (June 2019). Should there be delays to the project timetable and/or implementation of the proposed dredging works, an update survey may need to be completed. In this instance, advice should be sought as to the validity of the data, recommendations and conclusions contained herein.

5 RESULTS

5.1 DESK STUDY

Figure 2 shows the location of previous records of bird species. The red line indicates the stretch surveyed.

Figure 2 Previous records of breeding birds from the survey stretch and wider local area (Source: Somerset Drainage Boards Consortium)



As the species records for birds have been combined, the records do not allow a detailed evaluation of potential territories for kingfishers or any indication of the nesting bird species previously recorded on site.

5.2 FIELD EVIDENCE

5.2.1 Kingfisher

Habitat Evaluation

Small areas of suitable nesting habitat were identified in the lower stretch and these were restricted to the RHB. Both banks were subject to grazing pressure and therefore the banks, particularly along the RHB were severely poached, thus frequently destroying the vertical cliff faces required by nesting kingfishers.

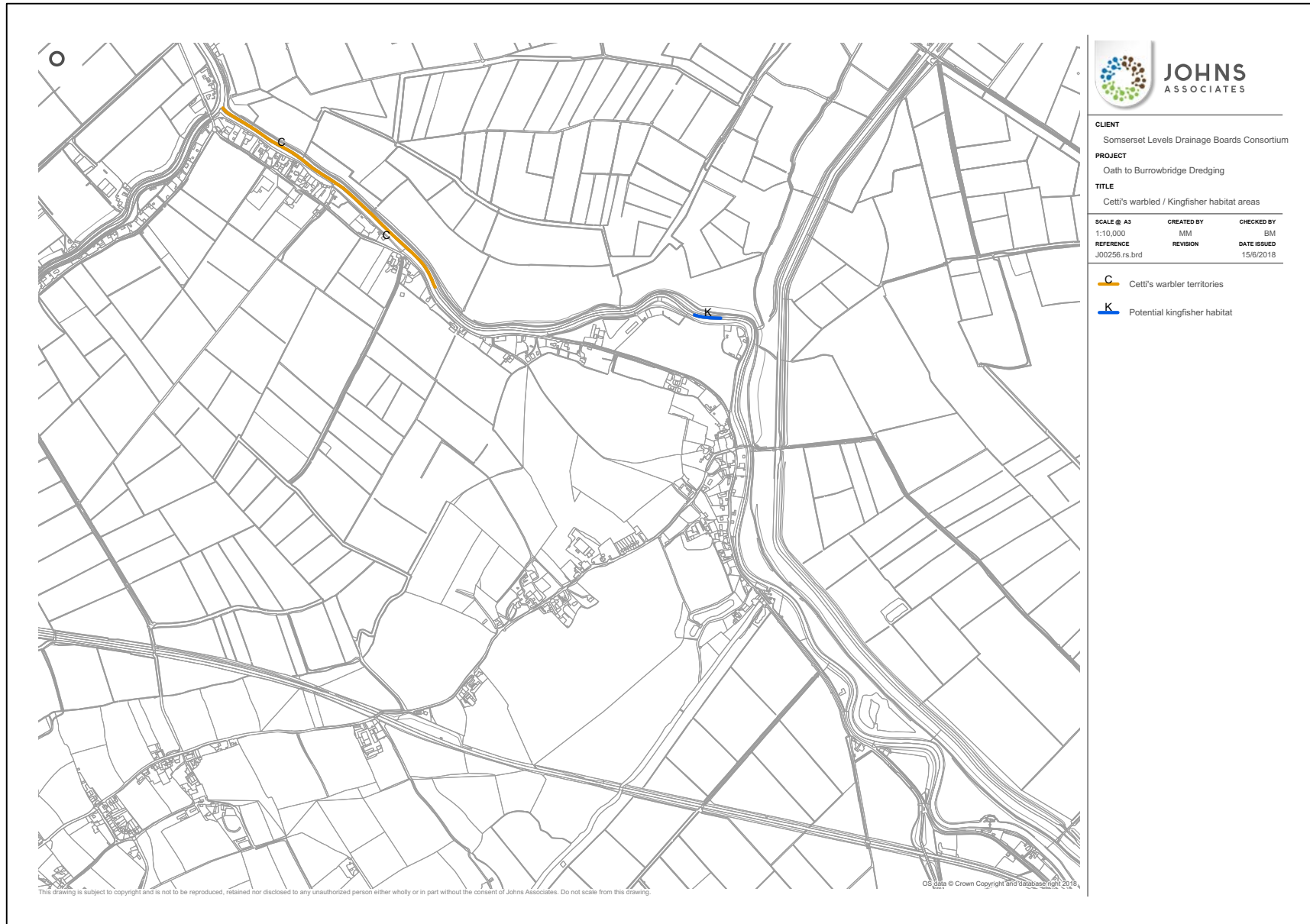
Habitat along the main River Parrett channel within the stretch surveyed was considered to be largely suboptimal for foraging for this species, given the depth of the channel, strength of flows and the absence of optimal feeding perches.

However, as kingfishers will hold territories up to 3-5km and given the proximity of an expansive network of smaller and potentially highly suitable water courses, the site is highly likely to lie within a kingfisher territory. Therefore, any suitable nest features were considered as potential nesting sites irrespective of the foraging suitability of the watercourse in the vicinity of the feature. In addition, Eurasian kingfishers will utilize suitable soil cliff features located away from water courses.

Given the large fluctuation in water levels during the early kingfisher breeding period, burrows located at any height on the banks were inspected.

The locations of potential nesting habitat for kingfishers is presented in Figure 3.

Figure 3 Kingfisher and Cetti's Warbler sensitive areas



Field Signs

No kingfishers were recorded during the surveys. One bank feature was identified as being suitable (Figure 4) with a number of holes exhibiting characteristic within the ranges detailed in Table 1. However, these had partially collapsed due to cattle poaching and, as such, it was not possible to ascertain the species that constructed the burrows. No supporting field signs were found (nesting detritus, faecal sacs, claw marks etc)

Figure 4 Suitable kingfisher habitat feature (with unidentified burrows)



5.2.2 Nesting Birds

Habitat Evaluation

Habitat along the main River Parrett channel within the stretch surveyed was considered suitable for the majority of riparian, garden and wetland bird species. The absence of bankside scrub and tree habitats was noted, limiting the appeal of this stretch to scrub and tree nesting species.

The significant poaching of the RHB further limits the potential for nesting birds.

Field Signs

A conspicuous lack of birds was recorded on site during the surveys, despite the ideal conditions and timing of the surveys.

Notable nesting bird records were limited to two singing Cetti's Warblers on scrub and tall grass on the LHB (see Figure 3). No further field signs were recorded to confirm breeding/nesting during the survey.

6 CONCLUSIONS

Suitable potential kingfisher nesting habitat and two territories of Cetti's Warbler have been identified within the site. This includes area of riparian scrub and long vegetation within a maximum 450m range (as indicated on Figure 33) including area extending away from the river bank.

A precautionary approach should be taken to works in all area where Schedule 1 birds have been recorded, should these be required during the kingfisher nesting period (February-September, inclusive to accommodate both species). Given that the offence is directly limited to the disturbance of an active nest, works outside the breeding season are not considered to present risk of offence under the Wildlife and Countryside Act (1981).

Author: Ben Mitchell BSc MSc MCIEEM, Principal Ecologist

Johns Associates Ltd
The Old Brewery
Newtown
Bradford on Avon BA15 1NF
T: 01225 723652
W: johnsassociates.co.uk

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.

APPENDIX 6E: OTTER AND WATER VOLE

SOMERSET LEVELS DRAINAGE BOARDS CONSORTIUM

River Parrett

Oath to Burrow Bridge Ecology Surveys: Water Vole and Otter

1 INTRODUCTION

Johns Associates was commissioned by the Somerset Levels Drainage Boards Consortium (SLDBC) to undertake a survey for signs of the presence/absence of water vole (*Arvicola amphibious*) and otter (*Lutra lutra*) along approximately 4km of the River Parrett upstream of its confluence with the River Tone (hereafter referred to as the Site).

2 LEGAL PROTECTION

The water vole is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 and is a priority conservation species.

It is illegal to ¹*inter alia*:

- intentionally capture, kill or injure water voles
- damage, destroy or block access to their places of shelter or protection (on purpose or by not taking enough care)
- disturb them in a place of shelter or protection (on purpose or by not taking enough care)
- possess, sell, control or transport live or dead water voles or parts of them (not water voles bred in captivity)

If found guilty of an offence the penalty could be an unlimited fine and up to 6 months in prison.

The European otter is the only native UK otter species. It is a European protected species included on the Conservation of Habitats and Species Regulations 2017 and is also fully protected under the Wildlife and Countryside Act 1981.

¹ www.gov.uk

It is illegal to² *inter alia*:

- capture, kill, disturb or injure otters (on purpose or by not taking enough care)
- damage or destroy a breeding or resting place (deliberately or by not taking enough care)
- obstruct access to their resting or sheltering places (deliberately or by not taking enough care)
- possess, sell, control or transport live or dead otters, or parts of otters

If found guilty of an offence the penalty could be an unlimited fine and up to 6 months in prison.

3 SITE LOCATION & CONTEXT

The Site is located along a section of the River Parrett between Burrowbridge (National Grid Reference [NGR] ST 35842 30207) and Oath (NGR ST 38308 27900). The survey stretch was approximately 4km in length in 2018 and 2.5km (downstream of Staithe Bridge) in 2019 to reflect the reduced proposed working area.

The surrounding landscape is predominantly coastal and floodplain grazing marsh with areas of lowland meadows and semi-improved and improved neutral grassland (Figure 1).

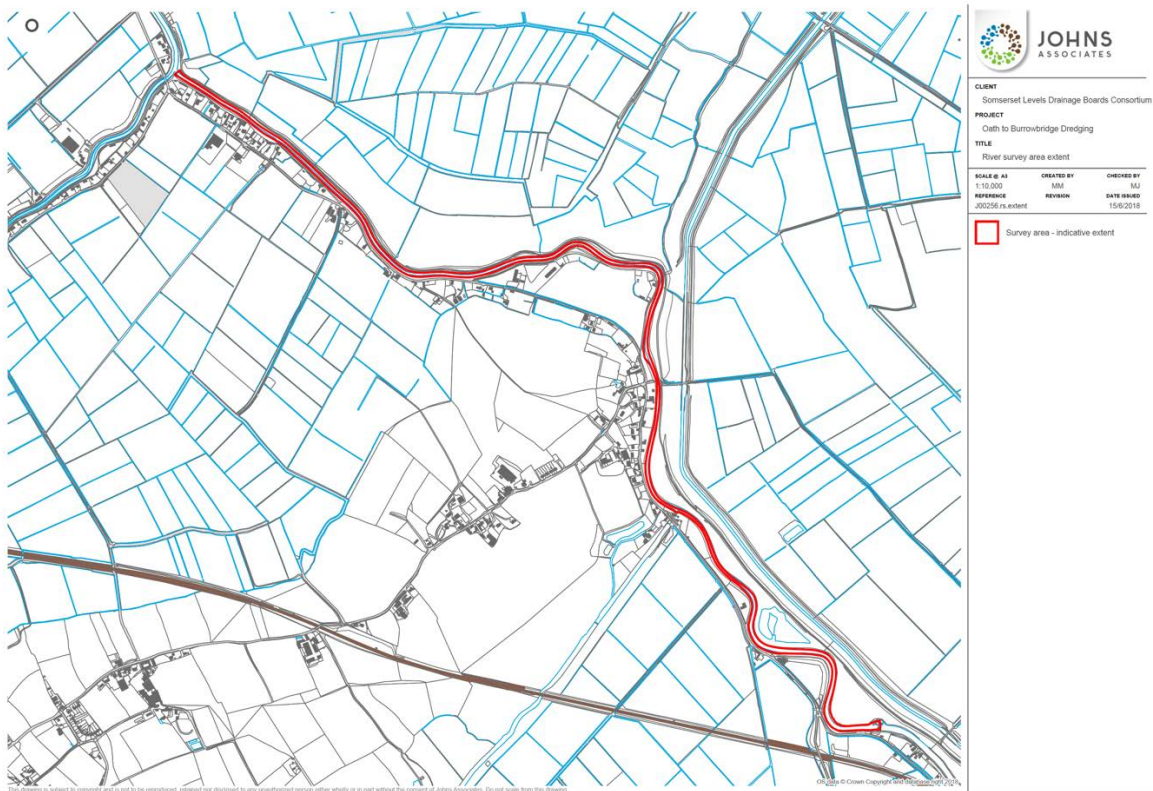


Figure 1: Site location between the confluence of the River Tone and the River Parrett to Oath Lock.

² www.gov.uk

4 METHODOLOGY

4.1 DESK STUDY

Information provided by the Somerset Levels Drainage Boards Consortium was reviewed for previous records of otter and water vole from the survey stretch and the wider local area.

4.2 SITE SURVEY

4.2.1 Water Voles

A water vole survey was undertaken by Matt Johns and Ben Mitchell from Johns Associates on 24th and 25th May, with further inspections on 7th June 2018 and an update survey by Ben Mitchell and Tessa Pepler on June 19th 2019. The weather was dry and sunny on both occasions, with good visibility of both riverbanks.

The survey was carried out from the channel (using an inflatable boat with an electric outboard engine) and also from the public right of way, which runs along the left-hand bank (LHB) of the River Parrett at this location.

In order to establish presence/ likely absence of active water vole burrows on the banks of the river within the stretch surveyed, banks were systematically inspected for characteristic signs of water vole including burrows, runs, food piles and latrines. Additional notes of habitat suitability (or otherwise) were made and representative photographs taken. Photographic evidence of any positive signs of this species was also recorded. Signs of rat, mink and other small mammals were also noted.

The survey was carried out following survey methods described at www.gov.uk and/or in the Water Vole Conservation Handbook (Strachan, 2011).

4.2.2 Otter

An otter survey was undertaken concurrently with the water vole survey by Matt Johns and Ben Mitchell from Johns Associates on 24th and 25th May 2018 and June 19th 2019. The same stretch of the River Parrett was surveyed, both from the channel (by boat) and from the public right of way which runs along the LHB at this location.

In order to establish presence/ likely absence of otter from this stretch of the River Parrett, banks were systematically searched for characteristic signs of otter, including anal jelly, spraints, tracks/ footprints, slides, possible holts and couches. Additional notes of habitat suitability (or otherwise) were made and representative photographs taken. Photographic evidence of any positive signs of this species was also recorded. Any likely signs of mink were also noted.

The survey was carried out in accordance with Natural England guidance (Natural England, 2014).

4.3 LIMITATIONS

Access was possible by boat to the entire survey stretch of the River Parrett. Survey conditions were considered good, with both banks clearly visible from the channel. The LHB could be surveyed from a public footpath which ran along the top of the bank at this location. The right-hand bank (RHB) was predominantly surveyed from the channel, owing to the presence of domestic gardens to which no access was permitted.

The results of the otter and water vole survey are valid at the time of writing (June 2018). Should there be delays to the project timetable and/or implementation of the proposed dredging works, an update survey may need to be completed. In this instance, advice should be sought as to the validity of the data, recommendations and conclusions contained herein.

5 RESULTS

5.1 DESK STUDY

Figure 2 shows the location of previous records of otter and water vole. The red line indicates the stretch surveyed.

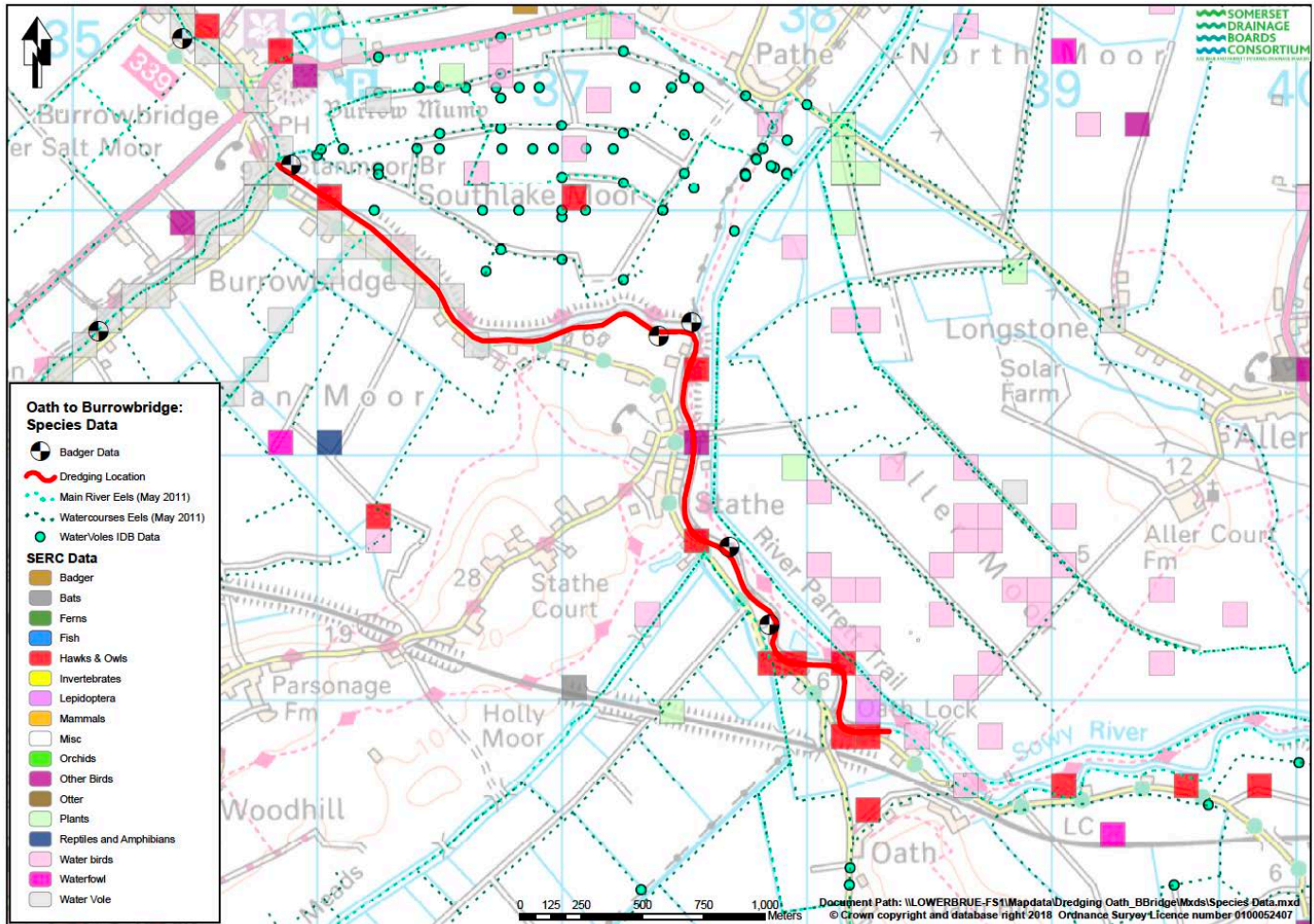


Figure 2: Previous records of otter and water vole from the survey stretch and wider local area (Source: Somerset Drainage Boards Consortium)

5.1.1 Water Vole

Records of water vole exist for the complex of ditched to the north of the River Parrett (illustrated by the turquoise circles in Figure 2). A number of additional records are shown to the south east of the survey stretch, close to Oath. These records originate from the Internal Drainage Board (IDB).

Data provided by the Somerset Environmental Records Centre (SERC) show water voles have also been recorded along both banks of the downstream survey stretch (see Figure 2 – pale grey 100m squares), and from connected ditches to the west.

This data shows water voles to be abundant in the wider local area to the north of the River Parrett, with records also suggesting presence along the main river channel.

5.1.2 Otter

Data supplied by SERC appears to show the edge of a 100m square (indicating record/s of otter) from an area to the north of the River Parrett. No records are shown from within the area surveyed by Johns Associates in 2018 and no IDB records for this species are shown. This would seem to suggest that otters were previously absent from this area of the Somerset Levels, or else under-recorded.

5.2 FIELD EVIDENCE

Figures 3 and 4 show the location and type of otter and water vole evidence recorded at the time of survey. Rat droppings were identified from one location towards the downstream limit of the survey stretch (see Figure 3).

5.2.3 Water Vole

Habitat Evaluation

Habitat along the main River Parrett channel within the stretch surveyed was considered suitable for this species, although burrows are likely to be located away from the main channel itself as water level fluctuates widely which would lead to flooding of burrows at certain times. The banks are of suitable gradient for burrow excavation, with a plentiful supply of food plants nearby.

Field Signs

Positive signs of water vole were identified along the entire survey stretch (see Figure 4) up to Staithe Bridge:

An extensive network of burrows was identified along the entire survey stretch (see Plates 1 and 2).



Plate 1: Water vole burrows



Plate 2: Water vole burrows

Additional evidence including feeding signs and characteristic water vole droppings were also noted and mapped (see Figure 4 and Plates 3 and 4).



Plate 3: Feeding signs and characteristic droppings



Plate 4: Feeding signs and characteristic droppings

5.2.4 Otter

Habitat Evaluation

Habitat along the main River Parrett channel within the stretch surveyed was considered suitable for otter, with side ditches providing a well-connected wider area of available habitat for this species. There is suitable habitat available for the establishment of holts within the system, and areas of low disturbance. The fluctuating water levels would not constitute a significant constraint to otters.

Field Signs

Positive signs of otter were identified during the course of the survey, particularly closer to Staithe Bridge the upper reaches of the stretch surveyed (see Figure 3):

Feeding remains (fish) was identified in an area of vegetation on the lower part of the left hand bankface (Plate 5).



Plate 5: Feeding remains (fish)

Characteristic footprints and claw marks were identified from an area of soft mud close to the edge of the water (see Plate 6).

Old and recent spraints were noted during the survey (see Plate 7) on an exposed area of mud. This suggests resident rather than transient otters along this stretch of the River Parrett.



Plate 6: Otter footprints and claw marks in soft mud



Plate 7: Old and recent otter spraints

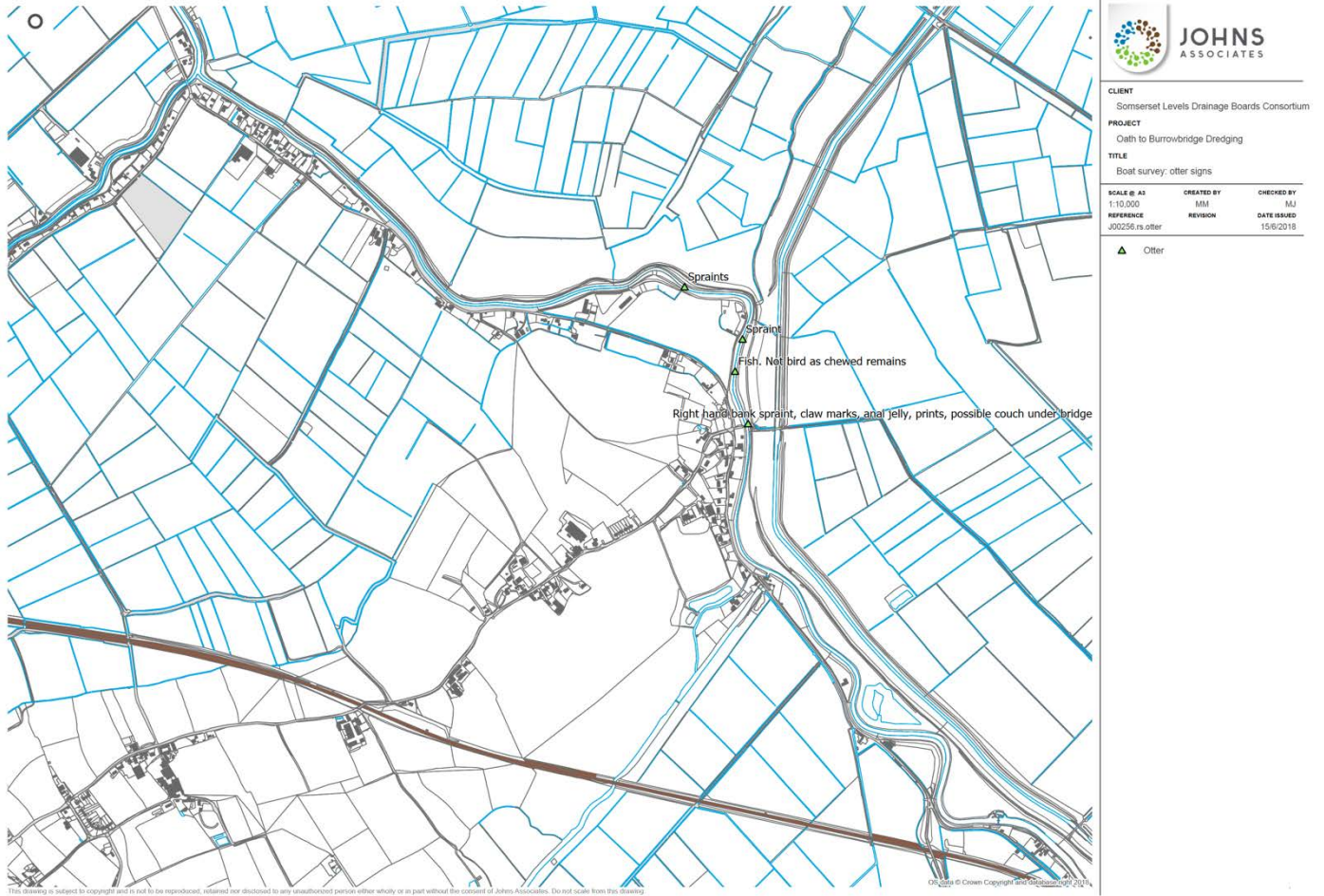


Figure 3: Results of Otter Survey



6 CONCLUSIONS

The field survey confirmed the presence of otter and water vole from within the stretch of the River Parrett surveyed in May 2018 and June 2019. Historic records also indicate the presence of these species from the site and wider local area over time.

Author: Matt Johns BSc MSc CEnv MCIEEM FGS MIFM, Director

Johns Associates Ltd
The Old Brewery
Newtown
Bradford on Avon BA15 1NF
T: 01225 723652
W: johnsassociates.co.uk
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.