King's Sedgemoor and Aller Moor Water Level Management Plan

Parrett Internal Drainage Board

Approved July 2010

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1. Approval of the Water Level Management Plan

This Water Level Management Plan has been prepared by the Parrett Internal Drainage Board for the King's Sedgemoor and Aller Moor area of the Drainage Board District. Contributions to the WLMP have been received from the Environment Agency, Natural England and others.

Water Level Management Plan – General details	
Plan area	King's Sedgemoor and Aller Moor (Parrett IDB)
SSSI(s) covered	King's Sedgemoor SSSI Moorlinch SSSI
Region / Area	Somerset Levels and Moors
IDB lead officer	Philip Brewin, Ecologist

Approval of the Water Level Management Plan			
"I agree with the proposals and actions set out in this Water Level Management Plan and confirm the Plan will help achieve favourable condition for the Sites of Special Scientific Interest covered by the Plan."			
Position & Organisation	**Name**	**Signature**	**Date**
Chairman – Parrett Drainage Board	Peter Maltby		
Area Manager – Environment Agency	Nick Gupta		
Area Manager – Natural England	Mark Watson		

2. Introduction

2.1. Purpose of the Plan

Water Level Management Plans (WLMPs) are required for all areas which have a conservation interest and where water level management is important for the maintenance, or rehabilitation, of that interest (e.g. Sites of Special Scientific Interest (SSSIs), Special Protection Areas and Ramsar sites). WLMPs also provide a framework for balancing and integrating the water level requirements of agriculture, recreation, flood risk and conservation within an area.

Natural England is responsible for assessing the condition of SSSIs and has identified a number of wetland SSSIs in Somerset where changes in water level management are required to achieve favourable condition for each site (see Box 2). Two of these sites are within the area covered by this Plan:

- King's Sedgemoor SSSI (822ha), with 74% of the area being in an unfavourable condition due to inappropriate water management.
- Moorlinch SSSI (226ha), with 30% of the area being in an unfavourable condition due to inappropriate water management.

The activities of the Parrett IDB play an important role in maintaining a healthy natural environment in Somerset and the IDB acknowledges its statutory duties to nature conservation under the Land Drainage Act (1991), the Conservation (Natural Habitats etc) Regulations (1994), the Countryside and Rights of Way Act (2000) and the Natural England and Rural Communities Act (2006). This WLMP will assist the Parrett IDB in carrying out its nature conservation duties and help provide appropriate water level management required to achieve favourable condition for the King's Sedgemoor SSSI and Moorlinch SSSI. It will also help ensure effective management measures are in place to resolve problems and protect and sustain valued features of the Plan area.

2.2. Plan area

The Plan covers 5364 hectares (13 255 acres) of the former King's Sedgemoor and Cary Valley Drainage Board Aller Moor Drainage Board Districts that now forms part of the area managed by the Parrett IDB. The location and extent of the Plan area is shown on Map 1.

The south-east boundary of the Plan area is formed by the high ground around Aller, High Ham and Somerton. The south-west boundary follows the right bank of the River Parrett, from Langport in the south, to Challis Wall (to the east of Southlake Moor) in the north. The western boundary then follows the higher land around the former islands of Othery and Middlezoy. From here the south-western boundary follows the left bank of the King's Sedgemoor Drain to Chedzoy, where it includes land to the north of the village itself. To the east, the Plan area includes the Cary Valley upstream to Somerton and follows the edge of the high ground around Compton Dundon. The northern boundary is formed by the ground rising up to the Polden Hills from Compton Dundon in the east, to Bawdrip in the west. The most westerly point of the Plan area is Dunball Sluice where the King's Sedgemoor Drain discharges to the tidal River Parrett.

2.3. Responsibility for preparation and implementation of the Plan

The Parrett IDB is responsible for the preparation, overall monitoring and review of this WLMP on behalf of the Drainage Authorities operating in the area, namely the Parrett IDB, the Environment Agency, Somerset County Council, Sedgemoor District Council, Mendip District Council and South Somerset District Council. Each Drainage Authority has contributed information to enable the WLMP to be produced by the Parrett IDB. The end result is a collaborative effort by all the Authorities. Each Drainage Authority is responsible for implementing and monitoring their own actions within the WLMP and for reporting on these matters to the Parrett IDB as appropriate.

The Parrett IDB will adopt and implement the WLMP in accordance with the criteria set out in Box 1.

2.4. Consultation and Plan approval

The First Draft of the WLMP was considered by the Parrett IDB WLMP Committee in June 2010 and endorsed for purposes of consultation with drainage ratepayers, Statutory Bodies and other organisations. Consultation on the WLMP took place during a four week period in June and July 2010.

Consultation responses, and any amendments to the WLMP arising from the consultation, were considered by the Parrett IDB WLMP Committee before recommending the WLMP for approval by the Full Parrett Board in July 2010.

Box 1: The approval and implementation of Water Level Management Plans

The following criteria will be used by the Parrett IDB when considering WLMPs for approval and when implementing actions relating to:

a. Making recommendations regarding the approval of a WLMP as a plan of action;
b. The construction of a capital improvement scheme as proposed within the approved WLMP;
c. Changing water levels as proposed within the approved WLMP.

A. Continuation of existing good practices

Where the WLMP includes proposals to '*continue the current good practices regarding water level management, watercourse maintenance and operational procedures'*, the Parrett IDB will satisfy itself that the current practices:

- Are technically sound;
- Satisfies the drainage and water level management needs of the area;
- Are environmentally sound;
- Are within the financial capacity of the Board to achieve;
- Will fulfil all the legal obligations of the Board, including those related to achieving favourable condition and biodiversity.

B. Undertake a capital improvement scheme

Where the WLMP includes a '*proposal to carry out a capital improvement scheme'*, the Parrett IDB will satisfy itself that the proposed scheme:

- Is technically sound;
- Satisfies the drainage and water level management needs of the area;
- Is environmentally sound;
- Is within the financial capacity of the Board to achieve;
- Has been agreed in principle with the occupier(s) and owner(s) of the land where the capital scheme is to be built;
- Is within the legal power of the Board to implement.

C. Change water level management

Where the WLMP includes proposal is to '*change the water level management, watercourse maintenance or operational procedures'*, the Parrett IDB will satisfy itself that the proposed change:

- Is technically sound;
- Satisfies the drainage and water level management needs of the area;
- Is environmentally sound;
- Is within the financial capacity of the Board to achieve;
- Is supported by the owners and occupiers of a significant majority of the land that would be affected by the proposed change being considered (see note below);
- Will fulfil all the legal obligations of the Board, including those related to achieving favourable condition and biodiversity;
- Does not carry a significant risk that the Board may face a legal claim for damages incurred by a third party as a consequence of its decision to change its current practice.

Notes: When considering a proposal to change water levels, the Parrett IDB will use the uptake of agri-environment scheme agreements (including proposals by the occupiers to upgrade their agreements), in the area likely to be affected by the proposed change, as an initial indication of the measure of compatibility of the farm holding/land management unit with the proposed change in water levels. Actual changes in water levels thereafter will be sought through the negotiation of appropriate land management agreements between the owners/occupiers of the land and the relevant authority (i.e. Higher Level Stewardship agreements between farmers and Natural England).

3. Hydrology, watercourses and infrastructure

3.1. Topography and soils

The land drained by the watercourses is low lying alluvium with surface peat enclosed by the higher ground of the Polden Hills to the north, the higher ground around High Ham and Somerton to the east and the former islands of Othery and Middlezoy to the west. The land surface varies from levels of about 5 metres above Ordnance Datum Newlyn (ODN) at the eastern and southern edges of the Plan area to about 3m ODN at the western end around Chedzoy and Bawdrip. High tides are prevented from inundating the low lying land by the Dunball Sluice and the tidal embankments along the right bank of the River Parrett.

3.2. Water supply

The mean annual rainfall between 2000 and 2008 for King's Sedgemoor and Aller Moor was 690mm. This figure was calculated using Environment Agency rain gauges at Long Sutton and Westonzoyland.

The River Parrett and River Cary are the principal watercourses that supply water to the Plan Area. The River Cary enters the Plan area at Somerton and feeds inlets to Somerton Moor and Sutton Moor, and to the King's Sedgemoor Drain at Henley. The Parrett supplies water to Aller Moor via inlets at either end of Poolmead Rhyne and to the Sowy River at Monks Leaze Clyse. The main feeds to the King's Sedgemoor SSSI are from the River Cary, the Langacre Rhyne and Bimpits Rhyne. The Kings Sedgemoor Drain, upstream of Greylake Sluice, provides the main feed to the Moorlinch SSSI, as well as a supplemental feed to the River Cary via pumps at Henley Door. Water is also fed from the King's Sedgemoor and Aller Moor area into the River Penzoy via Aller Drove Inlet Sluice, and into the Chedzoy area via Chedzoy Inlet from Langacre Rhyne.

Water management in the summer is mostly focused on the supply of water to the rhyne and ditch system and the maintenance of high ditch water levels for farming and conservation, except during periods of heavy rainfall when there is a risk of flooding. From early April to the end of November, sluice gates and penning boards are operated to raise water levels in the rhynes and ditches to summer pen levels. The maintenance of summer levels is required to:

a) Provide wet fences around the fields and the watering of livestock;

b) Maintain an appropriate groundwater table during the growing season;

c) Maintain the conservation interest of the watercourses.

Details of the water supply inlets to the Plan area are given in Section 3.7.1 and the locations of structures are shown on Map 3.

3.3. Drainage

Dunball Sluice is the only outlet from the Plan area, from where water is evacuated at low tide by gravity from the King's Sedgemoor Drain to the Parrett. Details of this outlet can be found in Section 3.7.2.

During flood conditions in the River Parrett, large volumes of water can enter the Plan area via Monks Leaze Clyse or over spillways on the right bank of the Parrett (Aller Moor and Beazley's Spillways). The Sowy River (also known as the Parrett Flood Relief Channel) is used to convey the flood water to the King's Sedgemoor Drain and Dunball Sluice. The operation of Dunball Sluice is critical at these times, as high flows in the Sowy can cause flooding in adjacent areas, especially along the King's Sedgemoor Drain.

Water levels are generally lowered in winter to allow better drainage and to reduce the risk of overland flooding. However, most watercourses retain a pen level in winter to maintain the conservation interests and to reduce frost damage and the erosion of banks.

3.4. Asset management systems

The Environment Agency manages its assets using a Flood Risk Management (FRM) system approach. An FRM system is defined as "*a group of assets that work together to reduce the flood risk to the people, infrastructure and environment within the system*". Each system has its own specific Management Plan.

Performance specifications are given to each system to guide maintenance standards. The maintenance works are then carried out by the Environment Agency's Operations Delivery Team. This process is used to direct the highest standards of maintenance to where they are needed most (i.e. people, property and environment) using a risk based approach. The Environment Agency has adopted three categories to prioritise maintenance for each FRM system:

- **High** – Generally urban areas with high populations or rural areas with high environmental designations.
- **Medium** – Urban to rural areas with relatively low population densities.
- **Low** – Sparsely populated areas and agricultural land.

The FRM system that covers the whole of the King's Sedgemoor and Aller Moor WLMP area is:

- **FR/14/S024 Kings Sedgemoor Drain (High)**

The Kings Sedgemoor Drain FRM system has been categorised as a high priority system because of the high environmental designations of the adjoining land and the importance of water management to these environmental assets.

Each Environment Agency maintained asset is listed in the National Flood and Coastal Defence Database (NFCDD). This provides a definitive store for all data on flood and coastal defences. It records inspections, identifies asset condition and residual life, and recommends any work required and its urgency.

The Parrett IDB manages its assets in the Plan area under a comparable asset management system.

3.5. The strategic context for water management

There are a number of strategic plans and documents which provide the context for this Water Level Management Plan, including:

- *The Catchment Flood Management Plan* - A summary version is available on the Environment Agency website.
- *Catchment Abstraction Management Strategies (CAMS)* - These documents are currently being revised for re-release in 2011.
- *Mid Parrett, Isle & Yeo Study* - Completed in March 2007.
- *Lower Parrett & Tone Flood Management Strategy* - Working Draft prepared in February 2005.
- *Parrett and Tone Channel Monitoring Project 2008-09.*
- *Water Framework Directive* and *South West River Basin Management Plan* - The plan is available on the Environment Agency website.

3.5.1. Catchment Flood Management Plan

The Catchment Flood Management Plan (CFMP) for the River Parrett provides an overview of flood risk management in the catchment for the next 100 years. The CFMP is intended to guide Flood Risk Management (FRM) investment in the catchment by the Environment Agency and other bodies with FRM responsibilities and powers. The CFMP was produced in 2008 and will be reviewed every six years.

The Environment Agency has adopted Policy Option 6 for the floodplains of the Parrett catchment. This would involve the Environment Agency, and others, taking action to increase the frequency of flooding within the King's Sedgemoor and Aller Moor WLMP area, if redistributing floodwater from upstream of Langport to the King's Sedgemoor Drain reduced the overall damage and disruption from flooding. Work will be required to maintain the safety of the existing River Parrett embankments and flood management infrastructure.

3.5.2. Catchment Abstraction Management Strategy

The Environment Agency has developed Catchment Abstraction Management Strategies (CAMS) to assess the water availability in catchments and to ensure water resources are managed sustainably. As the Levels and Moors are penned systems, the current Strategy for the Parrett catchment (published March 2006) was unable to accurately assess the water requirements for these areas, and therefore the availability of water for abstraction. To address this problem the Environment Agency is preparing a new CAMS for the Levels and Moors, which is due for completion by February 2011. The aim of the new Strategy will be to identify what water may be available for abstraction and set an appropriate abstraction licensing policy for those rivers that are influenced by the inlets and outlets from penned systems. The new CAMS will not seek to change the water levels within penned systems, and will assume that the water levels stated in the WLMPs are appropriate. If the CAMS identifies that there is surplus water available in the catchment, then it will also consider how much of this water is available for new abstraction licences. Where over abstraction is identified it will consider what actions are necessary to redress the balance.

3.5.3. Lower Parrett & Tone Flood Management Strategy

This draft report looks at the long term flood management of the River Parrett and the River Tone downstream of Taunton and Langport. The strategic aim is to achieve sustainable flood management within the area, minimise the impact on communities and maximise opportunities for wildlife and other local interests. Most of the area has a significant risk of flooding from either fluvial and / or tidal sources. Embankments provide most of the flood protection in the area and there is an increasing risk of breaching due to bank condition and climate change. Various options have been recommended for further study.

3.5.4. Parrett and Tone Channel Monitoring Project

The Environment Agency is currently undertaking a study on the River Parrett and River Tone to monitor and assess the success of dredging work that was carried out between 2002 and 2005. The study area on the Tone is from the Parrett confluence to New Bridge and on the Parrett from Oath Lock downstream to the M5 flyover. New bathymetric surveys will be undertaken to gauge the current profile of the river channels. This data will then be meshed together with LiDAR data in order to obtain accurate cross sections. Once these cross sections are in place, the Environment Agency intends to reuse the existing Parrett / Sowy hydraulic model to replicate the current profile of the Parrett and Tone. The Environment Agency will then model alternative scenarios to determine the need for a programme of de-silting that maximises flood alleviation and optimises the performance and sustainability of the channels.

3.6. Watercourses

3.6.1. Main Rivers

The Environment Agency has permissive powers to manage designated Main Rivers to reduce the risk of flooding property and the risk to human life. There are 13 Main Rivers (108 km) in the Plan area: Eighteen Feet Rhyne, River Cary, King Sedgemoor Drain, King Sedgemoor Back Ditch, Bimpits Rhyne, Othery Rhyne, Langacre Rhyne, River Sowy, River Parrett, Decoy Rhyne, Misbrook Rhyne, Middlemoor Rhyne and Poolmead Rhyne. There are also several Main Rivers outside of the Plan area which can affect water levels within the area. Summary details of these watercourses are set out in Table 1. The locations of the Main Rivers are shown on Map 2. The control structures on these watercourses are listed in Tables 2 – 4.

3.6.2. IDB watercourses

The Parrett IDB is responsible for maintaining a network of arterial watercourses in the Plan area known as 'Viewed Rhynes'. Watercourses can be taken into, or out of, view by resolution of the Board. There are over 132 kilometres of IDB maintained Viewed Rhynes in the Plan area. Summary details of the Viewed Rhynes for King's Sedgemoor and Aller Moor are set out in Table 1 and their locations are shown on Map 2. The control structures on these watercourses are listed in Tables 2 – 4.

3.6.3. Private ditches

In addition to the Main Rivers and Viewed Rhynes, private ditches occur throughout the Plan area and the responsibility for maintenance of these watercourses lies with the riparian owner. This network of ditches is an integral part of the drainage and water supply network in the Plan area. They are particularly important as wet fences, to supply drinking water for grazing animals, and as habitats for a substantial part of the biodiversity interest of the Plan area.

Table 1: Schedule of arterial watercourses in King's Sedgemoor and Aller Moor

Asset no.	Watercourse	Operating authority	Length (m)	Location & connections	Typical maintenance regime	Control structures (see Tables 2 - 4)
8591	Kings Sedgemoor Drain	EA	15800	The Kings Sedgemoor Drain (KSD) originates at Henley Sluice and discharges into the River Parrett at Dunball Sluice. Other Main Rivers and a large number of viewed rhynes connect to the KSD.	This watercourse is cut once annually in September using W2 specification.	Dunball Sluice Greylake Sluice Henley Door Sluice Henley Pumping Station
8562	Kings Sedgemoor Drain Back Ditch	EA	9000	This watercourse originates at Eighteen Feet Rhyne and runs parallel to the KSD. The first section runs from Eighteen Feet Rhyne to Greylake Bridge where it connects with the KSD. There is then a short section that runs as far as a Trench Sheet Bay ~50m downstream. The final section runs from this point to Bawdrip. A number of Viewed Rhynes connect to the KSD Back Ditch.	W2 specification is used twice annually in June and August.	Back Ditch Outfall, Bradney (blocked) Parchy Tilting Weir and Flap Cossington Rhyne Outfall Cossington Rhyne Penning Bay Chilton Right Penning Bay Chilton Right Rhyne Outfall Greylake Bridge Trench Sheet Dam Greylake Inlet (Hook Rhyne)
8563	Eighteen Feet Rhyne	EA	8200	Starting in the east at Hurst near Compton Dundon, this rhyne flows west until it joins with the KSD downstream of Aller 2nd Sluice. A large number of viewed rhynes connect to the Eighteen Feet Rhyne. Summer feed u/s of Walton Sluice, feeds from Main Rhyne and Etsome Inlet, u/s of Etsome Sluice.	One weed cut is taken on this rhyne in August each year using W3 specification.	Walton Sluice Nythe Sluice (not used)
8681	Langacre Rhyne	EA	10200	The Langacre flows in a north-western direction from Decoy Rhyne to the KSD. At Pathe, the Langacre runs parallel to the Sowy, and feeds Othery Rhyne and the KSD. The Langacre also connects with the River Sowy at Blindmans Gate via a tilting weir and flap valve. There is a direct connection with the Kings Sedgemoor Drain.	The Langacre Rhyne is cut twice annually in August and September using W2 specification.	Langacre Sluice (3 no) Blind Mans Gate Sluices (3no) Blind Man's Gate Bypass Tilting Weir Chedzoy Inlet (feed to Chedzoy) Beer Wall Sluices (3 No) Decoy Orchard Tilting Weir Aller Drove Inlet Sluice Oxleaze Drove Tilting Weir
8662	Bimpits Rhyne	EA	5400	Bimpits Rhyne comes directly off the Sowy at Bagenham Farm Inlet, then flows north and west, parallel to the Sowy before joining back into the Sowy at Bimptis Lane Outfall. A short section continues on for another 0.5km west past the outfall and terminates near Burdenham Farm. There are connections to Bimpits Rhyne from Owery Rhyne and Small Rhyne.	W3 specification is used twice annually in July and October.	Bimpits Rhyne Inlet (Bagenham Farm Inlet) First Drove Tilting Weir (also incorrectly known as Beer Wall Tilting Weir) Greylake Farm Penning Bay (Sandpit Lane Sluice) Blind Man's Gate Tilting Weir Bimpits Lane Tilting Weir
8682	Othery Rhyne	EA	1300	Othery Rhyne originates from the Langacre Rhyne approximately 1.7km downstream of Beer Wall. It flows in a north-easterly direction for 1.3km until it reaches Egypt Clyse where it enters the KSD. (Summer feed to Kings Sedgemoor Drain)	W3 specification is used twice annually in June and September	Egypt Clyse (Othery sluice)

Table 1 (continued): Schedule of arterial watercourses in King's Sedgemoor and Aller Moor

Asset no.	Watercourse	Operating authority	Length (m)	Location & connections	Typical maintenance regime	Control structures (see Tables 2 - 4)
8550	River Parrett	EA	6000 (in Plan area)	The Parrett forms the southern boundary of the Plan Area for approximately 6km. It supplies water to the Sowy and Poolmead Rhyne. During flood conditions it overtops at Aller Moor Spillway and Beazley's Spillway and runs into the Sowy.	The weed in and around the river in this Plan Area is not currently cut. This practice is subject to annual review.	Beazley's Bank (Spillway) Oath Lock Sluice Aller Moor Spillway Cockle Moor Bridge Inlet Gas House Footbridge Inlet
8661	Sowy River	EA	12000	The Sowy originates at Monks Leaze Clyse on the right bank of the Parrett and is fed from the Parrett. The Sowy then flows west, parallel to the Parrett until Southlake, where the Sowy continues north to the KSD. The Sowy supplies water to Bimpits Rhyne at Bagenham Farm Inlet and Southlake via Aller Drove Inlet and Southlake Inlet near Challis Wall Sluices.	W3 specification is used once annually in September.	Monks Leaze Sluice Aller Drove Inlet Sluice (to the Penzoy) Bagenham Farm Sluice Beer Wall Tilting Weir
8561	River Cary	EA	30000 (approx)	The River Cary enters the Plan Area north of Somerton. From here it flows along the Southern edge of North Moor and Somerton Moor until it reaches Henley Sluice, where it becomes the King Sedgemoor Drain.	W2 weed specification is used once during August or September between Henley Bridge and Somerton-Cary Bridge, and once in September or October between the Somerton-Cary Bridge & Cary Fitzpaine.	Etsome (Bridge) Sluice (Penning Gate) Pitney Steart Bridge Weir Henley Sluice
8684	Middlemoor Rhyne	EA	1100	Middlemoor Rhyne is feed from Poolmead Rhyne at Headwall Sluice. It flows directly west to join with Decoy Rhyne.	W3 specification is carried out twice annually in August and October.	Headwall Structure Decoy Orchard Sluice Middlemoor Rhyne Penning Bay Middlemoor Sluice
8685	Misbrook Rhyne	EA	1700	Misbrook Rhyne is feed from Poolmead Rhyne at Headwall Sluice. It flows in a north-westerly route before looping south to join Decoy Rhyne.	W2 specification is used twice annually in July and October.	Weir Bridge Rhyne Tilting Weir
8683	Decoy Rhyne	EA	300	This short, linking watercourse drains most of Middle Moor, starting at Middlemoor Rhyne and flowing directly south into the Sowy.	W3 specification is carried out twice annually in August and October.	Decoy Rhyne Control Structure.
8686	Poolmead Rhyne	EA	1800	This rhyne comes off the Parrett at Monks Leaze Clyse and flows directly north before looping east and south back towards Langport. It runs into Northstreet Moor Rhyne at Common Moor Sluices (private)	From Monks Leaze to Common Moor Sluice this watercourse is maintained using W3 specification and is cut twice annually in August and October.	Poolmead Rhyne Inlet Poolmead outfall Poolmead Rhyne Penning Bay Common Moor Sluice No 3 Common Moor Sluice No 2 Common Moor Sluice 1

Table 1 (continued): Schedule of arterial watercourses in King's Sedgemoor and Aller Moor

Asset no.	Watercourse	Operating authority	Length (m)	Location & connections	Typical maintenance regime	Control structures (see Tables 2 - 4)
1	Little Wall Rhyne	IDB	445	Crooked route from south of the A39 opposite the Knowle Inn, south and east to the KSD.	Annual weed cut	Little Wall Outfall to KSD Pipe under Bank.
2	Bawdrip Level Rhyne	IDB	3203	Rhyne and branch through Bawdrip Level westwards to the KSD.	Annual weed cut	Level Rhyne Outfall to KSD Pipe under Bank.
3	North Moor Rhyne	IDB	549	At right angles to Northmoor Drove, east of Peasy Hill.	Annual weed cut	
4	Chedzoy Rhyne	IDB	2806	Crooked route north of Chedzoy village generally eastwards to the KSD.	Annual weed cut	Chedzoy Rhyne Tilting Weir
5	Pendon Rhyne	IDB	1293	Along northern edge of West Moor, Stawell, with a branch south to Moor Road. Connecting to West Moor Rhyne.	Annual weed cut	
6	Stawell Rhyne	IDB	732	Along IDB boundary, connecting with Paddocks Rhyne to the west.	Annual weed cut	
7	Skidwell Rhyne	IDB	988	Crooked route and branch through Stawell Moor.	Annual weed cut	
8	Paddocks Rhyne	IDB	909	West from Sutton Mallett and then along the East side of Moor Road to connect with Stawell Rhyne and West Moor Rhyne.	Annual weed cut	
9	Short Rhyne	IDB	555	Short length of rhyne to south of Moor Road.	Annual weed cut	
10	West Moor Rhyne	IDB	830	Along south side of Moor Road, connecting with the KSD Back Ditch to the west.	Annual weed cut	
11	Cossington Right Rhyne	IDB	1708	Crooked route along northern edge of Lang Moor, connecting with the KSD Back Ditch at the western end.	Annual weed cut	Cossington Right Rhyne penning bay
12	Cossington Rhyne	IDB	641	South from junction with Cossington Right Rhyne and Sutton Rhyne to the KSD Back Ditch in the south.	Annual weed cut	Cossington Rhyne outlet to KSD
13	Fortyacre Rhyne	IDB	763	From Chilton Right Drove, west to connect with Cossington Rhyne.	Annual weed cut	
14	Polden Rhyne	IDB	866	Crooked route from junction of Templars, Chilton Right and Shapwick Rhynes, west to Fortyacre Rhyne.	Annual weed cut	Polden Rhyne trench sheet bay
15	Templers Rhyne	IDB	512	From Moorlinch Rhyne in the north, southwards to junction of Polden, Chilton Right and Shapwick Rhynes	Annual weed cut	
16	Chilton Right Rhyne	IDB	512	From junction of Templars, Polden and Shapwick Rhynes, south to the KSD Back Ditch.	Annual weed cut	Chilton Right Outfall to KSD Penstock and flap valve
17	Sutton Rhyne	IDB	1190	Section connecting with Moorlinch Rhyne in the east and with Cossington Right Rhyne in the west.	Annual weed cut	Sutton Rhyne Bridge
18	Greinton Rhyne (B)	IDB	1708	Upstream section from Nythe Road, Pedwell south and west to Greinton (A).	Annual weed cut	
19	Greinton Rhyne (A)	IDB	2166	Downstream section south and west to connect with the KSD Back Ditch (Boundary Rhyne) upstream of Greylake Sluice.	Annual weed cut	

Table 1 (continued): Schedule of arterial watercourses in King's Sedgemoor and Aller Moor

Asset no.	Watercourse	Operating authority	Length (m)	Location & connections	Typical maintenance regime	Control structures (see Tables 2 - 4)
20	Old Greinton Rhyne	IDB	976	South-westwards to connect with the KSD Back Ditch (Boundary Rhyne) upstream of Greylake Sluice.	Annual weed cut	
21	Strangeways Old Rhyne	IDB	793	From east side of A361, eastwards to Othery Rhyne.	Annual weed cut	
22	Moorlynch Rhyne	IDB	1915	West from Drysend Farm, Moorlinch to Junction of Temples and Sutton Rhynes.	Annual weed cut	RWLA tilting weir
23	Shapwick Right Rhyne	IDB	2428	From Hook Rhyne in the east, westwards to junction of Polden, Chilton Right and Templar Rhynes. Catcott Right and Edington Right also connect.	Annual weed cut	
24	Edington Right Rhyne	IDB	1220	From Moorlinch Rhyne in the north, southwards to Shapwick Rhyne.	Part of RWLA	RWLA tilting weir
25	Catcott Right Rhyne	IDB	1251	From Drysend Rhyne in the north, southwards to Shapwick Rhyne.	Annual weed cut	
26	Twelve Acre Rhyne	IDB	275	From Moorlinch Right Drove westwards to Catcott Right Rhyne.	Annual weed cut	
27	Hook Rhyne (A)	IDB	2166	From KSD upstream of Greylake Sluice, northwards around eastern edge of Moorlinch SSSI.	Annual weed cut	Greylake Inlet penstock and flap valve
28	Hook Rhyne (B)	IDB	244	Northern extension of Hook (A) towards Drysend Farm.	Annual weed cut	Penstock winter feed to RWLA
29	Cross Rhyne	IDB	555	From Hook Rhyne (A) to Catcott Right Rhyne.	Annual weed cut	
30	Shooting Lakes Rhyne (A)	IDB	421	South west from Hurst Drove, connecting to upstream part of the Eighteen Feet Rhyne.	Annual weed cut	
31	Shooting Lakes Rhyne (B)	IDB	488	Upstream section, east of Hurst Drove.	Annual weed cut	
32	Mead Run Rhyne	IDB	671	Along north side of Mead Run to Hurst Drove where it connects with upstream part of Eighteen Feet Rhyne.	Annual weed cut	
33	Compton Dundon Rhyne	IDB	2336	Along south side of Middle Drove, from Hurst Rhyne in the east, turning south-west after 900m then west to connect with Redlake Rhyne (A).	Annual weed cut	
34	Redlake Rhyne (A)	IDB	2013	Downstream section of Redlake (B), from Liver Moor Drove in the east, north-west to connect with the Eighteen Feet Rhyne.	Annual weed cut	Penning facility at Middle Drove Weir between Middle Drove and 18 feet rhyne.
35	Redlake Rhyne (B)	IDB	2044	Upstream section of Redlake, from south of Decoy Farm to Liver Moor Drove in the west.	Annual weed cut	
36	Redlake Rhyne Extension	IDB	537	East from Decoy Farm.	Annual weed cut	
37	Nythe Road Rhyne (A)	IDB	347	Along west side of Nythe Road. Culvert under road to connect with Nythe Rhyne (B).	Annual weed cut	
38	Nythe Rhyne (B)	IDB	1159	Along east side of Nythe Road, connecting with Eighteen Feet Rhyne in the south and Nythe Road Rhyne (A)	Annual weed cut	

Table 1 (continued): Schedule of arterial watercourses in King's Sedgemoor and Aller Moor

Asset no.	Watercourse	Operating authority	Length (m)	Location & connections	Typical maintenance regime	Control structures (see Tables 2 - 4)
39	Butleigh Rhyne	IDB	1452	Through Butleigh Moor, connecting with Nythe Rhyne (B) in the west and Preisthill Rhyne in the east.	Cut as required – Very Soft	
40	Sutton Rhyne	IDB	2300	East from Priesthill Rhyne to Walton Drove, along northern edge of Butleigh Moor.	Annual weed cut	Culvert under Walton Drove on Sutton Rhyne
41	Priesthill Rhyne	IDB	830	From western end of Sutton Rhyne, southwards to Eighteen Feet Rhyne. Also connects to Butleigh Rhyne.	Annual weed cut	
42	Butleigh Rhyne	IDB	1440	From North Rhyne (A) south and then west to connect with Eighteen Feet Rhyne.	Annual weed cut	
43	Old Sutton Rhyne	IDB	2251	From Higher Drove in the east, north along west side of Street Drove, then north-west to Butleigh drove.	Annual weed cut	
44	Street Rhyne	IDB	1086	From Eighteen Feet Rhyne north-east to connect with North Rhyne (A) & (B).	Annual weed cut	Street Rhyne Inlet
45	North Rhyne (A)	IDB	824	From northern end of Street Rhyne, west to Walton Drove.	Annual weed cut	
46	North Rhyne (B)	IDB	1732	From Street Drove westwards, along north side of Higher Drove, to connect with northern end of Street Rhyne.	Annual weed cut	
47	Middle Rhyne	IDB	1360	From Street Drove, westwards to Street Rhyne.	Annual weed cut	
48	Owery Rhyne	IDB	366	Branches either side of Bimpits Rhyne.	Annual weed cut	
49	Smallmoor Rhyne	IDB	1464	Crooked course through Small Moor, under A361, east of Greylake Farm to follow the east side of the A361 to connect with Bimpits Rhyne.	Annual weed cut	Smallmoor Rhyne Dam
50	Two Mile Rhyne	IDB	1495	Along west side of Two Mile Drove, north from Beer Wall.	Annual weed cut	Two Mile Rhyne Penstock
51	Two Mile Rhyne Extension	IDB	1129	Along south side of Beer Wall. Then north under the road along east side of River Drove for one field then eastwards to connect with Two Mile Rhyne.	Annual weed cut	
52	New Rhyne	IDB	427	From northern end of Two Mile Rhyne to southern end of River Drove Rhyne.	Annual weed cut	
53	Aller Second Rhyne (North)	IDB	793	Northern section	Annual weed cut	
54	River Drove Rhyne	IDB	458	Along east side of River Drove, north from New Rhyne to Othery Rhyne.	Annual weed cut	
55	Blackhole Rhyne	IDB	1598	From Kings Sedgemoor Drain to High Ham Rhyne in the west.	Annual weed cut	Blackhole Outlet Blackhole Rhyne Penning Bay Feed Culvert under Pedwell-High Ham Road on Blackhole
56	Blackhole Feed	IDB	702	From Henley Bridge, north and west to connect with Blackhole Rhyne.	Annual weed cut	Inlet from Old River Cary u/s of Henley Door
57	Old Rhyne (A)	IDB	933	Eastern section of the old River Cary, connecting with the River Cary at Henley Bridge.	Annual weed cut	Inlet from Old River Cary u/s of Henley Door

Table 1 (continued): Schedule of arterial watercourses in King's Sedgemoor and Aller Moor

Asset no.	Watercourse	Operating authority	Length (m)	Location & connections	Typical maintenance regime	Control structures (see Tables 2 - 4)
58	Old Rhyne (B)	IDB	1452	Middle section of the old River Cary	Annual weed cut	Old Rhyne Inlet Pipe High Ham Rhyne Penstock
59	Old Rhyne (C)	IDB	1641	Western section of the old River Cary	Annual weed cut	
60	Huish Moor Rhyne	IDB	1330	From the Sutton Rhyne, westwards to the KSD.	Annual weed cut	
61	Low Ham Rhyne	IDB	1452	From Henley Bridge north-east to Eighteen Feet Rhyne.	Annual weed cut	Low Ham Moor Penning Bay Low Ham Rhyne Tilting Weir
62	Northern Sutton Moor Rhyne	IDB	1379	From downstream section of Low ham Rhyne north-west through Sutton Moor to connect with Eighteen Feet Rhyne.	Annual weed cut	Northern Rhyne Feed Northern Rhyne Penning Bay
63	Sutton Moor Middle Rhyne	IDB	1751	From Low Ham Rhyne north-west to Eighteen Feet Rhyne.	Annual weed cut	Sutton Moor Middle Rhyne Feed Sutton Moor Middle Rhyne Penning Bay
64	Sutton Rhyne	IDB	2092	Along east side of Pedwell Drove, from Henley Bridge north-west to Huish Moor Rhyne.	Annual weed cut	Sutton Rhyne Feed under Pedwell Drove KS071 – Pipe under Pedwell Drove KS070 – Pipe under Pedwell Drove Sutton Rhyne Penning Bay Feed Pipe under Pedwell Drove Sutton Rhyne Bottom Tilting Weir
65	Two Mile Rhyne Bottom Section	IDB	403	Downstream end of two Mile Rhyne, north and west to connect with Othery Rhyne.	Annual weed cut	
66	Aller Second Rhyne (South)	IDB	1342	Southern section, east of Beer Drove, then branching east and north to connect with ASR (North) and Two Mile Rhyne.	Annual weed cut	Culvert on Two Mile Rhyne
67	New Rhyne	IDB	793	West from High Ham Rhyne, to Aller Second Rhyne (North).	Annual weed cut	
67	New Rhyne	IDB	793	West from High Ham Rhyne, to Aller Second Rhyne (North).	Annual weed cut	
68	High Ham Rhyne	IDB	1342	From Old River Cary north to the KSD.	Annual weed cut	High Ham Rhyne Penstock No 1 High Ham Rhyne Penstock No 2 Old Rhyne Inlet Pipe High Ham Rhyne Sluice Penstock toKSD
69	Middlezoy Moor Feed	IDB	305	From upstream of Greylake Sluice south-west along side of A361 for one field then crooked route north and west to reach eastern end of Middlezoy Moor Drove, then south to Langacre Rhyne.	Annual weed cut	KS059 Penstock
70	Etsome Rhyne	IDB	1403	From River Cary north then west to Dundon Drove where it connects with Somerton North Main Rhyne.	Annual weed cut	Etsome Inlet Dundon Drove Sluice
71	Somerton North Main Rhyne	IDB	683	Connects with Etsome Rhyne at Dundon Drove in the east and with Somerton Middle Main Rhyne at Liver Moor Drove in the west.	Annual weed cut	Liver Moor Drove Penning Bay

Table 1 (continued): Schedule of arterial watercourses in King's Sedgemoor and Aller Moor

Asset no.	Watercourse	Operating authority	Length (m)	Location & connections	Typical maintenance regime	Control structures (see Tables 2 - 4)
72	Somerton Middle Main Rhyne	IDB	1397	Connects with Somerton North Main Rhyne at Liver Moor Drove in the east and with Somerton Main Rhyne (A) in the west.	Annual weed cut	Middle Main Rhyne Sluice at Peddles Barn Drove
73	Somerton Main Rhyne (A)	IDB	1891	Parallel to Peddles Barn Drove and Walton Drove, northwards to connect with Eighteen Feet Rhyne.	Annual weed cut	Somerton Main Rhyne penstock & Flood Relief Pipe
74	Somerton Main Rhyne (B)	IDB	1031	Southern extension of Somerton Main Rhyne (A), including lengths south of Somerton Drove.	Annual weed cut	Somerton Main Rhyne/ Somerton Drove Culvert Feed pipe under Walton Drove on Somerton Main & New Rhyne
75	Connecting Rhyne	IDB	214	Rhyne along east side of Liver Moor Drove, connecting Somerton North Main Rhyne with Somerton Main Rhyne (C) to the south.	Annual weed cut	North Main Rhyne Sluice
76	Somerton Main Rhyne (C)	IDB	1104	From Somerton Door Drove north-east to Somerton Main Rhyne (B).	Annual weed cut	
77	New Rhyne	IDB	262	Connect western end of Somerton Main Rhyne (B) with Pitney Straight Rhyne (Somerton Rhyne).	Annual weed cut	
78	Pitney Straight Rhyne (Somerton Rhyne)	IDB	2721	Along east side of Pitney Moor Drove, from Pitney Steart Bridge in the south to Eighteen Feet Rhyne in the north.	Annual weed cut	Somerton Rhyne Inlet Somerton Straight Rhyne Penning No 1 Somerton Straight Rhyne Penning No 2 Somerton Straight Rhyne Penning No 3 Somerton Straight Rhyne Penning No 4
91	KSM RWLA Rhyne 1	IDB	1635	Crooked route from southern end of High Ham Rhyne to RWLA Rhyne 2.	Annual weed cut	See RWLA Plans / Maps
92	KSM RWLA Rhyne 2	IDB	620	Connects the northern end of Aller Second Rhyne and RWLA Rhyne 3 to the KSD.	Annual weed cut	See RWLA Plans / Maps
93	KSM RWLA Rhyne 3	IDB	499	Connects Aller Second Rhyne with Two Mile Rhyne Bottom Section.	Annual weed cut	See RWLA Plans / Maps
95	Butleigh Drove Rhyne (north)	IDB		Along north side of the eastern end of Butleigh Drove, connecting with Butleigh Rhyne and North Rhyne (A).	Annual weed cut	
AM01	Leazeway West Rhyne	IDB	1114	Along the west side of Leazeway Drove, from Aller Drove in the south up to the Langacre Rhyne in the north.	Odd year rhyne	
AM02	Stathemill Rhyne	IDB	1023	Zigzag route from northern corner of Stathe Drove north east to the Langacre Rhyne.	Odd year rhyne	Stathe Drove Penning Boards
AM03	Stathe Drove East to Oxleaze Rhyne	IDB	541	Connects Stathe Drove East and Oxleaze South-West.	Annual weed cut	
AM04	Stathe Drove West Rhyne	IDB	1280	Along south-west side of Stathe Drove.	Odd year rhyne	
AM05	Church Drove Rhyne	IDB	458	Along north-west side of Church Drove between Oxleaze Drove and Stathe Drove.	Annual weed cut	

Table 1 (continued): Schedule of arterial watercourses in King's Sedgemoor and Aller Moor

Asset no.	Watercourse	Operating authority	Length (m)	Location & connections	Typical maintenance regime	Control structures (see Tables 2 - 4)
AM06	Middle Moor Rhyne	IDB	1080	Through Middle Moor to Weir Bridge, just west of Aller village.	Annual weed cut	Playing Field Tilting Weir Weir Bridge West Penning Bay
AM07	Weirbridge Rhyne (Weirbridge to Little Hook)	IDB	1238	From Weirbridge north-west to west side of Aller Drove and on to Littlehook Drove.	Odd year rhyne	Weir Bridge East Penning Bay Weir Bridge Rhyne Dam
AM08	Lucas Rhyne	IDB	828	From control structure at northern (downstream) end of Blackwithies to the Langacre Rhyne.	Odd year rhyne	Lucas Drove Penning Boards
AM09	Blackwithies Rhyne	IDB	1545	From Longstone on Aller Drove in the south, north to control structure.	Odd year rhyne	Lucas Drove Penning Boards
AM10	Lockyers Rhyne	IDB	348	Short section to the north of Lucas Rhyne.	Odd year rhyne	
AM11	Wookey Rhyne	IDB	937	Parallel to the east (right) bank of the Sowy, from Aller Drove northwards.	Odd year rhyne	
AM12	Leazeway East Rhyne	IDB	1209	Along the east side of Leazeway Drove, from Aller Drove in the south up to the Langacre Rhyne in the north.	Even year rhyne	
AM13	Weirbridge – Little Hook to Pathe	IDB	889	Parallel to Aller Drove, one field distant to the south-west.	Even year rhyne	
AM14	Head Drove	IDB	596	Along east side of Head Drove.	Even year rhyne	
AM15	Head Drove – Little Hook Drove North Rhyne	IDB	666	Along north side of Littlehook Drove.	Even year rhyne	
AM16	Head Drove – Little Hook Drove South Rhyne	IDB	601	Along south side of Littlehook Drove.	Even year rhyne	
AM17	Aller Drove (North) Rhyne	IDB	1343	Along north-east side of Aller Drove.	Even year rhyne	
AM18	Stathe Drove North East Rhyne	IDB	1325	Along north-east side of Stathe Drove.	Even year rhyne	
AM19	Stathe Drove Rhyne	IDB	260	Connects with northern corner of Stathe Drove.	Even year rhyne	
AM20	Oxleaze South West Rhyne	IDB	1205	Along south-west side of Oxleaze Drove.	Even year rhyne	
AM21	Durleaze Drove South Rhyne	IDB	599	Along south side of Durleaze Drove.	Even year rhyne	
AM22	Stathe Drove (East of Church Drove) Rhyne	IDB	280	Follows line of Stathe Drove east of Church Drove.	Even year rhyne	

3.7. Structures

3.7.1. Structures controlling inflows

A number of structures are used to supply water to the Plan area (Table 2).

Table 2: Structures controlling inflows to King's Sedgemoor and Aller Moor

Asset no.	Inlet	Grid Ref.	Maintained by	Operated by
1122587500402R05002	Monks Leaze Sluice (Main)	ST 4093 2759	EA	EA
1122587500402R05003	Monks Leaze Sluice (Minor)	ST 4093 2760	EA	EA
1122586860101B03001	Poolmead Rhyne Inlet	ST 4096 2760	EA	EA
1122585500301R06	Beazley's Bank (Spillway)	ST 3753 2925	EA	No operation
1122587500402R04	Aller Moor Spillway	ST 4055 2753	EA	No operation
1122585910101L02002	Middlemoor Spillway	ST 4061 2777	EA	No operation
1122585610102R01003	Pitney Steart Inlet	ST 4528 3084	IDB	IDB
1122585610101R03002	Broadacre Inlet	ST 4493 3107	Private	Private
	Low Ham (Bridge) Inlet	ST 4418 3203	Private	Private
1122585910302L02001	Blackhole Rhyne Inlet	ST 4303 3303	IDB	IDB
1122585610101R01003	Henley Pumping Station	ST 4353 3268	EA	EA
1122585610101B01002	Henley Sluice and Bridge	ST 4353 3268	EA	EA
	RWLA Inlet Pumps (Henley Bridge)	ST 4390 3250	EA	EA
1122586860101L01001	Common Moor Sluice No 2	ST 4158 2728	Private	Private
1122586860101B01002	Common Moor Sluice 1	ST 4159 2728	Private	Private

3.7.2. Structures controlling outflows

Dunball Sluice is the only outfall for water leaving the Plan area (Table 3).

Table 3: Structures controlling outflows from King's Sedgemoor and Aller Moor

Asset no.	Outfall	Grid Ref.	Maintained by	Operated by
1122585500103R03001	Dunball Sluice	ST 3099 4072	EA	EA

3.7.3. Structures controlling water levels within the area

Water control structures that currently are used to maintain water levels within the Plan area are detailed in Table 4.

Table 4: Schedule of control structures affecting water management in King's Sedgemoor and Aller Moor

Asset No.	Control structure	Grid reference	Maintained by	Operated by	Watercourse (see Table 1)	Description	Dimensions & operating range
1122586620 102B02002	Bimpits Lane Tilting Weir	ST 3828 3448	EA	EA	Bimpits Rhyne	Tilting weir	0.94m wide manually operated tilting weir located in a concrete headwall. Immediately downstream of the gate is a 0.91m diameter flap valve which closes over a culvert in the headwall to prevent Sowy flood waters entering Bimpits Rhyne.
1122586620 108B02002	Bimpits Rhyne Inlet (Bagenham Farm Inlet)	ST 3879 3118	EA	EA	Bimpits Rhyne	Penstock	Manually operated sluice penstock which closes over a 600mm culvert through the flood bank.
1122586620 102B02003	Bimpits Rhyne Outfall	ST 3828 3448	EA	EA	Bimpits Rhyne	Flap	Steel Flap over a 0.3m diameter concrete pipe. Situated downstream of Bimpits Lane Tilting Weir. Prevents water from the Sowy entering Bimpits Rhyne.
1122586620 104B01005	Blind Man's Gate Tilting Weir	ST 3911 3385	EA	EA	Bimpits Rhyne	Tilting weir	0.93m wide manually operated tilting weir centrally located in a concrete headwall structures. There are stoplog rebates up and down stream which may be used for maintenance.
1122586620 107B01011	First Drove Tilting Weir (also incorrectly known as Beer Wall Tilting Weir)	ST 3895 3161	EA	EA	Bimpits Rhyne	Tilting weir	Manually operated steel tilting weir, 0.91m wide, situated in a concrete headwall. Stoplog rebates are situated on both sides of the structure for maintenance.
1122586830 101B01001	Decoy Rhyne Control Structure (Decoy Rhyne Sluice)	ST 4023 2793	EA	EA	Decoy Rhyne	Penstock, penning bay and flap	The asset has three components: a 1m square flap valve, a 1m square manually operated sluice penstock and a penning bay for timber stoplogs all contained in a concrete headwall.
1122585630 101B02003	Nythe Sluice (Main Sluice)	ST 4272 3461	EA	EA	Eighteen Feet Rhyne	Penstock	Constructed in 1950, this is a steel vertical lifting gate, 3.6m wide, manual operation. Not currently operated.
1122585630 101R02004	Nythe Sluice Weir	ST 4272 3461	EA	EA	Eighteen feet rhyne	Weir / Sluice	This penstock is situated on the right bank and is integral with Nythe Sluice (Main Sluice). It consists of a 1m wide manually operated penstock. Not currently operated
1122585630 102B01001	Walton Sluice (Main Sluice)	ST 4530 3347	EA	EA	Eighteen Feet Rhyne	Large penstock	Steel vertical lifting gate 2.5m wide constructed 1950. This is manually operated using a gearbox with a removable handle. Feeds RWLA on Walton Moor.
1122585630 102R01002	Walton Sluice	ST 4530 3347	EA	EA	Eighteen Feet Rhyne	Weir / Sluice	This 1m wide steel penstock is located in the right hand abutment of the main Walton Sluice Structure.
1122589102 08B01001	Greylake Sluice	ST 3971 3445	EA	EA	King Sedgemoor Drain	Two tilting weirs	Replaced in 2006, this structure now consists of two independent, electrically actuated, 3.5m wide tilting weirs in a concrete structure. Stoplog rebates are situated on both sides of the tilting weirs for maintenance.

Table 4 (continued): Schedule of control structures affecting water management in King's Sedgemoor and Aller Moor

Asset no.	Control structure	Grid reference	Maintained by	Operated by	Watercourse (see Table 1)	Description	Dimensions & operating range
1122585910 302R02002 (KS066)	Henley Feed to Old River Cary	ST 4353 3268	EA	EA	River Cary / Old River Cary	Feed to Old River Cary	2 x 0.25m diameter pipes from the Old River Cary within a concrete headwall plus 2 RWLA feed pumps.
1122585610 101R01003	Henley Pumping Station	ST 4353 3268	EA	EA	King Sedgemoor Drain / Cary	Pumping station	Two automatically operated axial submersible pumps with a capacity 0.11 cumecs and a design head of 2.28m. The inlet is protected by a weed screen and stoplog rebates are in the wingwalls.
1122585610 101B01002	Henley Sluice and Bridge	ST 4353 3268	EA	EA	King Sedgemoor Drain / Cary	Weir, sluice and bridge	Electrically actuated vertical lifting gate, approximately 3m wide, adjacent to the pumping station and integral with the road bridge.
1122585500 103R03001	Dunball Sluice	ST 3099 4072	EA	EA	King's Sedgemoor Drain	Tilting weirs, Penstocks and tide flaps	Total structure is 23.95m wide. It has four main openings (eyes - 4m wide), and two culverts. Each eye is fitted with two vertical lifting gates (4.26m wide x 3.04m high) and a tidal flap. On the inlet to each channel there is a tilting weir and a penstock, and there is a flap on the outfall. River width is 25.78m.
1225868101 03L02001	Aller Drove Inlet (to Langacre Rhyne)	ST 3814 3033	EA	EA	Langacre Rhyne	Penstock	1.2m diameter Armco pipe with a steel penstock in a concrete headwall.
1122586810 102B01001	Beer Wall Sluices (3 No)	ST 3922 3151	EA	EA	Langacre Rhyne	Penstock	Two large flood evacuation penstocks which close over two low level 1.22m square culverts and one smaller weir penstock, which closes over a 600mm x 300mm culvert. All three sluices are integral to the bridge. The entire structure is 8.5m long.
1122586810 101L004	Blind Man's Gate Sluices	ST 3925 3394	EA	EA	Langacre Rhyne	3 x Penstocks	Two 1.3m wide flood evacuation penstocks and one 0.6m wide weir penstock on the upstream side of the road bridge.
1122586810 101B01001	Langacre Sluices	ST 3803 3509	EA	EA	Langacre Rhyne (Outfall into the KSD)	3 x Penstocks	Two 1.22m square cast iron flood evacuation penstocks adjacent to one 600 x 300 deep level weir penstock, on the upstream face of a concrete headwall. On the downstream face, there are two 1.22m square non-return flaps and stoplog rebates for maintenance.
1122586810 103B02009	Oxleaze Drove Tilting Weir	ST 3828 2935	EA	EA	Langacre Rhyne	Tilting weir	Manually operated 900mm wide tilting weir within a concrete headwall that is used to pen water along the Langacre Rhyne.
1122586610 102R01001	Blind Man's Gate Bypass Tilting Weir	ST 3925 3394	EA	EA	Langacre Rhyne/ Sowy	Tilting weir at head of flap	Outfall flap on a 600mm diameter pipe at the end of Blind Man's Gate Bypass into the Sowy.
1122586840 101B01003	Middlemoor Rhyne Penning Bay	ST 4028 2817	EA	EA	Middlemoor Rhyne	Stoplogs	This was once a stoplog structure situated in a concrete headwall. It is not longer used.

Table 4 (continued): Schedule of control structures affecting water management in King's Sedgemoor and Aller Moor

Asset no.	Control structure	Grid reference	Maintained by	Operated by	Watercourse (see Table 1)	Description	Dimensions & operating range
1122586840 101B01005	Middlemoor Sluice	ST 4120 2795	EA	EA	Middlemoor Rhyne	Penstock	300mm diameter steel penstock in a 6m long concrete headwall situated over a 0.3m diameter pipe though the headwall.
1122586830 101B01001	Decoy Orchard Sluice	ST 4021 2825	EA	EA	Middlemoor Rhyne/Langacre Rhyne	Penstock	900mm wide penstock situated in a 5.8m long concrete headwall. This structure is operated manually using a gearbox and removable handle. Integral with Decoy Orchard Tilting Weir.
1122586810 104B01007	Decoy Orchard Tilting Weir	ST 4021 2825	EA	EA	Middlemoor Rhyne/Langacre Rhyne	Tilting weir	0.94m wide manually operated tilting weir. Integral with Decoy Orchard Sluice.
1122586850 101R01001	Weir Bridge Rhyne Tilting Weir	ST 4016 2829	EA	EA	Misbrook Rhyne/ Weir Bridge Rhyne	Tilting weir	Manually operated tilting weir, approximately 0.8m wide in a concrete headwall.
1122586610 103L01001	Bagenham Farm Sluice	ST 3857 3121	EA	EA	Bimpits Rhyne	Penstock	Water supply via penstock and linked to the Sowy by a 450mm diameter culvert (the Bagenham Farm Flap is at the other end).
1122586610 103L01002	Bagenham Farm Flap	ST 3859 3119	EA	EA	Bimpits Rhyne	Flap	Flap used to prevent flood waters in the Sowy backing up to Bagenham Farm.
1122585910 302L01007	S1 Inlet	ST 4129 3232	EA	EA	Old River Cary (non main river)	Penstock	0.4m square penstock over a 400mm diameter 15m long plastic culvert and fixed to a 1.5m high, 4.5m long trench sheet dam. Used to provide the KSM RWLA feed.
1122586820 101B02001	Egypt Clyse (Othery Sluice)	ST 4039 3415	EA	EA	Othery Rhyne	Penstock	Main summer feed to KSD. Undershot gate also provides pen level in Othery Rhyne.
1122586860 101B03001	Poolmead Rhyne Inlet	ST 4096 2760	EA	EA	Poolmead Rhyne	Penstock	Manually operated 600mm wide vertical sluice gate constructed within a stone headwall.
1122586860 103L01001	Headwall Structure (Headwall Sluice and Penning Boards)	ST 4122 2795	EA	EA	Poolmead Rhyne/ Middlemoor Rhyne	2 x Penstocks and a stoplog structure	Approximately 7.5m long culvert with two 750mm wide penstocks at the Middlemoor Rhyne end (d/s). Timber stop logs can be inserted d/s of the penstocks.
1122585610 201B01003	Etsome Sluice	ST 4820 3070	EA	EA	River Cary	Penstock	This is a manually operated steel weir sluice gate, 4.8m wide. Pens water in the summer to feed moorland.
1122587500 402R04	Aller Moor Spillway	ST 4085 2761	EA	No operation	River Parrett	Spillway	This spillway runs at 8.03 when the Parrett is in flood. Flood waters are directed into the Sowy.
1122587500 501R02001	Cockle Moor Bridge Inlet	ST 4158 2660	EA	Redundant	River Parrett	Penstock - redundant	Manual penstock, fixed on the Parrett side of the bridge headwall.
1122587500 402B01001	Oath Lock Sluice	ST 3831 2787	EA	EA	River Parrett	2 x Large penstocks and a tilting weir	New structure completed 2006. Consists of 2 large vertical lifting gates and a large tilting weir on a bypass channel that gravitates when river levels are low.
1122585500 301R06	Beazley's Bank (Spillway)	ST 3753 2925	EA	No operation	River Parrett to Sowy	Spillway	Design level: 7.36mODN, lowest level = 7.24mAOD.

Table 4 (continued): Schedule of control structures affecting water management in King's Sedgemoor and Aller Moor

Asset no.	Control structure	Grid reference	Maintained by	Operated by	Watercourse (see Table 1)	Description	Dimensions & operating range
1122586610 103B01001	Beer Wall Tilting Weir	ST 3918 3152	EA	EA	River Sowy	Tilting weir	3m wide electrically operated, manually controlled tilting weir on upstream side of Beer Wall.
1122585910 101L02002	Middlemoor Spillway	ST 4061 2777	EA	No operation	River Sowy	Spillway	Runs from the Sowy to Middlemoor when the banks overtop. This spillway will run when the throttle at Decoy rhyne is at full capacity.
1122587500 402R05002/ 3	Monks Leaze Sluices	ST 4093 2760	EA	EA	River Sowy	Large and small penstock	A steel vertical lifting gate 6m wide x 4m high in a steel gantry with stoplog rebates on the upstream side. It also has a 600mm wide penstock to maintain flows when the main gate is closed.
1122586610 104R01001	Sowy River Throttle	ST 4020 2790	EA	EA	River Sowy	Culvert	Regulates the flow of the Sowy when running. Consists of two large culverts.
1122586610 105L03001	Aller Drove Inlet Sluice	ST 3809 3037	EA	EA	River Sowy/ Penzoy River	Penstock & boards	Small sluice which controls the flow into the Penzoy from the Sowy. Water can be reversed if conditions allow.
1122586610 101L01001	Sedgemoor Drove Rhyne Outfall	ST 3792 3495	EA	EA/IDB	Sedgemoor Drove Rhyne	Stop-logs on the end of a siphon	0.6m diameter pipe with 1.2m penning capability.
KS001	Podimore Pumping Station	ST 5330 2500	IDB	IDB	Podimore Rhyne	Pumping station	Pumps water from Podimore Rhyne to Park Brook then to River Cary.
KS002	Park Brook Sluice	ST 5280 2660	IDB	IDB	Park Brook	Penstock with stop-logs	Drop Board Sluice provides summer water level in Park Brook.
KS003	Etsome Inlet	ST 4840 3070	IDB	IDB	Etsome Rhyne	Inlet penstock controlled inlet	Penstock provides feed to Somerton and Walton Moors. Shut in winter.
KS004	Dundon Drove Sluice	ST 4755 3110	IDB	IDB	Etsome Rhyne & Somerton North Main Rhyne	Culvert and penstock with stop-logs	Culvert under drove provides winter level. Adjacent drop board penning structure provides summer level.
KS005	North Main Rhyne Sluice	ST 4690 3085	IDB	IDB	Middle Main Rhyne	Culvert and penstock (seized)	Culvert under drove and seized penstock provide both summer and winter levels.
KS006	Somerton Rhyne Inlet	ST 4525 3085	IDB	IDB	Somerton Rhyne	Inlet with penstock	Penstock provides summer feed to Somerton Rhyne and Middle Rhyne via New Rhyne.
KS007	Crooked Rhyne Inlet	ST 4495 3110	IDB	IDB	Crooked Rhyne	Inlet with penstock	Penstock provides summer feed.
KS008	Somerton Straight Rhyne Penning No 1	ST 4520 3130	IDB	IDB	Somerton Straight Rhyne	Tilting weir	Tilting Weir provides summer water and transfers water to Main Rhyne via New Rhyne.
KS009	Somerton Straight Rhyne Penning No 2	ST 4515 3145	IDB	IDB	Somerton Straight Rhyne	Penstock with stop-logs	Concrete penning board structure, provides summer pen level.
KS010	Somerton Main Rhyne/ Somerton Drove Culvert	ST 4565 3130	IDB	IDB	Somerton Main Rhyne	Tilting weir	Raised in summer and lowered in winter.
KS011	Middle Main Rhyne Sluice	ST 4595 3150	IDB	IDB	Somerton Middle Main Rhyne	Culvert and penstock	Culvert under drove and seized penstock together with adjacent pipe provide both summer and winter levels.

Table 4 (continued): Schedule of control structures affecting water management in King's Sedgemoor and Aller Moor

Asset no.	Control structure	Grid reference	Maintained by	Operated by	Watercourse (see Table 1)	Description	Dimensions & operating range
KS012	Inlet to Pitney Rhyne	ST 4420 3205	IDB	IDB	Pitney Rhyne	Penstock	Penstock and culvert provides summer feed.
KS013	Pitney Rhyne Penning Bay	ST 4450 3250	IDB	IDB	Pitney Rhyne	Stop-logs	Trench sheet drop board penning structure. Provides summer pen.
KS014	Somerton Straight Rhyne Penning No3	ST 4494 3270	IDB	IDB	Somerton Straight Rhyne	Penstock	Over-topping penstock.
KS015	Somerton Main Rhyne penstock & Flood Relief Pipe	ST 4560 3300	IDB	IDB	Somerton Main Rhyne	Penstock	Over-topping penstock.
KS016	Redlake Rhyne Middle Drove Culvert	ST 4600 3310	IDB	IDB	Redlake Rhyne	Pipe	Pipe under drove with penning facility and adjacent pipe. Not normally used.
KS017	Redlake Rhyne Weir	ST 4600 3325	IDB	IDB	Redlake Rhyne	Weir	Permanent weir across watercourse.
KS018	Street Rhyne Inlet	ST 4605 3340	IDB	IDB	Street Rhyne	Inlet pipe with flap valve	Pipe with flap valve provides summer feed.
KS019	Inlet to Blackhole	ST 4360 3270	IDB	IDB	Henley Inlet	Penstock	Undershot penstock.
KS020	Low Ham Rhyne Upper Penning Bay	ST 4360 3270	IDB	IDB	Low Ham Rhyne	Stop-logs	Stop-logs in concrete structure adjacent to Henley Bridge Farm.
KS021	Sutton Moor Middle Rhyne Feed	ST 4380 3320	IDB	IDB	Sutton Moor Middle Rhyne	Invert of culvert	Invert of pipe under drove retains summer water in Low Ham Rhyne and allows feed to Sutton Moor Middle Rhyne.
KS022	Northern Rhyne Feed	ST4445 3355	IDB	IDB	Northern Sutton Moor Rhyne	Invert of culvert	Invert of pipe under drove retains summer water in Low Ham Rhyne and allows feed to Northern Rhyne.
KS023	Low Ham Rhyne Penning Bay	ST 4470 3350	IDB	IDB	Low Ham Rhyne	Tilting weir	Tilting Weir provides summer pen for Low Ham Rhyne, Northern Rhyne and Sutton Moor Middle Rhyne.
KS024	Somerton Straight Rhyne Penning Bay No 4	ST 4480 3350	IDB	IDB	Sutton Straight Rhyne	Tilting weir	Tilting Weir on trench sheet dam provides summer pen in bottom of Somerton Rhyne, Crooked Rhyne and Pitney Rhyne.
KS025	Blackhole Outlet	ST 4305 3305	IDB	IDB	Blackhole Rhyne	Outfall with penstock	Penstock, open in winter to drain area.
KS026	Sutton Rhyne Feed under Pedwell Drove	ST 4310 3340	IDB	IDB	Sutton Rhyne	Inlet pipe	Pipe under drove.
KS027	Sutton Rhyne Penning Bay	ST 4305 3370	IDB	IDB	Sutton Rhyne	Tilting weir	
KS028	Redundant structure	ST 4360 3370	IDB	IDB	Sutton Moor Middle Rhyne	Redundant	Redundant structure replaced by KS067.
KS029	Feed pipe under Pedwell Drove	ST 4290 3390	IDB	IDB	Sutton Rhyne	Inlet pipe	15cm diameter pipe under drove.

Table 4 (continued): Schedule of control structures affecting water management in King's Sedgemoor and Aller Moor

Asset no.	Control structure	Grid reference	Maintained by	Operated by	Watercourse (see Table 1)	Description	Dimensions & operating range
KS030	Redundant structure	ST 4340 3430	IDB	IDB	Sutton Moor Middle Rhyne	Redundant	Redundant trench sheet penning structure.
KS032	Northern Rhyne Penning Bay	ST 4400 3430	IDB	IDB	North Sutton Moor Rhyne	Stop-logs	Concrete penning structure provides summer pen.
KS033	Blackhole Rhyne Penning Bay	ST 4230 3290	IDB	IDB	Black Hole Rhyne	Stop-logs	Trench sheet drop board penning structure. Provides summer pen.
KS034	High Ham Rhyne Sluice	ST 4185 3360	IDB	IDB	High Ham Rhyne	Outfall with penstock	Overtopping penstock in summer to provide level, open in winter to drain area.
KS035	Old Rhyne Inlet Pipe	ST 4160 3240	IDB	IDB	Old Rhyne	Inlet pipe	Pipe under road supplies water to the KSM SSSI and provides flood relief to the Old River Cary.
KS036	High Ham Rhyne Penstock No 2	ST 4130 3230	IDB	IDB	High Ham Rhyne	Penstock	Penstock mounted on trench sheet headwall.
KS037	New Rhyne Culvert	ST 4108 3300	IDB	IDB	New Rhyne	Culvert	Culvert under Ackland Drove. No water control function.
KS038	High Ham Rhyne Penstock No 1 (S1 Inlet)	ST 4108 3220	IDB	IDB	High Ham Rhyne	Penstock	Penstock mounted on trench sheet headwall.
KS039	Culvert on Two Mile Rhyne	ST 4030 3250	IDB	IDB	Two Mile Rhyne	Culvert	Culvert under public highway.
KS040	Two Mile Rhyne Penstock	ST 4040 3280	IDB	IDB	Two Mile Rhyne	Penstock	Overtopping timber door penstock in summer to provide level, open in winter to drain area.
KS041	Small Moor Rhyne Penning Bay	ST 3895 3340	IDB	IDB	Small Moor Rhyne	Stop-logs	Trench sheet drop board penning structure. Provides summer pen.
KS042	Hook Rhyne Inlet	ST 3970 3450	IDB	IDB	Hook Rhyne	Inlet with penstock	Penstock feeds Hook Rhyne via KSD. Back Ditch.
KS043	Chedzoy Inlet from Langacre	ST 3800 3490	IDB	IDB	Langacre Rhyne	Inlet with penstock	Cast iron sluice valve with weed screen.
KS044	KSD Back Ditch Bay adjacent to KS045	ST 3750 3530	IDB	IDB	KSD Back Ditch	Stop-logs	Trench sheet structure with stop-logs.
KS045	Chilton Right Outfall to KSD	ST 3760 3540	IDB	IDB	KSD Back Ditch	Outfall with penstock	Penstock, twin pipes, one with a flap
KS046	KSD Back Ditch (Chilton Right) Penning Bay	ST 3750 3530	IDB	IDB	KSD Back Ditch	Stop-logs	Concrete penning bay with stop-logs.
KS047	Polden Rhyne Bay	ST 3750 3580	IDB	IDB	Polden Rhyne	Trench sheet bay	
KS048	Cossington Rhyne Outlet to KSD	ST 3645 3580	IDB	IDB	KSD Back Ditch	Outfall with penstock	Penstock, twin pipes, one with a flap.

Table 4 (continued): Schedule of control structures affecting water management in King's Sedgemoor and Aller Moor

Asset no.	Control structure	Grid reference	Maintained by	Operated by	Watercourse (see Table 1)	Description	Dimensions & operating range
KS049	KSD Back Ditch (Cossington Right) Penning Bay	ST 3640 3580	IDB	Not used	KSD Back Ditch	Penning bay	Concrete penning bay no longer used.
KS050	Cossington Right Rhyne Penning Bay	ST 3565 3710	IDB	IDB	Cossington Right Rhyne	Penning bay	Concrete penning bay. Provides summer and winter water to Sutton Hams.
KS051	Parchey Tilting Weir	ST 3520 3780	IDB	IDB	KSD Back Ditch	Tilting weir	Tilting weir and flap on KSD side of structure.
KS052	Chedzoy Rhyne Tilting Weir	ST 3480 3810	IDB	IDB	Chedzoy Rhyne	Tilting weir	
KS053	Back Ditch Outfall to KSD east of KS047	ST 3430 3890	EA	EA	KSD Back Ditch	Outfall	Concrete pipe, 60cm diameter.
KS056	Little Wall Outfall to KSD	ST 3370 3980	IDB	IDB	KSD Back Ditch	Outfall	Concrete pipe, 90cm diameter.
KS057	Level Rhyne Outfall to KSD	ST 3410 3910	IDB	IDB	Level Rhyne	Outfall	Concrete pipe, 75cm diameter.
KS058	Sutton Rhyne Bridge	ST 3730 3620	IDB	IDB	Sutton Rhyne	Invert below bridge	Invert below existing bridge with a stone arch.
KS059	Inlet/outlet to south side of KSD at Greylake	ST 3970 3440	IDB	IDB	Middlezoy Moor Feed	Inlet / Outfall	Plastic pipe inlet / outfall to the KSD with in-line penstock.
KS060	Feed culvert under Pedwell-High Ham Road on Blackhole	ST 4260 3285	IDB	IDB	Aller Second Rhyne (B)	Inlet pipe	Pipe under road, 30 cm diameter.
KS061	Culvert under Walton Drove on Butleigh-Sutton Rhyne	ST 4695 3495	IDB	IDB	Butleigh Sutton Rhyne	Invert on culvert	Culvert under drove, with the invert controlling upstream penning levels.
KS062	Feed pipe under Walton Drove on Somerton Main and New Rhyne	ST 4540 3120	IDB	IDB	Somerton Main Rhyne and New Rhyne.	Inlet pipe	Pipe under Walton Drove.
KS063	Henley Bridge Inlet to Low Ham Rhyne	ST 4360 3270	IDB	IDB	Low Ham Rhyne	Inlet penstock	Cast iron penstock on concrete headwall, 50 cm diameter inlet pipe.
KS064	Bridge Farm Front Gate Inlet, Henley	ST 4360 3270	IDB	IDB	Low Ham Rhyne / Sutton Rhyne	Culvert	Stone culvert, no control structure present.
KS065	Inlet to Blackhole and Old River Cary	ST 4360 3270	IDB	IDB	River Cary	Inlet with penstock	Undershot sluice, 45cm diameter pipe.
KS067	Sutton Moor Middle Rhyne Penning Bay	ST 4350 3400	IDB	IDB	Sutton Moor Middle Rhyne	Stop-logs	Trench sheet penning bay.
KS068	Low Ham Moor Inlet	ST 4390 3250	IDB	IDB	River Cary	Stop-logs	Steel penstock on headwall with culvert.

Table 4 (continued): Schedule of control structures affecting water management in King's Sedgemoor and Aller Moor

Asset no.	Control structure	Grid reference	Maintained by	Operated by	Watercourse (see Table 1)	Description	Dimensions & operating range
KS069	Low Ham Moor Penning Bay	ST 4385 3280	IDB	IDB	Low Ham Rhyne	Stop-logs	Plywood board placed over pipe through gate crossing.
AL001	Stathe Drove Penning Bay	ST 3793 2912	IDB	IDB	Stathemill	Stop-logs	Timber stop-logs in concrete structure.
AL002	Weir Bridge East Penning Bay	ST 3966 2912	IDB	IDB	Weirbridge to Little Hook	Stop-logs	Timber stop-logs in concrete structure.
AL003	Weir Bridge West Penning Bay	ST 3963 2912	IDB	IDB	Middlemoor	Stop-logs	Timber stop-logs in brick structure.
AL004	Black Withies Penning Bay	ST 3959 3102	IDB	IDB	Lucas / Blackwithies	Stop-logs	Timber stop-logs in concrete structure.
AL005	Weir Bridge Rhyne Dam	ST 3913 2960	IDB	IDB	Lucas / Blackwithies	Stop-logs	Timber stop-logs in brick structure.
AL006	Playing Field Tilting Weir	ST 3990 2900	IDB	IDB	Middlemoor	Tilting weir	
	Common Moor Sluice No.1	ST 4159 2728	Private	Private	Poolmead Rhyne	Penstock	
	Common Moor Sluice No.2	ST 4158 2728	Private	Private	Poolmead Rhyne	Penstock	
	Common Moor Sluice No.3	ST 4161 2730	Private	Private	Poolmead Rhyne	Penstock	
	Poolmead outfall	ST 4169 2765	Private	Private	Poolmead Rhyne	Penstock	
	Poolmead Rhyne Penning Bay	ST 4161 2733	Private	Private	Poolmead Rhyne	Penning bay	Drop board penning bay. No longer used.
	Greylake Bridge Trench Sheet Dam	ST 3979 3447	Private	Private	King Sedgemoor Drain Back Ditch	Trench sheet dam	

3.7.4. Gauge boards

The principal gauge boards within the King's Sedgemoor and Aller Moor area are summarised in Table 5. All gauge boards are metric and are levelled to metres above Ordnance Datum Newlyn (ODN) relative to local Ordnance Survey benchmarks.

Table 5: Gauge boards in King's Sedgemoor and Aller Moor

Location of gauge board	Grid Reference	Notes	Operator
King Sedgemoor Drain			
Dunball Sluice	ST 3099 4071	u/s & d/s	EA
Crandon Bridge	ST 3302 3998	d/s (worn)	EA
Bradney	ST 3397 3924	On Road Bridge	Private
Parchey Bridge	ST 3519 3773	u/s	EA
Chedzoy Clyse Left Bank	ST 3573 3649	u/s	EA
Chedzoy Clyse Right Bank	ST 3576 3651	u/s	EA
Greylake Sluice	ST 3971 3445	u/s	EA
Greylake Bridge	ST 3978 3442	u/s	EA
Henley Pumping Station	ST 4353 3269	u/s &d/s	EA
Bradney Bridge	ST 3377 3943	d/s	Private
Crandon Bridge	ST 3302 3998	On the bridge	EA
King Sedgemoor Back Ditch			
Parchy Outfall	ST 3522 3771	u/s of Parchy	EA
Cossington Right Penning Bay	ST 3647 3580	u/s	Private
Langacre Rhyne			
Langacre Sluice	ST 3803 3509	u/s	EA
Decoy Orchard Tilting Weir	ST 4021 2825	d/s	EA
Blind Mans Gate Sluices	ST 3925 3394	u/s of A361 bridge	EA
Beer Wall Sluices	ST 3922 3151	u/s & d/s	EA
Aller Drove Tilting Weir	ST 3814 3033	u/s & d/s	EA
Aller Drove Gauge Board	ST 3803 3021	u/s	EA
Oxleaze Drove Tilting Weir	ST 3828 2935	u/s	EA
Sowy River			
Beer Wall Tilting Weir	ST 3922 3151	u/s &d/s	EA
A361 Gauge Board	ST 3925 3394	u/s	EA
Sowy River Throttle	ST 4020 2790	u/s	EA
Monks Leaze Clyse Left Bank	ST 4091 2760	d/s	EA
Monks Leaze Clyse Right Bank	ST 4092 2761	d/s	EA
Aller Drove Inlet to Penzoy	ST 3808 3036	u/s	EA
River Parrett			
Oath Lock Sluices	ST 3831 2788	u/s &d/s	EA
Monks Leaze Clyse (Parrett)	ST 4092 2759	u/s reads above 7m only	EA

Table 5 (continued): Gauge boards in King's Sedgemoor and Aller Moor

Location of gauge board	Grid Reference	Notes	Operator
Bimpit's Rhyne			
Bimpit's Lane Tilting Weir	ST 3828 3447	u/s & d/s	EA
Blind Man's Gate Tilting Weir	ST 3911 3385	u/s & d/s	EA
Othery Rhyne Penning Bay	ST 3944 3303	u/s	Private
First Drove Tilting Weir	ST 3895 3161	u/s &d/s	EA
Decoy Rhyne			
Decoy Rhyne Sluice	ST 4023 2793	u/s (metric) & d/s	EA
Poolmead Rhyne			
Headwall Sluice	ST 4122 2795	u/s of drove	EA
River Cary			
Etsome Sluice	ST 4821 3070	d/s	EA
Eighteen Feet Rhyne			
Gauge Boards	ST 4603 3338	d/s of RWLA	EA
Nythe Sluice Gauge Boards	ST 4272 3461	u/s and d/s	Private
Low Ham Sluice Gauge Board	ST 4468 3351	u/s (off Main River)	IDB
Walton Sluice	ST 4530 3347	U/s	EA
Kings Sedgemoor RWLA			
S2	ST 4121 3343	u/s	EA
S5	ST 4067 3343	u/s	EA
S6	ST 4051 3372	u/s	EA
S7	ST 4097 3392	u/s	EA
S8	ST 4097 3360	u/s	EA
S9	ST 4160 3354	u/s	EA
Moorlinch RWLA Kings Sedgemoor RWLA			
S1	ST 3784 3629	u/s	EA
S2	ST 3844 3552	u/s	EA
S3	ST 3969 3616	u/s	EA
S4	ST 3965 3634	u/s	EA
Walton Moor RWLA Kings Sedgemoor RWLA			
S1	ST 4435 3410	u/s	EA
S2	ST 4439 3430	u/s	EA
S3	ST 4450 3445	u/s	EA
S7	ST 4486 3405	u/s	EA
S8	ST 4489 3424	u/s	EA
S9	ST 4455 3434	u/s	EA
S10	ST 4461 3408	u/s	EA
S12	ST 4554 3426	u/s	EA
S13	ST 4585 3447	u/s	EA
S14	ST 4593 3464	u/s	EA

3.7.5. Water level telemetry

The Environment Agency has installed telemetry where there is an operational need to be kept informed of water levels and to alert staff to changes in water levels. The Environment Agency has telemetry installed at Greylake Sluice, Egypt Clyse, Blind Man's Gate, Henley, Dunball Sluice, Bradney and Beer Wall. There is also a rain and flow telemetry station on the Cary at Somerton. Each telemetry site has prescribed target water level ranges for summer and winter, and a series of alarms alert staff when water levels go outside of the predetermined range. Alarms are received by a National Incident Communication Service and are then passed on to the most appropriate duty officer in the area.

3.8. Abstraction and other hydrological management issues

Low flows in the River Cary can cause water resource issues in dry summer conditions, which can also affect the water supply to large parts of the Plan area. To compensate for these impacts, the Environment Agency operates irrigation pumps at Henley Door to supplement flows in the River Cary.

The Water Act (2003) has introduced a new statutory framework for managing water resources. Under the Act the abstraction of up to and including 20 cubic metres per day (approximately 4,400 gallons per day) from surface water or groundwater does not require a licence from the Environment Agency regardless of the purpose for which the abstracted water will be used. Abstractions above 20 cubic metres per day require a licence, issued by the Environment Agency. The Water Act (2003) also removes a range of exempt activities that currently do not require an abstraction or transfer licence. However, this section of the legislation has not yet been enacted (see the EA website for further information on licensing requirements under the Water Act (2003)).

The Environment Agency will consult the Parrett IDB and Natural England regarding its consideration of applications for an abstraction licence.

There are six abstraction licences that may affect water management in the Plan area, which are summarised in Table 7.

Table 7: Abstraction licences in or near King's Sedgemoor and Aller Moor

Licence no.	Point name	Description	Max daily vol. (m^3)	Max annual vol. (m^3)
16/52/008/G/123	Borehole Somerton ST 4888 2909	Fish Farm / Cress Pond Through flow	864	330,000
16/52/003/G/184	Bore Hole, Huish Episcopi ST 4191 2856	General farming and domestic	24	7300
16/52/008/S/103	Westonzoyland Rhyne ST 3650 3505	Spray Irrigation – Direct	100	1795
16/52/008/G/138	Burtle Beds ST 3425 3815	Spray Irrigation – Direct	800	9245
16/52/008/S/122	Kings Sedgemoor Drain ST 3298 4000	Industrial, commercial and public services – general cooling	3,000	1,000,000
16/52/008/S/108	King Sedgemoor Drain ST 3220 4070	Spray Irrigation – Direct	205	8200

3.9. Water quality

There have been 20 years of steady water quality improvements across the Somerset Levels and Moors catchments; however, phosphate levels remain a concern. There are some local water quality issues in the Plan area related to diffuse and point sources of pollution. Diffuse pollution is primarily caused by high phosphate levels from nutrient enrichment (fertilisers) and private septic tank overflows. Point sources of pollution mainly occur at sewage treatment works.

The Environment Agency and Natural England are currently developing 'Diffuse Water Pollution from Agriculture' plans that aim to reduce nutrient enrichment of watercourses and promote good agricultural practice through the Catchment Sensitive Farming Programme. The Environment Agency has also undertaken nutrient modelling to identify the relative importance of diffuse and point sources to nutrient enrichment in the catchment and is working with the water companies to reduce nutrient discharges from sewage treatment works.

Weed-cutting activities can also cause significant drops in dissolved oxygen (DO) levels on most watercourses. The Environment Agency's Operations Delivery team take DO readings before and during weed cutting to ensure water quality does not deteriorate rapidly. If DO levels drop below 20%, all operations stop immediately, including the operation of Pumping Stations, especially in summer. This practice helps to prevent fish kill and unnecessary damage to the aquatic environment.

Of particular concern to the Environment Agency is a 6km stretch of the River Cary from Somerton to Henley where, in recent years, low summer flows have resulted in low DO levels and caused a number of fish kills. The Environment Agency is targeting this catchment in a concerted effort to reduce the risk of fish kills in the Cary. In 2009 the Environment Agency installed a continuous water quality monitoring station on the River Cary near Etsome to help identify why water quality is being impacted and to provide an early warning of low DO levels. If this pilot project is successful, the Environment Agency hopes to expand remote water quality monitoring to other areas on the Somerset Levels and Moors.

It is illegal to discharge raw sewage or trade effluent directly into any controlled watercourse. Controlled discharge of treated effluent requires consent to discharge, which must be obtained from the Environment Agency. The Environment Agency should be informed of any water pollution problems, particularly septic tank discharges, to allow investigation and improvement. In the event of a pollution incident being noted, assistance should be sought immediately from the Environment Agency's incident pollution hotline on 0800 80 70 60.

There are a number of discharge consents in or near the Kings Sedgemoor and Aller Moor Plan area, as set out in Table 8.

Table 8: Discharge consents in or near Kings Sedgemoor and Aller Moor

Consent no.	Site name	Grid reference	Discharge type
101715	Summerhedge Pumping Station	ST 38449 31327	Sewerage network - pumping station
102571	Somerton Road Combined	ST 42282 27295	Sewerage network - sewers
081335	Aller Court Farm(Langport)	ST 39313 28680	Livestock/food production
071143	Aller PS	ST 39790 29211	Sewerage network - pumping station
081334	Charity Farm(Langport)	ST 41360 32148	Livestock/food production
102232	Heavens Gate Farm	ST 42214 31851	Undefined
081271	Balls Farm(Langport)	ST 42664 32427	Livestock/food production
081269	Wishel Farm	ST 44086 31527	Livestock/food production
081906	Fir Tree Farm	ST 42993 29616	Livestock/food production
081253	Old Manor Farm	ST 43218 29229	Livestock/food production
071163	Wagg Bridge Ps	ST 44009 27511	Sewerage network - pumping station
103180	Pitney Ps	ST 44099 28464	Sewerage network - pumping station
102299	Greinton Pumping Station	ST 41193 36251	Sewerage network - pumping station
101708	Right Drove Pumping Station	ST 39741 36567	Sewerage network - pumping station
102298	Pedwell Pumping Station	ST 42398 36290	Sewerage network - pumping station
013534	Bradley Lane/Taunton Road Ps	ST 43860 36429	Sewerage network - pumping station
080653	Huckham Farm(Bridgwater)	ST 44493 35520	Livestock/food production
081933	The Pipers Inn	ST 44265 36202	Public houses and bars
080760	Higher Farm (Sutton Mallet)	ST 37613 37283	Livestock/food production
080629	Sutton Farm	ST 37099 37422	Livestock/food production
101687	Sutton Mallet Pumping Station	ST 37099 37066	Sewerage network - pumping station
101609	Middlezoy Household Waste Recycling	ST 38368 33643	Household waste amenity sites
081282	Peasey Farm	ST 34057 39012	Livestock/food production
072328	Bradney Depot	ST 33938 39229	Machinery and mechanical equipment
080570	Church Farm (Bawdrip)	ST 34017 39772	Livestock/food production
NPSWQD005828	BAE Systems (Bridgwater)	ST 33434 40632	Water treatment works
081773	Kings Farm	ST 34709 39664	Livestock/food production
101711	Stawell Pumping Station	ST 36664 38498	Sewerage network - pumping station
081576	Willeys Farm	ST 49056 33258	Livestock/food production
070673	Ham Lane No1 Pumping Station	ST 48296 32774	Sewerage network - pumping station
080504	Lower Hayes Farm	ST 47900 32201	Livestock/food production
070674	Moor Close Sewage Pumping Station	ST 47930 31865	Sewerage network - pumping station
080591	Millway Farm	ST 49204 31608	Livestock/food production
103392	Somerton Stw	ST 48463 29732	Sewage disposal works
070695	Barpool Lane Pumping Station	ST 48444 30700	Sewerage network - pumping station
103571	New Hill CSO	ST 49402 28714	Sewerage network - sewers
101389	Whiscombe Hill Landfill Site	ST 46359 29188	Industrial waste landfills
081623	Ivythorne Farm(Street)	ST 46399 34631	Livestock/food production

4. Agriculture and other land uses

4.1. Agriculture

Agriculture is the predominant and most extensive land use within the Plan area. Most of the land is divided into small fields which are usually separated by watercourses or a combination of hedge and watercourse. The watercourses are used to provide drinking water for livestock and as wet fences. The Parrett IDB recognises the importance of agriculture within the Plan area and the key role that the effective management of water has to play in enabling this land use to prosper within the area. The Board also recognises that additional investment in the water management system will be required in the years to come in order to achieve the combined objectives of conservation and farming in the Plan area.

Livestock farming is the primary land use, with improved, semi-improved and unimproved grassland used for grazing and for winter fodder covering about 80% of the farmed area. Livestock farming systems not only produce food but the wider land management they provide is crucial in delivering conservation outcomes, for example through agri-environment agreements. Farm businesses need continual re-investment to survive and if their food production and conservation land management are to continue.

The growing need for food security, and the growing demand for quality food to supply the increasing population of the UK and elsewhere, may stimulate additional investment in agriculture on some farms in the area in the coming years. The larger farm units in particular have invested in productive capacity over the years and will continue to do so in line with market signals. Many will also continue to deliver environmental outcomes alongside food production. Within the King's Sedgemoor and Moorlinch SSSIs, appropriate balances will be sought between agriculture, nature conservation value, flood risk and the vulnerability of peat soils.

4.2. Built development, services and transport

A number of domestic and commercial properties in the Plan area depend either directly, or indirectly, on effective flood protection and water level management. Low lying properties, utilities infrastructure and minor roads (which provide essential transport links) would suffer from flooding or waterlogging without the appropriate maintenance of flood defences, Main Rivers and IDB Viewed Rhynes.

The provision of adequate land for housing and employment is a national priority and Local Planning Authorities are charged with ensuring that sufficient land is made available though the new Local Development Frameworks. However, new development in areas of high flood risk may not be sustainable, particularly where these low lying areas are protecting existing development by providing space for water.

The Local Authorities consult the Environment Agency and the Parrett IDB on strategic plans, such as the new Local Development Frameworks, and on individual applications of significance. Planning Policy Statement 25 (PPS25, December 2006) sets out Government policy on development and flood risk. It aims to ensure that flood risk is taken into account, at all stages in the planning process, to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest risk.

In exceptional cases, where new development is necessary in areas of flood risk, the policy aims to make it safe without increasing flood risk elsewhere. Where possible, developers are encouraged to work with the Planning Authority and the Drainage Authorities to use opportunities for new development to reduce flood risk overall.

4.3. Recreation

The Environment Agency has a duty to consider recreation on or near water and aims to create a quality of environment that people will be able to enjoy. The Agency's vision is to conserve and improve the quality of the river environment whilst balancing recreational interests on water (e.g. canoeists, rowers, anglers and boaters) and on river banks (e.g. cyclists, horse-riders, walkers and bird watchers).

The River Parrett Trail is a nationally recognised walk which draws tourists to the area. The number of people using the trail is expected to grow as demand for recreation increases each year.

4.4. Fisheries

The Environment Agency has a duty to maintain freshwater and eel fisheries. These fisheries are a major part of the wildlife interest and ecology of the Plan area; especially eels, which are widely distributed and are a favoured food for both otters and fish-eating birds. Works to improve water level management will have to consider fisheries improvements, and any new structures should allow for the free movement of eels and elvers. The Environment Agency's fisheries officers can provide advice to ensure that fisheries are safeguarded and that the Environment Agency's duty to fisheries is not prejudiced.

Some of the watercourses in the catchment area are de-silted and weed-cut for flood risk management purposes. As these practices can disturb spawning fish, remove spawn or reduce cover for fry, the method and timing of weed cutting and de-silting must be carefully considered to avoid these impacts. In some watercourses, excessive build up of duckweed at penned structures can be a problem during the summer that can result in de-oxygenation. Removal of the duckweed is difficult, although the use of floating booms across the watercourse can help to prevent the duckweed from completely covering the water surface.

All the major watercourses in this Plan area are important coarse fisheries with roach, bream, pike, tench, ruffe and eels the dominant species. Rudd, gudgeon, perch and carp are also locally important, and chub and dace are also present though these species may move upstream at certain times of the year. Regular angling takes place on the King Sedgemoor Drain, Langacre Rhyne, the Sowy and the River Parrett.

5. Nature conservation and archaeology

5.1. Nature conservation interests

The Plan area contains:

a) An essential part of the largest area of lowland wet grassland remaining in England (the Somerset Levels and Moors), supporting an important assemblage of breeding waders and wetland birds, notably snipe, curlew, redshank, lapwing and yellow wagtail.

b) Part of a large wetland of international importance for its overwintering and migratory populations of waterfowl, and in particular golden plover, teal, wigeon, shoveler and lapwing.

c) Part of a large wetland of international importance for its outstanding assemblage of rare invertebrates, particularly water beetles.

d) Part of a wetland of national importance for:

- Botanically rich, unimproved wet meadows and mires;
- Ditch flora, including species which are nationally scarce, and relict fen species on ditch banks;
- Ditch fauna, including species which are nationally rare or scarce;
- Meadow fauna, including species which are nationally rare or scarce;
- Breeding wetland birds, such as sedge and reed warblers, lapwing, snipe, ducks and rails / crakes.

The Plan area includes:

a) King's Sedgemoor SSSI (831 hectares / 2052 acres) notified in 1985;

b) Moorlinch SSSI (226 hectares / 558 acres) notified in 1985;

c) King's Sedgemoor SSSI and Moorlinch SSSI are part of the Somerset Levels and Moors Special Protection Area, which was designated under the European Community's Directive on the Conservation of Wild Birds in June 1997;

d) King's Sedgemoor SSSI and Moorlinch SSSI are part of the Somerset Levels and Moors Ramsar Wetland of International Importance, which was designated under the terms of the Ramsar Convention in June 1997;

e) Greylake Nature Reserve which is owned and managed by the RSPB (110 hectares / 272 acres);

f) Aller Moor County Wildlife site, which is important for its rhynes, wet meadows and population of wintering birds.

The locations of the nature conservation sites are shown on Map 5 and Natural England's advice to the Parrett IDB on the water management requirements for King's Sedgemoor and Moorlinch SSSIs is summarised on Map 7.

Box 1: Favourable condition for wetland SSSIs in Somerset

An SSSI is considered to be in favourable condition when the special habitats and features of an SSSI are in a healthy state and are being conserved for the future by appropriate management. The Government's Public Service Agreement with DEFRA requires that 95% of all nationally important wildlife sites (SSSIs) are in a favourable (or unfavourable recovering) condition by the end of 2010.

Water management requirements for wetland SSSIs in Somerset

The following information summarises Natural England's advice to the Parrett IDB on the water management requirements needed for wetland SSSIs in Somerset to achieve favourable condition.

For ditch and grassland interests in winter:

- At least 30cm of water in the bottom of rhynes and ditches except in those around the margins of the SSSI where the ground levels are slightly higher.
- Summer water level at not more than 30cm below mean field level from 1 April to 30 November.

For wintering birds:

In early winter (from mid November):

- Gradual rising water levels to create extensive pools providing surface water covering 20 to 50% of the majority of fields with the lowest lying fields being close to 50%.

In mid winter (1 December to 28 February):

- Extensive areas of splashy conditions and shallow pools up to 25cm deep covering at least 50% of the majority of the fields;
- Deeper water roosts of at least 60ha, with water 25 to 75cm deep.

In late winter and early spring (to end of March):

- Gradual lowering of mid winter levels with some splashy conditions and shallow pools remaining through late February and into March in the lowest fields.

For breeding waders in spring (ideally blocks 50ha or more in size):

In early spring (1 March to 30 April):

- Extensive pools providing surface water covering up to 25% of the majority of fields with the lowest lying fields being close to 25%.
- On higher fields and species-rich fields, limited surface water covering less than 10% of the field.

In mid spring (May):

- Some pools in the lower lying fields covering up to 15% of surface area with soft ground and damp soils elsewhere;
- Low intensity grazing from mid-May in those fields not being laid up for hay.

In late spring (June):

- A few surface pools present in the lowest lying fields towards the end of this period and into July.

5.2. Biodiversity Action Plans

The floodplain grazing marshes found within the King's Sedgemoor and Aller Moor area are considered a habitat of primary importance in the UK Biodiversity Action Plan (1996). Furthermore, the 200km of Main Rivers and Viewed Rhynes in the Plan area, and the associated network of ditches and ponds, are biodiversity rich habitats that support good populations of priority BAP species such as water voles and otters.

The IDBs in Somerset have recently completed a biodiversity audit of all BAP species and habitats in their drainage districts and used this information to prepare a Biodiversity Action Plan relevant to IDB activities and interests (April 2010). The introduction of an IDB BAP for Somerset is intended to assist the integration of biodiversity conservation and enhancement works into IDB planning and work programmes. The new IDB BAP will also allow the Somerset IDBs to demonstrate and record their important contributions to conserving biodiversity. The Somerset IDB BAP sets objectives and targets for the conservation and enhancement of wetland species and habitats, and provides a link to the national and local BAP targets. The IDB BAP will also be used to report progress on the implementation of all IDB WLMPs in Somerset.

5.3. Conservation management

The current practices, adopted by the Parrett IDB and the Environment Agency for the maintenance of watercourses, help to maintain the conservation and biodiversity interest of these wetland habitats in balance with the need for effective drainage and irrigation throughout the Plan area.

Financial support for the conservation management of land is available to farmers and landowners from Natural England, who administers the Environmental Stewardship scheme on behalf of DEFRA. Such agri-environment schemes operate on the principle that the landowner, or farmer, voluntarily enters into an agreement where payment is made in return for following land management practices that benefit the environment. Farmers can join Entry Level Stewardship (ELS), where a basic payment is made for 5 years for basic environmental management, or Higher Level Stewardship (HLS), which is more targeted and provides higher payments for more demanding conservation management over 10 year agreements. Many farmers in the area have still to complete their agreements under the previous Somerset Levels and Moors Environmentally Sensitive Area (ESA) Scheme.

5.4. Archaeology

The wetlands of the Somerset Levels and Moors contain a wealth of archaeological information often hidden under layers of peat and clay that have built up over many millennia. This has had three significant effects:

a) Organic remains such as wood and leather are preserved because the waterlogging excluded oxygen and prevented the normal types of decay which destroy these materials on normal archaeological sites;

b) The waterlogged conditions also preserve pollen grains, plant material, insects, snails and even macroscopic plant and animal remains. These constitute a unique record of the past natural and man-made environment stretching back over the last 6,000 years. They can also provide information concerning human activity on the neighbouring dry land, and past changes in climate and sea levels;

c) The normal methods of archaeological detection do not work well in wetland areas where sites can be deeply buried. The number of known archaeological sites is therefore only a small fraction of the existing total. It is extremely likely that all the river valley wetlands in Somerset contain a wealth of important archaeological sites. In

addition there are several types of sites such as fisheries, medieval flood defences and small river ports of which we know very little, but may exist in considerable numbers.

The organic archaeological remains from the Somerset Levels and Moors depend for their continued survival, on an anaerobic waterlogged burial environment. If the surrounding peat or clay dries out, the organic material will shrink considerably and crack apart. The presence of oxygen will also allow bacterial and fungal decay to resume and eventually completely destroy the artefacts.

The peat itself, and the precious information contained within it, is also adversely affected by desiccation. Where field water tables are below ground level for long periods of time, the shrinkage and chemical breakdown of peat soils can be significant and can destroy all the archaeological information contained within them. In this regard, the summer is the crucial period, as that is when in-field water tables are generally at their lowest and therefore peat wastage highest.

All the known archaeology in the area is contained in the County Sites and Monuments Record which is kept in map form and on computer at County Hall, Taunton. This represents information collected from aerial photographs, excavations, chance finds, observations of drainage ditches and other sources. However, in the Somerset Levels and Moors, the deep deposits of clay and peat that have built up over thousands of years mean that much of the local archaeology in the area remains hidden from the normal forms of archaeological detection. Therefore the known archaeology recorded on the Sites and Monuments Record represents only a fraction of the total archaeological resource that lies below the surface.

King's Sedgemoor has largely escaped peat cutting and ploughing, so very little is known about the archaeology that survives on the moor. This should not be taken to mean that there is little archaeological interest in the area. Rather it is due to the fact that archaeology is essentially 'threat led', and on King's Sedgemoor there has been little visible surface threat to the archaeology.

The deep peat on King's Sedgemoor contains pollen and the remains of plants, beetles, snails and insects, which together form a vital record of the past environment over many thousands of years, not just about the moor itself, but also informing us about activity on the dry land, and changes in climatic conditions and sea levels. Such information is vital to our understanding of past human activity in the area.

A water management system beneficial to the preservation of wetland archaeological is a key objective of the WLMP. The locations of the archaeological sites in the Plan area are shown on Map 6.

6. Constraints and impacts on adjacent ground

6.1. Works adjacent to Main River

Any work proposed in, over, under or adjacent to Main River requires Flood Defence Consent (FDC) from the Environment Agency. Land Drainage Byelaws require third parties to apply for consent for any alterations or new works within an eight metre strip on either side of the Main Rivers. Where consent is applied for on land which forms part of an SSSI, or other designated site, the applicant is obliged to consult Natural England. Where works may affect a European designated site, the Environment Agency will undertake a test of likely significance and seek Natural England's approval before a consent can be issued. These conditions will also apply to proposals that lie outside the boundary of a designated sites but which may impact on the site.

6.2. Works adjacent to IDB rhynes

Under the Land Drainage Act (1991), the Parrett IDB has administrative responsibility for all the Viewed Rhynes and ordinary watercourses within the Plan area for the purposes of consenting activities as set out in the IDB's Byelaws. The Parrett IDB exercises this administrative control using a series of policy documents adopted by the IDB for this purpose.

The Parrett IDB Byelaws require third parties to apply for consent for any alterations or new works within a nine metre strip on either side of a Viewed Rhyne. Where consent is applied for on land within a SSSI, the IDB consults Natural England before arriving at its decision. The form of consent given by the IDB states that such consent does not override the necessity of obtaining other statutory consents (including that of Natural England).

6.3. Private ownership of land and property rights

Most of the land within the Plan area is under private ownership and is occupied either by the owner or by tenants, licensees, graziers etc. For the WLMP to be sustainable and succeed, any works or proposals to vary water levels must respect all legal obligations and responsibilities including property rights. As mentioned in 4.1, the predominant land use across the Plan area is agriculture, and changes in water levels can potentially have a significant impact on agricultural activities carried out by owners and/or occupiers. Changing of water levels to achieve conservation objectives (e.g. within SSSI areas) will be achieved most sustainably through negotiation of individual agri-environment agreements under the HLS scheme, whereby farmers receive an appropriate payment in return for their management which delivers the public benefit (in terms of favourable SSSI condition).

7. Current water management practices

7.1. Current water level management regime

In general, water levels are maintained at a relatively high level during the summer months to provide wet fences and, to a certain extent, to keep water tables high to promote the growth of grass and other crops. During the winter periods, water levels are lower in order to accommodate increased rainfall and runoff, and to reduce the risk or severity of flooding.

Seasonal changes in water levels are normally implemented on the 1 April for summer levels and 1 December for winter levels. In practice however, the seasonal water levels are usually phased in two weeks either side of these 'normal operating dates'. This system has come about through custom and practice and generally works well. From time to time, depending on the prevailing weather conditions, requests may be received by the Parrett IDB to advance or delay these seasonal operations. Under these circumstances, the IDB will consult Natural England before advancing or delaying the normal operating dates by more than two weeks.

7.1.1. Current target water levels

The current target water levels for key control structures within the Plan area are set out in Table 9 and any proposed changes in target waters levels are detailed in Table 17. The Parrett IDB will consult Natural England and the Environment Agency if they are considering changing the water levels at a structure so that it falls outside the range given in the Plan. Target water levels have been adjusted for gauge board errors and relate to metres above Ordnance Datum Newlyn (ODN).

Table 9: Current target water levels in King's Sedgemoor and Aller Moor

Water level control structures	Grid ref.	Operated by	Summer water levels (m ODN)	Winter water levels (m ODN)	Flood conditions
King's Sedgemoor Drain, Eighteen Foot Rhyne, Sowy, Parrett					
Dunball Sluice	ST 3099 4072	EA	2.60 - 2.65	2.13	Open
Greylake Sluice	ST 3971 3445	EA	3.45	3.00 - 3.10	Weir lowered (to maintain upstream level)
Henley Sluice	ST 4353 3268	EA	5.10 - 5.20	No pen	
Henley Pumping Station	ST 4353 3268	EA	Pumping for irrigation when required	No pumping	No pumping
Nythe Sluice	ST 4272 3461	EA	Raised (not used)		-
Walton Sluice	ST 4530 3347	EA	4.20	No pen	Not pen
Oath Lock Sluice	ST 3831 2787	EA	Lowered	Raised	Raised
Oath Lock Bypass Weir	ST 3831 2787	EA	6.60	No pen	No pen
Beer Wall Tilting Weir	ST 3918 3152	EA	3.80 - 4.00	No pen	No pen
Monks Leaze Main Sluice	ST 4093 2760	EA	Closed	Closed	Partially open / closed when spillways run
Monks Leaze Minor Sluice	ST 4093 2760	EA	Open	Closed	-
Langacre Rhyne (King's Sedgemoor SSSI)					
Langacre Sluices (2No. large doors)	ST 3803 3509	EA	Closed	Open	Open
Langacre Sluices (1No. small door)	ST 3803 3509	EA	3.45	Open	-
Blind Man's Gate Sluices	ST 3925 3394	EA	3.65	Open	Open
Egypt Clyse (Othery Sluice)	ST 4039 3415	EA	3.65 Controlled feed to KSD	Open	Open
Beer Wall Sluices (1No. small door)	ST 3922 3151	EA	3.80	Open	-
Beer Wall Sluices (2No. large doors)	ST 3922 3151	EA	Closed	Open	Open
Middlezoy Moor Feed from KSD	ST 3970 3440	IDB	Open	Closed	-
S1 Inlet	ST 4129 3232	EA	Controlled feed	Open	-
High Ham Rhyne Sluice	ST 4185 3360	IDB	3.75	No pen	-
High Ham Rhyne Penstock No 1	ST 4108 3220	IDB	Open	Open	-
High Ham Rhyne Penstock No 2	ST 4130 3230	IDB	Closed	Closed	-
Old Rhyne Inlet Pipe	ST 4160 3240	IDB	Boards fitted	No pen	-
Two Mile Rhyne Penstock	ST 4040 3280	IDB	3.75	Open	-
Henley Bridge Inlet to Low Ham Rhyne	ST 4360 3270	IDB	Controlled feed	Closed	-
Low Ham Moor Penning Bay	ST 4385 3280	IDB	Boards fitted	No pen	-
Bridge Farm Front Gate Inlet, Henley	ST 4360 3270	IDB	Culvert invert	Culvert invert	-

Water level control structures	Grid ref.	Operated by	Summer water levels (m ODN)	Winter water levels (m ODN)	Flood conditions
Inlet to Old R Cary, Henley	ST 4360 3270	IDB	Pumped or gravity feed	Closed	-
Low Ham Moor Inlet	ST 4390 3250	IDB	Controlled feed [2]	Closed	-
Inlet to Blackhole Rhyne	ST 4360 3270	IDB	Controlled feed	Closed	-
Blackhole Rhyne Penning Bay	ST 4230 3290	IDB	Boards fitted [2]	No pen	-
Blackhole Outlet	ST 4305 3305	IDB	Closed	Open	-
S2 (KSM RWLA)	ST 4121 3344	EA	3.75	4.05	-
S5 (KSM RWLA)	ST 4067 3343	EA	3.75	3.96	
S6 (KSM RWLA)	ST 4052 3372	EA	3.65	3.84	-
S7 (KSM RWLA)	ST 4097 3391	EA	3.65	3.84	-
S8 (KSM RWLA)	ST 4097 3360	EA	3.75	3.96	-
S9 (KSM RWLA)	ST 4161 3354	EA	3.75	3.96	-
Bimpits Rhyne (King's Sedgemoor SSSI)					
Bimpits Lane Tilting Weir	ST 3828 3448	EA	3.30	3.00	-
Blind Man's Gate Tilting Weir	ST 3911 3385	EA	3.55	No pen	-
Sandy Lane Penning Bay	ST 3930 3347	EA	3.70 [2]	No pen	-
First Drove Tilting Weir	ST 3895 3161	EA	3.90	No pen	-
Small Moor Rhyne Penning Bay	ST 3895 3340	IDB	Boards fitted [2]	No pen	-
Bimpits Rhyne Inlet (Bagenham Farm Inlet)	ST 3879 3118	EA	Controlled feed	Closed	Closed
KSD Back Ditch (Moorlinch SSSI)					
Parchey Tilting Weir	ST 3520 3780	IDB	3.10	No pen	No pen
Cossington Rhyne Outlet to KSD	ST 3645 3580	IDB	Closed	Open	Open
Cossington Right Rhyne Penning Bay	ST 3565 3710	IDB	[1]	No pen	-
Chilton Right Outfall to KSD	ST 3760 3540	IDB	Closed	Open	Open
KSD Back Ditch (Chilton Right) Penning Bay	ST 3750 3580	IDB	3.30 -3.35	No pen	-
Hook Rhyne Inlet	ST 3970 3450	IDB	Controlled feed	Closed	-
S1 (Moorlinch RWLA)	ST 3784 3629	EA	No pen	3.50	-
S2 (Moorlinch RWLA)	ST 3844 3552	EA	No pen	3.50	-
S3 (Moorlinch RWLA)	ST 3969 3616	EA	No pen	3.50	-
S4 (Moorlinch RWLA)	ST 3965 3634	EA	Closed	Open	-
King's Sedgemoor (Sutton, Somerton, Walton, Butleigh, Huish Moors)					
Podimore Pumping Station	ST 5330 2500	IDB	Pumping for drainage when required	Pumping for drainage when required	Pumping
Park Brook Sluice	ST 5280 2660	IDB	Boards fitted if necessary	No pen	-
Etsome Sluice	ST 4820 3070	EA	Closed [1]	Open	Open
Etsome Inlet	ST 4840 3070	IDB	Controlled feed	Closed	-

Water level control structures	Grid ref.	Operated by	Summer water levels (m ODN)	Winter water levels (m ODN)	Flood conditions
Dundon Drove Sluice	ST 4755 3110	IDB	Boards fitted [2]	No pen	-
North Main Rhyne Sluice	ST 4690 3085	IDB	No pen	No pen	-
Somerton Rhyne Inlet	ST 4525 3085	IDB	Controlled feed	Closed	-
Crooked Rhyne Inlet	ST 4495 3110	IDB	Controlled feed	Closed	-
Somerton Straight Rhyne Penning Bay No 1	ST 4520 3130	IDB	Tilting weir set to summer pen [2]	No pen	-
Somerton Straight Rhyne Penning Bay No2	ST 4515 3145	IDB	Boards fitted if necessary	No pen	-
Somerton Straight Rhyne Penning No3	ST 4494 3270	IDB	Boards fitted [2]	No pen	-
Somerton Straight Rhyne Penning No 4	ST 4480 3350	IDB	Tilting weir set to summer pen [1]	No pen	-
Somerton Main Rhyne/ Somerton Drove Tilting Weir	ST 4565 3130	IDB	Tilting weir set to summer pen [1]	No pen	-
Somerton Main Rhyne Penstock & Flood Relief Pipe	ST 4560 3300	IDB	Penstock raised & pipe blocked	No pen & pipe blocked	-
Middle Main Rhyne Sluice	ST 4595 3150	IDB	No pen	No pen	-
Inlet to Pitney Rhyne	ST 4420 3205	IDB	Controlled feed	Closed	-
Pitney Rhyne Penning Bay	ST 4450 3250	IDB	Boards fitted	No pen	-
Redlake Rhyne Middle Drove Culvert	ST 4600 3310	IDB	No pen	No pen	-
Redlake Rhyne Weir	ST 4600 3325	IDB	Fixed weir	Fixed weir	-
Street Rhyne Inlet	ST 4605 3340	IDB	Closed	Closed	-
Inlet to Blackhole Rhyne	ST 4360 3270	IDB	Controlled feed	Closed	-
Low Ham Rhyne Upper Penning Bay	ST 4360 3270	IDB	Boards fitted	Boards fitted	-
Low Ham Rhyne Penning Bay	ST 4470 3350	IDB	Tilting weir set to summer pen [1]	Lowered by 300mm approx	-
Sutton Rhyne Penning Tilting Weir	ST 4305 3370	IDB	Tilting weir set to summer pen [1]	No pen	-
Feed Pipe under Pedwell Drove	ST 4290 3390	IDB	Flap value closed	Flap value open	-
Sutton Rhyne Bottom Penning Bay	ST 4285 3410	IDB	Tilting weir set to summer pen [1]	No pen	-
Sutton Moor Middle Rhyne Pen	ST 4350 3400	IDB	Boards fitted	Lowered by 300mm approx	-
Northern Rhyne Penning Bay	ST 4400 3430	IDB	Boards fitted	No pen	-
C1 (Walton RWLA)	ST 4447 3366	EA	Open	Closed	-
S1 (Walton RWLA)	ST 4450 3445	EA	4.15	4.45	-
S2 (Walton RWLA)	ST 4429 3431	EA	4.05	4.35	-
S3 (Walton RWLA)	ST 4450 3445	EA	3.95	4.10	-
C13 (Walton RWLA)	ST 4517 3371	EA	Open	Closed	-
S7 (Walton RWLA)	ST 4486 3405	EA	4.00	4.30	-
S8 (Walton RWLA)	ST 4489 3424	EA	4.00	4.30	-
S9 (Walton RWLA)	ST 4455 3434	EA	3.85	4.15	-

Water level control structures	Grid ref.	Operated by	Summer water levels (m ODN)	Winter water levels (m ODN)	Flood conditions
S10 (Walton RWLA)	ST 4460 3408	EA	Open [3.85]	Closed [4.15]	-
C23 (Walton RWLA)	ST 4544 3387	EA	Open	Closed	-
S12 (Walton RWLA)	ST 4554 3426	EA	4.00	4.30	-
S13 (Walton RWLA)	ST 4585 3447	EA	3.87	4.17	-
S14 (Walton RWLA)	ST 4593 3464	EA	3.75	4.05	-
Aller Moor					
Oxleaze Drove Tilting Weir	ST 3828 2935	EA	4.44	3.80 approx (lowered)	Lowered
Aller Drove Inlet (to Langacre Rhyne)	ST 3814 3033	EA	Open	Open	Closed
Poolmead Rhyne Inlet	ST 4096 2760	EA	Open	Closed	Closed
Headwall Sluices	ST 4122 2795	EA	Open	Open	Open
Headwall Penning Bay	ST 4122 2795	EA	5.65	4.70	-
Middlemoor Sluice	ST 4120 2795	EA	Open	Open	
Decoy Orchard Sluice	ST 4021 2825	EA	Open	Open	
Decoy Orchard Tilting Weir	ST 4021 2825	EA	Set to allow water to flow into the Langacre Rhyne		Closed
Weir Bridge Rhyne Tilting weir	ST 4016 2829	EA	5.00	Closed (weir raised)	Closed (weir raised)
Weir Bridge East Penning Structure	ST 3966 2912	IDB	Redundant	Redundant	Redundant
Weir Bridge West Penning Bay	ST 3963 2912	IDB	Boards fitted [2]	No pen	-
Decoy Rhyne Sluices	ST 4023 2793	EA	Open	Open	Closed
Decoy Rhyne Penning Bay	ST 4023 2793	EA	4.90	No pen	-
Stathe Drove Penning Bay	ST 3793 2912	IDB	4.46	2.90 approx	-
Playing Field Tilting Weir	ST 3990 2900	IDB	New structure	New structure	-
Black Withies Penning Bay	ST 3959 3102	IDB	4.10	No pen	-

Notes:
- **Summer season:** Aim to achieve summer pen levels by 1st April.
- **Winter season:** Aim to achieve winter pen levels by 1st December.
- See Box 2 for target conditions for RWLAs.
- **[1]:** Level subject to trial.
- **[2]:** No gauge board
- **ODN:** Ordnance Datum Newlyn.

7.1.2. Contingency measures for drought

During a drought situation the Environment Agency will encourage the public and industry to practice water efficiency and to conserve water, whilst all abstraction licence holders will be encouraged to minimise water abstraction. There will also be close liaison between the Environment Agency and the Parrett IDB to conserve water and to ensure a fair distribution of what water is available.

If there is an exceptional shortage of rain, or a serious deficiency in water flow that threatens flora or fauna, drought permits or orders may be issued. Drought permits are issued by the Environment Agency to enable water companies to take water from new sources or to alter restrictions on existing abstractions. Drought orders, issued by the Secretary of State, go further and restrict the non-essential use of water.

7.1.3. Raised Water Level Areas

There are five Raised Water Level Areas (RWLAs) in the Plan area, where high water levels are maintained in winter and spring to provide suitable wetland conditions for wildfowl and waders (see Box 2 for target conditions). There are two large RWLAs on the King's Sedgemoor and Moorlinch SSSIs that are maintained by the Environment Agency. Details for all RWLAs in the Plan area are given in Tables 10 to 13 and their locations are shown on Map 4.

Table 10: Raised Water Level Areas in King's Sedgemoor and Aller Moor

Raised water area	Maintained & operated by	Area in hectares	Area in acres
King's Sedgemoor	EA	159	392
Moorlinch	EA	153	378
Walton Moor	EA	113	279
Greylake Nature Reserve	RSPB	108	267
Aller Moor (Stathe Drove)	Mr Hector	34	84

King's Sedgemoor Raised Water Level Area

The King's Sedgemoor RWLA was constructed in 1996 and extends to 159 hectares. It is divided into four blocks each controlled by several stop-log structures.

Table 11: Current target water levels for the King's Sedgemoor RWLA

Control structure	Grid reference	Operator	Description	Summer level (m ODN)	Winter level (m ODN)
S2	ST 4121 3344	EA	Removable timber stoplogs, 1.15m long and 150mm high in a steel trench sheet dam, 1.6m high and 7.8m long.	No pen (3.75)	4.05
S5	ST 4067 3343	EA	Removable timber stoplogs, 1.15m long and 150mm high in a steel trench sheet dam, 1.6m high and 7.8m long.	3.65	3.95
S6	ST 4052 3372	EA	Removable timber stoplogs, 1.15m long and 150mm high in a steel trench sheet dam, 2.3m high and 8.7m long.	No pen (3.65)	3.85
S7	ST 4097 3391	EA	Removable timber stoplogs, 1.15m long and 150mm high in a steel trench sheet dam, 2.6m high and 6.1m long.	3.54	3.84
S8	ST 4097 3360	EA	Removable timber stoplogs, 1.15m long and 150mm high in a steel trench sheet dam, 2.7m high and 7.7m long.	3.75	3.95
S9	ST 4161 3354	EA	Removable timber stoplogs, 1.15m long and 150mm high in a steel trench sheet dam, 2.0m high and 4.5m long.	3.75	3.95

Notes: - See Box 2 for target conditions

Moorlinch Raised Water Level Area

The Moorlinch RWLA was constructed in 2002 and consists of one hydrological block of 153ha. Water levels in the Moorlinch RWLA are 3.25m above ODN in the summer and 3.50m in the winter. This site is operated by two tilting weir structures (S1 and S2) and two small penstocks (S3 on Hook Rhyne and S4 Drysend Farm).

There is also a small RWLA of some 15 hectares within the Moorlinch SSSI which is owned and operated by Natural England.

Table 12: Current target water levels for the Moorlinch RWLA

Control structure	Grid reference	Operator	Description	Summer level (m ODN)	Winter level (m ODN)
S1	ST 3784 3629	EA	1.25m wide tilting weir in a trench sheet dam headwall.	No pen (3.35)	3.50
S2	ST 3844 3552	EA	1.25m wide tilting weir in a trench sheet dam headwall.	No pen (3.35)	3.50
S3	ST 3969 3616	EA	0.45m x 0.45m weir penstock in a steel trench sheet dam.	No pen (3.35)	3.50
S4	ST 3965 3634	EA	0.45m x 0.45m penstock in a steel trench sheet dam.	Closed	Open

Notes: - See Box 2 for target conditions

Walton Moor Raised Water Level Area

The Walton Moor RWLA is 113 hectares and was constructed in 1994. It is divided into three areas: A, B and C each controlled by several stop-logs structures.

Table 13: Current target water levels for the Walton Moor RWLA

Control Structure	Grid Reference	Owner/ operator	Description	Summer level (m ODN)	Winter level (m ODN)
BLOCK A					
C1		EA	450mm dia penstock on culvert inlet, 450 non-return valve on outfall headwall.	Open	Closed
S1	ST 4435 3410	EA	Timber stoplogs, 1.25m long and 150mm high in a steel trench sheet dam, 1.8m high by 7.4m long.	4.15	4.45
S2	ST 4439 3430	EA	Timber stoplogs, 1.25m long and 150mm high in a steel trench sheet dam, 2m high and 7m long.	4.05	4.35
S3	ST 4450 3445	EA	Timber stoplogs, 1.25m long and 150mm high in a steel trench sheet dam, 2.2m high and 7.4m long.	3.95	4.10
BLOCK B					
C13		EA	450mm dia penstock on culvert inlet	Open	Closed
S7	ST 4486 3405	EA	Timber stoplogs, 1.25m long and 150mm high in a steel trench sheet dam, 2.1m high and 6.5m long.	4.00	4.30
S8	ST 4489 3424	EA	Timber stoplogs, 1.25m long and 150mm high in a steel trench sheet dam, 2.1m high and 4.9m long.	4.00	4.30
S9	ST 4455 3434	EA	Timber stoplogs, 1.25m long and 150mm high in a steel trench sheet dam, 1.4m high and 5.8m long.	3.85	4.15
S10		EA	250 mm dia non-return valve with gauge board.	Open (3.85)	Closed (4.15)
BLOCK C					
C23		EA		Open	Closed
S12	ST 4554 3426	EA	Timber stoplogs, 1.25m long and 150mm high in a steel trench sheet dam, 2m high and 7.8m long.	4.00	4.30
S13	ST 4585 3447	EA	Timber stoplogs, 1.25m long and 150mm high in a steel trench sheet dam, 1.5m high and 5.7m long.	3.87	4.17
S14	ST 4593 3464	EA	Timber stoplogs, 1.25m long and 150mm high in a steel trench sheet dam, 1.5m high and 6.1m long.	3.75	4.05

Notes: - See Box 2 for target conditions

7.2. Current flood management regime

The Environment Agency has permissive powers to carry out works to reduce flood risk on Main Rivers. The primary flood defences within this Plan area are raised earth embankments located on either side of the River Parret and parts of the Sowy River, with a few small sections of harder engineering (e.g. steel piles and masonry walls) where space is at a premium. These defences are inspected regularly to ensure they provide the flood risk management benefit that they were designed for. The Environment Agency also undertakes routine maintenance i.e. weed cutting, tree pruning and removal. Emergency repair and maintenance works are carried out when necessary. Environment Agency staff are deployed to monitor high tides on the tidal section of the Parrett as far as Oath Lock Sluice.

The Environment Agency regularly inspects and operates the main inlet structures into the Plan area. These are closed when water levels in the River Parrett rise to minimise the risk of flooding from the river. During flood conditions, Dunball Sluice is operated by the Environment Agency to evacuate water from the King's Sedgemoor Drain to the Parrett at low tide.

The main purpose of the Sowy River is as a flood evacuation channel and its operation is summarised below:

1. Under normal operating conditions the main sluice gate at Monks Leaze (Monks Leaze Clyse) is closed however, whenever a flood in the Parrett threatens to overtop Beasley's or Aller Moor spillways (Parrett 6.5m and rising).

2. Before Monks Leaze Clyse is opened to the agreed level, all of the inlet sluices on the Sowy are closed. The main sluices at Dunball and Beer Wall are also adjusted to accommodate increased flow.

3. Should the level in the River Parrett continue to rise, overtopping of first Beazley's and then Aller Moor spillways may occur, in which case Monks Leaze Clyse is closed. If overtopping continues to increase, Middlemoor will flood (retaining some flood water) and this will eventually overspill to the Aller Moor catchment downstream.

4. As the levels in the River Parrett fall and the spillways cease to flow, Monks Leaze Clyse is re-opened to utilise the flood relief capacity of the Sowy River and KSD. This involves balancing the flows from the River Parrett and the flooded areas to maintain flows at bank full capacity, without causing further overland flooding.

5. Monks Leaze Clyse is closed when there is no further risk of flooding from the River.

7.2.1. Contingency measures for flooding

The Environment Agency carries out active monitoring of raised flood banks during high flows, and ensures that outfall structures are kept clear of debris to allow evacuation of flood water as safe working conditions allow. The Environment Agency will also carry out emergency works as required to protect people and property.

The Environment Agency and the Parrett IDB are investigating the potential benefits of pre-emptive lowering of water levels at key control structures in anticipation of extreme weather conditions. It has been suggested that early action at certain control structures may reduce the severity of damage caused by overland flooding at critical times of the year, especially in summer. This work is at an early stage and will need to consider the impacts on the SSSI and the concern that it may be difficult to restore summer pen levels if forecast rainfall does not occur.

The Parrett IDB will ensure that all weed-screens on Viewed Rhynes are cleared on an 'as required basis' and that watercourses are running freely to assist the evacuation of flood water.

Box 3: Flood Zones

The Flood Map shows areas across England and Wales that could be affected by flooding from rivers and/or the sea. It has been produced by the Environment Agency to raise awareness among the public, local authorities and other organisations of the likelihood of flooding and to encourage people living and working in areas prone to flooding to find out more and take appropriate action. The Flood Zones in the Plan area are shown in Map 8.

Flood Zones are also known as floodplains which could be affected by flooding from rivers and the sea. There are three zones which are defined in the Government's planning policy for England. They ignore the presence of existing flood defences as these can be overtopped and even fail in an extreme event.

Zone 1 - is shaded white and shows areas with the lowest probability of flooding from rivers or the sea and where the chance of flooding in any one year is less than 0.1% (i.e. less than a 1 in 1000 chance).

Zone 2 - is shaded turquoise and shows areas where the chance of flooding in any one year is between 0.1% and 1% for flooding from rivers (i.e. a 1 in 1000 to a 1 in 100 chance), or 0.5% for flooding from the sea (i.e. 1 in 200 chance). The outer edge of this zone is referred to as the 'Extreme Flood Outline' (EFO).

Zone 3 - is shaded blue and shows areas with the highest probability of flooding where the chance of flooding in any one year is greater than 1% for flooding from rivers (i.e. a 1 in 100 chance), or 0.5% flooding from the sea (i.e. a 1 in 200 chance).

It is important to understand that a 1 in 100 chance of flooding in any one year does not mean that level of flood will happen once every 100 years, nor does it mean that if the flood hasn't happened for the last 99 years, it will happen this year. In fact, a flood of this magnitude may occur more than once in a year.

7.3. Current watercourse maintenance regimes

7.3.1. Environment Agency maintenance practices

The Environment Agency assesses all maintenance works on the basis of flood risk to people and property and whether the management system is rated as high, medium or low risk. As a result, maintenance is targeted towards high risk systems. The Environment Agency regularly reviews its annual and intermittent maintenance procedures, in accordance with national guidance and policy, to ensure that a high level of flexibility and efficiency of funding and staffing allocation are achieved.

The Environment Agency operates a flexible, annual weed cutting programme during the summer months. The Main Rivers are inspected prior to starting and the programme can be changed to accommodate urgent cuts or abnormal weather and vegetation conditions. It is normal practice to provide good access for weed-cutting machinery, which consists of culverting side ditches and providing gates and side fencing so that travel across field boundaries is unrestricted. The Environment Agency does not typically use herbicides in the Plan area.

The River Parrett lies adjacent to the south-western boundary of the Plan area and flows into the Plan area at Aller Moor Spillway and at Beasley's Spillway during flood conditions when it cannot discharge to the sea. The left and right banks of the River Parrett are flailed annually where no regular grazing takes place. This is done to control weed growth and to reduce the risk of

burrowing mammals (e.g. rabbits and badgers) destabilising the banks. The tidal sections of the River Parrett and River Tone carry heavy silt loads on each tide and the merits and cost effectiveness of de-silting these rivers is currently being investigated by the Environment Agency.

Flood and asset management along the stretch of the Parrett and Sowy downstream of Langport is currently under review following several years of bank overtopping problems and ongoing repairs, which are proving increasingly unsustainable. A Sub-Group of the Wessex Regional Flood Defence Committee has been set up to oversee this task, while a capital project is currently under proposal. The Sub-Group has been formed to help identify a strategic, sustainable, long term solution for the operation and management of the Parrett banks and Sowy Flood Relief Channel. This includes the operation and performance of related structures and spillways as well as identifying how such a project can be funded, whilst balancing the requirements of stakeholders for agriculture, environment and flood risk. The stakeholders sitting on the Sub-Group include members of the WRFD Committee, representatives of the Drainage Board, Natural England and the Environment Agency. This work and the aims of Proposal 9 (operation of the Sowy) in this WLMP will need a joint approach.

Trees, branches and bushes within the channel area are trimmed, coppiced or pollarded to allow maximum flow, whilst retaining as much shade as possible to reduce weed growth. Tree removal will take place in exceptional circumstances where blockage of the channel has occurred, or is likely to occur. The Environment Agency expects riparian landowners to maintain trees and vegetation that could cause flood risk. Where necessary, the Environment Agency will serve notice on landowners to ensure that works are completed as requested. Where the Environment Agency owns land, it will carry out any required tree maintenance.

7.3.2. Parrett IDB maintenance practices

The Parrett IDB maintains the majority of Viewed Rhynes in the Kings Sedgemoor area once a year in late summer or during the winter. Some Viewed Rhynes in the Aller Moor area being maintained once every two years. Viewed Rhynes are occasionally de-silted to prevent their condition from deteriorating and to sustain the required water depth and flow. Aquatic herbicides are not routinely used by the IDB, but may be used to control invasive plants. The use of aquatic herbicide in any watercourse requires consent from the Environment Agency and from Natural England when used within the SSSI.

The maintenance of watercourses adjoining Viewed Rhynes is the responsibility of the riparian occupiers. The Board has powers under its Byelaws to require occupiers to fulfil their obligations in this respect where they fail to do so.

Water control structures are inspected by the Parrett IDB on a regular basis and repaired as necessary. The Board does not accept any liability for the maintenance of bridges and culverts over Viewed Rhynes, however it is prepared to consider making an *ex gratia* contribution of a share of the cost of such maintenance, approximately in proportion to its usage by the IDB. The Parrett IDB does not accept any liability for the maintenance of droves, and only carries out such maintenance, or contributes to the cost of maintenance, where droves are essential to the Board for gaining access to a channel, or where damage has been caused by works carried out on behalf of the IDB.

8. Objectives for water level management in the future

The Water Level Management Plan is based on the following objectives which have been adopted by the signatories to the Plan. The signatories acknowledge that not all the objectives can be achieved on each and every occasion or location.

Objective 1 – Balance of interests
Firstly, ensure that all legal obligations and responsibilities are met and secondly, balance different interests by managing water in a way that reflects the local hydrology and topography of the area and which best serves the owners and farmers of the majority of the land within each sub-catchment.

Objective 2 – Agriculture
Maintain seasonal water levels that provide wet fences, stock watering and drainage appropriate for the principal land management and farming practices in each sub-catchment.

Objective 3 – Biodiversity
Maintain and enhance, when suitable opportunities arise, wet grassland, wetland and freshwater aquatic habitats and species throughout the Plan area, with particular attention being given to those protected by law or designated in some way.

Objective 4 – Favourable condition of SSSIs
Implement a programme of improvement works to ensure that the management of water that affects the SSSI in the Plan area helps to secure, or makes significant progress towards achieving, this SSSI being in favourable condition by December 2010.

Objective 5 – Organic soils and archaeology
Maintain a stable, year round water table that avoids desiccation and oxidation of the organic soils.

Objective 6 – Settlements and highways
Ensure the proposed changes in water management do not increase the flood risk to settlements, property, highways, utility infrastructure or rights of way.

Objective 8 – Watercourse maintenance operations
Maintain the watercourses in the Plan area on rotation and in a sympathetic manner, to maintain an adequate flow of water around the sub-catchments and to enhance the diversity of ditch habitats and their associated flora and fauna.

Objective 9 – Water quality
Sustain the ditch flora and fauna in the Plan area through the provision of an adequate supply of water of high quality (defined as having water in a ditch at a given season, of sufficient quality and volume to sustain the full diversity, abundance and distribution of all aquatic plants and animals recorded in the area).

Objective 10 – Flood management
Mitigate the impacts of flooding where these are damaging to the biodiversity and agricultural interests of the Plan area.

Objective 11 – Drought management
Mitigate the impacts of drought where these are damaging to the soils, biodiversity, archaeology and agricultural interests of the Plan area.

9. Proposed water management practices

9.1. Continuation of current good practice

Many of the current management practices carried out by the Parrett Drainage Board and by the Environment Agency are meeting the needs of both farming and conservation. These good practices will continue, as set out below.

Proposal 1: The current summer penning levels at the key control structures, as set out in Table 16, will continue to be maintained by the Parrett IDB and the Environment Agency.

Reason: The current summer water levels throughout the Plan area are considered suitable for farming and nature conservation. The summer penning levels that will continue to be maintained by the Parrett IDB and the Environment Agency are set out in Table 16 (see Proposal 6).

Proposal 2: Maintenance of the current Viewed Rhyne network will continue to be undertaken by the Parrett IDB.

Reason: The Parrett IDB will continue to maintain the existing Viewed Rhyne network, as shown on Map 2, and is of the opinion that its maintenance procedures help to achieve favourable condition and to further conservation and biodiversity in the Plan area. The Parrett IDB will complete its review of maintenance procedures and de-silt selected Viewed Rhynes (see Proposal 12).

9.2. Changes to water control infrastructure

Natural England has advised the Parrett IDB that the management of water, in some parts of the King's Sedgemoor and Moorlinch SSSIs, does not allow the designated sites to be recorded as being in a favourable condition for wildlife. Capital improvements to water control structures are required to enable the Parrett IDB to change the management of water levels in winter and spring in order to achieve, and maintain favourable condition across the SSSIs.

Proposal 3: Capital improvement works will be carried out by the Parrett IDB to help achieve favourable condition on King's Sedgemoor and Moorlinch SSSIs.

Reason: A number of capital improvement works are proposed by the Parrett IDB in order to help achieve favourable condition on King's Sedgemoor and Moorlinch SSSIs. These proposed works are described in Tables 14 & 15 and their locations are shown on Map 9 for King's Sedgemoor SSSI and Map 10 for Moorlinch SSSI.

Table 14: Proposed capital improvement works for King's Sedgemoor SSSI

Ref	Description of the proposed capital works for Kings Sedgemoor SSSI	Grid ref	Action by	Date
1.1	**Sandy Lane Tilting Weir** - construct new tilting weir on Bimpits Rhyne to replace Sandy lane Penning Bay.	ST 3828 3448	IDB	2010
1.2	**High Ham Rhyne Sluice** – construct new tilting weir upstream of existing sluice door.	ST 4185 3360	IDB	2010
1.3	**Two Mile Rhyne Penstock** – Replace penstock structure with tilting weir.	ST 4040 3280	IDB	2010
1.4	**Blackhole Rhyne Penning Bay** – Replace stoplog structure with tilting weir.	ST 4230 3290	IDB	2011/12
1.5	**S2 (KSM RWLA)** – Replace stoplog structure with tilting weir.	ST 4121 3344	IDB	2011/12
1.6	**S5 (KSM RWLA)** – Replace stoplog structure with tilting weir.	ST 4067 3343	IDB	2011/12
1.7	**S6 (KSM RWLA)** – Replace stoplog structure with tilting weir.	ST 4052 3372	IDB	2011/12
1.8	**S7 (KSM RWLA)** – Replace stoplog structure with tilting weir.	ST 4097 3391	IDB	2011/12
1.9	**S8 (KSM RWLA)** – Replace stoplog structure with tilting weir.	ST 4097 3360	IDB	2011/12
1.10	**New Rhyne Tilting Weir (E38 RWLA feed)** – Replace penstock with new tilting weir.	ST 4108 3300	IDB	2011/12
1.11	**S11 Acklands Drove Tilting Weir** – construct new tilting weir.	ST 4106 3303	IDB	2011/12
1.12	**Lucus Rhyne Tilting Weir** – construct new tilting weir on Lucus Rhyne upstream of junction with Langacre Rhyne.	ST 3959 3102	IDB	2010
1.13	**Leazeway East Rhyne Tilting Weir** – construct new tilting weir on Leazeway East Rhyne upstream of junction with Langacre Rhyne.	ST 3903 3110	IDB	2011/12
1.14	**Black Withies Penning Bay** – replace penning bay with tilting weir.	ST 3959 3102	IDB	2011/12
1.15	Replace culverts on **Middlezoy Moor** to form new viewed rhyne for water supply.	Various	IDB	2011/12

Table 15: Proposed capital improvement works for Moorlinch SSSI

Ref	Description of the proposed capital works for Moorlinch SSSI	Grid ref	Action by	Date
2.1	**Chilton Right Tilting Weir –** construct new tilting weir in front of the Chilton Right Outfall to maintain winter levels in the KSD Back Ditch, Chilton Right and Shapwick Right Rhynes.	ST 3750 3580	IDB	2010
2.2	**KSD Back Ditch (Chilton Right) Tilting weir** – replace existing penning bay with tilting weir to control summer levels in the the KSD Back Ditch, Chilton Right and Shapwick Right Rhynes.	ST 3750 3580	IDB	2010
2.3	**KSD Back Ditch (Greylake) Dam** - reconstruct existing trench sheet dam including a small penstock for controlled irrigation of the KSD Back Ditch.	ST 3979 3447	IDB	2010
2.4	**Shapwick Right Rhyne Dam** – modify existing trench sheet dam to include a small penstock for controlled irrigation of the Shapwick Right Rhyne to the west of Chilton Right Rhyne.	ST 3777 3578	IDB	2011
2.5	**Shapwick Right Rhyne Siphon** – replace existing siphon under the Shapwick Right Rhyne that connects NE owned SSSI fields to the RSPB Reserve, and replace existing inlet to the NE owned fields.	ST 3935 3516	IDB	2011
2.6	**Greylake Reserve connections to KSD (east and west) –** replace existing structures connecting the RSPB Greylake Reserve to the King's Sedgemoor Drain and include new control mechanisms to allow the short-term storage of winter flood water on the Reserve for the habitat management and flood water storage purposes.	ST 3912 3474 & ST 3802 3518	RSPB	2010

Proposal 4: The Environment Agency will continue to develop a capital improvements scheme for Henley Door Sluice.

Reason: Henley Door is the main water level control and supply structure for the King's Sedgemoor area, including a large part of the King's Sedgemoor SSSI. The main structure is an undershot vertical gate, located at the junction of several arterial watercourses that take their feeds from upstream of the structure. The door also maintains summer water levels within the River Cary. The existing structure does not provide sufficient flexibility and can require frequent operation to maintain upstream water levels and a rapid operational response to increases in flow following rainfall events.

Emergency repair work was carried out in March 2009 to resolve the seepage through the right abutment. The repair work has been successful and ongoing monitoring is in place. Henley Bridge has been placed on the Environment Agency's Bridges Programme and a capital scheme will be developed for the bridge when the condition of the structure has deteriorated such that the bridge becomes a priority within the programme.

In March 2010 the Environment Agency carried out improvements to the control system at Henley Door. The new system will control the operation of the vertical gate to provide better control of the water levels in the River Cary. The system will also control two irrigation pumps that are used to maintain upstream levels in summer. The new control system is now operational.

Earlier in 2010 The Environment Agency began developing further proposals for Henley Sluice that aim to extend the serviceable life of the structure and improve the operational efficiency of the pumps.

The preferred option in the short term is to continue with the current operation and maintenance of the existing sluice. In the long term (within the next 10 years) Henley Sluice should be replaced with a new structure as part of a combined Henley Bridge and Sluice scheme. Replacement of the structure should provide a more operationally flexible overshot structure, however a more detailed appraisal of the options will be necessary at the time of project development. In the meantime, the sluice will be monitored to ensure that its condition does not become more critical.

Associated with the work at Henley Door, the Parrett IDB will continue to implement a five year programme of improvements to IDB structures across the King's Sedgemoor area. These works will benefit water management in the Plan area and add significant value to the Environment Agency's work at Henley Door. The EA will consider all structures along the River Cary between Somerton and Henley Sluice to develop the most appropriate means of water management of the River Cary. This work will include increasing flows in the River Cary to reduce the existing dependence on pumping at Henley Pumps.

Proposal 5: Additional gauge boards and telemetry stations will be installed by the Parrett IDB in the Plan area.

Reason: To improve its ability to manage water levels in the King's Sedgemoor and Aller Moor area, the Parrett IDB proposes to install remote monitoring equipment and additional gauge boards at the locations set out in Table 16. Alarm settings will be established for each station, which will report directly to the Drainage Board Office. Stations may also be used to collect other relevant data such as rainfall or water quality information.

The Environment Agency has replaced gauge boards within the Plan area over the last few years but has no plans to install any new telemetry sites within the Plan area. Existing telemetry is regularly assessed and upgraded as necessary for optimum management.

Table 16: Proposed additional gauge boards and telemetry stations for King's Sedgemoor and Aller Moor

Location	Grid Ref.	Notes	Operator
Two Mile Rhyne	ST 4040 3280	KS040	IDB
High Ham Rhyne / KSD	ST 4185 3360		IDB
Lucas Rhyne / Lanagcre Rhyne	ST 3959 3102		IDB
Aller Drove	ST 3809 3037	Aller Moor	IDB
Shapwick Right Rhyne	ST 3844 3552	S2	IDB
Chilton Right Rhyne	ST 3756 3535	Chilton Right Rhyne Tilting Weir	IDB
Greylake Reserve / KSD Back Ditch	ST 3802 3518	Greylake Reserve Connection (West)	IDB

9.3. Changes to target water levels

Proposal 6: The Parrett IDB and the Environment Agency will adopt the proposed changes to target water levels, as set out in Table 17, and trial these levels to ensure that they meet the agreed objectives.

Reason: Natural England has advised the Parrett IDB that some parts of King's Sedgemoor and Moorlinch SSSIs require an increase in winter and spring water levels to provide a minimum depth of water for ditch plants and invertebrates, and splashy fields in winter for wintering water birds and soft ground conditions in spring for breeding waders. The seasonal water levels at some of the control structures will therefore need to be changed to help achieve favourable condition for the King's Sedgemoor and Moorlinch SSSIs.

The proposed changes in target water levels are set out in Table 17. The locations of the areas with seasonally higher water levels are shown on Map 11. The proposed improvements to the water control infrastructure, outlined in Proposals 3 and 4, will help the Parrett IDB and the Environment Agency to achieve, and maintain, the water levels required for favourable condition on the SSSIs.

The installation of new control structures and gauge boards within the plan area will allow the Parrett IDB to improve its understanding of water management on King's Sedgemoor and Aller Moor. As new information is collected by the IDB, it will be used to update Table 17 and inform the future operation and improvement of water control structures by the Parrett IDB.

Table 17: Proposed target water levels in King's Sedgemoor and Aller Moor

Water level control structures		Operated by	Current summer water levels (m ODN)	Current winter water levels (m ODN)	Proposed summer water levels (m ODN)	Proposed winter water levels (m ODN)	Flood Conditions
King's Sedgemoor Drain, Eighteen Foot Rhyne, Sowy, Parrett							
Dunball Sluice	ST 3099 4072	EA	2.60 - 2.65	2.13	2.60 - 2.65	2.13	Open
Greylake Sluice	ST 3971 3445	EA	3.45	3.00 - 3.10	3.45	3.00-3.10	Weir lowered (to maintain upstream level)
Henley Sluice	ST 4353 3268	EA	5.10 - 5.20	No pen	5.10 - 5.20	No pen	
Henley Pumping Station	ST 4353 3268	EA	Pumping for irrigation when required	No pumping	Pumping for irrigation when required	No pumping	No pumping
Nythe Sluice	ST 4272 3461	EA	Not used	Not used	Not used	Not used	Not used
Walton Sluice	ST 4530 3347	EA	4.20	No pen	4.20	No pen	Not pen
Oath Lock Sluice	ST 3831 2787	EA	Lowered	Raised	Lowered	Raised	Raised
Oath Lock Bypass Wier	ST 3831 2787	EA	6.60	No pen	6.60	No pen	No pen
Beer Wall Tilting Weir	ST 3918 3152	EA	3.80 - 4.00	No pen	3.80 - 4.00	**3.25**[1]	No pen
Monks Leaze Main Sluice	ST 4093 2760	EA	Closed	Closed	Closed	Closed	Partially open / closed when spillways run
Monks Leaze Minor Sluice	ST 4093 2760	EA	Open	Closed	Open	Closed	-
Langacre Rhyne (King's Sedgemoor SSSI)							
Langacre Sluices (2No. large doors)	ST 3803 3509	EA	Closed	Open	Closed	**Closed** [1]	Open
Langacre Sluices (1No. small door)	ST 3803 3509	EA	3.45	Open	3.45	**3.45** [1] **(operates as overflow)**	-
Blind Man's Gate Sluices	ST 3925 3394	EA	3.65	Open	3.65	**3.00-3.10** [1]	Open
Blind Man's Gate Bypass Tilring Weir	ST 3925 3394	EA	New structure	New structure	**3.45**	**3.00-3.10** [1]	-
Egypt Clyse (Othery Sluice)	ST 4039 3415	EA	3.65 Controlled feed to KSD	Open	3.65 Controlled feed to KSD	**Partially open** [1]	Open
Beer Wall Sluices (1No. small door)	ST 3922 3151	EA	3.80	Open	3.80	Open	-
Beer Wall Sluices (2No. large doors)	ST 3922 3151	EA	Closed	Open	Closed	Closed	Open
Middlezoy Moor Feed from KSD	ST 3970 3440	IDB	Open	Closed	Open	Closed	-
S1 Inlet	ST 4129 3232	EA	Controlled feed	Open	Controlled feed	Open	-
High Ham Rhyne Sluice [3]	ST 4185 3360	IDB	3.75	No pen	3.75	**3.40** [1]	-
High Ham Rhyne Penstock No 1	ST 4108 3220	IDB	Open	Open	Open	Open	-
High Ham Rhyne Penstock No 2	ST 4130 3230	IDB	Closed	Closed	Closed	Closed	-

Water level control structures		Operated by	Current summer water levels (m ODN)	Current winter water levels (m ODN)	Proposed summer water levels (m ODN)	Proposed winter water levels (m ODN)	Flood Conditions
Old Rhyne Inlet Pipe	ST 4160 3240	IDB	Boards fitted	No pen	[1]	No pen	-
Two Mile Rhyne Penstock [3]	ST 4040 3280	IDB	3.75	Open	3.75	**3.40** [1]	-
Henley Bridge Inlet to Low Ham Rhyne	ST 4360 3270	IDB	Controlled feed	Closed	Controlled feed	Closed	-
Low Ham Moor Penning Bay	ST 4385 3280	IDB	Boards fitted	No pen	Boards fitted	No pen	-
Bridge Farm Front Gate Inlet, Henley	ST 4360 3270	IDB	Culvert invert	Culvert invert	Culvert invert	Culvert invert	-
Inlet to Old R Cary, Henley	ST 4360 3270	IDB	Pumped or gravity feed	Closed	Pumped or gravity feed	Closed	-
Low Ham Moor Inlet	ST 4390 3250	IDB	Controlled feed [2]	Closed	Controlled feed [1]	Closed	-
Inlet to Blackhole Rhyne	ST 4360 3270	IDB	Controlled feed	Closed	Controlled feed	Closed	-
Blackhole Rhyne Penning Bay [3]	ST 4230 3290	IDB	Boards fitted [2]	No pen	Boards fitted [1]	No pen	-
Blackhole Outlet	ST 4305 3305	IDB	Closed	Open	Closed	Open (level maintained by KS060)	-
S2 (KSM RWLA) [3]	ST 4121 3344	IDB	No pen 3.75	4.05	No pen 3.75	4.05	-
S5 (KSM RWLA) [3]	ST 4067 3343	IDB	3.75	3.95	3.75	3.95	-
S6 (KSM RWLA) [3]	ST 4052 3372	IDB	No pen 3.65	3.85	No pen 3.65	3.85	-
S7 (KSM RWLA) [3]	ST 4097 3391	IDB	3.65	3.85	3.65	3.85	-
S8 (KSM RWLA) [3]	ST 4097 3360	IDB	3.75	3.95	3.75	3.95	-
S9 (KSM RWLA)	ST 4161 3354	IDB	3.75	3.95	Decommission	Decommission	-
New Rhyne Tilting Weir (KS037/E38)	ST 4108 3300	IDB	New structure	New structure	Controlled feed (same level as KS035)	Controlled feed	-
S11 Ackland's Drove Tiliting Weir	ST 4106 3303	IDB	New structure	New structure	No pen 3.75	4.05	-
Bimpits Rhyne (King's Sedgemoor SSSI)							
Bimpits Lane Tilting Weir	ST 3828 3448	EA	3.30	3.00	3.30	**3.10** [1]	-
Blind Man's Gate Tilting Weir	ST 3911 3385	EA	3.45	No pen	3.45	No pen	-
Sandy Lane Penning Bay	ST 3930 3347	EA	3.70 [2]	No pen	Decommission	Decommission	-
Sandy Lane Tilting weir	ST 3930 3347	IDB	New structure	New structure	3.70	3.40	-
First Drove Tilting Weir	ST 3895 3161	EA	3.90	No pen 3.50 approx	3.98	[1]	-
Small Moor Rhyne Penning Bay	ST 3895 3340	IDB	Boards fitted [2]	No pen	[1]	No pen	-
Bimpits Rhyne Inlet (Bagenham Farm Inlet)	ST 3879 3118	EA	Controlled feed	Closed	Controlled feed	Closed	Closed

Water level control structures		Operated by	Current summer water levels (m ODN)	Current winter water levels (m ODN)	Proposed summer water levels (m ODN)	Proposed winter water levels (m ODN)	Flood Conditions
KSD Back Ditch (Moorlinch SSSI)							
Parchey Tilting Weir	ST 3520 3780	IDB	3.10	No pen	3.10	No pen	No pen
Cossington Rhyne Outlet to KSD	ST 3645 3580	IDB	Closed	Open	Closed	Open	Open
Cossington Right Rhyne Penning Bay	ST 3565 3710	IDB	[2]	No pen	[1]	No pen	-
Chilton Right Outfall to KSD	ST 3760 3540	IDB	Closed	Open	Closed	Open	Open
KSD Back Ditch (Chilton Right) Penning Bay [3]	ST 3750 3580	IDB	3.30 -3.35	No pen	3.30 -3.35	Weir raised	Weir raised (outfall to KSD open)
Chilton Right Tilting Weir	ST 3756 3535	IDB	New structure	New structure	**Closed (weir raised)**	**3.00 - 3.10** [1]	-
Shapwick Right Rhyne Dam	St 3778 3577	IDB	New structure	New structure	Controlled feed	Closed	-
KSD Back Ditch (Greylake) Dam	ST 3979 3447	IDB	New structure	New structure	**Controlled feed**	**Open** [1]	-
Hook Rhyne Inlet	ST 3970 3450	IDB	Controlled feed	Closed	Controlled feed	Closed	-
S1 (Moorlinch RWLA)	ST 3784 3629	EA	No pen	3.50	No pen	3.50	-
S2 (Moorlinch RWLA)	ST 3844 3552	EA	No pen	3.50	No pen	3.50	-
S3 (Moorlinch RWLA)	ST 3969 3616	EA	No pen	3.50	No pen	3.50	-
S4 (Moorlinch RWLA)	ST 3965 3634	EA	No pen	3.50	No pen	3.50	-
King's Sedgemoor (Sutton, Somerton, Walton, Butleigh, Huish Moors)							
Podimore Pumping Station	ST 5330 2500	IDB	Pumping for drainage when required	Pumping for drainage when required	Pumping for drainage when required	Pumping for drainage when required	Pumping
Park Brook Sluice	ST 5280 2660	IDB	Boards fitted if necessary	No pen	Boards fitted if necessary	No pen	-
Etsome Sluice	ST 4820 3070	EA	7.85 Closed	No pen	7.85 Closed	No pen	No pen
Etsome Inlet	ST 4840 3070	IDB	Controlled feed	Closed	Controlled feed	Closed	-
Dundon Drove Sluice	ST 4755 3110	IDB	Boards fitted [2]	No pen	[1]	No pen	-
North Main Rhyne Sluice	ST 4690 3085	IDB	No pen	No pen	No pen	No pen	-
Somerton Rhyne Inlet	ST 4525 3085	IDB	Controlled feed	Closed	Controlled feed	Closed	-
Crooked Rhyne Inlet	ST 4495 3110	IDB	Controlled feed	Closed	Controlled feed	Closed	-
Somerton Straight Rhyne Penning Bay No 1	ST 4520 3130	IDB	Tilting weir set to pen level [1]	No pen	[1]	No pen	-
Somerton Straight Rhyne Penning Bay No2	ST 4515 3145	IDB	Boards fitted if necessary	No pen	[1]	No pen	-
Somerton Straight Rhyne Penning No3	ST 4494 3270	IDB	Boards fitted [2]	No pen	[1]	No pen	-
Somerton Straight Rhyne Penning No 4	ST 4480 3350	IDB	Tilting weir set to pen level [1]	No pen	[1]	No pen	-

Water level control structures		Operated by	Current summer water levels (m ODN)	Current winter water levels (m ODN)	Proposed summer water levels (m ODN)	Proposed winter water levels (m ODN)	Flood Conditions
Somerton Main Rhyne/ Somerton Drove Tilting Weir	ST 4565 3130	IDB	Tilting weir set to pen level [1]	No pen	[1]	No pen	-
Somerton Main Rhyne Penstock & Flood Relief Pipe	ST 4560 3300	IDB	Penstock raised & pipe blocked	No pen & pipe blocked	Penstock raised & pipe blocked	No pen & pipe blocked	-
Middle Main Rhyne Sluice	ST 4595 3150	IDB	No pen	No pen	No pen	No pen	-
Inlet to Pitney Rhyne	ST 4420 3205	IDB	Controlled feed	Closed	Controlled feed	Closed	-
Pitney Rhyne Penning Bay	ST 4450 3250	IDB	Boards fitted	No pen	[1]	No pen	-
Redlake Rhyne Middle Drove Culvert	ST 4600 3310	IDB	No pen	No pen	No pen	No pen	-
Redlake Rhyne Weir	ST 4600 3325	IDB	Fixed weir	Fixed weir	Fixed weir	Fixed weir	-
Street Rhyne Inlet	ST 4605 3340	IDB	Closed	Closed	Closed	Closed	-
Inlet to Blackhole Rhyne	ST 4360 3270	IDB	Controlled feed	Closed	Controlled feed	Closed	-
Low Ham Rhyne Upper Penning Bay	ST 4360 3270	IDB	Boards fitted	Boards fitted	Boards fitted	Boards fitted	-
Low Ham Rhyne Penning Bay	ST 4470 3350	IDB	Tilting weir set to pen level [1]	Lowered by 300mm approx	[1]	[1]	-
Sutton Rhyne Penning Tilting Weir	ST 4305 3370	IDB	Tilting weir set to pen level [1]	No pen	[1]	No pen	-
Feed Pipe under Pedwell Drove	ST 4290 3390	IDB	Flap value closed	Flap value open	Flap value closed	Flap value open	-
Sutton Rhyne Bottom Penning Bay	ST 4285 3410	IDB	Tilting weir set to pen level [1]	No pen	[1]	No pen	-
Sutton Moor Middle Rhyne Pen	ST 4350 3400	IDB	Boards fitted	Lowered by 300mm approx	[1]	[1]	-
Northern Rhyne Penning Bay	ST 4400 3430	IDB	Boards fitted	No pen	[1]	No pen	-
C1 (Walton RWLA)	ST 4447 3366	EA	Open	Closed	Open	Closed	-
S1 (Walton RWLA)	ST 4435 3410	EA	4.15	4.45	4.15	4.45	-
S2 (Walton RWLA)	ST 4439 3430	EA	4.05	4.35	4.05	4.35	-
S3 (Walton RWLA)	ST 4450 3445	EA	3.95	4.10	3.95	4.10	-
C13 (Walton RWLA)	ST 4517 3371	EA	Open	Closed	Open	Closed	-
S7 (Walton RWLA)	ST 4486 3405	EA	4.00	4.30	4.00	4.30	-
S8 (Walton RWLA)	ST 4489 3424	EA	4.00	4.30	4.00	4.30	-
S9 (Walton RWLA)	ST 4455 3434	EA	3.85	4.15	3.85	4.15	-
S10 (Walton RWLA)	ST 4460 3408	EA	Open [3.85]	Closed [4.15]	Open [3.85]	Closed [4.15]	-
C23 (Walton RWLA)	ST 4544 3387	EA	Open	Closed	Open	Closed	-
S12 (Walton RWLA)	ST 4554 3426	EA	4.00	4.30	4.00	4.30	-

Water level control structures		Operated by	Current summer water levels (m ODN)	Current winter water levels (m ODN)	Proposed summer water levels (m ODN)	Proposed winter water levels (m ODN)	Flood Conditions
S13 (Walton RWLA)	ST 4585 3447	EA	3.87	4.17	3.87	4.17	-
S14 (Walton RWLA)	ST 4593 3464	EA	3.75	4.05	3.75	4.05	-
Aller Moor							
Oxleaze Drove Tilting Weir	ST 3828 2935	EA	4.44	3.80 approx (lowered)	4.44	3.80 approx (lowered)	Lowered
Aller Drove Inlet (to Langacre Rhyne)	ST 3814 3033	EA	Open	Open	Open	Open	Closed
Poolmead Rhyne Inlet	ST 4096 2760	EA	Open	Closed	Open	Closed	Closed
Headwall Sluices	ST 4122 2795	EA	Open	Open	Open	Open	Open
Headwall Penning Bay	ST 4122 2795	EA	5.65	4.70	5.65	4.70	-
Middlemoor Sluice	ST 4120 2795	EA	Open	Open	Open	Open	-
Decoy Orchard Sluice	ST 4021 2825	EA	Open	Open	Open	Open	-
Decoy Orchard Tilting Weir	ST 4021 2825	EA	Set to allow water to flow into the Langacre Rhyne		Set to allow water to flow into the Langacre Rhyne		Closed
Weir Bridge Rhyne Tilting weir	ST 4016 2829	EA	5.00	Closed (weir raised)	5.00	Closed (weir raised)	Closed (weir raised)
Weir Bridge East Penning Structure	ST 3966 2912	IDB	Redundant	Redundant	Redundant	Redundant	Redundant
Weir Bridge West Penning Bay	ST 3963 2912	IDB	Boards fitted [2]	No pen	Boards fitted [1]	No pen	-
Decoy Rhyne Sluices	ST 4023 2793	EA	Open	Open	Open	Open	Closed
Decoy Rhyne Penning Bay	ST 4023 2793	EA	4.90	No pen	4.90	No pen	-
Stathe Drove Penning Bay	ST 3793 2912	IDB	4.46	2.90 approx	4.46	2.90 approx	-
Playing Field Tilting Weir	ST 3990 2900	IDB	New structure	New structure	[1]	[1]	-
Black Withies Penning Bay [3]	ST 3959 3102	IDB	4.10	No pen	4.10	3.50	-
Lucus Rhyne Tilting weir	ST 3959 3102	IDB	New structure	New structure	3.90 [1]	3.70 [1]	-
Leazeway East Rhyne Tilting weir	ST 3903 3110	IDB	New structure	New structure	3.90 [1]	3.70 [1]	-

Notes:
- **Summer season:** Aim to achieve summer pen levels by 1st April.
- **Winter season:** Aim to achieve winter pen levels by 1st December.
- See Box 2 for target conditions for RWLAs.
- **[1]:** Level unknown.
- **[2]:** No gauge board
- **[3]:** Structure to be replaced by tilting weir
- **ODN:** Ordnance Datum Newlyn.

Proposal 7: The Parrett IDB will support the management of Raised Water Level Areas in the Plan area as set out in Table 18.

Reason: Within the framework provided by the operation of the arterial watercourses and control structures, the Parrett IDB will support the management of RWLAs in the Plan area, where they do not adversely affect the management of neighbouring land. Where conflict does occur, the IDB will work with landowners to achieve the best water management solution.

The Parrett IDB acknowledges that there may be the potential to increase the area managed with raised water levels in winter and / or the spring within the Plan area. The Parrett IDB would support Natural England in their work to secure the appropriate agri-environment agreements to increase the area managed for breeding waders during the five years of this WLMP. The improvements to the water management infrastructure in this Plan would support, and not prejudice, the realisation of these opportunities in future years.

The areas with seasonally higher water levels are set out in Table 18 and their locations are shown on Map 11.

Table 18: Areas with seasonally higher water levels in King's Sedgemoor and Aller Moor

Raised water area	Name of operator	Area in hectares	Area in acres
King's Sedgemoor	EA	159	392
Moorlinch	EA	153	378
Walton Moor	EA	113	279
Greylake Nature Reserve	RSPB	108	267
Aller Moor (Stathe Drove)	Mr Hector	34	84

9.4. Changes to operational procedures and responsibilities

Proposal 8: The Parrett IDB and the Environment Agency will adopt a flexible operating regime that allows water levels and seasonal penning dates to vary in response to weather conditions.

Reason: The Parrett IDB considers flexibility to be a critical element in the management of water across the Somerset Levels and Moors. The timing of operations (e.g. setting pen levels, watercourse maintenance) and the water levels need to be responsive to prevailing weather conditions. The date of operations and the water levels set out in this Plan are the product of many years experience and are most likely to be accurate for a 'normal season'.

The Parrett IDB and the Environment Agency propose to adopt the principle that:

- The timing of the normal seasonal changes in pen level can vary by up to two weeks from the date specified in the Plan;
- The normal water level can range up to 50mm above the level specified in the Plan during dry conditions;
- The normal water level can range up to 100mm below the level specified in the Plan during wet conditions.

The Environment Agency and the Parrett IDB have agreed to meet three weeks before the normal seasonal changeover date to confirm summer / winter penning dates based on catchment conditions. If the season or local conditions require the Parrett IDB or the Environment Agency to operate outside these 'normal' parameters then consultation with Natural England will take place.

Proposal 9: The Parrett IDB and the Environment Agency will agree operational guidelines for the River Sowy (Parrett Flood Relief Channel) and the King's Sedgemoor Drain.

Reason: The effective operation of the River Sowy (Parrett Flood Relief Channel) and King's Sedgemoor Drain are critical to water level and flood risk management in the King's Sedgemoor and Aller Moor area. When the River Sowy is used to relieve flood flows in the Parrett, it can cause extensive flooding in King's Sedgemoor and Aller Moor, which can have detrimental impacts on agriculture, nature conservation and access in the area. The Parrett IDB and the Environment Agency will therefore agree criteria for the operation of the main control structures on the River Sowy and King's Sedgemoor Drain (Monks Leaze, Beer Wall Sluice and Dunball Sluice).

Proposal 10: The Parrett IDB, the Environment Agency and Natural England will establish and maintain a monitoring programme to support the implementation of the Plan, and to ensure that the water level management regime meets the agreed objectives.

Reason: Changes in water levels and operational practices will be monitored by the relevant authorities and assessed to determine their effects on conservation, agriculture and flood risk management. The Parrett IDB will report on the outcomes of this monitoring, at least once a year, for three years following the implementation of the Plan.

Several organisations are involved in monitoring environmental information that is relevant to the WLMP, as set out in Table 19.

Table 19: Monitoring arrangements for King's Sedgemoor and Aller Moor

Lead body	Topic of monitoring
Parrett IDB	• Target water levels at key IDB control structures; • Maintenance of Viewed Rhynes; • Monitoring channel profiles and conveyance in Viewed Rhynes; • Maintenance of minor watercourses, farmers ditches etc; • Water quality.
Environment Agency	• Target water levels at key Agency control structures; • Maintenance of Main Rivers; • Monitoring channel profiles and conveyance in Main Rivers; • Catchment rainfall and weather events; • Water quality.
Natural England	• Plant, bird, invertebrate and mammal communities; • Land management; • Surface water and soil wetness conditions; • Water quality.

It is anticipated that an ongoing monitoring programme of long-term changes in the plant, bird, invertebrate and mammal communities of the King's Sedgemoor and Aller Moor area will be undertaken by Natural England and others. The data collected will be used in combination with Environment Agency and Parrett IDB environmental data, and local knowledge, to inform and refine decisions regarding suitable water levels in the future.

Proposal 11: The Parrett IDB and the Environment Agency will resolve the proposed changes in ownership and responsibility for selected water control structures and watercourses in the Plan area.

Reason: There are merits to having one Operating Authority manage a greater proportion of the smaller structures that control water levels within a defined system. The Environment Agency and the Parrett IDB are negotiating the handover of maintenance and operational responsibility for some of the control structures currently maintained and operated by the Environment Agency.

DEFRA and Government priorities, with regards to flood risk management, have been evolving over the past few years. This has resulted in the Environment Agency having to review its priorities and activities. The Environment Agency currently maintains and operates many structures that provide essential land drainage and nature conservation benefits. It also manages and maintains Main Rivers that serve no critical flood defence benefit. In the future the Environment Agency may no longer be able to justify maintaining or operating these structures and watercourses. The Environment Agency may consider de-maining some watercourses on this basis in the future.

One possible option is for the Parrett IDB to take over the ownership and management of these watercourses and structures, to continue a system of professional management and to provide continuity for the benefit of land owners and wildlife. The structures identified for this proposal are listed in Table 19.

Table 20: Proposed changes in ownership and responsibility of water control structures

Structure	Current operator	Proposed operator
King's Sedgemoor SSSI RWLA structures	EA	IDB
Moorlinch SSSI RWLA structures	EA	IDB
Bimpits Rhyne structures	EA	IDB
Walton Moor RLWA structures	EA	Landowners

9.5. Changes to maintenance practices

Proposal 12: The Parrett IDB will complete a review of IDB watercourse maintenance procedures in the Plan area.

Reason: In consultation with ratepayers and Natural England, the Parrett IDB will complete a review of the Board's procedures for maintaining Viewed Rhynes within the Plan area. The Parrett IDB will also establish a de-silting programme for Viewed Rhynes, to improve water circulation and to restore and enhance ditch habitats in areas affected by silt accumulation. High silt levels and shallow water depths can reduce water flow, increase water temperature in summer and adversely affect ditch habitat quality and availability. The IDB will inform Natural England of any changes to maintenance procedures that may affect the SSSI.

Proposal 13: The Environment Agency will complete its review of the maintenance of Main Rivers within and adjacent to the Plan area.

Reasons: The Environment Agency is currently investigating the effectiveness of silt removal from a number of Main Rivers and Drains in the Parrett IDB District including, the Rivers Parrett and Tone, North Moor Main Drain and West Sedgemoor Main Drain. The Environment Agency will use the findings of these investigations to help determine the need for a programme of de-silting.

10. Unresolved matters

10.1. Climate change impacts

The potential effects of climate change and sea level rise on the Plan area are unclear at present. Studies by the Environment Agency, and others, should inform the Parrett IDB on these matters and the water management mitigation, or adaptation, required to accommodate these impacts.

The Government has recently introduced the Carbon Reduction Commitment, which the Environment Agency and other public sector organisations must comply with. The Environment Agency has set itself a target of 33% carbon reduction by 2015. Therefore, water level management needs to be carried out with the minimum of CO_2 output. The Parrett IDB will work with the Environment Agency to identify opportunities, such as maximising gravity discharge, and investigate the potential impacts of such measures on flood risk management and the environment.

11. Amendments agreed during the period of the Plan

Amendments to this Plan which are agreed by Drainage Board, the Environment Agency and Natural England are set out in Table 21.

Table 21: Amendments agreed during the period of the Plan

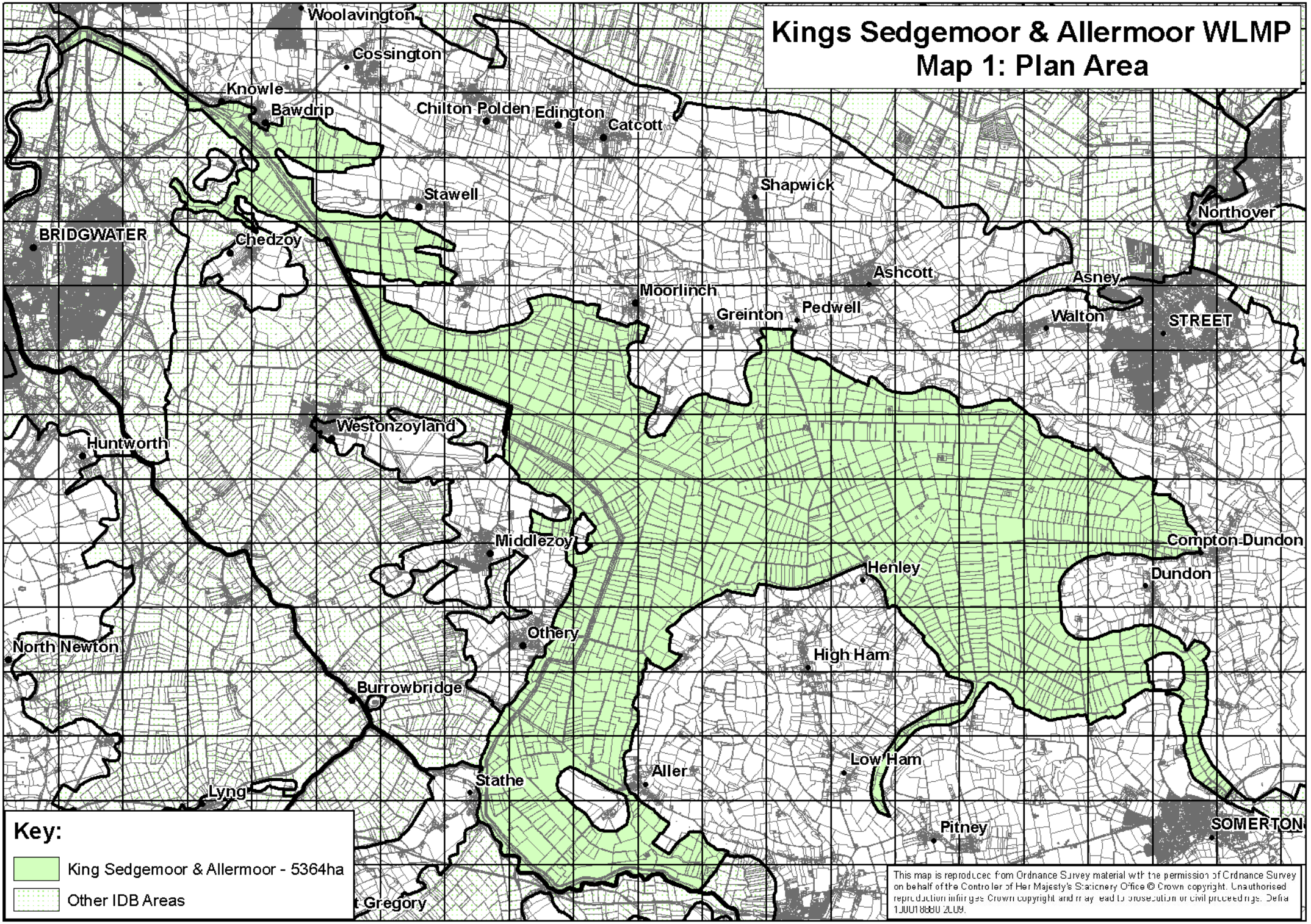
No.	Date	Amendment	Agreed

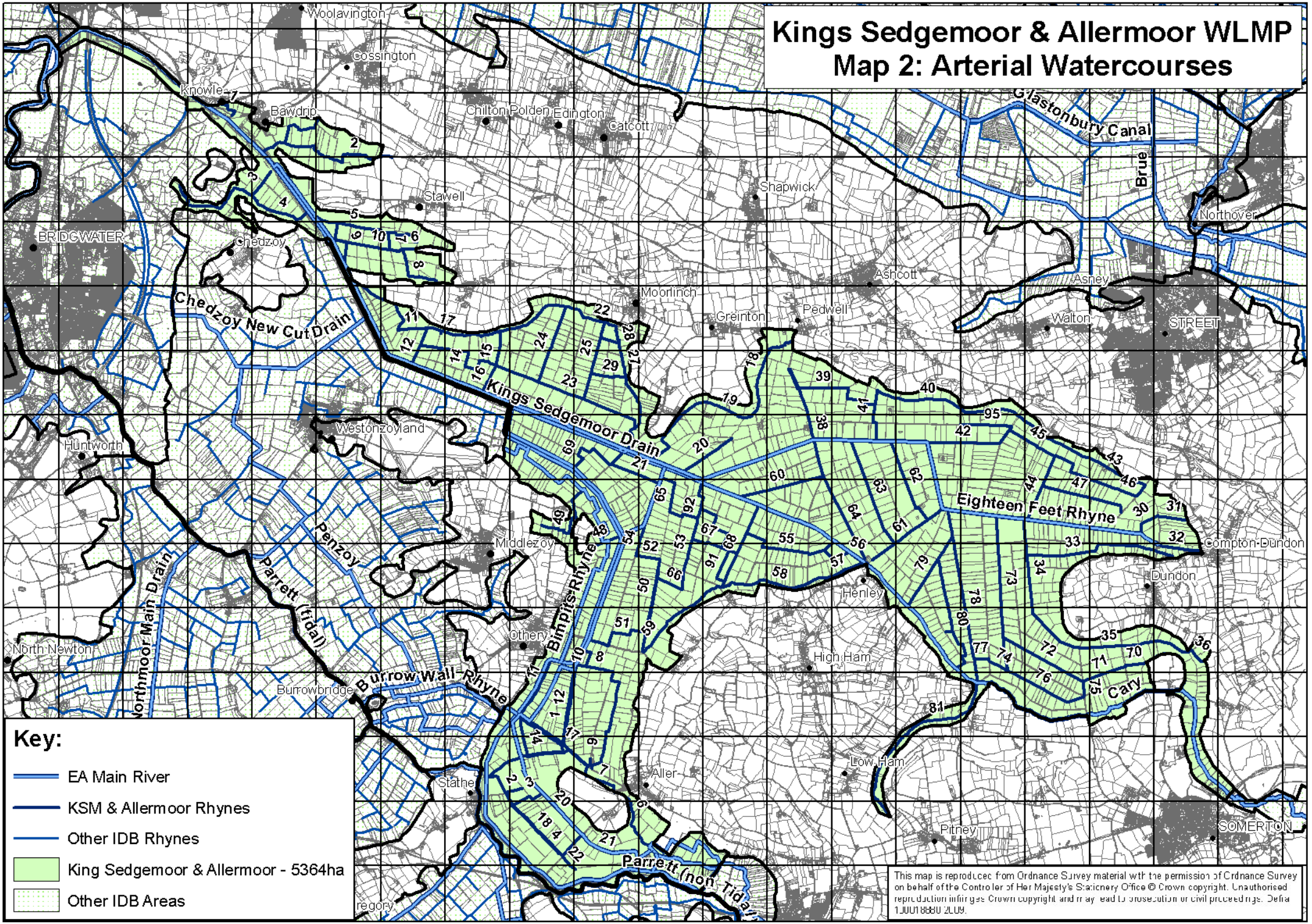
12. Review arrangements

The Parrett IDB proposes to review this WLMP in 2015, five years after it has been adopted. If any alterations to operating procedures or maintenance are required before 2015, these will be discussed by the IDB, the Environment Agency and Natural England and can be agreed as interim measures pending the full review.

13. Timetable of actions: King's Sedgemoor and Aller Moor WLMP

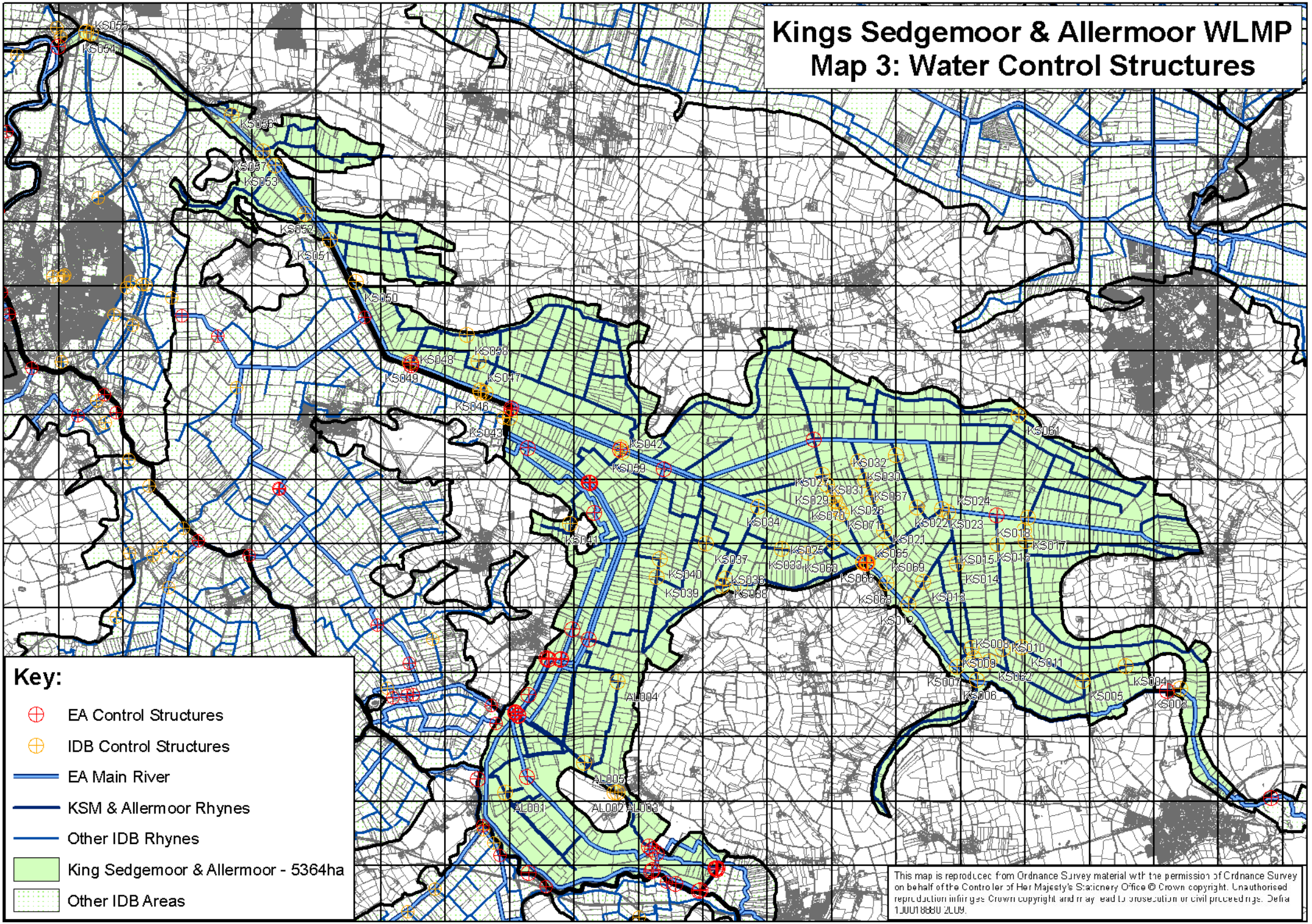
	Proposed continuation of current good practice	
1:	The current summer and winter penning levels at the key control structures, as set out in Table 17, will continue to be maintained by the Parrett IDB and the Environment Agency.	**Ongoing**
2:	Maintenance of the current Viewed Rhyne network will continue to be undertaken by the Parrett IDB.	**Ongoing**
	Proposed changes to water control infrastructure	
3:	Capital improvement works will be carried out by the Parrett IDB to help achieve favourable condition on King's Sedgemoor and Moorlinch SSSIs.	**Complete by end 2014**
4:	The Environment Agency will continue to develop a capital improvements scheme for Henley Door Sluice.	**Works identified by end 2010**
5:	Additional gauge boards and telemetry stations will be installed by the Parrett IDB in the Plan area.	**Complete by end 2012**
	Proposed changes to target water levels	
6:	The Parrett IDB and the Environment Agency will adopt the proposed changes to target water levels, as set out in Table 17, and trial these levels to ensure that they meet the agreed objectives.	**From 2010**
7:	The Parrett IDB will support the management of Raised Water Level Areas in the Plan area as set out in Table 18.	**Ongoing**
	Proposed changes to operational procedures and responsibilities	
8:	The Parrett IDB and the Environment Agency will adopt a flexible operating regime that allows water levels and seasonal penning dates to vary in response to weather conditions.	**Immediate**
9:	The Parrett IDB and the Environment Agency will agree operational guidelines for the River Sowy (Parrett Flood Relief Channel) and the King's Sedgemoor Drain.	**Complete by end 2011**
10:	The Parrett IDB, the Environment Agency and Natural England will establish and maintain a monitoring programme to support the implementation of the Plan, and to ensure that the water level management regime meets the agreed objectives.	**Establish by end 2010**
11:	The Parrett IDB and the Environment Agency will resolve the proposed changes in ownership and responsibility for selected water control structures and watercourses in the Plan area.	**Complete by end 2012**
	Proposed changes to maintenance practices	
12:	The Parrett IDB will complete a review of IDB watercourse maintenance procedures in the Plan area.	**Complete by end 2011**
13:	The Environment Agency will complete its review of the maintenance of Main Rivers within and adjacent to the Plan area.	**Complete by end 2011**


Kings Sedgemoor & Allermoor WLMP
Map 1: Plan Area
Woolavington
Cossington
Knowle
Bawdrip
Chilton Polden
Edington
Catcott
Shapwick
Stawell
Northover
BRIDGWATER
Chedzoy
Ashcott
Asney
Moorlinch
Greinton
Pedwell
Walton
STREET
Westonzoyland
Huntworth
Middlezoy
Compton Dundon
Henley
Dundon
Othery
North Newton
High Ham
Burrowbridge
Low Ham
Aller
Stathe
Lyng
Pitney
SOMERTON
Key:
King Sedgemoor & Allermoor - 5364ha
Other IDB Areas
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Kings Sedgemoor & Allermoor WLMP
Map 3: Water Control Structures

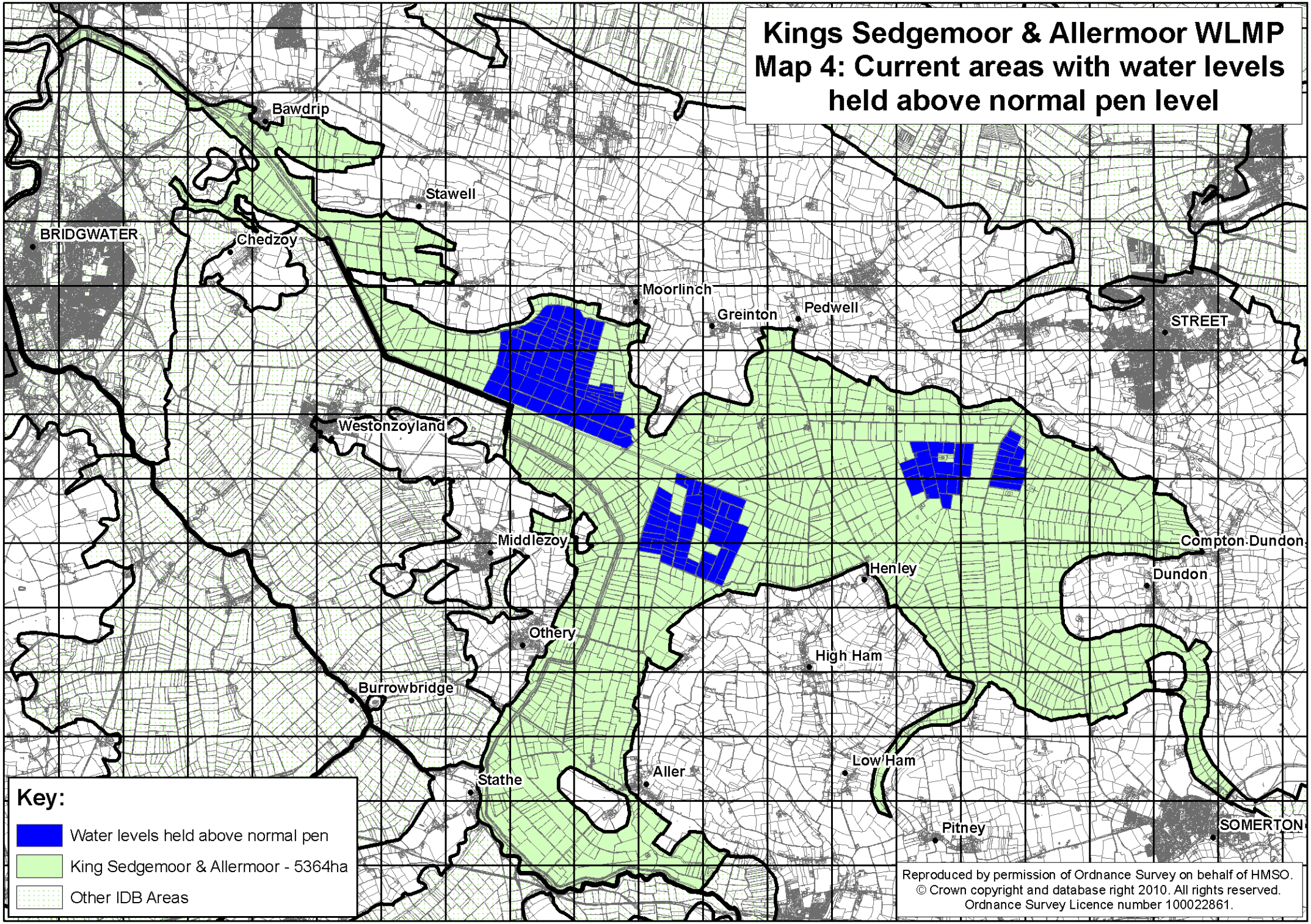


Key:

- EA Control Structures
- IDB Control Structures
- EA Main River
- KSM & Allermoor Rhynes
- Other IDB Rhynes
- King Sedgemoor & Allermoor - 5364ha
- Other IDB Areas

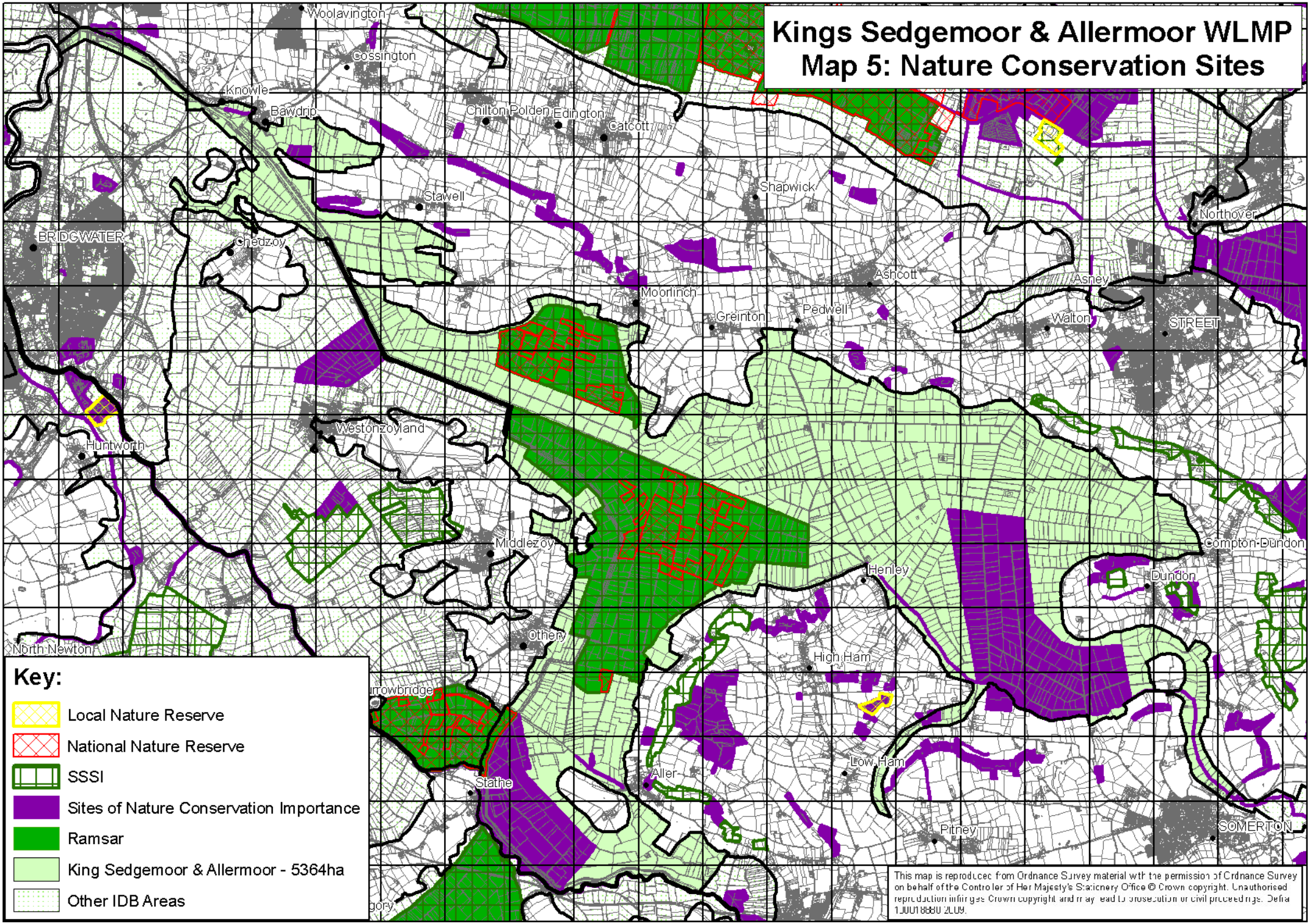
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Kings Sedgemoor & Allermoor WLMP
Map 4: Current areas with water levels held above normal pen level

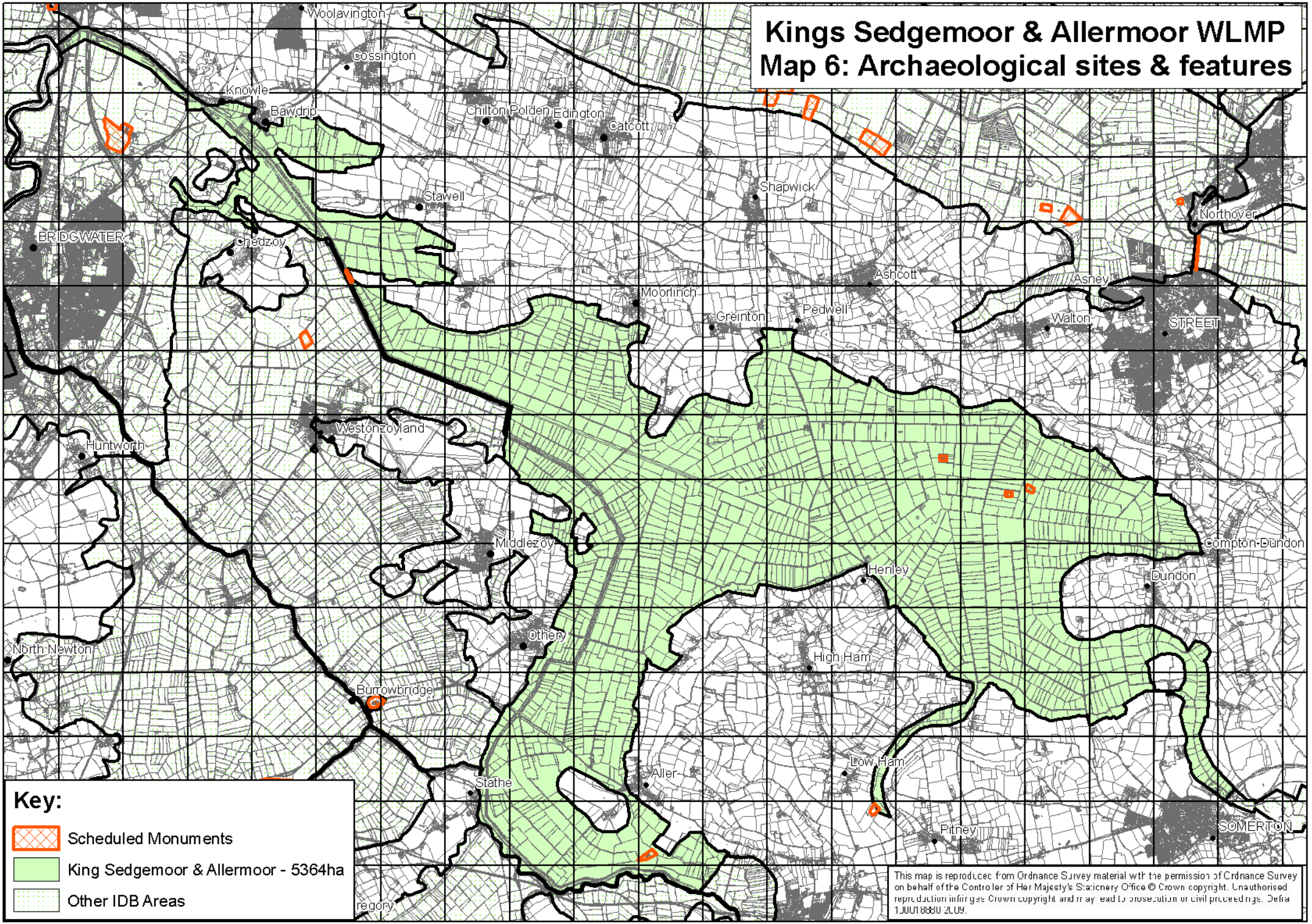


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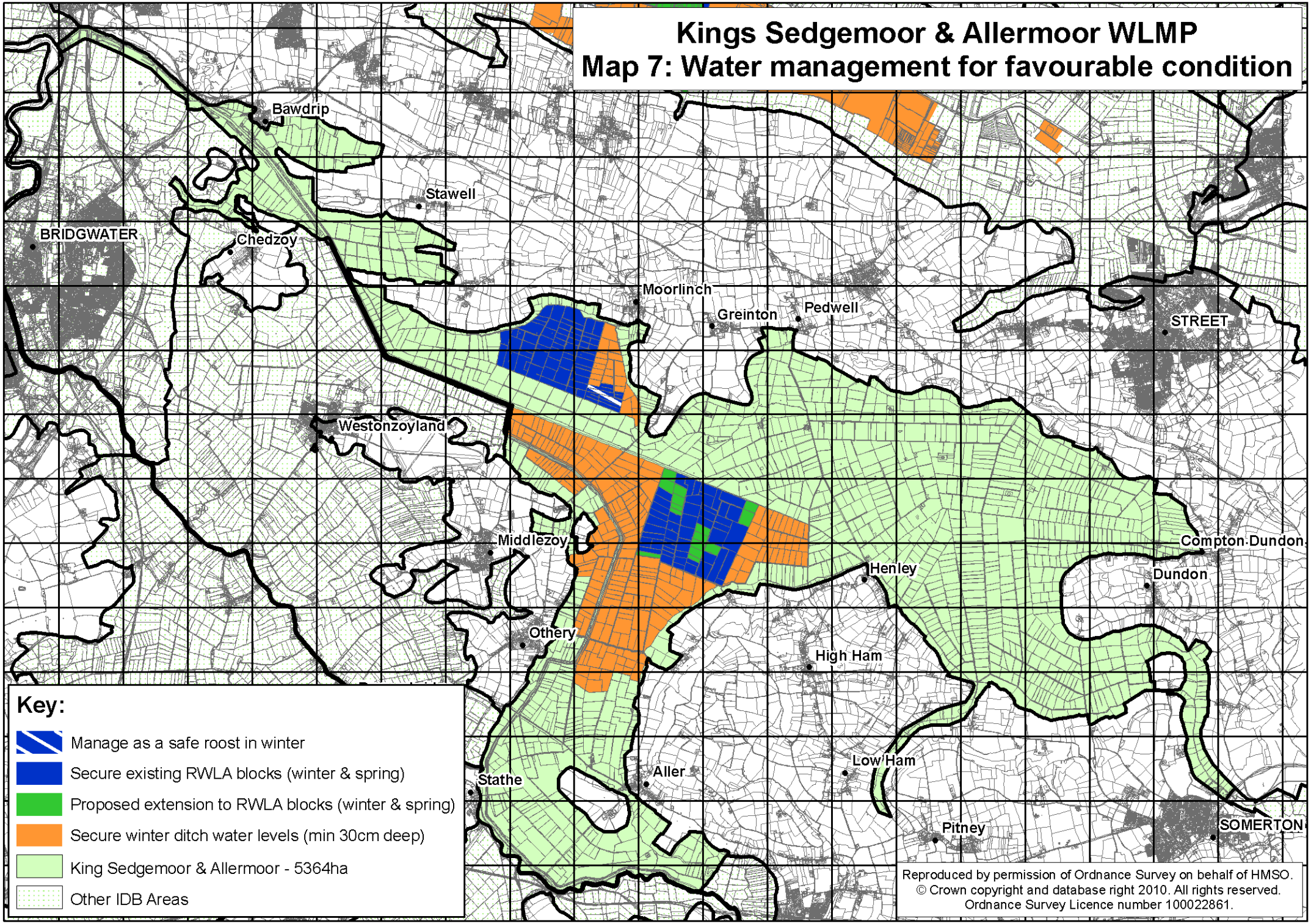
Kings Sedgemoor & Allermoor WLMP
Map 5: Nature Conservation Sites



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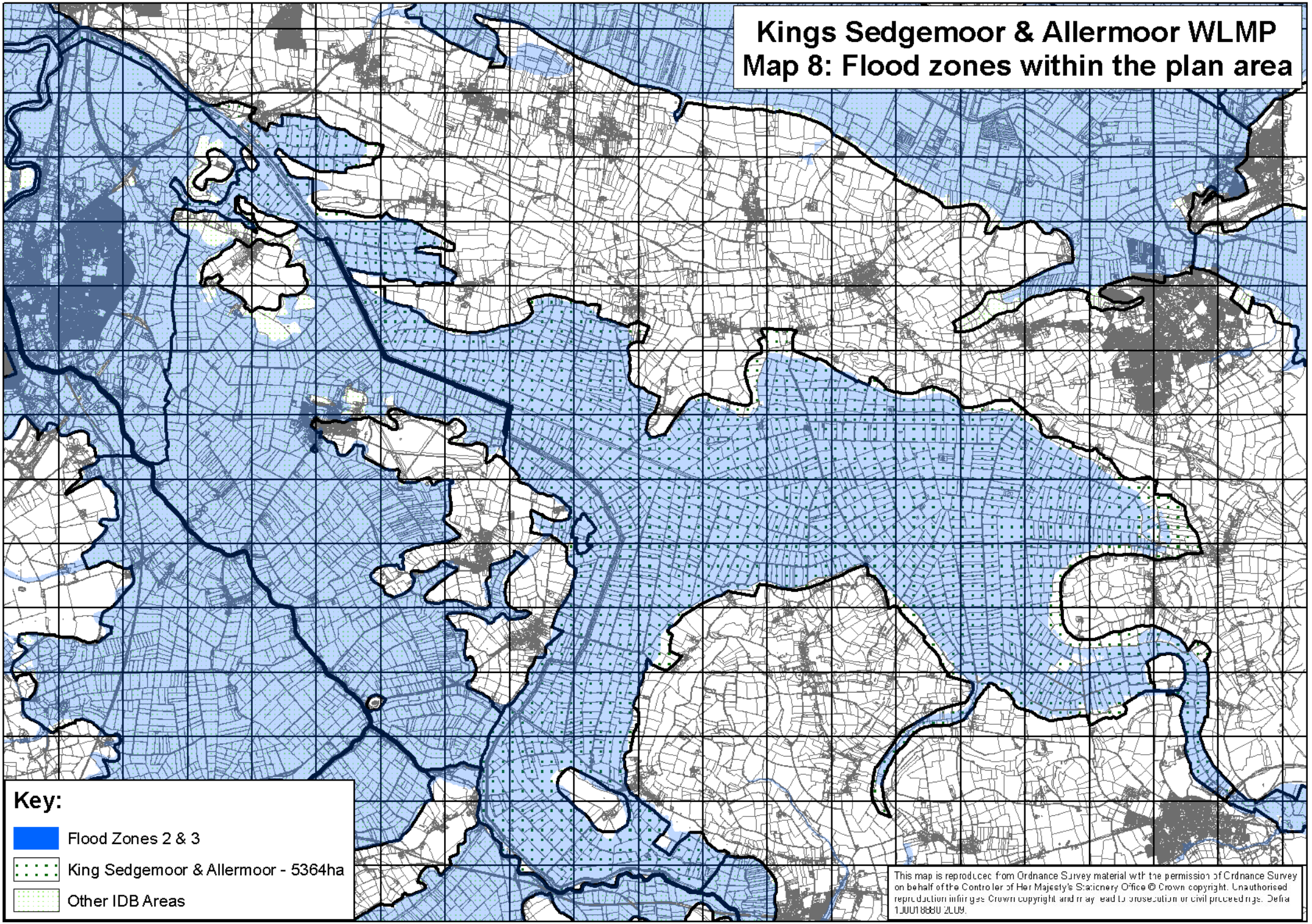

Kings Sedgemoor & Allermoor WLMP
Map 6: Archaeological sites & features
Woolavington
Gossington
Knowle
Bawdrip
Chilton Polden
Edington
Catcott
Shapwick
Stawell
Northover
BRIDGWATER
Chedzoy
Ashcott
Asney
Moorlinch
Greinton
Pedwell
Walton
STREET
Westonzoyland
Huntworth
Middlezoy
Compton Dundon
Henley
Dundon
Othery
North Newton
High Ham
Burrowbridge
Low Ham
Aller
Stathe
Pitney
SOMERTON
Key:
Scheduled Monuments
King Sedgemoor & Allermoor - 5364ha
Other IDB Areas
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Kings Sedgemoor & Allermoor WLMP
Map 7: Water management for favourable condition

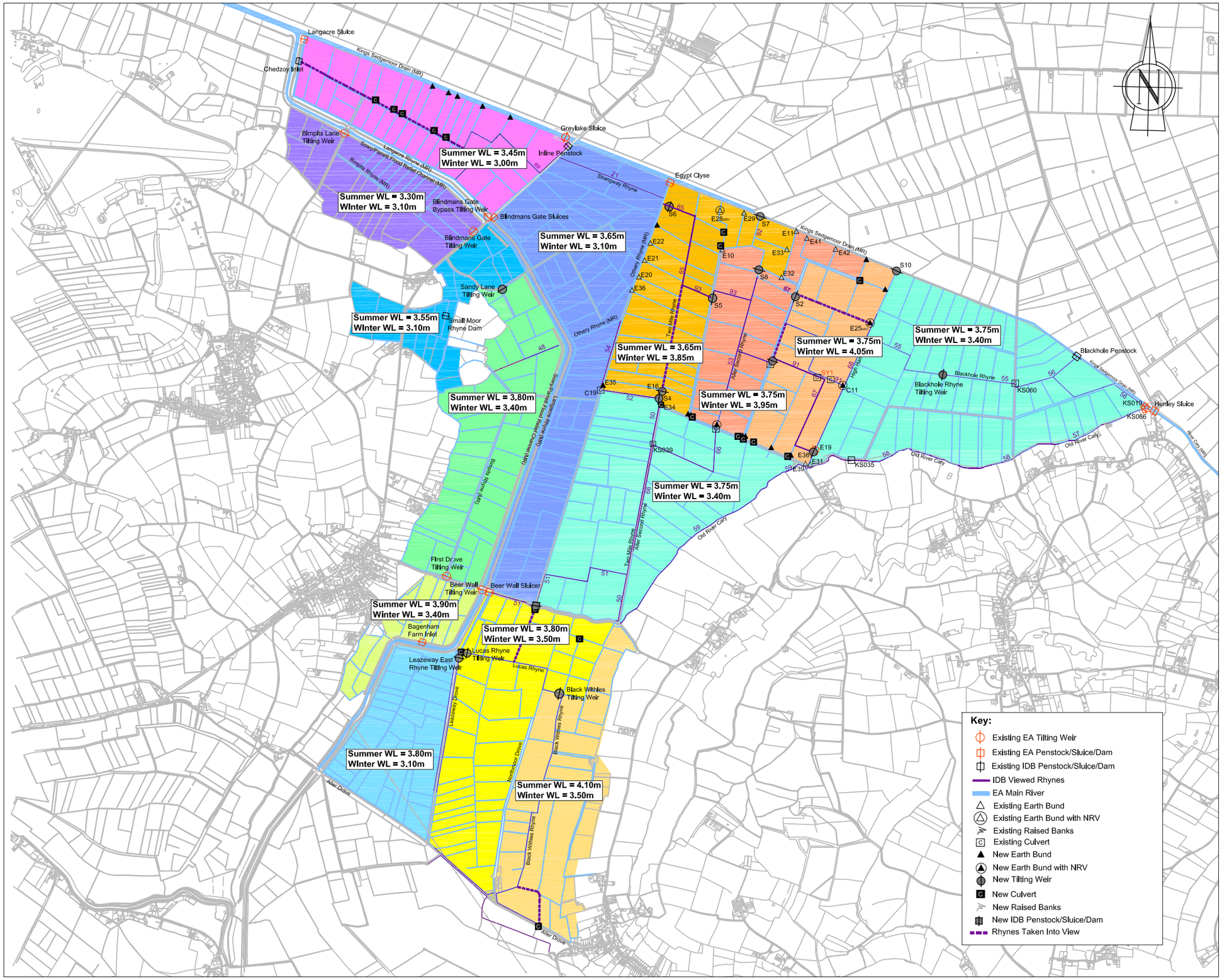


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Kings Sedgemoor & Allermoor WLMP
Map 8: Flood zones within the plan area



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KINGS SEDGEMOOR SSSI AREA - PROPOSED CAPITAL WORKS & WATER LEVELS

100m 0m 100m 300m 500m 700m 900m 1000m

Scale 1:12500

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I:\121438\CAD\CURRENT\KSM PROPOSED WATER LEVELS> (AN.08.06.10)

Drawing No.	Cad Ref	Rev.
121438-0000-0018A	KSM WL'S	PA

Note: The limits, including the height and depths of the Works, shown in this drawing are not to be taken as limiting the obligations of the contractor under Contract.

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Rev	Drawn	Checked	Reviewed	Date	Description
PA	AN	NC	PB	25/05/10	FOR WLMP CONSULTATION

Designed by:	AN	Date:	18/09/09
Drawn by:	AN	Date:	18/09/09
Checked by:	LD	Date:	25/09/09
Reviewed by:	AW	Date:	04/11/09

Client

SD BC

Client drawing No. | Revision

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Tel: +44(0)1752 668 712 E-mail: bv@bv.com

Project

KINGS SEDGEMOOR
FAVOURABLE CONDITION

Drawing title

KINGS SEDGEMOOR
PROPOSED WATER LEVELS

Approved by:		Date:	
Drawing scale:	AS SHOWN	Sheet size:	A1
Drawing No.	121438 — 0000 — 0018A	Revision	PA

Moorlinch WLMP Improvements

N

S1 Existing RWLA structure

S3 Existing RWLA structure

S2 Existing RWLA structure

New bund

Renew culvert

Renew culvert

Renew culvert

New bunds

Renew structure incorporating small irrigation sluice

Shapwick Right Rhyne Renew syphon & control structure

Renew inlet

Renew syphon - improve connection to KSD and KSD Back Ditch

Renew syphon - improve connection to KSD

Renew structure incorporating small irrigation sluice

Greylake sluice

Moorlinch Inlet Fit non-return valve

Existing RSPB inlets

New tilting weir to replace existing structure

Remove existing structure

Existing outfall to KSD

New tilting weir structure

Cossington

Sutton

Fortyacre

Polden

Templers

Chilton Right

Edington Right

Moorlynch

Hook (b)

Twelve Acre

Hook (a)

Catcott Right

Shapwick

Ksd Back Ditch

Kings Sedgemoor Drain

Langacre Rhyne

Sowy/parrett Flood Ba

Bimpits R

Greinton Part (a)

KEY:

SSSI Favourable Condition Project

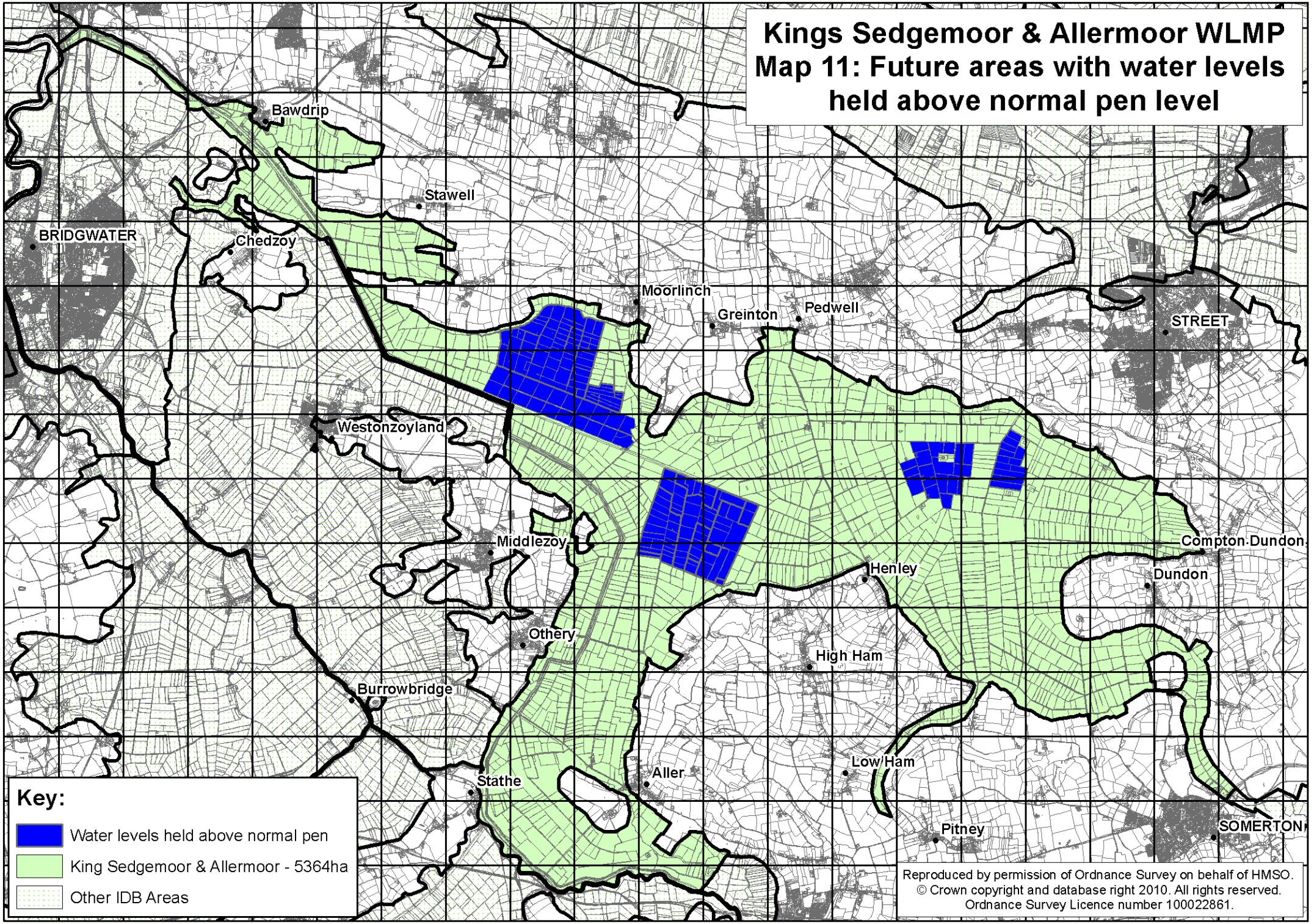
Greylake Connectivity Project

Kilometers

0 0.15 0.3 0.6 0.9

MoorlinchWLMPlayout_April2010

Kings Sedgemoor & Allermoor WLMP
Map 11: Future areas with water levels held above normal pen level



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