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LOCAR Hydrogeological Facilities post-LOCAR

Groundwater Resources Programme

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LOCAR Hydrogeological Facilities post-LOCAR

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Acknowledgements

The LOCAR programme could not have achieved its objectives without the assistance of the landowners of all the LOCAR sites in allowing access and their cooperation is gratefully acknowledged. Thanks are also due to those landowners who have agreed to the renewal of access agreements and/or the transfer of key sites to other agencies. Finally, the landowners of sites where access agreements were not renewed are thanked for their cooperation in the decommissioning process.

Summary

Following completion of the LOCAR Thematic Programme in 2006, BGS and CEH were awarded a service level agreement by NERC to manage the future of the individual sites which constituted the LOCAR infrastructure. This involved deciding which sites were to be maintained, which were to be transferred to other agencies (such as the Environment Agency and Universities) and which were to be decommissioned. The appropriate activity for each site was then implemented.

For those sites that were to be maintained, NERC Estate Management section and their agents negotiated new access agreements. As the service level agreement between NERC and BGS/CEH was not awarded until the end of November 2006, and because the subsequent renegotiation of leases took a significant amount of time, it was not possible to publicise in detail the ongoing availability of LOCAR sites until the publishing of this report (December 2008); even at this time the transfer of some sites to other agencies has not yet been completed. However, the ongoing availability of some LOCAR sites has been publicised in general terms on the LOCAR research results site (http://catchments.nerc.ac.uk/about/field/). Meanwhile it must be noted that, whilst a number of the LOCAR sites are once more available to the scientific community for research purposes through the offices of BGS (hydrogeological sites) or CEH (hydrological sites), the renewed access agreements for most sites only run for a further 20 months until August 2010.

The main objective of this report is to publicise the current availability of these sites and flag the fact that should access beyond August 2010 be required then action is needed now to initiate renegotiation of access agreements and locate appropriate funding for them.

This report details only those LOCAR sites which contained essentially hydrogeological research facilities. The report describes the thinking that led to the development of the individual sites and groups different sites according to the nature of the possible research areas that they would support and/or the data that they would produce. It should be noted that there will be other potential research opportunities at these sites and potential users should not feel restricted to the opportunities that may be suggested herein.

1 Introduction

NERC's Lowland Catchment Research (LOCAR) thematic programme provided the detailed, interdisciplinary hydro-ecological research needed to manage permeable lowland catchments, both now and in the future. £5 million was invested in installing and running field research facilities in the three contrasting permeable lowland catchments (Peach et al 2004). These 'flagship' sites provided the basis for long-term monitoring needed to define natural variability and responses to environmental change. The funding for these facilities came from a £2m Joint Infrastructure Fund grant to a consortium of universities and institutes, and from the programme's own funds. The programme distributed over £3m in research grants and studentships.

The programme investigated how water enters, is stored within, and is discharged from rivers in three groundwater-dominated catchments, the Frome/Piddle in Dorset, the Pang/Lambourn in Berkshire and the Tern in Shropshire. Researchers also investigated how fine sediments and chemicals (including fertiliser residues) move, and their effects on in-stream, riparian and wetland habitats within these catchments.

The LOCAR programme came to an end in 2006 leaving a legacy of high quality research (http://catchments.nerc.ac.uk/) and a substantial supporting infrastructure. The hydrogeological elements of the supporting infrastructure are described in three reports by Adams et al., (2003a, 2003b, 2003c). These reports are available on the LOCAR research results website (http://catchments.nerc.ac.uk/about/field/) where it is also noted that some of the LOCAR infrastructure remains available for research activities.

As LOCAR drew to a close in 2006, new strategic research programmes and commissioned research projects were beginning to make further use of the existing monitoring network infrastructures. Thus there was a major opportunity to build upon the NERC investments to provide additional scientific value. However, it was also necessary to identify and plan the removal of equipment and minimise staff commitment and other costs at sites which are of diminished value for future NERC research. At NERC's invitation, CEH and BGS developed a proposal (which subsequently formed the basis of a service level agreement between NERC and the two Research Institutes) which had the following objectives:

- To plan and take responsibility for the managed withdrawals from existing monitoring sites which are no longer required or supported by the science or user communities.
- To oversee transfer of responsibility for some sites to external bodies, such as the Environment Agency.
- To identify and undertake "mothballing" of the sites which have high potential for future scientific use.
- To maximize the science outcomes from past investment.
- To facilitate continued use of infrastructure by the research community at sites where it is scientifically worthwhile, linked to support from new strategic science programmes and wider funding sources.
- To support negotiation and collaboration activities with other funding bodies.

The purpose of this report is to provide information on what has happened to each of the LOCAR hydrogeological infrastructure sites, particularly detailing those sites which are still available for scientific research.

The majority of the site access agreements with individual landowners came to an end in 2006 but, for a number of reasons, it was not possible to arrange immediate renewal of licences at those sites at which continued access was desired. Initially, it took some time to arrange the service level agreement between NERC and the two research institutes. Subsequently, some landowners asked for significantly higher rates for the new access agreements which lead to protracted negotiation and, in one case, a decision not to renew. Even where the landowners were happy for renewal of access agreements this sometimes took a long time to finalise. Thus, it is only now that it is possible to list the sites that remain available for research activity.

The majority of the original site access agreements for the LOCAR programme were for a period of 5 years terminating in September 2006 with just a few sites having leases until 2027 (see Table 1). For sites which were to be maintained post LOCAR, four year extensions, i.e. until August 2010, were negotiated. This means that, because of the delays in arranging the new leases noted in the previous paragraph, at the time of publication of this report there are less than two years remaining on the access agreements for nearly all of the sites maintained post LOCAR. Thus some thought now needs to be given as to the future of these sites, whether they will be required beyond August 2010 and what the cost implications of such extensions might be (i.e. costs of renewed access agreement, maintenance and final decommissioning).

Researchers having an interest in any of the sites listed in this report should contact the Head of Science for Groundwater Resources, BGS (see section 4) in the first instance. This includes those sites being transferred to other agencies since not all the transfers have yet been completed and it is not therefore possible to publish contact details.

Table 1 LOCAR hydrogeological research sites showing agencies responsible for their future maintenance.

LOCAR HYDROGEOLOGICAL SITES

Pang Lambourn sites

LOCAR site code	Site Name	Site Type	Future maintenance	LOCAR lease end-date	Renewed lease ends
PL02	Frogmore Farm	B	BGS	31/08/2006	31/08/2010
PL10	Trumpletts Farm	B	BGS	31/08/2006	31/08/2010
PL11	Frilsham Meadow	B,AWS, R	CEH/BGS	31/08/2006	31/08/2010
PL13	Broadfield Cottages	B	BGS	31/08/2006	31/08/2010
PL14	Grimsbury Wood	B,RG,FLUX	CEH	31/08/2006	31/08/2010
PL25	Pikes Row	B	BGS	31/08/2006	31/08/2010
PL26	Boxford	B	BGS	31/08/2006	31/08/2010
PL28	Beche Park Wood	B,R	BGS	31/08/2006	31/08/2010
PL29	West Ilsley	B,RG	Decommissioned	31/08/2006	-

Frome Piddle catchments

LOCAR Site Code	Site Name	Site Type	Future maintenance	LOCAR lease end-date	Renewed lease ends
FP05	Cull Peppers Dish (Briantspuddle)	B	Environment Agency	30/06/2027	
FP08	East Stoke	B	end	31/08/2006	-
FP16	Oakers Wood	B	Environment Agency	30/06/2027	
FP17	Down Farm (Bincombe)	B	Decommissioned	31/08/2006	-
FP29	Chilfrome	B	Environment Agency	31/08/2006	
FP34	Fordington Down	B	Environment Agency	31/08/2006	
FP37	Frome Whitfield	B	Environment Agency	31/08/2006	
FP13	Recharge at Higher Came Farm	R, B	??????	31/08/2006	-
FP35	Recharge at Lower Wraxall Farm	R,B	Decommissioned	31/08/2006	-

Tern Sites

LOCAR site code	CST Site Code***	Site Name	Site Type	Future maintenance	LOCAR lease end-date	Renewed lease ends
T04	TEO4	Old Springs Fm	R	Decommissioned	18/03/2007	-
T17	TE17	Oakley Folly	AWS,R	Decommissioned	31/08/2006	-
TO1A	TE30	Sambrook	B	Environment Agency	14/08/2027	
T04A	TE31	Old Springs Farm	B	Decommissioned	18/03/2007	-
T06A	TE32	Wood Farm	B	Environment Agency	31/08/2006	
T07A	TE33	Crudgington	B	Environment Agency	31/08/2006	
EA *	TE34	Bowling Green	B	Environment Agency (existed pre-LOCAR)		
T11A	TE35	Heathbrook Farm	B	Birmingham University	21/04/2023	
T11B	TE36	Heathbrook Farm	B	Birmingham University	21/04/2023	
T11C	TE37	Heathbrook Farm	B	Birmingham University	21/04/2023	
T11D	TE38	Heathbrook Farm	B	Birmingham University	21/04/2023	
T21B	TE39	Heathbrook Farm	B	Birmingham University	21/04/2023	
EA **	TE40	Heathbrook Farm	B	Environment Agency (existed pre-LOCAR)		
EA **	TE41	Helshaw Grange	B	Environment Agency (existed pre-LOCAR)		
T08A	TE42	Helshaw Grange	B	BGS	05/08/2023	
EA R16 West	TE43	Helshaw Grange	B	Environment Agency (existed pre-LOCAR)		
EA R16 East	TE44	Helshaw Grange	B	Environment Agency (existed pre-LOCAR)		
T13A	TE45	Lower Coal Brook	B	BGS	31/08/2006	31/08/2010
T14B	TE46	Mid Coal Brook	B	BGS	31/08/2006	31/08/2010
T14C	TE47	Mid Coal Brook	B	BGS	31/08/2006	31/08/2010
T14D	TE48	Mid Coal Brook	B	BGS	31/08/2006	31/08/2010
T15A	TE49	Bearstone	B	United Utilities	31/08/2006	
T16A	TE50	Norton in Hales	B	BGS	31/08/2006	31/08/2010
T16B	TE51	Norton in Hales	B	BGS	31/08/2006	31/08/2010
T16C	TE52	Norton in Hales	B	BGS	31/08/2006	31/08/2010
T17A	TE53	Oakley Folly	B	Decommissioned	31/08/2006	-
T18A	TE54	Childs Ercall	B	Decommissioned	13/08/2027	-
T21C	TE55	Stoke on Tern	B	Environment Agency	21/04/2023	

KEY: AWS: Automatic Weather Station; R: recharge; B: borehole; RG, Rain Gauge only;

***** TE34 pre-existing EA borehole at SJ625255 (LOCAR recharge site at this location - decommissioned)

** TE40 and TE41 pre-existing EA boreholes at SJ634292 (LOCAR recharge site at this location)

*** The LOCAR Catchment Service Team (CST) for the Tern used an alternative site numbering scheme to that assigned at the time the sites were established.

2 Sites and Facilities

For information on the planning and development of the LOCAR infrastructure, the reader is referred to Peach et al. 2004. For details of the hydrogeological facilities provided at each site, the reader is referred to the appropriate catchment report by Adams et al., 2003. The descriptions of the hydrogeological research facilities as currently available are described in section 2.1 - 2.3 below. Table 1 lists all the LOCAR hydrogeological sites established by the LOCAR infrastructure project and indicates whether they are to maintained and, if so, the agency responsible for its future maintenance.

The following description of LOCAR sites is organised by catchment and then on the basis of the design intention of the sites. However, the sites as constructed may well be suitable for other research purposes and it may be possible for future research projects to develop the sites further.

Figures 1-3 show the locations of sites in the three LOCAR research catchment areas.

2.1 HYDROGEOLOGICAL RESEARCH FACILITIES IN THE PANG/LAMBOURN CATCHMENT

Whilst all the LOCAR boreholes installed in the Pang/Lambourn catchment effectively augmented the existing groundwater monitoring network, they were also designed, either singly or in combination with other boreholes, to provide specific research facilities. The following paragraphs indicate those design intentions although of course researchers need not be limited to the described functions. LOCAR research projects were also at liberty to use their own funding to augment the LOCAR infrastructure provided and this was the case at site PL26 (see below).

2.1.1 Tracer test sites

Two sites specifically provide opportunities for tracer, packer testing and aquifer pumping tests - PL10 (Trumpletts Farm) and PL11 (Frilsham Meadow)

PL10 – TRUMPLETTS FARM

This site consists of three 100m deep open boreholes and three 40m deep holes which were completed with Electrical Resistive Tomography (ERT) arrays (for cross hole tomography) and piezometers at different depths – see Adams et al (2003a) for details of the site layout and borehole completions. The three 100m deep holes were only cased to around 20m at which depth competent chalk was encountered, enabling open hole completion from there to full depth. Tracer and packer tests can be carried out in any combination of the three 100m holes while monitoring heads in these deep holes and in the piezometers in the 40m deep holes. Additionally the site is adjacent to one of the Environment Agency's Thames Groundwater Scheme boreholes and the possibility exists for heads in all six holes to be monitored during abstraction from the Agency's hole – but only with their prior approval and co-operation. The ERT arrays were designed by Lancaster University and installed specifically for use in research projects with which they were involved. The data from these ERT arrays during packer and tracer test will provide important information on the flow hydraulics and transport of tracers at this site.

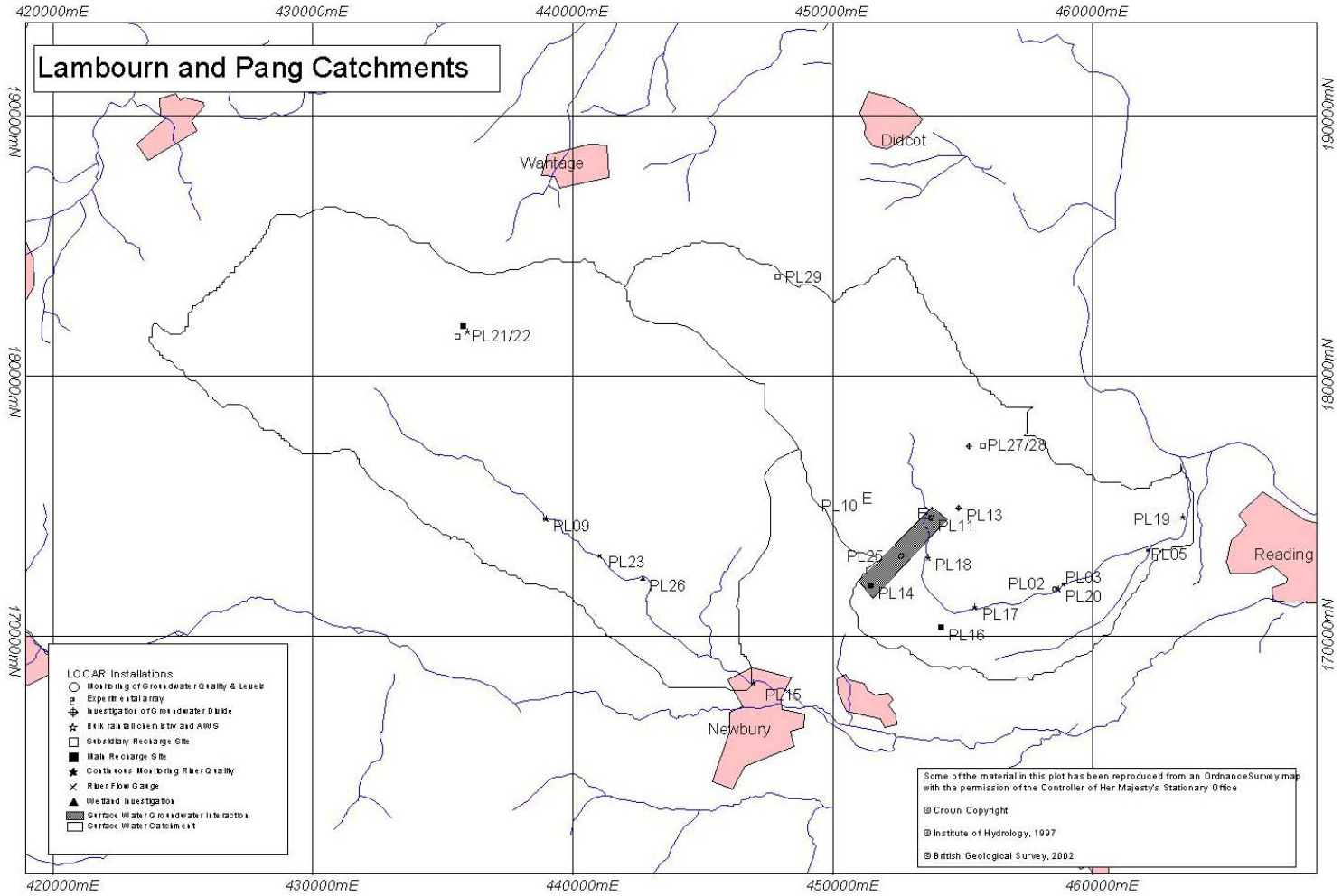

Figure 1 Location of the LOCAR infrastructure installed in the Pang/Lambourn catchment

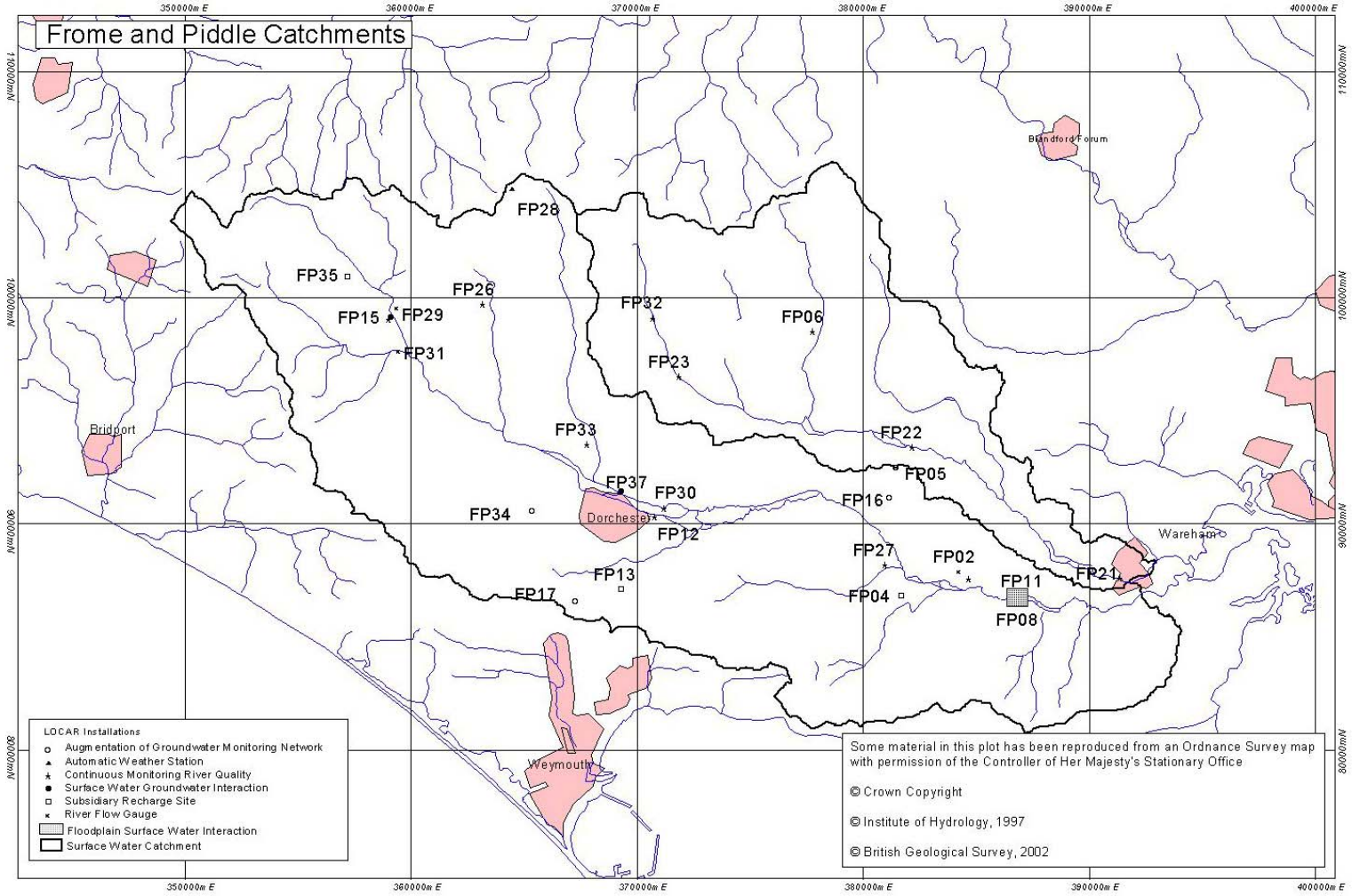

Figure 2 Location of the LOCAR infrastructure installed in the Frome/Piddle catchment

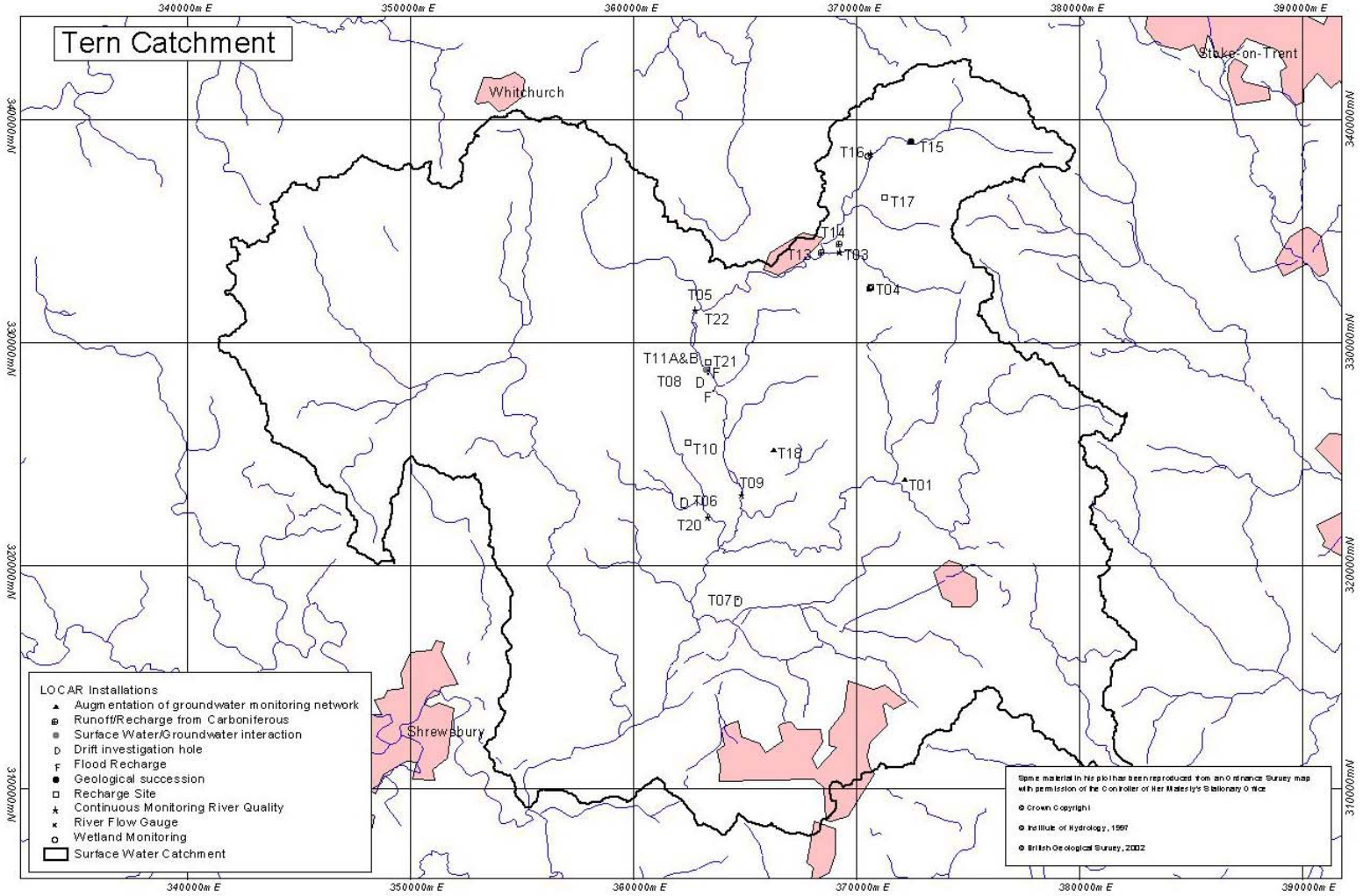

Figure 3 .Location of the LOCAR infrastructure installed in the Tern catchment

PL11 – FRILSHAM MEADOW

This site consists of 11 boreholes drilled to differing depths and of differing completions (Adams et al., 2003a). This is also the location of one of the seven recharge sites installed in the Pang/Lambourn catchment – see section 2.1.6.

It was originally planned that the three 40m open boreholes (PL11A, PL11B, PL11C) would only be cased to around 5m thus allowing some 35m of open hole for packer testing. However, it was found that the chalk was well fractured to a depth between 16 and 20m and it was therefore necessary to case these holes to such depths in order to prevent collapse. In order to gain information on the shallower zone, through which it was assumed significant flow to and/or from the river must be occurring, three additional 5m holes were drilled (PL11I, PL11J and PL11K). These three additional holes, the other three 40m deep holes (PL11D, PL11F and PL11G) and the 60 m non-cored hole (PL11H) were all completed with piezometers and ERT arrays (for cross hole tomography) (Adams et al., 2003a). Hole PL11E was drilled to a total depth of 85.5m. The original design had been to core to a total depth of 60m, however results from this site and PL13 indicated that it would be worth drilling on to a greater depth in order to penetrate the Chalk Rock – generally a significant flow horizon. Due to budgetary constraints it was not possible to core to full depth and so core was only collected to a total depth of 61m.

2.1.2 Groundwater divide

When planning the hydrogeological infrastructure for the Pang catchment it became evident that there was insufficient existing information to monitor the position of the groundwater divide between the Pang and the River Thames. It was, therefore, planned to drill four boreholes to help locate it. Two holes (PL13 and PL28) were sited initially with the intention that a further two would be sited following initial inspection of the results. The cost of the second two holes could not be covered following cuts in the drilling budget and so were not drilled.

PL13 (Broadfield cottages) and PL28 (Beche Park Wood) were drilled to 126m and 100m respectively. PL13 was cored to full depth and had multi-piezometer completion (Adams et al., 2003a). PL28 was left open hole and provides groundwater level information for the recharge site (see 2.1.6) also located in Beche Park Wood.

2.1.3 Interfluve to valley profile

Sites PL14, PL25 and PL11 were located to provide a profile from the top of an interfluve (PL14) down to a valley bottom (PL11). Site PL11 has already been described in section 3.6.1.

An initial borehole commenced at site PL14 had to be abandoned due to problems encountered in drilling through the Palaeogene deposits. The further borehole, PL14B (Grimsbury Wood), is a single borehole drilled through the Palaeogene cover into the Chalk to a total depth of 56m. The Palaeogene cover is unconsolidated and, in order to remain on budget and also regain lost time, it was decided to only core in the Chalk. There was no water strike in the Palaeogene deposits during drilling and so there was no piezometer installed in the cover, indeed the Palaeogene cover was completely cased out to prevent its collapse. Once stable Chalk had been encountered (at 33m) the hole was left open for the remainder of its depth. A single pressure transducer was installed to permit monitoring of water levels and this also provides information for the recharge site (see 2.1.6) located here.

PL25 is a single borehole site but completed with pressure transducers installed to monitor heads at three different depths.

2.1.4 Wetland investigation

Site PL26 initially consisted of a total of 8 boreholes located on either sides of the River Lambourn at Boxford. Boreholes PL26A, PL26C, PL26D, PL26E and PL26F were drilled in the flood plain of the river while PL26G, PL26H and PL26I are located on the Chalk outcrop which rises northwards from the valley. Borehole PL26F has been completed open hole and to a larger diameter (250mm) than the other holes at this site to provide the opportunity for pumped abstraction of groundwater. The depths and completions of the individual holes are given in Adams et al. 2003a.

During the LOCAR research phase, three additional piezometers (N4, N7 and N15) were installed at the Boxford site as part of the "Hydrogeochemical functioning of lowland permeable catchments" project. These new installations were located close to the river in a cluster upstream of borehole PL26C and penetrate the valley alluvial deposits. Following the end of the LOCAR research programme some additional piezometers were installed, at the locations indicated in Figure 4, as part of a BGS research programme into groundwater-surface water interaction. Boreholes P, Q, W, V, Y, Z and AA were drilled into the superficial gravels and completed with single piezometers. Borehole X was completed with a piezometer in shallow chalk. Piezometers R, S and T were emplaced in the gravel underlying the river bed and a stilling well, U, was installed in the river. The full details of these additional; boreholes at the Boxford site will be given in a separate report (Allen and Allen, 2008).

The Boxford site is immediately west of a candidate Special Area of Conservation as designated under the EC's Habitats Directive (Council Directive 92/43/EEC). In 2007 , CEH purchased the site immediately downstream of PL26 (consisting of almost 600 m of the River Lambourn and 24 acres of associated water meadows, all within the SAC) and have established a field observatory which, in conjunction with PL26, now provides a unique field site. This experimental research site will provide a UK capability for collaborative integrated science into freshwater hydrology and ecology of a groundwater-fed stream. For further information on this facility, contact CEH's Science & Management co-ordinator for the River Lambourn Observatory.

2.1.5 Surface water groundwater interaction

At sites PL02 (Frogmore Farm), PL11 (Frilsham Meadow) and PL26 (Boxford), the opportunity exists for investigation of surface water/groundwater interaction. The borehole layouts at Sites PL11 and PL26 have been described above.

PL02 is a single 21m deep borehole located approximately 10m from the River Pang. The borehole experienced artesian flow following completion but prior to equipping. Therefore, vented pressure transducers (with an associated barometric pressure transducer) were installed and a secure cover plate fitted to the surface casing to contain the flow whist allowing continuous measurement of heads.

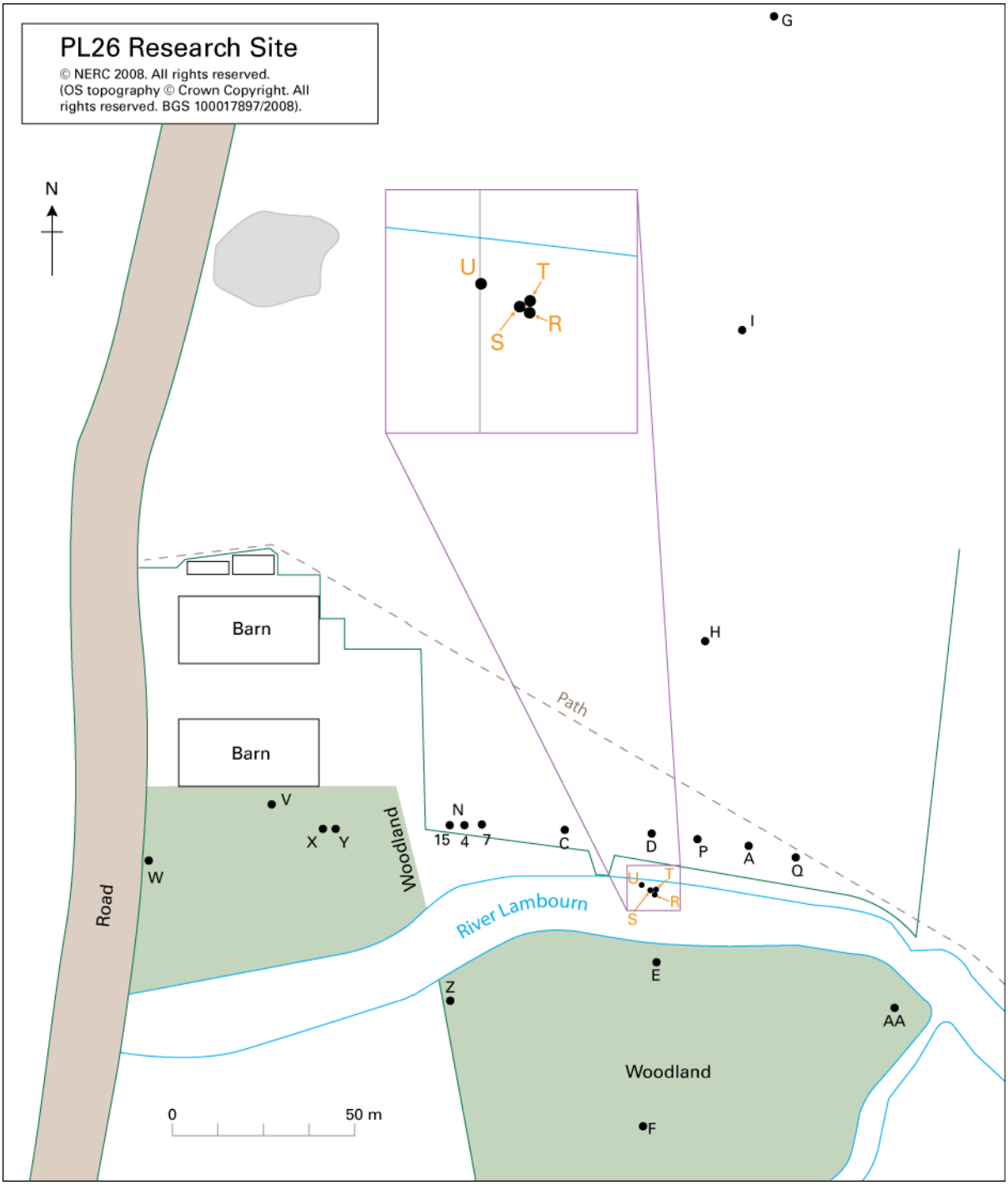

Figure 4 Locations of boreholes installed at the Boxford research site PL26.

Boreholes A, C, D, E, F, G, H and I installed as LOCAR infrastructure.

Boreholes N4, N7 and N15 installed as part of a LOCAR research project.

Boreholes P, Q, W, V, Y, Z, AA, X, Piezometers R, S, T and Stilling Well U installed for a post LOCAR research project.

2.1.6 Recharge sites

Sites PL11, PL14, and PL28, were located at LOCAR recharge sites which were installed as part of the LOCAR hydrological infrastructure. The purpose of these recharge sites is to monitor the movement of water and solutes as they move from the atmosphere, through the vegetation cover, to the land surface and then through the unsaturated zone to the groundwater table. To achieve a representative picture of the behaviour of the catchment as a whole, they are sited on a range of soil types and land use domains and consist of an area of land (of the order of 30 m square) equipped with a variety of instruments including rain gauges, automatic weather stations, neutron probe access tubes, automatic soil water content instruments, equitensiometers, tensiometers, soil water samplers and data loggers. To monitor the impact of the recharge on the water table, each recharge site requires a borehole to allow the measurement of variation in groundwater levels with time. Thus these three boreholes allow collection of this information for their respective recharge sites. Additionally, at PL14 and PL28, jacking tensiometers were installed in the boreholes themselves to record soil water potential deep in the profile. Unfortunately these jacking tensiometers never functioned satisfactorily during the LOCAR programme. The possibility of renovating the installation at PL28 is currently being considered.

A European funded project FLOOD 1 (Adams et al., 2008), unconnected with LOCAR, established an investigation site to the east of the village of East Ilsley (Grid Reference SU499811). Two boreholes, EI1 and EI2, were drilled at this site to depths of 40 and 40.5 m respectively. "Divers" for monitoring groundwater heads were installed in the two piezometers and the annulus of EI1. Jacking tensiometers were installed in EI2 in mid-November 2005 to monitor water tensions at the following depths below surface: 10 m, 13 m, 15 m, 17 m, 18 m, 19 m, 21 m, 22 m, 23 m, 24m. These jacking tensiometers have generally provided consistent data sets, more details can be found in the FLOOD 1 final report (Adams et al. 2008). The installation is still operational and for further information on this site BGS' Head of Science for Groundwater Resources should be contacted in the first instance (see section 4).

2.2 HYDROGEOLOGICAL RESEARCH FACILITIES IN THE FROME PIDDLE CATCHMENT

As shown in table 1, BGS will not be maintaining any LOCAR hydrogeological research sites in the Frome/Piddle catchment. Three sites have been decommissioned and the remainder have been or are being transferred to the Environment Agency. Details of the various sites that will be maintained by the Agency can be found in the LOCAR Hydrogeological Infrastructure report for the Frome/Piddle catchment (Adams et al. 2003b).

2.3 HYDROGEOLOGICAL RESEARCH FACILITIES IN THE TERN CATCHMENT

2.3.1 Augmentation of existing groundwater monitoring network

Boreholes T01 was located in cooperation with the Environment Agency to augment their existing groundwater observation network. Responsibility for this site has now been transferred to the Environment Agency.

2.3.2 Runoff/recharge from the Carboniferous to the Permo-Triassic aquifer

Boreholes at T4, T13 and T14 provide the opportunity to investigate groundwater/surface water interactions within the Coal Brook. The Coal Brook rises on Carboniferous rocks and

flows north-westwards onto the Permo-Triassic aquifer joining the Tern immediately east of Market Drayton. T4 is located on the Carboniferous, while boreholes at T14 and T13 are located downstream on the Permo-Triassic. At site T14 three boreholes (TY14b, T14c and T14d) were drilled adjacent to each other at differing depths (64.5m, 30m and 8.6m respectively) to allow the determination of groundwater head variation at this site. Completion details of all these boreholes are given in Adams et al. 2003c. The flow in the Coal Brook is monitored at Market Drayton by a LOCAR hydrological infrastructure flow gauge (site T03).

Unfortunately, it was not possible to come to a suitable agreement with the landowner of site T04 to extend the access agreement beyond the term agreed for the original LOCAR programme. Therefore site T04 has been decommissioned.

2.3.3 Drift investigation holes

Boreholes T6, T7 and T8 were drilled to provide detailed information on the drift cover, their locations and completion details are given in Adams et al. 2003c.

Responsibility for the future of sites T6 and T7 has been transferred to the Environment Agency. T8 will be maintained by BGS.

2.3.4 Surface water groundwater interaction

Site T11A has been designed to permit the investigation of surface water/groundwater interaction. The borehole array consists of a 51m deep abstraction borehole (T11Aa) and three monitoring boreholes between 24 and 31m deep (T11Ab, T11Ac and T11Ad). Additionally, one of the shallow drift investigation boreholes (T8) is located on the opposite bank of the river and could be used to monitor groundwater levels during any aquifer testing. The completion details of all of these boreholes and site layout are given in Adams et al. 2003c. This site is being transferred to Birmingham University.

2.3.5 Geological control

Borehole T15 was drilled and cored to provide detailed information on the Permo-Triassic sequence in the northern part of the catchment. It was drilled on a site owned by North West Water adjacent to an abstraction borehole. Completion details are given in Adams et al. 2003c. Responsibility for this site now rests with United Utilities plc.

2.3.6 Wetland investigation site

Three boreholes were drilled adjacent to each other on the eastern bank of the Tern to the east of Norton in Hales. These holes (T16a, T16b and T16c) were drilled to different depths (20m, 10m and 4m respectively) to allow the determination of groundwater head variations with depth. The completion details for these holes are given in Adams et al. 2003c.

2.3.7 Impacts of floods on aquifer recharge

Two shallow boreholes (T21b and T21c) were located on the flood plain of the River Tern near Stoke on Tern near an outfall of the Shropshire groundwater she me (SJ 640 280). This is an area that is regularly flooded and the boreholes have been completed with MiniTrolls (Adams et al. 2003c) to record groundwater levels fluctuations in response to flood events. Birmingham University and the Environment Agency are taking over responsibility for sites T21B and T21C respectively.

3 Data

The LOCAR data Centre was established as a facility to manage the scientific data produced by the NERC LOCAR Thematic Programme. The aim of the Data Centre was to create an integrated, quality controlled, quality assured database readily accessible to LOCAR scientists, and to the wider scientific community.

To create the database the Data Centre was responsible for specifying procedures, formats and media in which data will be received from the field and disseminated to users, setting up a data management policy, and ensuring that data were held securely. The Data Centre actively sought out existing NERC and third party datasets, and was responsible for disseminating field data as it become available, and for storage and dissemination of the datasets created by LOCAR researchers.

A web site was established (http://www.nerc-wallingford.ac.uk/locar/main.htm) which gives more information on the data centre and metadata about existing datasets. Following the end of the LOCAR programme the hydrogeological data sets are being maintained by the BGS Information Management Programme at Wallingford. These data files and data sets collected by projects post LOCAR will be available from the BGS WellMaster database. The UK Environmental Data Index (UKEDI) holds metadata summaries of the LOCAR data and these can be accessed from their web site (http://ukedi.ceh.ac.uk).

For post-LOCAR data collected from sites transferred to other agencies these other agencies would need to be approached individually.

For specific information on what was installed at each LOCAR site, reference should be made to the site completion files. Each site which formed part of the LOCAR infrastructure had a site completion file written for it giving full details of the installation. Each site completion file followed the same format and was divided into 10 sections as follows:

1. Site Summary
2. Maps and Diagrams
3. Photographs
4. Land Agreement
5. Health and Safety
6. Specifications
7. Manuals i.e. manuals for any equipment installed at that site
8. Calibration i.e. calibration data relating to equipment installed at that site
9. Variables i.e. description of what was being measured at that site
10. Appendices

A complete set of site completion files for each LOCAR catchment was lodged with the catchment service team for that catchment, NERC and the LOCAR Data Centre. The LOCAR Data Centre should be contacted in the first instance if information is required from these site completion files.

4 Contacts

If you require access to the ex-LOCAR hydrogeological sites described in this report please contact the Head of Science for Groundwater Resources, BGS Wallingford in the first instance who will be able to either give you more information about a particular site or direct you to the most appropriate person who can.

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