

ARCHAEOLOGICAL WATCHING
BRIEF
AT
ABBEY BRIDGE, EVESHAM,
WORCESTERSHIRE

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With contributions by Nick Daffern

Illustrations by Carolyn Hunt and Claire Christiansen

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INVESTOR IN PEOPLE

Project 3424
Report 1752
WSM 41769

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Archaeological Watching Brief at Abbey Bridge, Evesham, Worcestershire

Elizabeth A Curran

With contributions by Nick Daffern

Part 1 Project summary

An archaeological watching brief was undertaken at Abbey Bridge, Evesham, Worcestershire (NGR SP 034 431). It was undertaken on behalf of Halcrow Group Ltd, whose client Worcestershire County Council (Highways and Transportation) intends to replace the current Abbey Bridge and viaduct, for which a planning application will be submitted. The project aimed to determine if any significant archaeological remains were present and if so to indicate their date nature and location.

The watching brief was carried out in respect of ground works associated with the geotechnical investigations on the southern side of the bridge. It follows on from earlier investigation undertaken by the Service (Miller 2009). In addition deposit modelling was undertaken through the analysis of geotechnical data and logs provided by the contractor, Ian Farmer associates.

During the watching brief four trenches, amounting to just over c6.45m², were excavated to varied depths, the maximum being 2.42m below the ground surface. Trench 1 and 2 revealed a similar sequence of deposits, containing modern material considered to be the result of the successive re-surfacing of the pavement with levelling between. All other deposits beneath this were also considered to be of modern origin; however the narrow width of the trenches limited the observations of the deposits and it was not possible to fully understand their nature and extent.

Within Trench 3 a line of concrete piles were revealed however due to safety concerns the excavation of the trench was abandoned and it was not possible to establish whether they were contemporary with the construction of the bridge foundations. It was suggested they were the demarcation of a retaining wall for bank stabilisation. Alternatively, they may be the remains of the foundation of a World War II pillbox.

Topsoil revealed in Trench 4 overlay deposits containing modern debris. The foundation for the concrete boundary wall was observed on the north facing section of the trench, 0.97m below the ground surface. No further archaeological features or deposits pre-dating the 20th century were revealed and at no point was the full sequence of deposits down to the natural geology observed.

No additional structures or features were uncovered on the south bank of Abbey Bridge which could be ascribed to the World War II defences. This may be a result of the limited nature of the observations at this point. Nevertheless the possibility remains that evidence of the World War II defences, where present, may survive in areas of the south bank not disturbed by the present geotechnical investigations

Deposit modelling was undertaken through the analysis of geotechnical data and logs retrieved by Ian Farmer Associates and revealed the presence of a sequence of Holocene and possibly late Devensian deposits including an organic peat deposit possibly indicating the presence of a palaeochannel or similar alluvial feature. The date of this deposit is unknown although it has potential to contribute to the understanding of the Holocene development of the Avon floodplain

Part 2 Detailed report

1. Background

1.1 Reasons for the project

An archaeological Watching Brief was undertaken at Abbey Bridge (NGR SP 034 431), Evesham, Worcestershire, (Fig 1), on behalf of Halcrow Group Ltd. The client intended to undertake geotechnical investigations of Abbey Bridge and Viaduct in advance of redeveloping the current bridge over the River Avon. The works were considered by the Historic Environment Planning Advisor of Worcestershire County Council to have the potential to affect archaeological and palaeoenvironmental remains.

1.2 Project parameters

The project conforms to the *Standard and guidance for an archaeological watching brief* (IfA 2008)

The project also conforms to a project proposal, including detailed specification (HEAS 2009).

1.3 Aims

The aim of the watching brief was to observe and record archaeological deposits, and to determine their extent, state of preservation, date and type, as far as reasonably possible.

More specifically the following aims have been identified.

- Significant deposits may be defined as those likely to be of prehistoric date relating to palaeoenvironmental remains on the north bank and of modern date, relating to WWII defensive structures on the south bank.

2. Methods

2.1 Documentary search

Prior to fieldwork commencing a search was made of the Historic Environment Record (HER)

2.2 Fieldwork methodology

2.2.1 Fieldwork strategy

A detailed specification has been prepared by the Service (HEAS 2009).

Fieldwork was undertaken between 15 December 2009 and 14 January 2010. The site reference number and site code is WSM 41769.

A number of trenches, amounting to *c* 6.45m² in area, were excavated on the south bank of Abbey Bridge. The location of the trenches is indicated in Figure 2.

Deposits considered not to be significant were removed under archaeological supervision, both by hand or using a 360° tracked excavator, employing a toothless bucket. Subsequent

excavation was undertaken by hand and clean surfaces were inspected. Deposits were recorded according to standard Service practice (CAS 1995).

2.2.2 **Structural analysis**

All fieldwork records were checked and cross-referenced. Analysis was effected through a combination of structural, artefactual and ecofactual evidence, allied to the information derived from other sources.

2.3 **Artefact methodology**

2.3.1 **Artefact recovery policy**

The artefact recovery policy conformed to standard Service practice (CAS 1995; Appendix 2). This in principal determines that all finds, of whatever date, must be collected. However, in this case no finds were revealed within the excavated areas.

2.4 **Environmental archaeology methodology**

2.4.1 **Sampling policy**

The environmental sampling strategy conformed to standard Service practice (CAS 1995; appendix 4). In the event, no deposits or horizons were identified which were considered suitable for environmental analysis, so no samples were taken.

2.5 **Deposit modelling methodology by Nick Daffern**

The deposit modelling was undertaken through the analysis of geotechnical data and logs retrieved by Ian Farmer associates (Appendix 3). The borehole locations were identified from Worcestershire Highways exploratory hole location plan (Drawing no: TKWBDE/950/103, Figure 2).

Three 1:100 cross-sections of the deposits were created (Figure 3), the locations of which are shown in Figure 1. These models illustrate the sedimentary sequence and any large scale landscape features such as palaeochannels or terrace positions which are present in this area of the floodplain.

All turf, topsoil, made-ground and modern structures (i.e. concrete slabs) were grouped together as Deposit 1 for ease of presentation and interpretation.

2.6 **The methods in retrospect**

The methods adopted allow a high degree of confidence that the aims of the project have been achieved.

3. **Topographical and archaeological context**

The archaeological background to the site is given in desk-based assessment, undertaken by the Service (Miller, 2009)

4. Results

4.1 Structural analysis

The trenches recorded are shown in Fig 1 and 2 and Plates 1-10. The results of the structural analysis are presented in Appendix 1.

4.1.1 Phase 1 Natural deposits

At no point during the excavation of the trenches was the natural undisturbed matrix observed.

4.1.2 Phase 2 Modern deposits

Trench 1

Trench 1 was excavated on the northern pavement of Pershore Road. The maximum depth of excavation was between 0.42m and 2.42m below the present ground surface. The uppermost layer comprised of tarmac (300). Below this was a deposit of made ground (301), which contained broken tarmac, coarse sand and hardcore, and lay at a depth of 0.10m below the ground surface. This overlay and sealed a further made ground deposit (302).

Trench 2

Trench 2 was excavated to a depth of 1.20m and revealed a similar sequence of deposits to that recorded within trench 1.

Trench 3

Trench 4 was dug to a depth of 0.60m below the existing ground level. The topsoil (400) contained modern rubbish and had a diffuse boundary onto the subsoil (401). The coarse silty sand subsoil was recorded 0.05m below the ground surface. In the northern edge 4 concrete piles were revealed (402). For safety reasons excavation of trench 3 was discontinued.

Trench 4

The topsoil (1000) comprised of moderately dark brown silty loam, to a depth of 0.30m below the ground surface. Below this a clayey silt deposit containing variable quantities of modern debris was recorded (1001) to a depth of 0.70m below the ground surface. This deposit overlay a drain (1002) which ran north to south through the boundary wall (1003). The concrete boundary wall was observed on the north facing section of the trench. Part of the foundation block for the wall was recorded at 0.97m below the ground surface in the south western corner of the trench. It was 0.14m wide and between 0.13-0.15m thick.

4.2 Deposit modelling by Nick Daffern

The deposit models are presented in Appendix 3.

The majority of the site lies within the Uffington (533) soil group, a slightly mottled, pelogleyic brown calcareous alluvial soil of moderate permeability which is affected by fluctuating groundwater although the northern boreholes sample the soils of the Bishampton (572) group which have been colluvially transported southwards.

All three models show the same overall sequence of Holocene clay alluvium (deposits 2 and 3) which represent the Elmore Member (Bowen, 1999) sealing earlier gravel terrace deposits (deposit 5). The exact date of these gravel deposits could not be determined although they are

likely to represent the Bretford member (1st terrace) of the Warwickshire Avon system which is dated to the late Devensian/early Holocene (~11.5ka BP, Marine Isotope Stage 2-1) providing a *terminus post quem* for the overlying deposits.

Deposit 4, a brown fibrous peat is the deposit of greatest significance from an archaeological perspective due to the potential preservation of organic material such as plant macrofossils and palynological remains, environmental indicators which offer a method of reconstructing past vegetation and human activity within and upon the margins of the floodplain.

5. **Synthesis**

5.1 **Natural Deposits**

Deposit modelling demonstrates the survival of a well preserved sequence of Holocene and possibly late Devensian deposits. The presence of peat (Deposit 4) may also indicate the existence of a palaeochannel or similar negative feature which would facilitate the preservation of organic material. If the peat were revealed to be contained within a palaeochannel, its position would provide information regarding the historical location of the River Avon which would have had a direct influence upon human activity and settlement in the past.

Additionally, the plotting of palaeochannels and riverine features within a floodplain can provide a valuable planning tool as regards reducing the impact of future developments and flood management due to the preferential groundwater flow through such features.

If palynological research were to be undertaken, the assessment should be a cautious one as the calcareous nature of the soil and the fluctuating groundwater levels may have had a detrimental effect on preservation although the scientific understanding and prediction of palynological preservation is not flawless and therefore localised preservation is entirely possible.

The calcareous nature of the soil is further indicated by the observation of molluscan remains within deposits 2 and 3. The analysis of these remains may prove complimentary to other environmental or geoarchaeological indicators if both terrestrial and aquatic snails were preserved.

The relationship between alluvium (2 and 3) and the peat deposit (4) is unclear and any future work should aim to understand the relationship between the peat and the surrounding deposits but also to attempt to identify whether deposit 4 is contained within a palaeochannel and if this is the case, ascertain its course.

Undulations within deposit 3, prominently apparent in models 1 (BH 7-W08-BH9) and 2 (W06-BH8-W09-BH10), have the potential to indicate channel migration and incision although without a more detailed and higher resolution dataset such as an auger survey, the accuracy and extent of such features cannot be determined.

No archaeological features, deposits or artefacts pre-dating the 20th century were observed during the excavations on the south bank of Abbey Bridge. However, at no point was the full sequence of deposits down to the natural geology observed, so there remains the possibility that archaeological deposits, where present, survive in areas of the site not disturbed by the present development.

5.2 **Modern**

Trench 1 and 2 revealed a sequence of deposits (201 and 301) containing modern material which were truncated by services. These were determined to be of 20th century origin, and

considered to be the result of the successive re-surfacing of the pavement with levelling between. The deposits beneath were also considered to be of modern origin; however the narrow width of the trenches limited the observations of the deposits and it was not possible to fully understand their nature and extent.

The topsoil revealed in Trench 4 overlay deposits containing modern debris. The foundation for the concrete boundary wall was observed on the north facing section of the trench, 0.97m below the ground surface. No further archaeological features or deposits pre-dating the 20th century were revealed and at no point was the full sequence of deposits down to the natural geology observed.

The concrete piles revealed within the northern edge of Trench 3 were suggested by Ian Farmer Associates to be the demarcation of a retaining wall for bank stabilisation. Due to safety concerns the excavation of the trench was abandoned and it was not possible to establish whether they were contemporary with the construction of the bridge foundations. Alternatively, they may be the remains of the concrete cylinders or 'cheeses' which were intended to support the World War II pillbox that guarded the approach to the bridge. An example of the remains of the defences on the south western embankment was published in Wilks, 2007, 70 demonstrating this construction technique although in this instance it is more likely the cheeses were reused after the war to maintain the embankment (*pers comm* Mick Wilks).

No additional structures or features were uncovered on the south bank of Abbey Bridge which could be ascribed to the World War II defences. The anti-tank barriers on the south of Abbey Bridge were provided by concrete blocks which were fixed to the bridge with sockets (Miller, D 2009). They were probably removed after the threat of invasion had passed, as they would have obstructed traffic flow over the bridge. Later resurfacing works and installation of services can help explain the negative evidence relating to such a structure. Alternatively this may be a result of the limited nature of the observations at this point.

Nevertheless the possibility remains that evidence of the World War II defences, where present, may survive in areas of the south bank not disturbed by the present geotechnical investigations.

6. Publication summary

The Service has a professional obligation to publish the results of archaeological projects within a reasonable period of time. To this end, the Service intends to use this summary as the basis for publication through local or regional journals. The client is requested to consider the content of this section as being acceptable for such publication.

An archaeological watching brief was undertaken on behalf of Halcrow Group Ltd client at Abbey Bridge, Evesham, Worcestershire, (NGR SP 034 431; HER ref WSM 41769). Four trenches, amounting to c 6.45m² in area, were excavated on the south bank of Abbey Bridge.

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7. **Acknowledgements**

The Service would like to thank the following for their kind assistance in the successful conclusion of this project, Laura Wilkinson and Paul Bailey (Ian Farmer Associates Ltd), Anthony Rich (Halcrow Group Limited) and Mike Glyde (Historic Environment Planning Officer, Worcestershire County Council).

8. **Personnel**

The fieldwork and report preparation was led by Elizabeth Curran. The project manager responsible for the quality of the project was Tom Rogers. Fieldwork was undertaken by Elizabeth Curran, Angus Crawford and Nick Daffern, environmental analysis and deposit modelling by Nick Daffern and illustration by Carolyn Hunt and Claire Christiansen.

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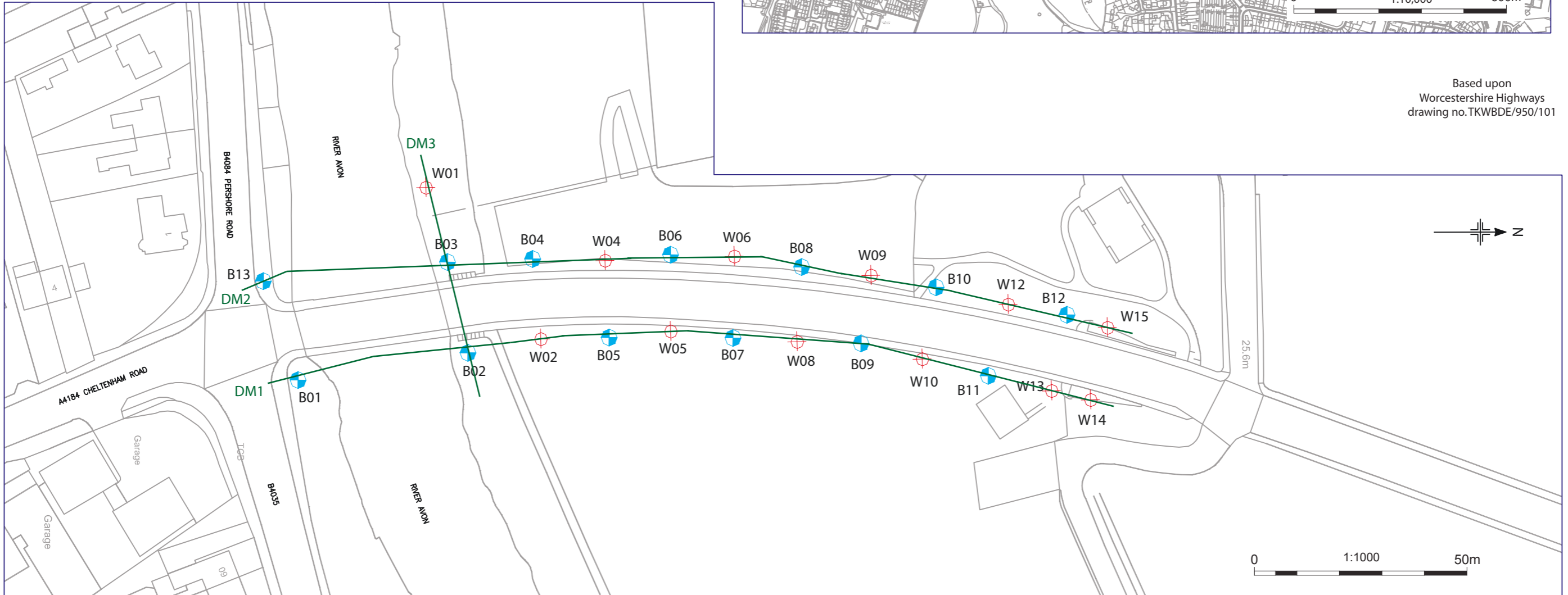
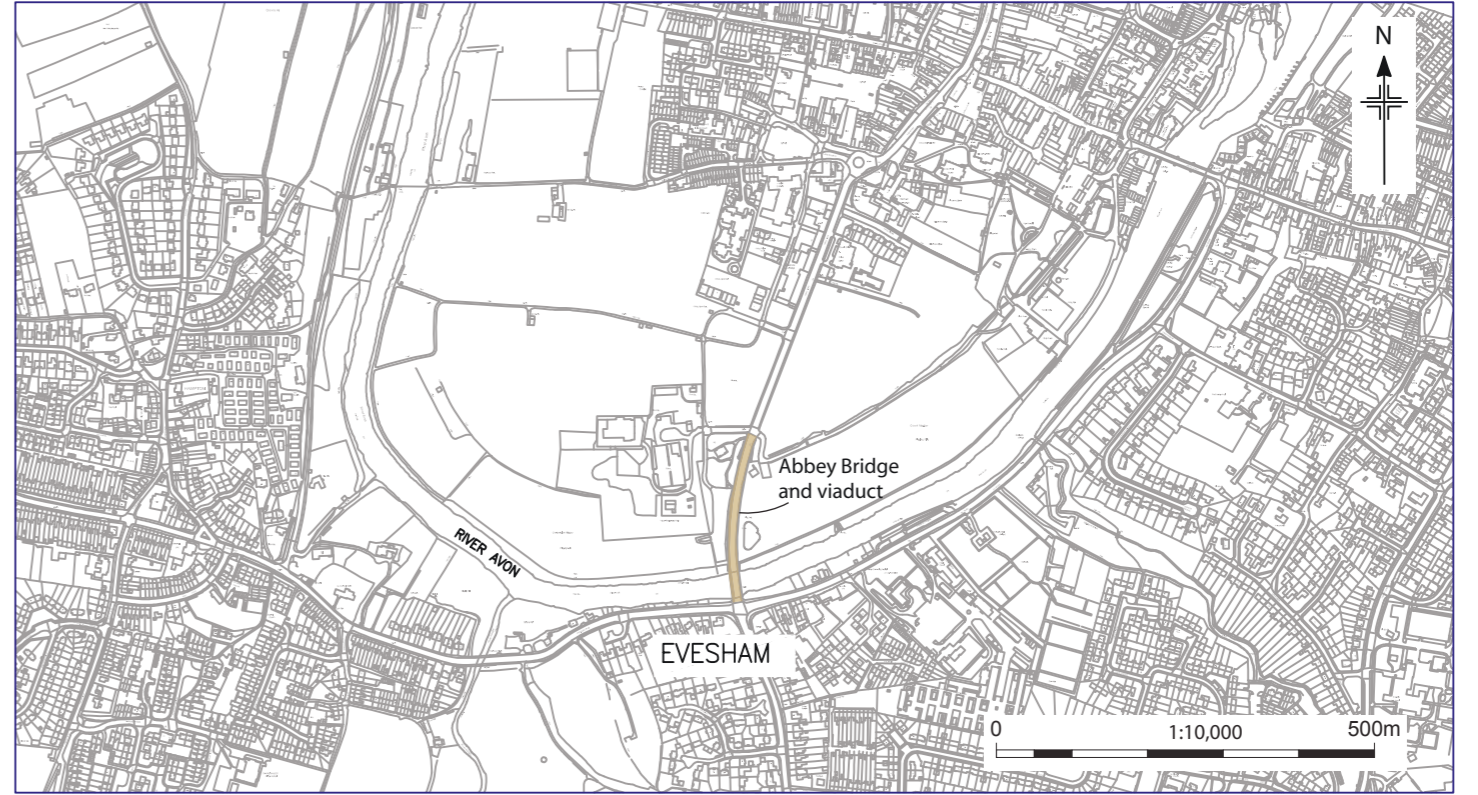
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Figures

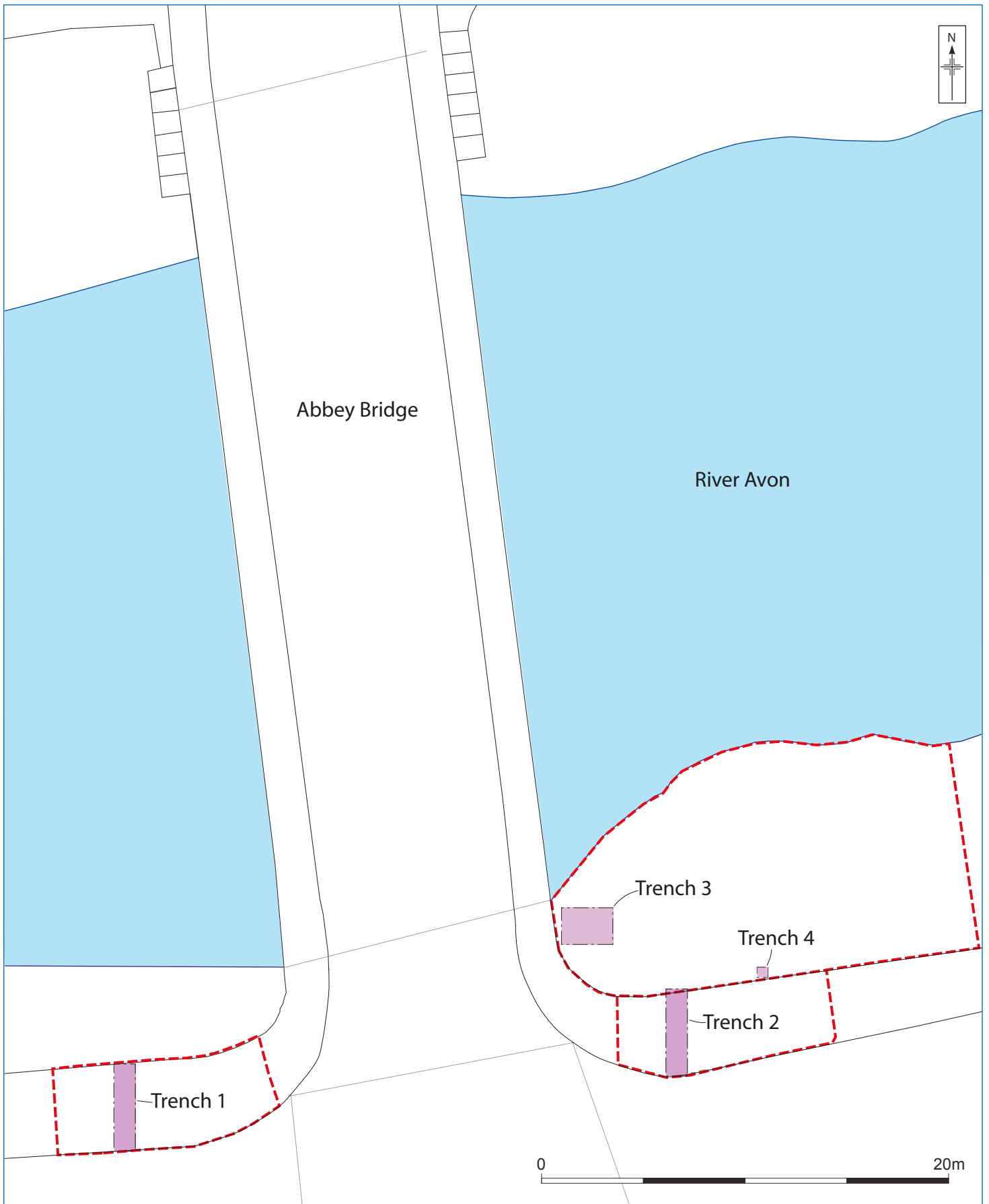


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drawing no.TKWBDE/950/101

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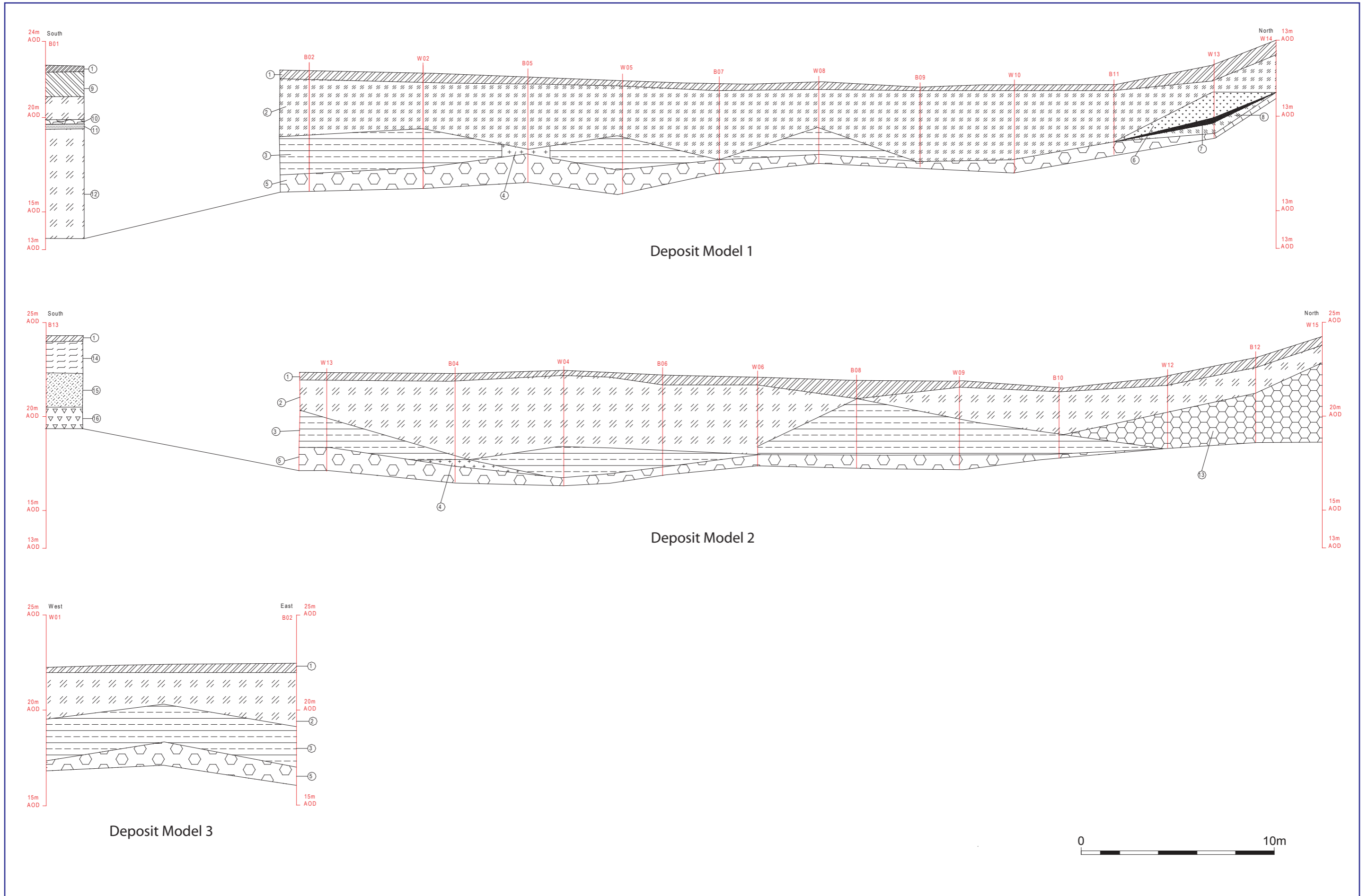
Location of the site, boreholes and deposit model cross sections

Figure 1



Location of Trenches observed (based upon Halcrow Drg No TKWBDE/950/103)

Figure 2



Deposit Models

Figure 3

Plates



Plate 1, General location of Trench 1, facing east



Plate 2, Trench 1, showing tarmac pavement and deposits beneath, truncated by modern services, view north



Plate 3, Southern part of Trench 1, view west



Plate 4, General location of Trench 2 during excavation, view west



Plate 5 Trench 2 showing tarmac with modern disturbance beneath, view north



Plate 6, Southern limit of Trench 2, view west



Plate 7, Excavation of Trench 3, with Abbey Bridge in the background, view west



Plate 8, Overview of Trench 3, showing the concrete piles on the northern edge of the trench



Plate 9, Detail of the concrete piles within Trench 3, view north



Plate 10, South and west facing section of Trench 4 showing deposits abutting the boundary wall

Appendix 1 Trench descriptions

Trench 1

Maximum dimensions: Length: 2.42m Width: 0.33m Depth: 0.42-1.34m

Orientation: N-S

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
300	Tarmac	Present pavement to south east of Abbey Bridge. Seals 300	0.00-0.10m
301	Hardcore	Successive re-surfacing of pavement with levelling between. Moderately dark, with oily residue. Sealed by 300.	0.10-0.35m
302	Made ground	Mid brown in colour. Possibly redeposited and then disturbed by modern services. Frequent sub rounded and rounded cobbles, pebbles and stone.	0.35-0.1.34m

Trench 2

Maximum dimensions: Length: 2m Width: 0.40m Depth: 1.20m

Orientation: N-S

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
200	Tarmac	Present pavement to south west of Abbey Bridge. Seals 201	0.00-0.03m
201	Make-up	Broken tarmac, coarse sand. Black with yellow sand band running through the middle. Foundation layer for pavement	0.03-0.25m
202	Made ground	Angular stones. Coarse sand. Includes possible old road stone. Backfill after service works.	0.20-1.20m+

Trench 3

Maximum dimensions: Length: 2.50m Width: 1.83m Depth: 0.60m

Orientation: E-W

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
400	Topsoil	Moderately coarse silty sand with frequent bioturbation. Mid dark brown. With modern rubbish. Above 401.	0.00-0.10m
401	Subsoil	Moderately coarse silt sand. Mid grey brown and occasional grey lenses. Reworked during placement of piles.	0.05-0.60m



Trench 4



Maximum dimensions: Length: 0.53m Width: 0.50m Depth: 1.10m

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
1000	Topsoil	Silt loam. Mid blackish brown. Turf, with root action and worm sorting. Occasional pebbles and stones. Above 1001.	0.00-0.30m
1001	Made ground	Clayey silt. Mid greyish brown lumps of orange grey silty clay. Rounded and sub rounded medium and large stones and pebbles. Cut by 1002. Below 1000	0.30-1.10m+
1002	Drain	Running N-S through the concrete retaining wall – extend trench to east to continue excavation by hand.	0.70-0.87m
1003	Concrete wall	Concrete wall below northern pavement of Pershore Road. Foundation blocks measure 0.14m running N-S beyond limit of excavation and 0.13-0.15m thick.	0.97m+

Appendix 2 Geotechnical logs

		Site Abbey Bridge and Viaduct, Evesham				Trial Pit Number P01	
Excavation Method Hand Dug Pit		Dimensions 0.60 x 0.85m		Ground Level (mOD) 22.15		Job Number 20584	
Location 403385.914 E 243135789 N		Dates 15/12/2009		Engineer Halcrow Group Limited		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend
						MADE GROUND: Soft, brown, high plasticity, sandy clay	
					(1.40)	Below 0.60m: Slightly gravelly. Gravel is fine to coarse, rounded to subrounded quartzite	
					1.40	Below 1.00m: Grey	
						Complete at 1.40m	
Plan							
Remarks Concrete core C01 drilled into bridge abutment at angle of 70° from horizontal - see Figure 20584.C01.PC05.							
Scale (approx) 1:25							Logged By HP
Figure No. 20584_PO1							

		Site Abbey Bridge and Viaduct, Evesham				Trial Pit Number P02	
Excavation Method Hand Dug Pit		Dimensions 0.60 x 0.85m		Ground Level (mOD) 22.15		Job Number 20584	
Location Halcrow Group Limited		Dates 15/12/2009		Engineer Halcrow Group Limited		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend
						MADE GROUND: Soft, grey brown, high plasticity, sandy, gravelly clay	
					(1.40)		
					1.40	Complete at 1.40m	
Plan							
Remarks Concrete core C02 drilled into bridge abutment at angle of 70° from horizontal - see Figure 20584.C01.PC05							
Scale (approx) 1:25							Logged By HP
Figure No. 20584_PO2							

IAN FARMER ASSOCIATES		Site		Trial Pit Number	
Excavation Method Hand Dug Pit	Dimensions 0.60 x 0.65m	Abbey Bridge and Viaduct, Evesham	Ground Level (mOD) 21.05	P03	
	Location 403397.158 E 243.95; 141 N	Worcestershire County Council		Job Number 20584	
	Dates 15/12/2009	Engineer Halcrow Group Limited	Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)
				20.76	(0.30) 0.30
					MADE GROUND: Brown topsoil
					Complete at 0.30m
Plan	Remarks Concrete core C03 drilled horizontally into bridge abutment - see Figure 20584.C03-T-C03				
Scale (approx)				1:25	Figure No.
Logged By				HP	20584.P03

IAN FARMER ASSOCIATES		Site		Trial Pit Number	
Excavation Method Hand Dug Pit	Dimensions 0.60 x 0.50m	Abbey Bridge and Viaduct, Evesham	Ground Level (mOD) 22.78	P05	
	Location 403419.254 E 243096.829 N	Worcestershire County Council		Job Number 20584	
	Dates 05/12/2009	Engineer Halcrow Group Limited	Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)
				22.48	(0.30) 0.30
				21.66	(0.82)
					1.12
					MADE GROUND: Grass over topsoil
					MADE GROUND: Soft, low plasticity, dark brown, sandy, slightly gravelly clay. Gravel is fine to coarse, rounded to subrounded quartzite, ash, tile and brick
					Complete at 1.12m
Plan	Remarks Pipe encountered next to pit.				
Scale (approx)				1:50	Figure No.
Logged By				HP	20584.P05

IAN FARMER ASSOCIATES				Site		Borehole Number	
IAN FARMER ASSOCIATES				Abbey Bridge and Viaduct, Evesham		B04	
IAN FARMER ASSOCIATES				Client		Job Number	
IAN FARMER ASSOCIATES				Worcestershire County Council		20584	
IAN FARMER ASSOCIATES				Engineer		Sheet	
IAN FARMER ASSOCIATES				Halcrow Group Limited		1/1	
IAN FARMER ASSOCIATES				Ground Level (mOD)		Water	
IAN FARMER ASSOCIATES				22.23		Legend	
IAN FARMER ASSOCIATES				Dates			
IAN FARMER ASSOCIATES				11/12/2009			
IAN FARMER ASSOCIATES				Casing Diameter		Field Records	
IAN FARMER ASSOCIATES				150mm cased to 6.00m			
IAN FARMER ASSOCIATES				Location		Water	
IAN FARMER ASSOCIATES				403379.9 E 243159.37 N		(ft)	
IAN FARMER ASSOCIATES				Casing Depth (ft)		Description	
IAN FARMER ASSOCIATES				2.00		MADE GROUND: Reinforced concrete slab	
IAN FARMER ASSOCIATES				2.00		MADE GROUND: Yellow brown, sandy, fine to coarse, angular to subangular gravel of quartzite	
IAN FARMER ASSOCIATES				3.00		Soft, high plasticity, brown, slightly sandy CLAY, with some white shells (Alluvium)	
IAN FARMER ASSOCIATES				3.00		Below 3.00m: Firm	
IAN FARMER ASSOCIATES				4.00		Below 4.00m: Mottled grey	
IAN FARMER ASSOCIATES				5.00		Soft to firm, high plasticity, chocolate brown PEAT (Alluvium)	
IAN FARMER ASSOCIATES				6.00		Medium dense, grey, very clayey, sandy, fine to coarse, rounded to subangular GRAVEL of quartzite (River Terrace Deposits)	
IAN FARMER ASSOCIATES				6.00		Firm, low plasticity, dark grey, fissured CLAY (Charmouth Mudstone Formation)	
IAN FARMER ASSOCIATES				6.50		Complete at 6.50m	
IAN FARMER ASSOCIATES				Sample / Tests		Depth (m)	
IAN FARMER ASSOCIATES				D1		0.20	
IAN FARMER ASSOCIATES				D2		0.40	
IAN FARMER ASSOCIATES				E1		0.50	
IAN FARMER ASSOCIATES				SPT N=4		1.20-1.65	
IAN FARMER ASSOCIATES				D3		1.20-1.65	
IAN FARMER ASSOCIATES				U1 100%		2.00-2.45	
IAN FARMER ASSOCIATES				D4		2.50	
IAN FARMER ASSOCIATES				SPT N=9		3.00-3.45	
IAN FARMER ASSOCIATES				D5		3.00-3.45	
IAN FARMER ASSOCIATES				U2 100%		4.00-4.45	
IAN FARMER ASSOCIATES				D6		4.50	
IAN FARMER ASSOCIATES				D7		4.90	
IAN FARMER ASSOCIATES				B1		4.90-5.80	
IAN FARMER ASSOCIATES				SPT(C) N=10		5.00-5.45	
IAN FARMER ASSOCIATES				SPT N=11		6.00-6.45	
IAN FARMER ASSOCIATES				D8		6.00-6.45	
IAN FARMER ASSOCIATES				Remarks		Logged By	
IAN FARMER ASSOCIATES				Excavating from 0.00m to 1.20m for 1 hour.		Scale (approx)	
IAN FARMER ASSOCIATES						1:50	
IAN FARMER ASSOCIATES						Figure No.	
IAN FARMER ASSOCIATES						20584-B04	

IAN FARMER ASSOCIATES				Site		Borehole Number	
IAN FARMER ASSOCIATES				Abbey Bridge and Viaduct, Evesham		B05	
IAN FARMER ASSOCIATES				Client		Job Number	
IAN FARMER ASSOCIATES				Worcestershire County Council		20584	
IAN FARMER ASSOCIATES				Engineer		Sheet	
IAN FARMER ASSOCIATES				Halcrow Group Limited		1/1	
IAN FARMER ASSOCIATES				Ground Level (mOD)		Water	
IAN FARMER ASSOCIATES				22.04		Legend	
IAN FARMER ASSOCIATES				Dates			
IAN FARMER ASSOCIATES				07/12/2009			
IAN FARMER ASSOCIATES				Casing Diameter		Field Records	
IAN FARMER ASSOCIATES				150mm cased to 5.50m			
IAN FARMER ASSOCIATES				Location		Water	
IAN FARMER ASSOCIATES				403397.582 E 243175.982 N		(ft)	
IAN FARMER ASSOCIATES				Casing Depth (ft)		Description	
IAN FARMER ASSOCIATES				2.00		Turf over TOPSOIL	
IAN FARMER ASSOCIATES				2.00		Soft, high plasticity, brown, slightly sandy silty CLAY with some fine white shell fragments (Alluvium)	
IAN FARMER ASSOCIATES				3.00		Below 2.00m: Very soft	
IAN FARMER ASSOCIATES				3.00		Below 3.00m: Grey brown mottled brown	
IAN FARMER ASSOCIATES				4.00		Soft to firm, brown fibrous PEAT	
IAN FARMER ASSOCIATES				5.00		Medium dense, wet, brownish grey, slightly clayey, very sandy, fine to coarse, subangular to rounded GRAVEL (River Terrace Deposits)	
IAN FARMER ASSOCIATES				5.50		Weak, light grey calcareous MUDSTONE (Charmouth Mudstone Formation)	
IAN FARMER ASSOCIATES				5.50		Hard, low plasticity, dark grey fissured CLAY (Charmouth Mudstone Formation)	
IAN FARMER ASSOCIATES				5.50-6.00		Complete at 6.00m	
IAN FARMER ASSOCIATES				Sample / Tests		Depth (m)	
IAN FARMER ASSOCIATES				D1		0.50	
IAN FARMER ASSOCIATES				E1		0.50	
IAN FARMER ASSOCIATES				U1 45%		1.20-1.65	
IAN FARMER ASSOCIATES				D2		1.70	
IAN FARMER ASSOCIATES				D3		2.00-2.45	
IAN FARMER ASSOCIATES				SPT N=2		2.00-2.45	
IAN FARMER ASSOCIATES				U2 45%		3.00-3.45	
IAN FARMER ASSOCIATES				D4		3.50	
IAN FARMER ASSOCIATES				D5		3.80	
IAN FARMER ASSOCIATES				D6		4.00-4.45	
IAN FARMER ASSOCIATES				B1		4.00-4.50	
IAN FARMER ASSOCIATES				SPT N=17		4.00-4.45	
IAN FARMER ASSOCIATES				SPT(C) N=23		5.00-5.45	
IAN FARMER ASSOCIATES				D7		5.00-5.45	
IAN FARMER ASSOCIATES				B2		5.00-5.50	
IAN FARMER ASSOCIATES				SPT(C) 68/260		5.50-5.91	
IAN FARMER ASSOCIATES				D8		5.50	
IAN FARMER ASSOCIATES				B3		5.50-6.00	
IAN FARMER ASSOCIATES				SPT(C) 25/40		6.00-6.13	
IAN FARMER ASSOCIATES				50/65			
IAN FARMER ASSOCIATES				Remarks		Logged By	
IAN FARMER ASSOCIATES				To be continued by relay casing - See B05		Scale (approx)	
IAN FARMER ASSOCIATES				Chiselling from 5.50m to 5.70m for 1 hour. Excavating from 5.70m to 6.00m for 1 hour. Excavating from 6.00m to 1.20m for 1 hour.		1:50	
IAN FARMER ASSOCIATES						Figure No.	
IAN FARMER ASSOCIATES						20584-B05	

Boring Method		Casing Diameter		Ground Level (mOD)		Site		Borehole Number	
Cable Percussion		150mm cased to 6.00m		22.22		Abbey Bridge and Viaduct, Evesham		B06	
Location		403379.457 E 243193.049 N		11/12/2009		Client		Job Number	
Location		403379.457 E 243193.049 N		11/12/2009		Worcestershire County Council		20584	
Engineer		Halcrow Group Limited		1/1		Sheet		1/1	
Depth (m)	Sample / Tests	Casing Depth (ft)	Water Depth (ft)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend	Water
0.50 0.50	D1 E1				22.07 21.72	(0.15) 0.15 (0.35) 0.50	MADE GROUND: Reinforced concrete (honeycomb structure) MADE GROUND: Light brown, clayey, sandy, fine to coarse, angular to subrounded gravel Firm brown, slightly sandy, silty CLAY (Alluvium)		
1.20-1.65 1.20-1.65	SPT N=10 D2		DRY	1,2,2,3,3,2		(3.50)			
2.00-2.45	U1 100%	2.00	DRY	28 blows					
2.50	D3								
3.00-3.45 3.00-3.45	SPT N=12 D4	3.00	DRY	2,3,3,2,4,3					
4.00-4.45	D5			Water striker(1) at 2.30m in 20 mins.	18.22	4.00	Soft, grey brown, sandy CLAY with pockets of fine to medium sand in alluvium, subangular to subrounded gravel (Alluvium)		
4.00-4.45 4.50-5.30	SPT(C) N=5 B1	4.00	2.30	1,1,0,1,2,2		(1.00)			
5.00-5.22	SPT(C) 50/70	5.00	2.50	19,21/25,25	17.22	5.00 (0.30)	COBBLE of quartzite		
5.40-5.43	SPT(C) 25/70	5.40	3.00	25/25	16.92	3.30 (0.30)	Moderately weak, light grey, fine grained LIMESTONE		
5.40 5.60	D6 D7				16.62	3.60	Very soft, fissured and laminated, high plasticity CLAY		
6.00-6.45 6.00-6.45	SPT N=63 D8	6.00	3.50	9,9/11,8,19,25		(0.90)			
							6.50		
Complete at 6.50m									
Remarks Chiselling from 5.30m to 5.60m for 0.5 hours. Excavating from 0.00m to 1.20m for 1 hour.									
								Scale (approx)	1:50
								Logged By	HP
								Figure No.	20584-B06

Boring Method		Casing Diameter		Ground Level (mOD)		Site		Borehole Number	
Cable Percussion		150mm cased to 5.30m		21.85		Abbey Bridge and Viaduct, Evesham		B07	
Location		403399.182 E 243205.811 N		08/12/2009		Client		Job Number	
Location		403399.182 E 243205.811 N		08/12/2009		Worcestershire County Council		20584	
Engineer		Halcrow Group Limited		1/1		Sheet		1/1	
Depth (m)	Sample / Tests	Casing Depth (ft)	Water Depth (ft)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend	Water
0.50 0.50	D1 E1				21.35	(0.30) 0.30	Turf over TOPSOIL Soft, high plasticity, brown slightly sandy silty CLAY (Alluvium)		
1.20-1.65	U1 45%		DRY	18 blows					
1.70	D2								
2.00-2.45 2.00-2.45	SPT N=5 D3		DRY	1,1/1,2,1,1	(3.70)				
3.00-3.45	U2 45%	3.00	DRY	28 blows			Below 3.00m: Mottled grey		
3.50	D4								
4.00-4.45 4.00-4.70	D5 B1			Water striker(1) at 2.90m in 20 mins. sealed at 4.90m.	17.65	4.00 (0.70)	Medium dense, wet, grey brown, very sandy, fine to coarse, subangular to rounded GRAVEL (River Terrace Deposits)		
4.00-4.45	SPT(C) N=17	4.00	2.90	2,3/3,4,5,5					
4.70-4.84	SPT(C) 25/75 50/65	4.70	3.00	25/25,25	16.95 16.75	4.70 (0.20) 4.90	Weak, grey MUDSTONE (Charmouth Mudstone Formation)		
4.70 4.90-5.12 5.30-5.63	SPT(C) 50/70 D6 SPT(C) 71/175	4.90 5.30	3.00 2.50	25-19/25,25 18,18/21,25,25		(0.70)	Very stiff to hard, low plasticity, dark grey fissured CLAY (Charmouth Mudstone Formation)		
							5.60		
Complete at 5.60m									
Remarks Pressure to be continued by clay casing - see B07 Chiselling from 4.90m to 5.60m for 1 hour. Excavating from 0.00m to 1.20m for 1 hour.									
								Scale (approx)	1:50
								Logged By	HP
								Figure No.	20584-B07

IAN FARMER ASSOCIATES				Site		Borehole Number	
Boring Method		Casing Diameter		Ground Level (mOD)		B10	
Cable Percussion		150mm cased to 4.00m		21.49		Abbey Bridge and Viaduct, Evesham	
		Location		Dates		Job Number	
		403389.076 E 243255.402 N		10/12/2009		20584	
		Engineer				Sheet	
		Halcrow Group Limited				1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description
0.50	D1				21.29	(0.20)	Turf over TOPSOIL
0.50	E1					0.20	Soft, high plasticity, brown slightly sandy, silty CLAY (Alluvium)
1.20-1.65	SPT N=5	DRY		1.0/1.2,1.1		(3.30)	
1.20-1.65	D2						
2.00-2.45	U1 100%	DRY		13 blows			
2.50	D3	2.00					Below 2.50m: Blueish grey
3.00-3.45	SPT N=5	DRY		1.0/0.2,2.1			
3.00	D4	3.00					
3.50	D5			Water strike(1) at 3.50m, reseal to 2.40m in 20 mins, sealed at 3.80m.	17.99	3.50	Medium dense, wet grey brown, slightly clayey, very sandy, fine to coarse, subangular to rounded GRAVEL (River Terrace Deposits)
3.80	D6			5.20/18.21,11.9	17.79	3.70	
3.50-3.95	SPT(C) N=59	3.50			17.65	3.90	Weak, grey calcareous MUDSTONE (Charmouth Mudstone Formation)
					17.49	4.00	Very stiff, low plasticity, dark grey fissured CLAY (Charmouth Mudstone Formation)
4.00-4.45	SPT(C) N=60	4.00		8.11/15.20,25.20			Complete at 4.00m
Remarks Borehole continued by rotary casing - see RC10. Chiselling from 3.70m to 3.80m for 1/3 hour. Excavating from 0.00m to 1.20m.							
						Logged By HP Figure No. 20584.B10	

IAN FARMER ASSOCIATES				Site		Borehole Number	
Boring Method		Casing Diameter		Ground Level (mOD)		B11	
Cable Percussion		150mm cased to 3.80m		21.61		Abbey Bridge and Viaduct, Evesham	
		Location		Dates		Job Number	
		403409.598 E 243268.411 N		09/12/2009		20584	
		Engineer				Sheet	
		Halcrow Group Limited				1/1	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description
0.50	D1				21.31	(0.30)	MADE GROUND: Turf over topsoil with occasional brick and metal fragments
0.50	E1					0.30	Soft, high plasticity, brown, slightly sandy silty CLAY (Alluvium)
1.20-1.65	U1 100%	DRY		19 blows		(2.70)	
1.70	D2						Below 1.70m: Firm, blueish grey
2.00-2.45	D3			Water strike(1) at 2.00m, reseal to 1.60m in 20 mins, 1.2/3,2.2,2			
2.00-2.45	SPT N=9	2.00					
3.00-3.45	SPT(C) N=10	3.00		4.5/3.2,2.3	18.61	3.00	Medium dense, brown, slightly clayey, sandy, fine to coarse, subangular to rounded GRAVEL (River Terrace Deposits)
3.00	D4					(0.60)	
3.60-3.68	SPT(C) 25/60	3.60		25/25	19.01	3.60	Weak, grey calcareous MUDSTONE (Charmouth Mudstone Formation)
3.60	D5				17.91	(0.10)	
3.70	D6					3.70	Very stiff, low plasticity, grey fissured CLAY (Charmouth Mudstone Formation)
3.70-4.10	D7	3.80		5.5/8,12,20,18		(1.40)	
4.60-5.02	SPT 92/265	3.80		20.18/20.22,25.25			
4.60	D8						
5.10	D9			09/12/2009 DRY	16.51	5.10	Complete at 5.10m
Remarks Borehole continued by rotary casing - see RC11. Chiselling from 3.66m to 3.77m for 1/2 hour. Excavating from 0.00m to 1.20m.							
						Logged By Scale (approx) 1:50 HP Figure No. 20584.B11	

IAN FARMER ASSOCIATES		Site		Number		
Excavation Method Drive-in Window Sampler	Dimensions 86mm to 2.00m 80mm to 3.00m	Client Worcestershire County Council	Ground Level (mOD) 23.14	Job Number 20584	Sheet 1/1	
						B12
Location 403395.25 E 245284.422 N	Dates 16/12/2009	Engineer Halcrow Group Limited	Field Records	Water Depth (m)	Sample / Tests	Depth (m)
Level (mOD)	Depth (Thickness)	Description	Legend	Water		
22.54	(0.60)	Grass over TOPSOIL				
	0.60	Very soft, low plasticity, orange brown to brown, very sandy, slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded quartzite (Alluvium)				
	(1.30)					
21.24	1.90	Firm to stiff, high plasticity, orange brown mottled brown CLAY (Alluvium)				
		Below 2.50m: Stiff, with some fine to coarse, rounded to subrounded gravel				
	(2.70)					
18.54	4.60	Very stiff, low plasticity, blue grey, fissured CLAY (Charmouth Mudstone Formation)				
	(0.80)					
17.74	5.40					
		Complete at 5.40m				
Remarks						
Excavating from 0.00m to 1.20m for 1 hour.					Logged By HP	
					Scale (approx) 1:50	
					Figure No. 20584.B12	

IAN FARMER ASSOCIATES		Site		Number		
Excavation Method Drive-in Window Sampler	Dimensions 86mm to 2.00m 80mm to 3.00m	Client Worcestershire County Council	Ground Level (mOD) 22.25	Job Number 20584	Sheet 1/1	
						WS01
Location 403381.238 E 243132.39 N	Dates 17/12/2009	Engineer Halcrow Group Limited	Field Records	Water Depth (m)	Sample / Tests	Depth (m)
Level (mOD)	Depth (Thickness)	Description	Legend	Water		
21.95	(0.30)	Turf over TOPSOIL				
	0.30	Soft to firm, low plasticity, brown, slightly gravelly, sandy, silty CLAY with some fine white shell fragments. Gravel is fine, subangular to rounded (Alluvium)				
	(2.40)					
19.55	2.70	Soft, high plasticity, dark grey silty CLAY (Alluvium)				
		Below 3.50m: With abundant fine white shell fragments				
	(2.20)					
17.35	4.90	Below 4.80m: Very soft				
	(0.50)	Wet, grey, very sandy, fine to coarse, subangular to rounded GRAVEL (River Terrace Deposits)				
16.85	5.40	Stiff, low plasticity, dark grey fissured CLAY (Charmouth Mudstone Formation)				
	(0.80)					
16.05	6.20					
		Complete at 6.20m				
Remarks						
Excavating from 0.00m to 1.20m for 1 hour.					Logged By HP	
					Scale (approx) 1:50	
					Figure No. 20584.WS01	

IAN FARMER ASSOCIATES		Site		Number		
Excavation Method Drive-in Window Sampler		Abbey Bridge and Viaduct, Evesham		WS02		
Dimensions Pit to 1.20m 86mm to 2.00m 86mm to 3.00m		Client Worcestershire County Council		Job Number 20584		
Location 403395.952 E 243160.487 N		Ground Level (mOD) 22.18		Sheet 1/1		
Water Depth (m)		Dates 17/12/2009		Legend		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (Thickness)	Description	Water
0.40	E1		21.78	(0.40) 0.40	Turf over TOPSOIL Soft, low plasticity, brown, sandy silty CLAY with some fine shell fragments (Alluvium)	
1.00	D1					
1.20-1.95	SPT D2	IP 300/S 0.0		(2.40)		
1.20	D3					
1.50	N=3	T 0.0, 1.2				
2.00-2.45	SPT N=7	1.1/2.1, 2.2			Below 2.00m: Mottled grey	
2.00	D4					
3.00-3.60	SPT D5	IP 150/S 0.0	19.38	2.80	Soft, high plasticity, bluish grey, slightly sandy, silty CLAY (Alluvium)	
3.00	D5					
4.00-4.60	SPT D6	T 1.1, 1.1		(2.10)	Below 3.60m: With some decayed rootlets and some fine shell fragments	
4.00	D6					
4.00-4.45	SPT N=1	IP 150/S 0.0				
4.00	N=1	T 1.0, 0.0				
5.00-5.45	SPT N=22	Fast(1) at 4.90m. 3.6/7.5, 5.5	17.28	4.90	Below 4.60m: Sandy, with abundant white shell fragments	
5.00	D7				Wet, grey, sandy, fine to coarse, subangular to rounded GRAVEL (River Terrace Deposits)	
5.50	D8			(1.10)		
6.00-6.37	SPT 50/220	1.2/3.3, 4.4	16.18	6.00	Moderately weak, grey LIMESTONE (Charmouth Mudstone Formation)	
			15.78	(0.40) 6.40		
					Complete at 6.40m	
Remarks Penetration 6.10m. Excavating from 0.00m to 1.20m for 1 hour.						Logged By Scale (approx) 1:50 HP Figure No. 20584, WS02

IAN FARMER ASSOCIATES		Site		Number		
Excavation Method Drive-in Window Sampler		Abbey Bridge and Viaduct, Evesham		WS04		
Dimensions Pit to 1.20m 86mm to 2.00m 86mm to 3.00m		Client Worcestershire County Council		Job Number 20584		
Location 403379.337 E 243172.913 N		Ground Level (mOD) 22.42		Sheet 1/1		
Water Depth (m)		Dates 17/12/2009		Legend		
Depth (m)	Sample / Tests	Field Records	Level (mOD)	Depth (Thickness)	Description	Water
0.30	E1		22.17	(0.25) 0.25	Turf over TOPSOIL Soft, high plasticity, brown, slightly sandy silty CLAY, with some fine white shell fragments (Alluvium)	
1.20-1.65	SPT D1	IP 150/S 0.0				
1.20	D1	T 1.1, 1.1, N=4				
2.00-2.45	SPT D2	IP 230/S 0.0		(3.75)	Below 2.00m: Firm	
2.00	D2	T 0.1, 1.2, N=4				
3.00-3.83	SPT D3	IP 360/S 0.0			Below 3.00m: Mottled grey	
3.00	D3					
4.00-4.45	SPT N=0	T 0.0, 0.1				
4.00	D4	IP 450 Test Failed	18.42	4.00	Below 3.80m: Sandy with abundant white shell fragments Soft, high plasticity, grey and dark grey, slightly sandy silty CLAY (Alluvium)	
5.00-5.45	SPT N=12	2.1/2.4, 3.3		(1.70)	Below 4.80m: Very soft with abundant decayed rootlets	
5.00	D5					
5.70	D6	Fast(1) at 5.70m.	16.72	5.70	Wet, grey, clayey, sandy, fine to coarse, subrounded to rounded GRAVEL (River Terrace Deposits)	
6.00-6.45	SPT N=41	3.4/5.9, 12.15	16.32	(0.40) 6.10	Stiff to very stiff, low plasticity, dark grey fissured CLAY (Charmouth Mudstone Formation)	
6.00	D7					
7.00-7.34	SPT 50/190	9.11/15.20, 15	15.07	(1.25) 7.35	Complete at 7.35m	
Remarks Penetration 7.00m. Excavating from 0.00m to 1.20m for 1 hour.						Logged By Scale (approx) 1:50 HP Figure No. 20584, WS04

IAN FARMER ASSOCIATES		Site		Number			
Excavation Method Drive-in Window Sampler		Abbey Bridge and Viaduct, Evesham		WS05			
Dimensions Pit to 1.20m 88mm to 2.00m 88mm to 3.00m		Client Worcestershire County Council		Job Number 20584			
Location 403396.545 E 243190.528 N		Ground Level (mOD) 21.85		Sheet 1/1			
Dates 17/12/2009		Engineer Halcrow Group Limited		Water			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend
0.30	E1			21.60	(0.25) 0.25	Turf over TOPSOIL Soft, high plasticity, brown, slightly sandy silty CLAY (Alluvium)	
1.20-1.88 1.20	SPT D1		IP 230/S 0.0		(2.65)	Below 1.50m: Firm	
2.00-2.53 2.00	N-3 SPT D2 N-5		T 0.1, 1.1 IP 80/S 0.1 T 1.1, 1.2			Below 2.40m: Mottled grey	
3.00-3.68 3.00	SPT D3		IP 230/S 0.0	18.95	2.80	Soft, high plasticity, blueish grey silty CLAY with some decayed rootlets (Alluvium)	
4.00-4.75 4.00	N-3 SPT D4		T 0.1, 1.1 IP 300/S 0.0		(1.80)	Below 3.80m: With abundant fine shell fragments	
4.80 5.00-5.45	N-3 D5 SPT N=33		T 0.0, 1.2 5.5/6.7, 10.10	17.15	4.70	Wet, grey, clayey, sandy, fine to coarse, subangular to rounded GRAVEL (River Terrace Deposits) Between 4.90m and 5.00m: Limestone cobble	
6.00-6.45 6.00	SPT 50/295 D6		6.6/10.11, 14.15	15.95	5.90 (0.55)	Very stiff, low plasticity, dark grey CLAY (Charmouth Mudstone Formation)	
Complete at 6.45m				15.40	6.45		
Remarks Penetration 6.40m. Excavating from 0.00m to 1.20m for 1 hour.						Scale (approx) 1:50	
						Figure No. 20584, WS05	

IAN FARMER ASSOCIATES		Site		Number			
Excavation Method Drive-in Window Sampler		Abbey Bridge and Viaduct, Evesham		WS06			
Dimensions Pit to 1.20m 88mm to 2.00m 88mm to 3.00m		Client Worcestershire County Council		Job Number 20584			
Location 403382.428 E 243211.874 N		Ground Level (mOD) 22.06		Sheet 1/1			
Dates 17/12/2009		Engineer Halcrow Group Limited		Water			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend
0.40	E1			21.76	(0.30) 0.30	Turf over TOPSOIL Soft, high plasticity, brown silty CLAY (Alluvium)	
1.20-1.73 1.20	SPT D1		IP 80/S 0.1			Below 0.80m: Mottled grey brown	
1.50 2.00-2.53 2.00	N-5 SPT D2 N-6		T 1.1, 1.2 IP 80/S 0.1 T 1.1, 2.2		(3.80)	Below 1.80m: Firm	
3.00-3.45 3.00	SPT N=5 D4		1.1/1.1, 1.2			Below 2.90m: With some decayed rootlets	
4.00-4.45 4.00	SPT N=10 D5		2.3/3.3, 2.2 Fast(1) at 4.10m.	17.96	4.10 (0.60)	Below 3.70m: Soft, blueish grey Wet, brown, clayey, sandy, fine to coarse, subangular to rounded GRAVEL (River Terrace Deposits)	
5.00-5.45 5.00	SPT N=24 D6		2.4/5.5, 6.8	17.36	4.70	Stiff, low plasticity, dark grey CLAY (Charmouth Mudstone Formation)	
5.80 6.00-6.45	D7 SPT N=42		6.8/9.1, 11.1, 11		(2.30)		
6.80	D8			15.06	7.00	Complete at 7.00m	
Remarks						Scale (approx) 1:50	
						Figure No. 20584, WS06	

IAN FARMER ASSOCIATES		Site		Number			
Excavation Method Drive-in Window Sampler		Abbey Bridge and Viaduct, Evesham		WS08			
Dimensions Fit to 1.20m 87mm to 2.00m 78mm to 3.00m		Client Worcestershire County Council		Job Number 20584			
Location 403399.771 E 243220.863 N		Ground Level (mOD) 21.74		Sheet 1/1			
Dates 15/12/2009		Field Records		Water			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend
0.30 0.30	A1 D1			21.44	(0.30) 0.30	Grass over TOPSOIL Soft to firm, high plasticity, brown CLAY (Alluvium)	
1.20-1.65 1.20	SPT N=2 D2		0.0/0.0,1.1		(2.10)	Below 1.00m: Very soft, orange mottled brown	
2.00-2.45 2.00	SPT N=5 D3		0.1/1.1,2.1		2.40	Firm, high plasticity, blue brown CLAY with decayed rootlets (Alluvium)	
2.50	D4			19.34	(0.80)		
3.00-3.45 3.00	SPT N=3 D5		0.0/1.1,0.1		3.20	Very soft, high plasticity, grey, slightly sandy CLAY, with decayed rootlets (Alluvium)	
3.50	D6			18.54	(0.60)		
4.00-4.45 4.00	SPT N=15 D7		1.5/3.3,4.5		3.80 (0.40) 4.20	Wet, brown, sandy, fine to coarse, rounded to subrounded GRAVEL of quartzite (River Terrace Deposits) Stiff, low plasticity, dark grey CLAY (Charmouth Mudstone Formation)	
5.00-5.42	SPT 50/270		6.9/12.16,13.9		(1.25)	Below 5.00m: Very stiff	
					5.45	Complete at 5.45m	
Remarks Excavating from 0.00m to 1.20m for 1 hour.		Scale (approx) 1:50		Logged By HP		Figure No. 20584, WS08	

IAN FARMER ASSOCIATES		Site		Number			
Excavation Method Drive-in Window Sampler		Abbey Bridge and Viaduct, Evesham		WS09			
Dimensions Fit to 1.20m 95mm to 2.00m 70mm to 3.00m		Client Worcestershire County Council		Job Number 20584			
Location 403386.729 E 243237.893 N		Ground Level (mOD) 21.85		Sheet 1/1			
Dates 15/12/2009		Field Records		Water			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend
0.30	E1			21.55	(0.30) 0.30	Turf over TOPSOIL Soft, high plasticity, brown silty CLAY (Alluvium)	
1.20-1.95 1.20	SPT D1		IP 300/S 0.0		(1.70)	Below 1.00m: Mottled grey brown	
1.70 2.00-2.60 2.00	N=2 D2 SPT D3		T 0.0,1.1 IP 150/S 0.0		2.00	Firm, high plasticity, blueish brown, slightly sandy silty CLAY with some decayed rootlets (Alluvium)	
2.60	D4		T 1.1,1.1		(1.90)		
3.00-3.45 3.00	SPT D5		IP 80/S 0.1*70 T 1.1,1.1,N=4		3.90 (0.80)	Wet, brown, sandy, fine to coarse, subangular to rounded GRAVEL (River Terrace Deposits)	
3.50	D6			17.95			
4.00-4.45 4.00	SPT N=4 D7		Fast (*) at 3.50m. 1.1/1.1,1.1		4.70	Stiff, low plasticity, dark grey CLAY (Charmouth Mudstone Formation)	
4.50	D8			17.15	(1.50)		
5.00-5.45 5.00	SPT N=30 D9		4.6/6.7,8.9		6.20	Complete at 6.20m	
6.00-6.22	SPT 50/65		8.9/60				
Remarks Excavating from 0.00m to 1.20m for 1 hour.		Scale (approx) 1:50		Logged By HP		Figure No. 20584, WS09	

IAN FARMER ASSOCIATES		Site		Number				
Excavation Method		Abbey Bridge and Viaduct, Evesham		WS10				
Drive-in Window Sampler		Client		Job				
Dimensions Ø 150mm to 200mm 70mm to 300mm		Worcestershire County Council		20584				
Location		Engineer		Sheet				
403405.564 E 243253.216 N		Halcrow Group Limited		1/1				
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend	Water
0.30 0.30	A1 D1			21.67	(0.30) 0.30	Grass over TOPSOIL Soft, high plasticity, brown CLAY (Alluvium)		
1.00 1.20-1.65 1.20 1.50	D2 SPT N=2 D3 D4		Water strike(1) at 1.00m. 0.0/0.0,1.1		(3.70)	Below 1.00m: Mottled grey		
2.00-2.45 2.00	SPT N=3 D5 D6		0.0/0.0,2.1					
2.50								
3.00-3.45 3.00	SPT N=4 D7 D8		0.0/1.1,1.1					
3.50								
4.00-4.45 4.00	SPT N=16 D9 D10		1.2/2.3,4.7	17.67	4.00 (0.70)	Wet, medium dense, grey, sandy, fine to coarse, rounded to subrounded GRAVEL or quartzite (River Terrace Deposits)		
4.50								
5.00-5.45 5.00	SPT N=33 D11 D12		5.7/6.8,8.11	16.97	4.70 (1.45)	Very stiff, low plasticity, dark grey CLAY (Charmouth Mudstone Formation)		
5.50								
6.00-6.14 6.00	SPT 25/75 50/60 D13		25/50	15.52	6.15			
Remarks		Complete at 6.15m						
Remarks		Excavating from 0.00m to 1.20m for 1 hour.						
Scale (approx)		1:50						Logged By
Figure No.		20584.WS10						HP

IAN FARMER ASSOCIATES		Site		Number				
Excavation Method		Abbey Bridge and Viaduct, Evesham		WS12				
Drive-in Window Sampler		Client		Job				
Dimensions Ø 150mm to 200mm 70mm to 300mm		Worcestershire County Council		20584				
Location		Engineer		Sheet				
403393.048 E 243271.171 N		Halcrow Group Limited		1/1				
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend	Water
0.30 0.30	A1 D1			21.64	(0.50) 0.50	TOPSOIL Very soft to soft, high plasticity, orange brown to brown CLAY (Alluvium)		
1.20-1.65 1.20-1.65 1.70	SPT 0/60,4/300 D2 D3		IP 230/S 0,0/80 T 0,1,1,2/N=4		(1.60)	Below 1.70m: With some decaying rootlets and fine to coarse, rounded to subrounded gravel		
2.00-2.45 2.00-2.45	SPT N=7 D4		1.2/1.2,2.2	20.04	2.10	Firm, high plasticity, orange brown to brown CLAY, with occasional fine to coarse, rounded to subrounded quartzite (Alluvium)		
2.60								
3.00-3.45 3.00-3.45	SPT N=21 D6		1.2/2,9,5,5		(1.80)	Below 3.00m: Stiff, brown grey with decayed rootlets		
3.60								
4.00-4.45 4.00-4.45	SPT N=32 D8		4.5/6,7,7,12	18.24	3.90	Very stiff, low plasticity, blue grey, fissured CLAY (Charmouth Mudstone Formation)		
4.60								
5.00-5.45 5.00-5.45	SPT N=38 D10		5.6/7,7,10,14		(2.00)			
5.60 5.80-5.90	D11 SPT 25/75 50/25		25/50	16.24	5.90			
Remarks		Complete at 5.90m						
Remarks		Excavating from 0.00m to 1.20m for 1 hour.						
Scale (approx)		1:50						Logged By
Figure No.		20584.WS12						HP

IAN FARMER ASSOCIATES		Site		Number				
Excavation Method Drive-in Window Sampler		Abbey Bridge and Viaduct, Evesham		WS13				
Dimensions Pit to 1.20m 95mm to 2.00m 70mm to 3.00m		Client Worcestershire County Council		Job Number 20584				
Location 403413.36 E 245281.394 N		Engineer Halcrow Group Limited		Sheet 1/1				
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend	Water
0.30	E1			22.48	(0.20)	MADE GROUND: Topsoil		
1.20-1.65	SPT 0780,3/300 D1 D2		IP 230/S 0,0*80 T 0,1,1,N=3	21.86	(0.20)	MADE GROUND: Dark brown, clayey, gravelly fine to medium sand, fine to coarse, angular to subangular, including quartz, ash		
1.20				21.86	(0.60)	Soft, high plasticity, brown, slightly sandy CLAY, with trace of fine ash (Alluvium)		
1.50				21.28	(0.60)	Very soft to soft, high plasticity, brown mottled grey CLAY (Alluvium)		
2.00-2.45	SPT N=11 D3		2,1/2,3,3,3		1.40	Below 1.80m: Slightly gravelly, Gravel is fine to coarse, angular to subrounded		
2.00					(1.40)	Below 2.50m: Firm		
2.80	D4			19.88	2.80	Firm, high plasticity, reddish brown, slightly sandy CLAY (Alluvium)		
3.00-3.45	SPT N=26 D5		6,4/3,3,3,17	19.68	(0.20)	Firm, low plasticity, grey brown CLAY (Alluvium)		
3.00					3.00	Complete at 5.35m		
3.80	D6			18.98	(0.70)	Grey, clayey, sandy, fine to coarse, angular to subangular GRAVEL of mainly limestone (River Terrace Deposits)		
4.00-4.45	SPT N=29 D7		2,3/4,5:10,10	18.78	3.70	Stiff, low plasticity, dark grey CLAY (Charmouth Mudstone Formation)		
4.00					3.90	Complete at 5.35m		
4.50	D8				(1.45)			
5.00-5.35	SPT 50/200 D9		7,11/15,20,15	17.33	5.35			
5.00								
Remarks Refusal at 5.25m.								Logged By Scale (approx) 1:50 Figure No. 20584, WS13

IAN FARMER ASSOCIATES		Site		Number				
Excavation Method Drive-in Window Sampler		Abbey Bridge and Viaduct, Evesham		WS14				
Dimensions Pit to 1.20m 97mm to 2.00m 70mm to 3.00m		Client Worcestershire County Council		Job Number 20584				
Location 403417.59 E 245283.398 N		Engineer Halcrow Group Limited		Sheet 1/1				
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description	Legend	Water
0.30	A1			23.56	(0.30)	MADE GROUND: Grass over topsoil		
0.30	D1			23.16	0.30	MADE GROUND: Soft, low plasticity, dark brown to grey, slightly gravelly clay. Gravel is fine to coarse, rounded to subangular quartzite, with occasional ash, brick fragments and some rootlets		
1.20-1.65	SPT N=5 D2 D3		0,0/0,1,2,2		(0.40)	Soft, brown, high plasticity, slightly sandy CLAY, with some white shales and occasional fine to coarse, rounded to subrounded gravel (Alluvium)		
1.20-1.65					0.70	Below 2.60m: Firm		
1.40	D4				(2.20)	Brown, very clayey, sandy, fine to coarse, rounded to subrounded GRAVEL of quartzite (River Terrace Deposits)		
2.00-2.45	SPT N=6 D5		0,0/0,1,2,3			Stiff, low plasticity, brown grey, fissured CLAY (Charmouth Mudstone Formation)		
2.00-2.45						Below 4.00m: Very stiff		
2.80	D6			20.96	2.90	Stiff, low plasticity, blue grey, fissured CLAY (Charmouth Mudstone Formation)		
3.00-3.45	SPT N=20 D7		4,3/4,4,6,6	20.86	(0.10)	Complete at 6.40m		
3.00-3.45					3.00			
3.80	D8				(1.80)			
4.00-4.45	SPT N=46 D9		2,4/6,7,15,18					
4.00-4.45								
4.60	D10			19.06	4.80			
5.00-5.45	SPT N=23 D11		4,3/3,4,6,10					
5.00-5.45								
5.60	D12				(1.60)			
6.00-6.41	SPT 50/255 D13		5,7/8,11,13,18	17.46	6.40			
6.00-6.40								
Remarks Excavating from 0.00m to 1.20m for 1 hour.								Logged By Scale (approx) 1:50 Figure No. 20584, WS14



Excavation Method				Site				Number	
Drive-in Window Sampler				Abbey Bridge and Viaduct, Evesham				WS15	
Dimensions		Ground Level (mOD)		Client		Job Number		Sheet	
1.20m 87mm to 2.00m 78mm to 3.00m		24.22		Worcestershire County Council		20584		1/1	
Location		Dates		Engineer		Legend		Water	
403399.174 E 243294.376 N		16/12/2009		Halcrow Group Limited					
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (Thickness)	Description			
0.30 0.30	A1 D1			23.72	(0.50) 0.50	TOPSOIL			
1.20-1.65 1.20	SPT N=12 D2		3,2/2,3,3,4	22.82	1.40	Soft to firm, low plasticity, orange brown to brown, sandy, slightly gravelly CLAY. Gravel is fine to coarse, subangular to rounded quartzite (Alluvium)			
1.70 2.00-2.45 2.00	D3 SPT N=23 D4		4,5/6,5,6,6			Firm, high plasticity, yellow brown mottled, slightly sandy CLAY (Alluvium)			
2.60 3.00-3.45 3.00-3.45	D5 SPT N=22 D6		2,4/5,5,5,7		(4.20)	Below 3.60m: Grey brown			
3.60 4.00-4.45 4.00	D7 SPT N=18 D8		17,5/6,4,3,5						
4.60 5.00-5.45 5.00	D9 SPT N=26 D10		25/10,5,5,6						
5.60 6.00-6.35 6.00	D11 SPT 50/200 D12		8,14/19,19,12	18.62 17.87	5.60 (0.75) 6.35	Firm, low plasticity, blue grey, fissured CLAY (Charmouth Mudstone Formation)			
Complete at 6.35m									

Remarks
Excavating from 0.00m to 1.20m for 1 hour.

Scale (approx)
1:50

Logged By
HP

Figure No.
20584, WS15

IAN FARMER ASSOCIATES		Site		Borehole Number	
Abbey Bridge and Viaduct, Evesham		R02		Job Number	
Worcestershire County Council		R02		20584	
Halcrow Group Limited		Sheet		1/1	
Installation Type Single Installation		Dimensions Internal Diameter of Tube (A) = 50 mm Diameter of Filler Zone = 120 mm		Client Worcestershire County Council	
Location 403403.026 E 243141.213 N		Ground Level (mOD) 22.39		Engineer Halcrow Group Limited	
Legend Water		Instr (A) 		Level (mOD) 22.19	
Description Concrete		Depth (m) 0.20		Groundwater Strikes During Drilling	
Date 21/12/09 22/12/09		Time 08.30 16.30		Readings 5 min 10 min 15 min 20 min	
Inflow Rate		Inflow Rate		Depth Sealed (m)	
Water Depth (mOD) 3.90 18.49		Water Depth (mOD) 6.50 11.50		Water Depth (mOD) 1.60 20.79	
Casing Depth (m) 3.90 18.49		Casing Depth (m) 6.50 11.50		Casing Depth (m) 1.60 20.79	
Depth Struck (m) 16.30 16.30		Depth Struck (m) 14.00 14.00		Depth Struck (m) 1.60 1.60	
Time 08.30 16.30		Time 16.30 16.30		Time 16.30 16.30	
Date 17/12/09		Date 17/12/09		Date 17/12/09	
Start of Shift		Start of Shift		End of Shift	
Groundwater Observations During Drilling		Groundwater Observations During Drilling		Groundwater Observations During Drilling	
Instrument Groundwater Observations		Instrument Groundwater Observations		Instrument Groundwater Observations	
Inst. [A] Type : Slotted Standpipe		Inst. [A] Type : Slotted Standpipe		Inst. [A] Type : Slotted Standpipe	
Instrument [A]		Instrument [A]		Instrument [A]	
Date 24/12/09 22/01/10		Time 20.34 1.65		Level (mOD) 20.74 20.74	
Depth (m) 2.05 1.65		Depth (m) 10.00 10.00		Level (mOD) 12.39 12.39	
Remarks Flush cover fitted.		Remarks Flush cover fitted.		Remarks Flush cover fitted.	

IAN FARMER ASSOCIATES		Site		Borehole Number	
Abbey Bridge and Viaduct, Evesham		R03		Job Number	
Worcestershire County Council		R03		20584	
Halcrow Group Limited		Sheet		1/1	
Installation Type Single Installation		Dimensions Internal Diameter of Tube (A) = 19 mm Diameter of Filler Zone = 120 mm		Client Worcestershire County Council	
Location 403377.052 E 243133.951 N		Ground Level (mOD) 22.36		Engineer Halcrow Group Limited	
Legend Water		Instr (A) 		Level (mOD) 22.16	
Description Concrete		Depth (m) 0.20		Groundwater Strikes During Drilling	
Date 17/12/09		Time 08.30		Readings 5 min 10 min 15 min 20 min	
Inflow Rate		Inflow Rate		Depth Sealed (m)	
Water Depth (mOD) 0.20		Water Depth (mOD) 18.76		Water Depth (mOD) 1.60	
Casing Depth (m) 0.20		Casing Depth (m) 18.76		Casing Depth (m) 1.60	
Depth Struck (m) 6.00		Depth Struck (m) 4.10 4.40 4.60		Depth Struck (m) 18.00 18.00	
Time 08.30		Time 16.30 16.30		Time 16.30 16.30	
Date 17/12/09		Date 17/12/09		Date 17/12/09	
Start of Shift		Start of Shift		End of Shift	
Groundwater Observations During Drilling		Groundwater Observations During Drilling		Groundwater Observations During Drilling	
Instrument Groundwater Observations		Instrument Groundwater Observations		Instrument Groundwater Observations	
Inst. [A] Type : Standpipe Piezometer		Inst. [A] Type : Standpipe Piezometer		Inst. [A] Type : Standpipe Piezometer	
Instrument [A]		Instrument [A]		Instrument [A]	
Date 24/12/09 22/01/10		Time 19.49 1.30		Level (mOD) 20.86 20.86	
Depth (m) 2.87 1.30		Depth (m) 18.00 18.00		Level (mOD) 4.36 4.36	
Remarks Flush cover fitted.		Remarks Flush cover fitted.		Remarks Flush cover fitted.	

IAN FARMER ASSOCIATES		Site		Borehole Number	
Abbey Bridge and Viaduct, Evesham		R07		Job Number	
Worcestershire County Council		R07		20584	
Halcrow Group Limited		Sheet		1/1	
Installation Type Single Installation		Dimensions Internal Diameter of Tube (A) = 19 mm Diameter of Filler Zone = 120 mm		Location 403399.182 E 243203.811 N	
Ground Level (mOD) 21.65		Client Worcester County Council		Engineer Halcrow Group Limited	
Legend 		Level (mOD) 21.45		Depth (m) 0.20	
Instr (A) 		Description Concrete		Date 16/12/09	
Water 		Bentonite Seal		4.00 4.20 17.45 17.15	
		Sand Filler Piezometer Tip Sand Filler		5.00 16.65	
Groundwater Strikes During Drilling		Groundwater Observations During Drilling		End of Shift	
Start of Shift		End of Shift		Instrument Groundwater Observations	
Time 08.30		Time 16		Time 16.30	
Depth Struck (m) 5.50		Depth Struck (m) 5.50		Depth Struck (m) 4.50	
Water Depth (mOD) 0.60		Water Depth (mOD) 21.05		Water Depth (mOD) 20.89	
Inflow Rate 5 min		Inflow Rate 5 min		Inflow Rate 5 min	
Casing Depth (m) 0.60		Casing Depth (m) 0.60		Casing Depth (m) 0.60	
Readings 5 min 10 min 15 min 20 min		Readings 5 min 10 min 15 min 20 min		Readings 5 min 10 min 15 min 20 min	
Depth Sealed (m) 19.95		Depth Sealed (m) 19.95		Depth Sealed (m) 21.29	
Date 24/12/09 22/01/10		Date 24/12/09 22/01/10		Date 24/12/09 22/01/10	
Instrument (A) Standpipe Piezometer		Instrument (A) Slotted Standpipe		Instrument (A) Slotted Standpipe	
Level (mOD) 3.65		Level (mOD) 3.49		Level (mOD) 3.49	
Depth (m) 18.00		Depth (m) 18.00		Depth (m) 18.00	
Remarks Flush cover fitted.		Remarks Flush cover fitted.		Remarks Flush cover fitted.	

IAN FARMER ASSOCIATES		Site		Borehole Number	
Abbey Bridge and Viaduct, Evesham		R10		Job Number	
Worcestershire County Council		R10		20584	
Halcrow Group Limited		Sheet		1/1	
Installation Type Single Installation		Dimensions Internal Diameter of Tube (A) = 50 mm Diameter of Filler Zone = 120 mm		Location 403389.076 E 243255.402 N	
Ground Level (mOD) 21.49		Client Worcester County Council		Engineer Halcrow Group Limited	
Legend 		Level (mOD) 21.29		Depth (m) 0.20	
Instr (A) 		Description Concrete		Date 15/12/09	
Water 		Bentonite Seal		5.00 16.49	
		Sand Filler Piezometer Tip Sand Filler		5.00 16.49	
Groundwater Strikes During Drilling		Groundwater Observations During Drilling		End of Shift	
Start of Shift		End of Shift		Instrument Groundwater Observations	
Time 08.30		Time 16.30		Time 16.30	
Depth Struck (m) 4.50		Depth Struck (m) 4.50		Depth Struck (m) 4.50	
Water Depth (mOD) 0.60		Water Depth (mOD) 0.60		Water Depth (mOD) 0.60	
Inflow Rate 5 min		Inflow Rate 5 min		Inflow Rate 5 min	
Casing Depth (m) 0.60		Casing Depth (m) 0.60		Casing Depth (m) 0.60	
Readings 5 min 10 min 15 min 20 min		Readings 5 min 10 min 15 min 20 min		Readings 5 min 10 min 15 min 20 min	
Depth Sealed (m) 21.29		Depth Sealed (m) 21.29		Depth Sealed (m) 21.29	
Date 24/12/09 22/01/10		Date 24/12/09 22/01/10		Date 24/12/09 22/01/10	
Instrument (A) Standpipe Piezometer		Instrument (A) Slotted Standpipe		Instrument (A) Slotted Standpipe	
Level (mOD) 3.65		Level (mOD) 3.49		Level (mOD) 3.49	
Depth (m) 18.00		Depth (m) 18.00		Depth (m) 18.00	
Remarks Flush cover fitted.		Remarks Flooded Flooded		Remarks Flooded Flooded	



Installation Type		Site		Borehole Number										
Single Installation		Abbey Bridge and Viaduct, Evesham		R13										
Dimensions		Client		Job Number										
Internal Diameter of Tube (A) = 19 mm Diameter of Filter Zone = 120 mm		Worcestershire County Council		20584										
Location		Engineer		Sheet										
403376.032 E 243089.959 N		Halcrow Group Limited		1/1										
Ground Level (mOD)		24.30												
Legend	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling									
					Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				
		24.10	0.20	Concrete	12/01/10		5.40	4.40		5 min	10 min	15 min	20 min	Depth Sealed (m)
		20.30	4.00	Bentonite Seal										
		18.80	5.50	Sand Filler										
		18.50	5.80	Piezometer Tip										
		18.30	6.00	Sand Filler										
		8.30	16.00	Cement/Bentonite Seal										
Instrument Groundwater Observations					End of Shift									
Inst. [A] Type : Standpipe Piezometer					Date	Time	Depth Hole (m)	Water Depth (mOD)	Casing Depth (m)	Water Depth (m)	Casing Depth (m)	Water Depth (mOD)	Water Depth (m)	Water Sealed (m)
					12/01/10	08.30	7.50	2.40	21.90	16.30	7.50	3.60	20.70	19.70
					13/01/10	08.30	7.50	2.40	21.90	16.30	16.00	4.60	19.70	
Instrument Groundwater Observations					Start of Shift									
Inst. [A] Type : Standpipe Piezometer					Date	Time	Depth Hole (m)	Water Depth (mOD)	Casing Depth (m)	Water Depth (m)	Casing Depth (m)	Water Depth (mOD)	Water Depth (m)	Water Sealed (m)
					22/01/10			2.44	21.86					
Remarks					Flush cover fitted.									

Appendix 3 Deposit models

Table 1 Key to deposits identified within the deposit models

Deposit Number	Description (based upon the logs of Ian Farmer Associates)	N.B
1	All turf, topsoil, made-ground and modern structures such as concrete slabs	
2	Brown sandy silty clay. Strength varies across deposit from soft to firm but plasticity is generally high. Frequently contains shell fragments (Alluvium)	Lower boundary between deposits 2 and 3 appears to be diffuse in places
3	Bluish grey or bluish brown clay with local variations as regards presence and concentrations of silt and sand. Frequently contains shell fragments and decayed root fragments (Alluvium)	
4	Brown fibrous peat. Soft to firm with high plasticity	Possibly former palaeochannel fill?
5	Medium dense grey or brown gravel, occasionally very clayey. Quartzite gravel is fine to coarse and rounded to sub-angular depending upon location (River terrace deposits)	Possibly equates to the Bretford Member (1 st terrace) of the Avon Valley Formation
6	Very soft-soft, high plasticity grey clay with brown mottles. Becomes firmer and slightly gravelly with depth (Alluvium)	
7	Firm high plasticity reddish brown, slightly sandy clay (Alluvium)	
8	Firm low plasticity grey brown clay (Alluvium)	
9	Firm, high plasticity, yellow brown to brown clay. Occasional shell fragments	The geotechnical logs suggest this is a member of the Charmouth Mudstone Formation but the deposit description does not support this. It may be equate to deposit 2 although this is unsupported
10	Very stiff, dark grey low plasticity clay (Charmouth Mudstone Formation)	
11	Firm, high plasticity, grey brown, slightly sandy clay	
12	Stiff to very stiff, low plasticity, dark grey fissured clay. Fragments of limestone are frequently encountered as depth increases	
13	Firm to stiff high plasticity orange/yellow-brown to brown clay. Occasionally fine to coarse, rounded to sub-rounded quartzite gravel, increases in frequency with depth (probably reworked deposit 5). Becomes greyer with depth (Alluvium)	Is likely to represent a mixed version of deposits 6, 7 and 8. Alternatively, the engineer did not differentiate between the individuals deposits and grouped them due to similarity

14	Brown, silty, fine to coarse sand and fine to coarse, sub-angular to sub-rounded gravel (Alluvium)	
15	Firm, brown mottled grey, slightly silty clay. Becomes browner and gravel content increases with depth (Alluvium)	
16	Dense, grey brown, coarse, sub-angular to sub-rounded gravel and cobbles of mainly mudstone and quartzite. (River terrace deposits)	

Appendix 4 Technical information

The archive

The archive consists of:

- 5 Fieldwork progress records AS2
- 1 Photographic records AS3
- 41 Digital photographs
- 4 Trench record sheets AS41
- 4 Scale drawings
- 1 Computer disk

The project archive is intended to be placed at:

Worcestershire County Museum

Hartlebury Castle

Hartlebury

Near Kidderminster

Worcestershire DY11 7XZ

Tel Hartlebury (01299) 250416
