

St Edward Homes

**Green Park Village,
Reading**

**Report on Hydrogeological Risk
Assessment**

Project Ref: 11321/1023

January 2008

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For and on behalf of Peter Brett Associates				

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1. Introduction

Peter Brett Associates (PBA) have been retained by St Edward Homes, the Client, to undertake a hydrogeological risk assessment for the proposed Green Park Village development, Reading. It is proposed to develop the site with a mixture of residential, commercial, open spaces and a school, with associated access roads, parking spaces and landscaping.

As part of the development, it is proposed to re-profile the Trout Lakes which are former mineral workings present within the site. In order for the re-profiling to take place dewatering of the lakes is required. This report presents the findings of a hydrogeological risk assessment of any potential impacts the proposed dewatering may have on local groundwater and surface water bodies.

A number of historical investigations have been carried out for the study area, including a detailed geoenvironmental investigation, carried out in 2002 (PBA 2002), a groundwater quality programme carried out in 2005/2006 (PBA 2007), and an investigation on the former Clembins Waste Transfer Station to the west of the Trout Lakes (PBA 2007). The information from the historical investigations has been used to compile this report.

The comments made in this report and the opinions expressed are based on the sources quoted, the ground conditions encountered in the exploratory holes and the results of tests made in the laboratory. There may however be conditions pertaining to the site which have not been disclosed by the investigation and which therefore could not be taken into consideration. In particular, it should be noted that groundwater conditions vary with seasonal and other effects.

2. Site Summary

2.1. Site Location and Description

The proposed development area is situated approximately 2km to the northwest of Junction 11 of the M4 Motorway and approximately 3km to the south of Reading Town Centre, centred on approximate National Grid Reference (NGR) SU 695 700. A Site Location Plan is presented as Figure 1.

The site is bounded by a railway line and the former Clembins Waste Transfer Station to the west, Longwater Avenue to the south, a flood relief channel to the east and by a drainage ditch along the northern boundary.

The site is currently occupied by open land, a small industrial estate (Pingemead Industrial Estate) and flooded former gravel workings (Trout Lakes). A site Layout Plan is presented in Figure 2.

The site is generally level although temporary stockpiles of topsoil/subsoil from other phases of the Green Park development are present over parts of the site, together with stockpiles of overburden material from the excavation of the Trout Lakes.

An historical domestic and commercial landfill is present to the northeast of the study area that was operated by Hills Aggregates in the 1980s following mineral extraction. It is understood that the landfill was not 'engineered' to current standards, although external bund walls were constructed using clays keyed into the underlying Lambeth Group. A clay capping layer was constructed on completion of landfilling operations.

An active landfill is currently present to the north of the Trout Lakes which is also operated by Halls. The landfill is licenced and accepts domestic and civil amenity waste and is fully contained, incorporating an HDPE basal/sidewall liner and a leachate collection/control system.

2.2. Site History

Details on the history of the site and surrounding area have been obtained from historical Ordnance Survey Maps. A summary of the history of the site area is presented below;

1883 – The site is indicated to be undeveloped, with the railway bounding the west of the site. Smallmead Road and Kybes Lane are present within the south of the site. Possible mineral workings are indicated where Smallmead Road crosses the railway line.

1900 – The possible mineral workings are no longer indicated. It is shown that work at the Manor Farm Sewage Works has commenced to the northeast of the site.

1961 – The site is still indicated as undeveloped. Re-worked ground is shown 200m to the west of the site at Searls Farm.

1976 – Major changes have occurred within the site boundary. Mineral workings are present within the site (Trout Lakes), with the remaining site area still indicated as open land. Numerous mineral workings are shown surrounding the site, present to the southwest at Kirtons Farm, to the northeast at the sewage

works and on Island Road. The mineral workings to the west of the site at Searls Farm have been significantly expanded.

1983 – The site layout remains largely unchanged, although some structures associated with the Pingemead Industrial Estate are now indicated. Mineral workings adjacent to the north of the site, operated by Halls Aggregates have been extended and additional workings are indicated at Kirtons Farm, approximately 130m to the southwest of the site. The former workings at the sewage works and Island Road appear to have been infilled, with a stadium constructed over part of the infilled workings. New mineral workings are indicated to be present approximately 750m to the east of the site at Smallmead. The M4 Motorway is now present to the south of the site boundary.

1992 – The Site layout remains largely unchanged, although the Smallmead mineral workings are shown to have been infilled.

Parts of the Trout Lakes were used as a Borrow Pit in 1995 for the extraction of Lambeth Group materials for use as bulk engineered fill in the Green Park development. Excavations were restricted to a depth of 6m above the top of Chalk to protect the underlying Chalk aquifer.

2.3. Regional Geology

According to the records of the British Geological Survey (Sheet 268, 1:50,000 scale, Solid and Drift Edition) the site is underlain by the following geological sequence:

Recent and Pleistocene Deposits	Alluvium (clays/silts)
	River Terrace Deposits (sands and gravels)
Solid Deposits	Lambeth Group (stiff clays overlying dense, silty fine to medium sands)
	Upper Chalk Formation

Information presented on the BGS map indicates that the western half of the site, in the vicinity of the Trout Lakes, is underlain by worked ground.

2.4. Groundwater Vulnerability

A review of the National Rivers Authority (NRA) groundwater vulnerability map (Sheet 38, Upper Thames and Berkshire Downs, 1:100,000 scale) indicates that the site is underlain by a major aquifer of high permeability (Upper Cretaceous Chalk).

According to the Environment Agency (EA) the site is located within an Outer Groundwater Source Protection Zone (SPZ). An Inner SPZ is located adjacent to the southeastern boundary of the site, associated with the groundwater abstraction located at the Scottish and Newcastle Brewery approximately 1200m to the southeast of the site boundary.

2.5. Regional Hydrogeology

A review of the hydrogeological map of the area (Sheet 7, Southwest Chilterns and Berkshire and Marlborough Downs) indicates that the potentiometric groundwater surface within the Chalk aquifer is around 35m AOD in 1976. Groundwater elevation contours indicate that the groundwater flow direction within the Chalk is likely to be towards the east or southeast.

2.6. Hydrology

Foudry Brook is present approximately 400m to the east of the site at its closest point, flowing in a northeast direction and flowing to the east. A drainage ditch is present adjacent to the northern boundary of the site, orientated west, east. The River Kennet is present approximately 800m to the north of the site at its closest point, orientated in an east - west direction and flowing towards the east.

A Flood Relief Channel constructed as part of the Green Park Development is present adjoining the extreme north eastern site boundary, flowing in a northerly direction. The Flood Relief channel was lined with clay on either side of the channel to the north of the site boundary due to the presence of the nearby closed landfill site and sludge beds associated with the former sewage works.

A number of water bodies representing flooded, former gravel pits are present within and in the immediate vicinity of the site boundary. The Trout Lakes are present within the eastern area of the site, with further water bodies present immediately to the north and approximately 80m to the west of the site boundary.

2.7. Groundwater and Surface Water Abstractions

The original Envirocheck Report used in the Geoenvironmental Report was compiled in 2002. As such, it was considered prudent to contact the Environment Agency (EA) to seek up to date information on discharge and abstraction information within the site area. Table 2.2 presents a summary of the EA groundwater abstraction licence search results for a 1km radius around the site.

Table 2.2 Summary of EA Groundwater Abstraction Licences within a 1km Radius of the Site

Licence Holder	Approximate Distance and Direction From Site (m)	Purpose of Abstraction	Licenced volume (m³/yr)
Kennet Valley Park Ltd	Within Site Boundary (Pingemead Ind Est)	Agriculture and private water supply	6819
Reading Football Club Plc	600m Southeast	Environmental Treatment	119734

According to the EA there is one surface water abstraction within a 1km radius of the site. The abstraction is licensed to Mr D J B Hewison of Hartley Court Farm, for agricultural usage. The abstraction is located approximately 600m to the southeast of the site, abstracting from Foudry Brook.

Correspondence from the EA is presented in Appendix 1 and the location of the abstractions are presented in Figure 5.

3. Ground Conditions

The results of the exploratory holes (see Figure 2 for locations) generally confirmed the sequence of strata given in Section 2.3. The ground conditions across the site are summarised below:

Table 3.1 Summary of Ground Conditions

Strata	Depth to Top (m bgl)	Elevation to Top (m AOD)	Thickness (m)
Made Ground (locally present)	Ground Level	Ground Level	0.20 to 2.1
Alluvium (locally absent)	0.1 to 1.1	37.55 to 38.85	0.2 to 1.5
River Terrace Deposits	0.2 to 2.1	36.3 to 38.9	1.1 to 3.55
Lambeth Group	2.7 to 4.5	34.0 to 35.9	13.45 to 15.55
Chalk Formation	17.7 to 19.0	19.4 to 20.55	Not Proven

Generally, made ground material was encountered at greater depths within the west of the site (former Clembins Waste Transfer Station area). Two geological cross sections are presented as Figures 3 and 4. Figure 3 is a cross section running from A to A' (east to west). Figure 4 is a cross section running from B to B' (south to north). The locations of the cross sections are presented on Figure 2.

4. Groundwater Conditions

Based on our 2007 Gas and Water Quality Monitoring Report, groundwater levels in the River Terrace Deposits were encountered between 0.8m and 1.2m bgl. A groundwater flow direction within the River Terrace Deposits was calculated to be towards the northeast with an elevation of around 37.8m AOD in the southwestern corner of the site and to around 37.0m AOD in the northeast corner.

The depth to groundwater in the monitoring wells installed within the Lambeth Group was recorded between 1.5m and 2.0m bgl. Flow direction was towards the east or southeast from around 37.9m AOD along the northwestern boundary to around 36.1m AOD along the eastern boundary. The presence of the cohesive strata at the top of the Lambeth Group therefore acts as an aquiclude between the River Terrace Deposits and the more permeable sandy horizons towards the base of the Lambeth Group.

The depth to water within the monitoring wells installed within the Chalk was around 3.5m below ground level during the monitoring period, at around 34.5m to 35.0m AOD, with groundwater flow to the south or south east, confirming the flow direction given on the hydrogeological map.

5. Discussion

5.1. Potential Impacts

A number of potential impacts have been identified that may arise as a result of the dewatering operations, namely:

- Changes in groundwater levels in aquifers across and outside of the site
- Derogation of groundwater and surface water abstractions
- Altering groundwater flow directions, possibly resulting in changes in contamination plume directions or drawing in contaminated water into the site/pumps
- Settlement either by removal of fines in granular materials or causing consolidation of cohesive soils
- Quality of the water in the Trout Lakes to be discharged
- Derogation of surface water/drainage ditches

An assessment of the likelihood of the above potential impacts occurring and any subsequent implications or risks has been carried out and is discussed in the following sections.

It should be noted that the proposed dewatering operations will not directly impact the groundwater conditions in the Chalk aquifer. The historical investigations however indicate that there is a downward hydraulic gradient between the Lambeth Group and the Chalk (probably as a result of the abstraction from the nearby brewery) and hence the dewatering operations may have an indirect impact on the Chalk in terms of encouraging the entry of contaminated water into the Lambeth Group that then underdrains into the Chalk.

5.2. Proposed Dewatering Methodology

It is proposed to dewater the Trout Lakes by using a 300mm Sykes pumps located at the both the northern and southern central margins of the lakes. The capacity of the proposed pumps is 400 litres/sec each. It is estimated that it will take around 2 months to remove the water in the lakes after which pumping at a reduced capacity will take place to control groundwater/surface water flows. The current programme for the infilling of the lakes is 6 months.

A similar strategy has been successfully adopted by the proposed dewatering contractor for the infilling of the nearby Moores Farm gravel pits, where 200mm pumps were used, throttled back to around 10% of their capacity during the actual filling operations. Should the proposed pumps be inadequate for fully dewatering the Trout lakes, it is likely that the Trout Lakes will be sectioned off into smaller areas.

The suction pipes will be floated during the initial emptying of the lakes stage to minimise the potential removal of fines. During the infilling stage, the pumps will be located within cages infilled with graded granular material to also prevent removal of fines.

The pumped water will be discharged into the drainage ditches that are present along the northern and southern boundaries of the site.

It should be noted that a similar dewatering methodology was adopted when the Lambeth Group was excavated in 1995 for use as bulk fill on the Green Park Development and no adverse affects were reported.

5.3. Radius of Influence Ro

An estimate of the radius of influence of the proposed dewatering operations has been carried out, based on the model indicated in Figure 6 and using the following formula (CIRIA Report C515 – Groundwater Control – Design and Practice):

$$Ro = C.h.\sqrt{k} \text{ where}$$

C = factor (taken to be 3000)
h = drawdown (m)
k = coefficient of permeability (m/s)

Estimates of the permeability of the various strata present have been carried out based on grading analyses undertaken as part of historical investigations and Hazen's formula ($k = D^{10^2}/100$). The results of the historical investigations however indicate that the nature of the Lambeth Group varies across the site, being essentially cohesive but containing sand bands of significant thickness, although the sand bands only appear to be connected/laterally persistent at the base of the Lambeth Group sequence (i.e below the level of the base of the Trout Lakes). For the purposes of this exercise, the permeability of the sand layers based on the grading analyses has been used to represent worst case conditions.

Based on the results of the grading analyses, the following permeabilities were adopted for this assessment:

River Terrace Deposits - 5×10^{-4} m/s
Lambeth Group (sands) - 5×10^{-6} m/s

From the conceptual model presented in Figure 6, heads of water in the River Terrace Deposits and Lambeth Group will be drawn down by 2m and 8m respectively and maintained by the dewatering operations to fully dewater the Trout Lakes. Using the above formula, the radius of influence from the dewatering will be around 135m in the River Terrace Deposits and 55m in the Lambeth Group, assuming worst case conditions.

5.4. Risk Assessment

A risk assessment has been carried out for the potential impacts identified in Section 5.1.

5.4.1. Groundwater Levels

The results of the assessment indicate that the radius of influence from the proposed dewatering will be of the order of 135m for the River Terrace Deposits. Groundwater levels in the River Terrace Deposits are therefore likely to be reduced to the south of the Trout Lakes. However the land to the south of the Trout Lakes is currently undeveloped.

Although the radius of influence of pumping from the River Terrace Deposits extends out side the northern site boundary, the River Terrace Deposits have been historically worked from these areas, with landfills now present with either impermeable membranes or clay sidewalls. Hence, the dewatering operations are unlikely to have a significant affect on water levels in the River Terrace Deposits to the north of the Trout

Lakes, although a local reverse in groundwater flow direction may occur where remnant River Terrace Deposits are present.

The assessment of the dewatering from the Lambeth Group indicates that the radius of influence locally extends outside of the northern and southern site boundaries. A localised reversal in the flow direction in the Lambeth Group may therefore occur along the southern boundary.

5.4.2. Groundwater and Surface Water Abstractions

Information from the Environment Agency indicates that there is only one current licenced groundwater abstraction licence within the estimated radius of influence of the proposed dewatering. This is located within Pingemead Industrial Estate and is for the abstraction of groundwater for the River Terrace Deposits for agricultural purposes. It is considered that this abstraction relates to the former farm and as such, has either been abandoned/discontinued or will be abandoned as part of the redevelopment. Further clarification on this abstraction is being sought.

Information from the Environment Agency indicates that there are no current surface water abstraction licences within the estimated radius of influence of the proposed dewatering.

5.4.3 Contamination

The results of the assessment indicate that the radius of influence of the dewatering of the River Terrace Deposits will be of the order of 135m. The dewatering operations therefore have the potential to alter the direction of any contaminated water plumes and to encourage any potentially contaminated groundwater entering the site/dewatering operations.

There are three potential sources for contaminated groundwater within or in the vicinity of the site, namely landfills to the north, the former Waste Transfer Station to the west of the Trout Lakes and Pingemead Industrial Estate to the east of the Trout Lakes.

Landfills

As discussed previously, historical and current landfills are present to the north of the Trout Lakes outside of the development area within former gravel pits. It is understood however that these have contained sidewalls, either clay liners keyed into the Lambeth Group or low permeability HDPE membranes. As such, it is considered that there are highly unlikely to be any potential leachate migration pathways from the landfills. The risk of the dewatering operations resulting in the migration of leachate from within the landfills into the site as a result in changes of groundwater flow direction are considered to be low.

There is however the possibility that leachate may be escaping vertically from beneath the landfills into the Lambeth Group and migrating laterally, particularly in the closed landfills. However, groundwater flow in the Lambeth Group is to the south east and the landfills lie hydraulically up gradient of the Trout Lakes. The assessment indicates that the radius of influence of the dewatering operations in the Lambeth Group are unlikely to extend as far as the closed landfill site.

Waste Transfer Station

A geoenviromental investigation was carried out by PBA over the former Waste Transfer Station operated by Clembins (PBA 2007). The results of this investigation indicated that locally the ground water in the River Terrace Deposits had been slightly impacted by hydrocarbons, ammonia and bacteriological compounds. Further testing and monitoring of this area has been recommended which will determine if any remedial measures are required and this will be conducted prior to the dewatering on the Trout Lakes.

Pingmead Industrial Estate

A limited geoenvironmental investigation was carried out over Pingmead Industrial Estate as part of our 2002 survey but the scope was restricted due to the presence of existing structures and hardstanding. The results of the desk study, the work carried out and the groundwater monitoring of the River Terrace deposits down hydraulic gradient of the Estate as part of our 2005/2006 survey, indicate that there is a low risk of significant impact from the Estate on groundwater quality. However, a detailed investigation is proposed for this area following closure of the Estate to enable full and unrestricted access to confirm if any remediation is required.

5.4.4 Surface Water Bodies

The results of the assessment indicate that there are no surface water bodies within the estimated radius of influence of the proposed dewatering with the exception of the drainage ditches along the southern and northern boundaries. However, these ditches are silted up or lined with clay (possibly within the cohesive alluvial deposits) and hence are unlikely to be impacted by the dewatering operations.

5.4.5 Water Quality in the Trout Lakes

As part of our 2005/2006 monitoring programme, the quality of the Trout Lakes water was monitored over a 6 month period. The result of the monitoring however indicated concentrations below the EQS for fresh water and hence the risk of significantly impacted water being present in the lakes is considered to be low.

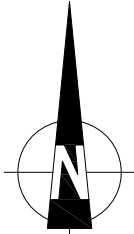
6. Summary

A hydrogeological risk assessment has been carried out for the proposed dewatering of the Trout Lakes as part of the Green Park Village development.

Several potential impacts of the dewatering have been identified. The results of the assessment indicates that these potential impacts represent a low or negligible risk to controlled water bodies within or surrounding the development area.

The exception to the above is however the potential for groundwater from beneath the former Waste Transfer Station to drawn towards the Trout Lakes that is slightly contaminated. Additional investigations are proposed in the Waste Transfer Station to confirm, following discussions with the Environment Agency, the need to carry out remedial measures. This will be carried out prior to the commencement of the dewatering operations.

Another potential source for contaminated groundwater to be present is within the Industrial Estate, although it is considered that based on the currently available information, this risk is low. A specific investigation is proposed for the Industrial Estate area and remedial measures will be carried out if required following discussions with the Environment Agency.

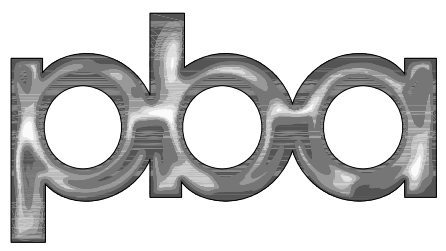


- KEY**
- GEOFFREY WALTON**
- WT4C CABLE PERCUSSION BOREHOLE LOCATION (1984)
- GEOTECHNICS**
- BH1 BOREHOLE LOCATION (1987)
 - TP1048 TRIAL PIT LOCATION (2003)
 - BH1016 BOREHOLE LOCATION (2003)
 - GW1048 GAS WELL POINT (2003)
 - SW1024 WATER LEVEL (2003)
- RMC (AGGREGATES) SOUTHERN LTD**
- W21 BOREHOLE LOCATION (1991)
- PETER BRETT ASSOCIATES**
- TP2 TRIAL PIT LOCATION (2001)
 - LAKE SURFACE WATER POINT (2005)
 - BH1 BOREHOLE LOCATION (2007)
 - WS8 WINDOW SAMPLE BOREHOLE LOCATION (2007)
 - TP7 TRIAL PIT LOCATION (2007)
- FOUNDATION EXPLORATION SERVICES**
- WS2 WINDOW SAMPLE BOREHOLE LOCATION (2002)
 - BH54 CABLE PERCUSSION BOREHOLE (2002)
 - TP201 TRIAL PIT LOCATION (2002)
- C J ASSOCIATES**
- G14 CABLE PERCUSSION BOREHOLE (2005)
- CROSS SECTION LINES**
- SITE BOUNDARY**

GREEN PARK VILLAGE

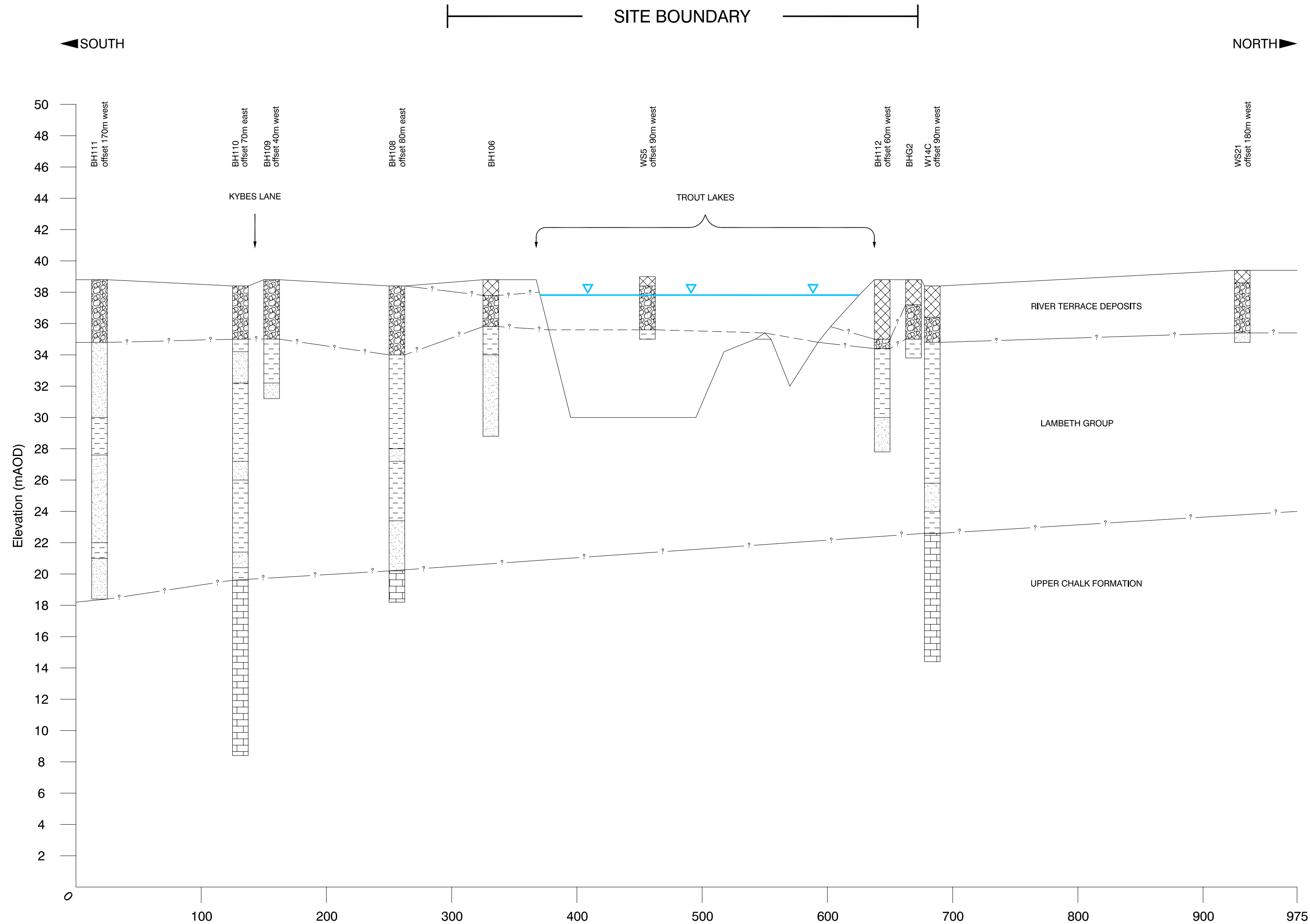
**SITE LAYOUT AND
INTRUSIVE INVESTIGATION PLAN**

Client
**ST. EDWARD
HOMES**



CAVERSHAM BRIDGE HOUSE WATERMAN PLACE READING BERKSHIRE RG1 8DN
Tel 0118 950 0761 Fax 0118 959 7498 E-mail: reading@pba.co.uk Internet: www.pba.co.uk © Peter Brett Associates

Date	21.01.2008	Drawn by	DJM	Figure Number
A1 Scale	1:2500	Checked by	JG	



GREEN PARK VILLAGE

SCHEMATIC GEOLOGICAL
CROSS SECTION B-B'

Client

ST. EDWARDS
HOMES

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Date

21.01.2008

Drawn by

DJM

A2 Scale

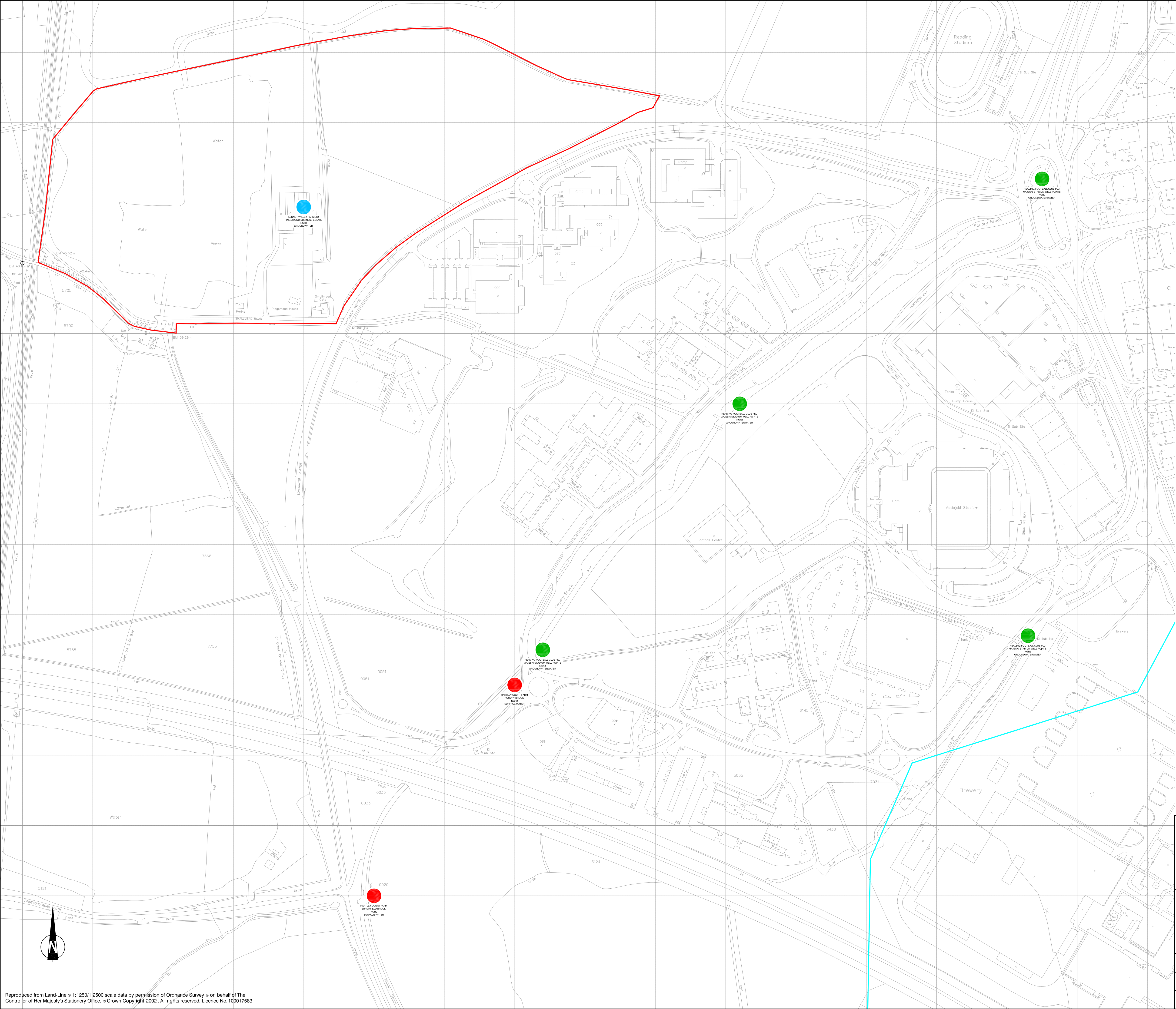
H 1:2500 V 1:200

Checked by

JG

Figure Number

4



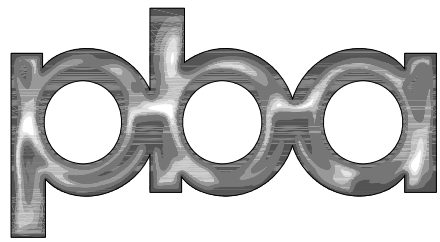
- KEY
- HARTLEY COURT FARM
 - KENNET VALLEY PARK LTD
 - READING FOOTBALL CLUB PLC
 - SITE BOUNDARY
 - 1000m BUFFER FROM SITE BOUNDARY

GREEN PARK VILLAGE

LICENSED WATER EXTRACTION POINTS

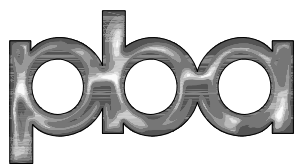
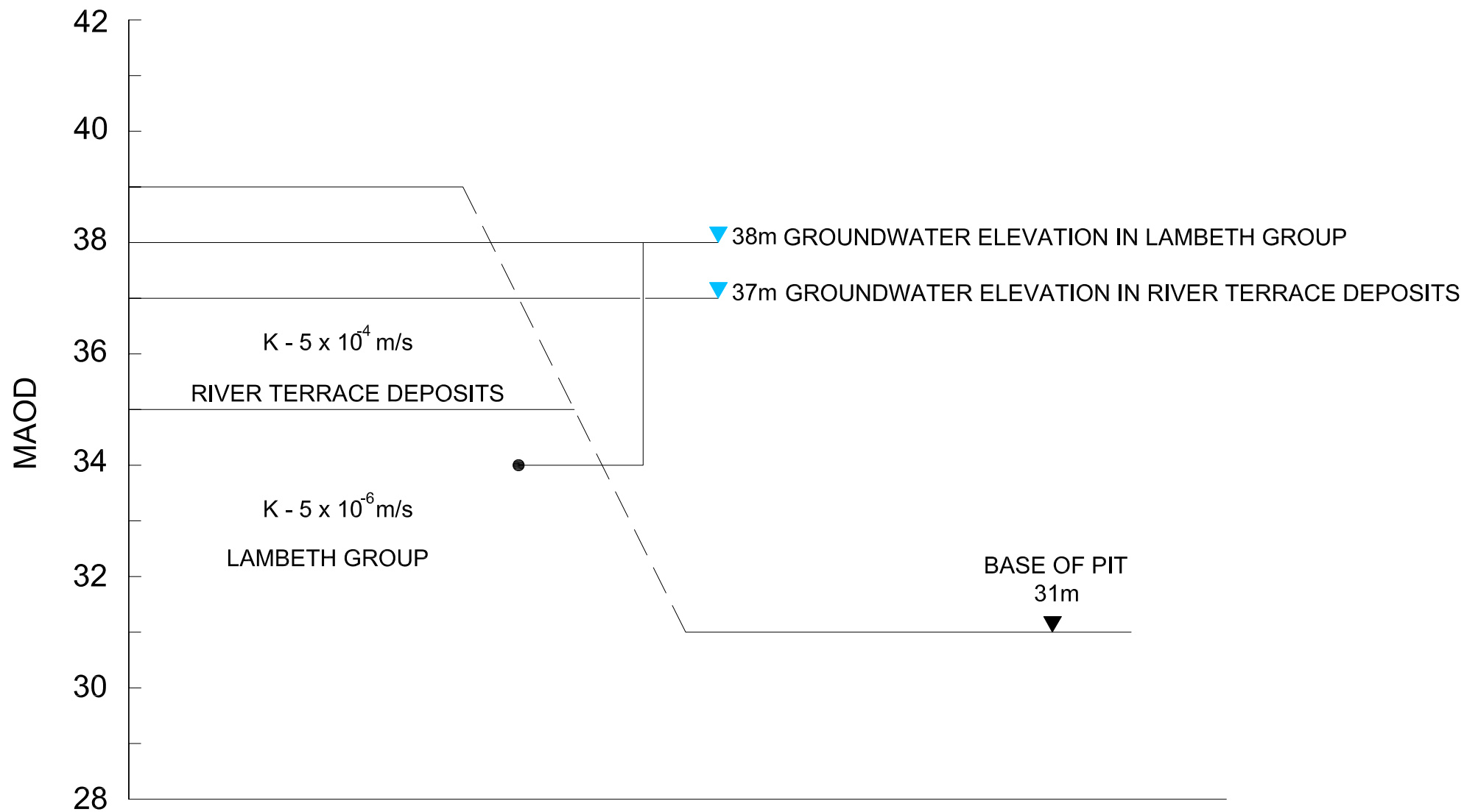
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A1 Scale	1:2500	Checked by	JG		



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GREEN PARK VILLAGE CONCEPTUAL SITE MODEL

Date	JAN, 08
A4 Scale	Vertical = 1:100
Drawn	AG
Checked	JG

Figure Number

6

Page: 1

Report Title	ABSTRACTION LICENCE SUMMARY BY MANAGEMENT UNIT / REPORTING UNIT EXTERNAL USAGE
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PARAMETERS		VALUES	
Short Name		AR251R	
PARAMETERS		VALUES	
USER		GTANNER	
REPORT TYPE	DETAIL		
DESTINATION TYPE	Preview		
REQUIRED DATE FROM	11/01/2008		
MANAGEMENT UNIT	THAMES CATCHMENT		
LICENCE NO	ALL		
LICENCE HOLDER NAME	ALL		
CONDITIONS ON LICENCES	ALL		
SOURCE OF SUPPLY	ALL		
PURPOSE	ALL		
	ALL		
	ALL		
RANGE SEARCH BY ANNUAL QTY	NONE DEFINED		
RANGE SEARCH BY DAILY QTY	NONE DEFINED		
RADIAL SEARCH	NGR SU 695 701	, DISTANCE 1.1 km	
SQUARE SEARCH	NONE DEFINED		

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Date: 11/01/2008
Time: 14:24:17

NALD - Thames Region
ABSTRACTION LICENCE SUMMARY BY MANAGEMENT UNIT / REPORTING UNIT

Page: 2

Licence No: 28/39/22/0232

Orig Application: WRS/472

Expiry Date:
Revoked Date:
Lapsed Date:

Issue No
100

Incr No
0

Status
CURR

Effective Start
10/03/1969

Effective End

Returns Req? Y

Chargeable?
Y

Licence Holder

MR D J B HEWISON
HARTLEY COURT FARM
THREE MILE CROSS
READING
BERKSHIRE
RG7 1NH

Licence Type : Licence Of Right

Water Act '03

Lic Type : Full Licence (>=28 Days)

Source : THAMES SURFACE WATER - NON TIDAL
Multiple Lh? : N

Purpose: Agriculture - General Agriculture

Spray Irrigation - Direct

Abs Period Start: 1/4

Abs Period End: 30/9

Time Ltd Start:

Time Ltd End:

Annual Qty:

Daily Qty:

Hourly Qty:

Inst Qty:

18184 m3
681.91 m3
56.83 m3
1/s

Usability: Legal
Usability: Legal
Usability: Legal

Conditions Exist: No
Agreements Exist: Yes

Local Name

FOUDRY BROOK AT HARTLEY COURT FARM

NGR1: SU 702 686 1.7km NGR2: SU 702 695

BURGHFIELD BROOK AT HARTLEY COURT FARM

NGR1: SU 695 688 1.3km NGR2: SU 700 692

Primary Type
Surfacewater

NGR3:

0.9km

Secondary Type
River / Stream

NGR4:

River / Stream

Category
Reach

NGR4:

River / Stream

Reach

Date: 11/01/2008
Time: 14:24:17

NALD - Thames Region
ABSTRACTION LICENCE SUMMARY BY MANAGEMENT UNIT / REPORTING UNIT

Page: 3

Licence No: 28/39/22/0463

Orig Application: WR/G/855

Expiry Date:
Revoked Date:
Lapsed Date:

Issue No	Incr No	Status	Effective Start	Effective End	Returns Req?	Chargeable?
101	0	CURR	10/09/1999		Y	Y

Licence Holder

633 KENNET VALLEY PARK LTD
650 PINGMEAD HOUSE
PINGWOOD BUSINESS ESTATE
READING
BERKSHIRE
RG30 3UR

Licence Type : Ordinary Licence
Water Act '03
Lic Type : Full Licence (>=28 Days)

Source : THAMES GROUNDWATER
Multiple Lh? : N

Purpose: Agriculture - General Agriculture
General Farming & Domestic

Abs Period Start:1/1 Abs Period End: 31/12 Time Ltd Start: Time Ltd End:

Annual Qty:	6819 m3	Usability:	Legal
Daily Qty:	22.73 m3	Usability:	Legal
Hourly Qty:	2.73 m3	Usability:	Legal
Inst Qty:	.76 l/s	Usability:	Legal

Conditions Exist: Yes
Agreements Exist: No

Local Name

PINGWOOD BUSINESS ESTATE, SMALLMEAD ROAD, READING
NGR1:SU 6990 7018 0.4km NGR2:

Primary Type
Groundwater
NGR3:

Secondary Type
Borehole
NGR4:
Category
Single Point

Purpose: Water Supply - Private Water Undertaking

Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household
Abs Period Start:1/1 Abs Period End: 31/12 Time Ltd Start:

Annual Qty:	6819 m3	Usability:	Legal
Daily Qty:	22.73 m3	Usability:	Legal
Hourly Qty:	2.73 m3	Usability:	Legal
Inst Qty:	.76 l/s	Usability:	Legal

Conditions Exist: Yes
Agreements Exist: No

Local Name

PINGWOOD BUSINESS ESTATE, SMALLMEAD ROAD, READING
NGR1:SU 6990 7018 0.4km NGR2:

Primary Type
Groundwater
NGR3:

Secondary Type
Borehole
NGR4:
Category
Single Point

Licence No: 28/39/22/0578 Orig Application: WRA/6539 Expiry Date: 30/06/2008
Revoked Date:
Lapsed Date:

Issue No	Incr No	Status	Effective Start	Effective End	Returns Req?	Chargeable?
100	0	CURR	08/06/1998		Y	Y

Licence Holder
1381 READING FOOTBALL CLUB PLC
2397 MADEJSKI STADIUM
OFF JUNCTION 11 M4
READING
BERKSHIRE
RG2 0FL

Licence Type : Ordinary Licence
Water Act '03
Lic Type : Full Licence (>=28 Days)

Source : THAMES GROUNDWATER
Multiple Lh? : N

Purpose: Environmental - Pump & Treat
General Use Relating To Secondary Category (Low Loss)

Abs Period Start:1/1	Abs Period End: 31/12	Time Ltd Start:	Time Ltd End:
Annual Qty:	189734.4 m3	Usability: Legal	Conditions Exist: No
Daily Qty:	518.4 m3	Usability: Legal	Agreements Exist: No
Hourly Qty:	21.6 m3	Usability: Legal	
Inst Qty:	6 l/s	Usability: Legal	

Local Name	Primary Type	Secondary Type	Category
MADEJSKI STADIUM WELLPOINTS	Groundwater	Wellpoints	Area
NGR1:SU 7052 6990 1.0km	NGR2:SU 7095 7022 1.5km	NGR3:SU 7093 6957 1.5km	NGR4:SU 7024 6955 0.9 km

* END OF REPORT *

Report Title ABSTRACTION LICENCE SUMMARY BY MANAGEMENT UNIT / REPORTING UNIT
Short Name AR251R

REPORT SUMMARY

Report Summary for report Date : 11/01/2008

Total Number of Licences	Sum of Hourly Quantities	Sum of Daily Quantities	Sum of Annual Quantities
3	83.890 m3	1245.770 m3	221556.400 m3