

**E10/003
BATH & WEST SHOWGROUND,
SHEPTON MALLET**

**ENVIRONMENTAL DESK STUDY
AT ROYAL BATH AND WEST
SHOWGROUND,
SHEPTON MALLET,
FOR
LONDON AND WHARFEDALE LIMITED.**

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Issued by: Giles Learman

Revision: Final

Date: 13 April 2010

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SUMMARY

This presents the salient points of the report and should not be referred to in isolation.

Instruction	In March 2010 Rodgers Leask Environmental Ltd (RLE) were commissioned by London & Wharfedale Limited to compile an Environmental Desk Study to inform the Planning Framework for the enhancement and improvement of facilities at the Royal Bath and West Showground, Shepton Mallet.
Site Location & Description	<p>The site is located adjacent to the southern edge of the village of Prestleigh, which is some 2 miles southeast of Shepton Mallet, Somerset. The site centre grid reference is: 363247E, 139700N.</p> <p>The site covers an area of approximately 91 Ha and is irregular in shape.</p>
History	<p>The earliest records from 1887 show the site to be occupied by fields, the existing watercourse and two quarries and associated lime kilns. Significant changes occurred between 1903 and 1931, when the largest of the quarries was backfilled, and between 1951 and 1971 when the current showground was constructed.</p> <p>In the immediate environs of the site, agricultural land dominates. Prestleigh village is adjacent the northeastern corner and several farms are present, the nearest being directly adjacent the southern boundary (Lower Bagborough Farm).</p>
Radon	The site is not within an area requiring radon protection measures as indicated by the BRE publication, Radon: Guidance on protective measures for new dwellings, 1999.
Geology	<p>No superficial deposits are shown on British Geological Survey mapping to be present on the site.</p> <p>The site is underlain by the Langport Member of the Blue Lias Formation and Charmouth Mudstone Formation. This typically comprises interbedded limestone and mudstone.</p>
Mining	<p>The Coal Authorities Gazetteer for England and Wales indicates that the site is not in an area affected by coal mining activities.</p> <p>The likelihood of non-coal mineral related shallow workings being present is negligible.</p>
Hydrogeology	The solid strata underlying the site has an aquifer classification of Secondary A. This is defined as being strata with permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

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1.00 INTRODUCTION

Terms of Reference

1.01 In March 2010 Rodgers Leask Environmental Ltd (RLE) were commissioned by London & Wharfedale Limited to compile an Environmental Desk Study to inform the Planning Framework for the enhancement and improvement of facilities at the Royal Bath and West Showground, Shepton Mallet, henceforth referred to as 'the site'.

Proposed Development

1.02 It is proposed to improve the facilities of the existing site use but also generate further benefits to the local economy. It is suggested that the proposed improvements to the site could comprise:

- A conference centre;
- Employment/commercial land to provide permanent on-site premises for new and existing rural businesses;
- Rural and outdoor-living specialist retail;
- Hotel space providing on-site hospitality facilities for Showground visitors; and
- A new Eco and Renewable Energy Zone including a solar energy generation facility, visitor centre and wetland habitat.

1.03 An indicative plan showing the above site areas forms Appendix A.

Objective

1.04 The objectives of the investigation were to:

- Assess the suitability of the site for the proposed improvement development, taking into account the potential ground conditions.
- Develop a Conceptual Site Model to assist in the assessment of potential contamination issues and design of future intrusive investigation works.

Scope

1.05 In order to achieve the outlined objectives the scope of the study encompassed:

- A walkover survey.

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- A desk study, including examination of: historic mapping, local geology, mains services, and local and regulatory authority information.
- Production of a conceptual model.
- Provide recommendations for intrusive Geo-environmental assessment works.

Pernicious Plants

- 1.06** No assessment has been made for the presence of pernicious plant species e.g. Japanese Knotweed, Giant Hogweed, within the remit of this investigation. However Japanese knotweed was not noted on the site.

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2.00 SITE LOCATION AND DESCRIPTION

Site Location

- 2.01** The site is located adjacent to the southern edge of the village of Prestleigh, which is some 2 miles southeast of Shepton Mallet, Somerset. The site centre grid reference is: 363247E, 139700N.

Site Description and Walkover Features

- 2.02** The site covers an area of approximately 91 Ha and is irregular in shape.
- 2.03** The slope of the site falls from the northwest to southeast, approximately 50m over 1600m in distance.
- 2.04** The main access to the site is gained off the A371, which runs the length of the eastern site boundary.
- 2.05** The site essentially comprises the Royal Bath and West Showground, which is comprised of numerous building sheds, offices and open ground, with an associated grid of roadways forming blocks of land and hedgerows. In summary the main site features are:
1. A centrally located main show ring and associated spectators stand; a secondary show ring is present on the east boundary.
 2. A cluster of animal sheds to the southwest of the main ring, but also centrally located.
 3. The Royal Society offices adjacent to the main ring to the southeast.
 4. A watercourse that flows into the site midway from the eastern boundary to the central area before doglegging to flow in a southerly direction and out of the site. An online feature lake is present in the southern portion of the site along with several weirs and a foul water pumping station that is located on the southern edge of the lake.
- 2.06** A site features plan, including topographical levels, and photograph locations forms Appendix B. Site photographs are contained within Appendix C.

Surrounding Area

- 2.07** The land beyond the site boundaries generally consists of fields but also the following features:
- Prestleigh village adjacent the site to the northeast.
 - The A371 to the north and running adjacent to the eastern boundary. A junction between the A371 and Prestliegh Road, which continues

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eastwards, is located adjacent to the north section of the eastern boundary.

- Waterside Farm and Wayside Farm to the east.
- Lower Bagborough Cottages, Bagborough Lane and Lower Bagborough Farm to the south.
- Bagborough Lane and Upper Bagborough Farm to the west.
- A lake approximately 25m to the southeast. The watercourse that crosses through the site flows into this lake.

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3.00 HISTORICAL REVIEW

- 3.01 Historical plans have been obtained via an Emapsite Report in order to obtain information on the site.
- 3.02 Ordnance Survey Maps at various scales have been obtained and are listed below. Copies of a range of these maps are contained in Appendix D.

Scale	Date
1:2500	1886, 1904, 1930, 1971, 1983, 1995, 1997, 2009
1:10560	1884-1885, 1902, 1931, 1956
1:10000	1971-1973, 1992, 2002, 2009

Historical Usage

- 3.03 A summary of the historical features is as follows:

Map Date	Site Feature	Adjacent Features
1884 - 1885	<p>The site is generally shown as agricultural fields, with several footpaths transecting the site. In addition the following features are shown:</p> <ul style="list-style-type: none"> The existing southerly flowing water course enters the site from the east and its course is similar to the existing course. A quarry and lime kilns are shown adjacent to the junction of the A371 and Prestleigh Road. A further kiln is shown on the southern tip of the site. A wood is shown in the south-western corner of the site. Evidence of small scale quarrying on the northern site boundary is shown. 	<p>The areas adjacent to the site are generally shown as agricultural fields. In addition the following features are shown:</p> <ul style="list-style-type: none"> The existing A371 along the eastern edge of the site and Bagborough Lane along the southern/south-western edge of the site are shown. Prestleigh village to the northeast. Adjacent buildings include dwellings, a public house and Chapel. Lower Bagborough Farm adjacent to the southwest. Higher Bagborough Farm 200m to the west. A small quarry and associated lime kiln 250m to the northwest. Prestleigh Water, 200m to the east. It is assumed this feature was being fed by the adjacent water course. The approximately north-south running Somerset and Dorset Joint rail line some 200m to the east.
1902	<p>Two cottages are shown on the southern boundary. These are shown to have an associated water pump.</p>	<p>No significant changes.</p>

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Map Date	Site Feature	Adjacent Features
1902	Two cottages are shown on the southern boundary. These are shown to have an associated water pump.	No significant changes.
1931	Between 1903 and 1931 the quarry adjacent to the junction of the A371 and Prestleigh Road was backfilled, though the kiln remained.	No significant change.
1951	No significant change.	Wayside Farm is shown adjacent the site to the east, along the A371.
1971	Between 1951 and 1971 the existing showground was constructed. This also included; minor straightening works to the watercourse through the site, removal of the kiln on the southern tip of the site, removal of the wood in the south-western corner.	Further buildings and a slurry pit were constructed on Lower Bagborough Farm, which by 1971 is labelled as a piggery. Overhead electricity lines are shown some 50m to the north of the site. Prestleigh Water is shown as Waterside Farm. The rail line the east is shown as 'dismantled'.
1983	No significant change.	No significant change.
1991	The kiln adjacent to the junction of the A371 and Prestleigh Road is no longer shown.	No significant change.
1991 - 2009	No significant change.	Residential development was shown ~400m to the southwest.

3.04 A summary of historical features is included within Appendix B.

Summary

3.05 In summary, the earliest records from 1887 show the site to be occupied by fields, the existing watercourse and two quarries and associated lime kilns. Significant changes occurred between 1903 and 1931, when the largest of the quarries was backfilled, and between 1951 and 1971 when the current showground was constructed.

3.06 In the immediate environs of the site, agricultural land dominates. Prestleigh village is adjacent the northeastern corner and several farms are present, the nearest being directly adjacent the southern boundary (Lower Bagborough Farm).

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4.00 GEOLOGY, MINING, RADON AND HYDROGEOLOGICAL REVIEW

GEOLOGY

4.01 The British Geological Survey 1:50,000 Solid and Drift Map (Sheet 281) indicates the following:

Made Ground

4.02 No made ground is recorded on geological records. However an infilled quarry is known to be present adjacent to the junction of the A371 and Prestleigh Road.

Superficial Deposits

4.03 No superficial deposits are shown on British Geological Survey mapping to be present on the site.

Solid Geology

4.04 The site is underlain by the Langport Member of the Blue Lias Formation and Charmouth Mudstone Formation. This typically comprises interbedded limestone and mudstone.

Structure

4.05 No geological faults are indicated within 500m of the site.

4.06 No BGS borehole logs were available for the site itself, or immediate surroundings.

MINING HISTORY

4.07 The Coal Authorities Gazetteer for England and Wales indicates that the site is not in an area affected by coal mining activities.

4.08 The likelihood of non-coal mineral related shallow workings being present is negligible.

RADON REVIEW

4.09 The site is not within an area requiring radon protection measures as indicated by the BRE publication, Radon: Guidance on protective measures for new dwellings, 1999.

HYDROGEOLOGY

4.10 The solid strata underlying the site has an aquifer classification of Secondary A. This is defined as being strata with permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some

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cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

5.00 REGULATORY REVIEW

AUTHORISATIONS AND CONSENTS

5.01 Data regarding Environment Agency and Local Authority authorisations and consents has been obtained via a GroundSure EnviroInsight site search, a copy of this report is contained within Appendix E. The report contains factual information which is produced from a database of records which have been obtained from various sources including; Local Authorities, Environment Agency, National Radiological Protection Board, English Nature. Only the information considered pertinent to the site has been included in this report.

Discharges to Water

5.02 There are no discharge consents registered to the site itself.

5.03 There are 10 discharge consents between 0 and 250m of the site; 4 of these are for soakaways and the remainder comprise:

Operator	Distance from Site (m)	Direction	Discharge Type	Receiving Water	Status
2 & 3 Ivythorne Cottages, Prestleigh	0-9	East	Sewage: final/treated	Tributary of the River Alham	Current
Prestleigh Inn	9	East	Sewage: final/treated	Tributary of the River Alham	Current
Aylesbury Muscovy Magpie Lodges	62	Northeast	Sewage: final/treated	Freshwater Lake	Current
Evergreen House, Prestleigh Lane	137	East	Sewage: final/treated	Watercourse	Current
Waterside Farm, Prestleigh	150	East	Sewage: final/treated	Prestleigh Water	Current

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Pollution Incidents

5.04 There are two records of pollution incidents for the site itself.

Pollutant	Year	Receptor	Severity
Food and Drink	2002	Water	Minor Incident
		Land Impact	No impact
		Air Impact	No Impact
Gas and Fuel Oils	2002	Water	No Impact
		Land Impact	No impact
		Air Impact	No Impact

5.05 There is one incident 12m east of the site, comprising:

Pollutant	Year	Receptor	Severity
Hydraulic Oils	2002	Water	No impact
		Land Impact	Minor Incident
		Air Impact	No Impact

Landfills

5.06 There no recorded landfills within 250m of the site.

Water Abstractions

5.07 There are no groundwater abstractions licensed by the Environment Agency under the Water Resources Act 1991 on the site. Three groundwater abstractions are present within 1000m of the site. These are as follows:

License No.	Distance from Site (m)	Direction	NGR	Use	Source	Status
16/52/009/G/011	359	East	363800, 140400	Farming & domestic	Spring, Doulting	Current
16/52/009/G/072	720	Northeast	364200, 141000	Farming & domestic	Spring, Doulting	Current
16/52/002/G/062	845	Southwest	362600, 138400	Farming & domestic	Well, North Cadbury	Current

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5.08 There is one on-site surface water abstraction license and one within 250m. The details are as follows:

License No.	Distance from Site (m)	Direction	NGR	Use	Source	Status
16/52/009/S/126	0	On-site	363400, 139700	Spray Irrigation	Stream	Current
16/52/009/S/127	91	East	363700, 139200	General Use	Stream	Current

Source Protection Zones

5.09 The site is not within, or within 2000m of a groundwater Source Protection Zone (SPZ).

Main Rivers

5.10 There are no Main Rivers within 500m of the site.

Hydrology

5.11 The nearest surface water feature is located the on-site stream and lake.

5.12 There are several small ponds located on the site.

Fluvial Floodplain

5.13 The site is not recorded as being within a fluvial indicative flood zone as recorded by the Environment Agency.

Current Industrial Data

5.14 The following are listed as potentially contaminative industrial on-site land uses:

- Mendip Community Transport – Vehicle Hire and Rental.
- Telephone Exchange.
- Electrical Sub-Station.
- Farmhouse Cheesemakers Ltd.

6.00 SITE CONCEPTUAL MODEL

- 6.01 This section provides a qualitative risk assessment of the risk posed from potential on and off-site contamination sources, identified by the information presented in the previous sections.
- 6.02 The conceptual model below has been developed based on the commonly adopted source-pathway-receptor model as recommended within CLR11 Model Procedures for the Management of Land Contamination.'

Potential Sources of Soil Contamination related to the sites past and current use

On-site

- 6.03 The past usage of the site as agricultural land and more recently as a showground is not listed within the DEFRA Publication CLR 8 'Potential Contaminants for the Assessment of Land'. The risk that contamination would be present on the site would therefore be generally considered low.
- 6.04 Notwithstanding the above it is considered that the infilled quarry and former lime kilns present potential areas of localised contamination and should be targeted as part of an intrusive investigation. Potential contaminants in these areas are heavy metals and poly aromatic hydrocarbons (PAH's), both are commonly associated with ash.
- 6.05 The infilled quarry presents a potential source of ground gas generation and should be investigated as part of an intrusive investigation. At this stage, based on the quarry having been filled prior to 1931, it is considered that the generation potential of the source/s is likely to be low. CIRIA C665 'Assessing risks posed by hazardous ground gasses to buildings' recommends that a minimum of 6 gas monitoring visits carried out over 3 months is necessary to establish the gassing regime of the site.
- 6.06 The quarry shown adjacent to the northern site boundary was not shown to be infilled.

Off-site

- 6.07 There are no past uses in the vicinity that are considered likely to present a tangible risk to the site
- 6.08 There are no landfills which may act as a potential source of gas within 250m of the site.

Potential Receptors

- 6.09 Based on the proposed development the following are considered to be potential receptors for contamination:

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Receptor	
Human Health	Future site users
	Construction workers
Controlled Waters	On-site water course and connected on-site and downstream lakes
	Secondary A aquifer
Other	Neighbouring buildings
	Underground structures
	Flora and fauna

Potential Pathways

6.10 With regard to the assessment of risk to human health, the following pathways are considered to be potential exposure routes based on the proposed end uses:

- Dermal contact.
- Direct ingestion of soil.
- Inhalation and Ingestion of soil dust.
- Ingestion of contaminated water via plastic pipes.

6.11 With regard to Controlled Waters, the following pathways are considered applicable:

- Downward infiltration through soils and bedrock.
- Lateral migration through soils and bedrock into the on-site water course.
- Newly created preferential pathways associated with the redevelopment of the site e.g. deep boreholes/piles/sewers.

Pollutant linkages

6.12 Based on the information above, the following potential pollutant linkages are considered applicable to the site:

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Pollutant Linkage	Source	Pathway	Receptor	Assessment Needed to Confirm Linkage
1	Contaminated Soils	Ingestion of soil, dermal contact, inhalation of dust, ingestion of any produce / vegetables grown on site.	Humans – end users	Non targeted intrusive investigation and testing of soil samples for a general suite of common contaminants. Targeted intrusive investigation around infilled quarry and lime kilns and testing of soil samples for a general suite of common contaminants (including speciated PAHs)
2	Contaminated Water Supplies	Ingestion of water, Migration of contaminants into plastic pipes	Humans – end users	As above
3	Contaminated Soils	Ingestion of soil, Dermal contact; Inhalation of dust.	Construction workers	As above
4	Contaminated Soils	Inhalation of soil dust	Members of the public adjacent to the site during construction	As above
5	Putrescible Soils	Ingress of asphyxiant or explosive gasses into confined spaces	Humans – end users Construction Workers	Gas Monitoring (See 6.05 above)
6	Contaminated Soils and Groundwater	Leaching to groundwater	Underlying Secondary A Aquifer	Non targeted intrusive investigation and leachate testing of soil samples, and/or ground water samples, for a general suite of common contaminants. Targeted intrusive investigation around infilled quarry and lime kilns and leachate testing of soil samples, and/or ground water samples, for a general suite of common contaminants

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Pollutant Linkage	Source	Pathway	Receptor	Assessment Needed to Confirm Linkage
				(including speciated PAHs)
7	Contaminated Soils and Groundwater	Leaching and groundwater flow to surface water	On-site water course and connected on-site and downstream lakes	As above
8	Contaminated Soils	Leaching of sulphate and corrosive contaminants	Buried structures/concrete, services	Non targeted intrusive investigation and testing of soil samples for a general suite of common contaminants. Targeted intrusive investigation around infilled quarry and lime kilns and testing of soil samples for a general suite of common contaminants (including speciated PAHs)
9	Contaminated Soils	Uptake of available phytotoxic contaminants	Flora & Fauna	Non targeted intrusive investigation and testing of soil samples for a general suite of common contaminants. Targeted intrusive investigation around infilled quarry and lime kilns and testing of soil samples for a general suite of common contaminants (including speciated PAHs)

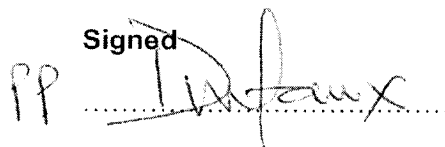
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7.00 CONCLUSIONS AND RECOMMENDATIONS

- 7.01 The published geological mapping for the site indicates that no made ground or superficial deposits are recorded, though localised areas of made ground associated with the development of the current site use and historical quarrying and quicklime production activities can be anticipated. The solid geology comprises the Langport Member of the Blue Lias Formation and Charmouth Mudstone Formation. It is possible that a thin weathered horizon of clayey material exists above rock head. In light of this it is anticipated that trenchfill foundations will be generally appropriate for lightly loaded buildings. Other foundation solutions may be necessary in the infilled quarry area.
- 7.02 Based on the likely presence of limestone it is possible that the use of soakaways may be feasible for surface water drainage. This should be investigated through trial pitting and soakaway testing if appropriate ground is encountered in the trial pits.
- 7.03 Based on the findings of the conceptual model it is considered that the potential for significant contamination on the site is low. Potential areas of contamination are:
- Infilled quarry.
 - Lime kilns.
- 7.04 In order to confirm the ground conditions, refine the conceptual site model of the site and confirm the contamination risks it is considered that an intrusive Geo-environmental Investigation should be undertaken.

For and behalf of

RODGERS LEASK ENVIRONMENTAL LIMITED

Signed
PP 

Date
14 April 2010