WYG Environment
part of the WYG group

Birmingham City University

City Centre Campus Phases 2 and 3

Archaeology and Heritage Desk-Based Assessment

May 2012

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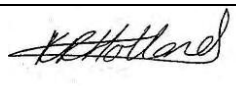
Document Control

Project:	City Centre Campus Phases 2 and 3
Client:	Birmingham City University
Job Number:	A071774
File Origin:	N:\Projects\A071000-A071999\A071774\reports\Archaeology DBA_v3.doc

Document Checking:

Prepared by:	Kirsten Holland Principal Archaeologist	Signed:	
Checked by:	Peter Harrison Regional Director	Signed:	
Verified by:	Peter Harrison Regional Director	Signed:	

Issue	Date	Status
0	April 2012	Draft
1	April 2012	Final
2	May 2012	Final following planning comments
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1.0 Introduction

This Archaeological and Heritage Desk-Based Assessment has been prepared by Kirsten Holland, Principal Archaeologist, WYG on behalf of Birmingham City University to accompany a planning application for the Birmingham City University Phase 2 and 3 development.

1.1 Aims and Objectives

In accordance with the Institute for Archaeologists (IfA) standard definition of a desk-based assessment (Standard and Guidance for Desk-Based Assessment, Operational Draft, 2011):

> Desk-based assessment will determine, as far as is reasonably possible from existing records, the nature, extent and significance of the historic environment within a specified area. Desk-based assessment will be undertaken using appropriate methods and practices which satisfy the stated aims of the project, and which comply with the Code of conduct, Code of approved practice for the regulation of contractual arrangements in field archaeology, and other relevant by-laws of the IfA. In a development context desk-based assessment will establish the impact of the proposed development on the significance of the historic environment (or will identify the need for further evaluation to do so), and will enable reasoned proposals and decisions to be made whether to mitigate, offset or accept without further intervention that impact.

This study examines the cultural heritage potential of the proposed development site and the surrounding area. The aim of the study is to:

- Identify recorded cultural heritage sites within the site boundary.
- Identify the potential for previously unrecorded sites to be present within the site.
- Identify potential impacts and mitigation strategies where appropriate.
- Make recommendations for further work where required.

Cultural heritage within this context includes all buried and upstanding archaeological remains, built heritage sites, historic landscapes and any other features that contribute to the archaeological and historic interest of the area.

This baseline assessment considers the cultural heritage potential within the site itself, the surrounding area and wider local and regional context. This assessment does not attempt to plot and review every archaeological find and monument; rather it aims to examine the distribution of evidence and to use this to predict the archaeological potential of the study area and the likely significance of the development proposals on those remains.

2.0 Site and Development Description

The development site is located within the city centre of Birmingham. The site is centred on SP 08075 87270 and lies approximately 115m above the Ordnance Datum. A site location plan can be seen in Appendix A.

The site that is the subject of this assessment extends to approximately 1.5 hectares. The site is set to the east of Millennium Point science museum and car park and to the north of the railway line. The development site comprises of two pieces of land either side of Penn Street bounded by the canal to the east, Curzon Street to the south, Cardigan Street to the west and Gopsal Street to the north. There are a number of buildings situated within the site boundary. The boundary of the site is illustrated on the site plan in Appendix A. Photographs of the site can be found in Appendix B.

The proposed development comprises new library, lecture theatre, restaurant and social areas. The building will have an entrance from Cardigan Street. The building will incorporate the Eagle and Ball Public House (currently called the Moby Dick). The effects on the public house building are dealt with in a separate report (Associated Architects 2012). The building will be constructed on a reinforced concrete frame situated on piled foundations. There will be a requirement for cut to the northern area of the development building footprint and fill, to the south of the development building footprint to accommodate the natural slope of the ground.

3.0 Methodology

3.1 Assessment Methodology

Impact assessment has been carried out through the consideration of baseline conditions in relation to the elements of the scheme that could cause cultural heritage impacts. Baseline conditions are defined as the existing environmental conditions and in applicable cases, the conditions that would develop in the future without the scheme. In accordance with best practice this report assumes that the scheme will be

constructed, although the use of the word 'will' in the text should not be taken to mean that implementation of the scheme is certain.

No standard method of evaluation and assessment is provided for the assessment of impact significance upon cultural heritage, therefore a set of evaluation and assessment criteria have been developed using a combination of the Secretary of State's criteria for Scheduling Monuments (Scheduled Monument Statement, Annex 1), Design Manual for Roads and Bridges, Volume 11, Part 3, Section 2, HA 208/07 and Transport Analysis Guidance (TAG Unit 3.3.9, Heritage of Historic Resources Sub-Objective). Professional judgment is used in conjunction with these criteria to undertake the impact assessment. The full assessment methodology can be seen in Appendix C.

3.2 Sources Consulted

A study area of approximately 500m radius centred on the development site (SP 08075 87270) has been examined to assess the nature of the surrounding cultural heritage sites and place the recorded sites within their context.

This study has taken into consideration the historical and archaeological background of the proposed development area. The sources consulted were:

- Birmingham Historic Environment Record (HER);
- English Heritage and Local Planning Authority for designated sites;
- Historic mapping;
- Birmingham Central Library;
- Birmingham Archives; and
- Appropriate documentary sources and archaeological journals.

A site walkover survey was undertaken on 24th February 2012 to assess the site for previously unrecorded heritage remains and suitability for potential evaluation and mitigation measures.

Consultation was undertaken with the Birmingham Historic Environment Record, English Heritage and the Birmingham Record Office for the provision of data for this report.

4.0 Legislation and Planning Policy Context

4.1 Ancient Monuments and Archaeological Areas Act 1979

Scheduled Monuments are designated by the Secretary of State for Culture, Media and Sport on the advice of English Heritage as selective examples of nationally important archaeological remains. Under the terms of Part 1 Section 2 of the Ancient Monuments and Archaeological Areas Act 1979 it is an offence to damage, disturb or alter a Scheduled Monument either above or below ground without first obtaining permission from the Secretary of State. This Act does not allow for the protection of the setting of Scheduled Monuments.

4.2 Planning (Listed Buildings and Conservation Areas) Act 1990

The Act outlines the provisions for designation, control of works and enforcement measures relating to Listed Buildings and Conservation Areas. Section 66 of the Act states that the planning authority must have special regard to the desirability of preserving the setting of any Listed Building that may be affected by the grant of planning permission. Section 72 states that special attention shall be paid to the desirability of preserving or enhancing the character or appearance of Conservation Areas.

4.3 National Planning Policy Framework 2012

The National Planning Policy Framework (NPPF) sets out the Government's national planning policies including those on the conservation of the historic environment. The NPPF covers all aspects of the historic environment and heritage assets including designated assets (World Heritage Sites, Scheduled Monuments, Listed Buildings, Protected Wreck Sites, Conservation Areas, Registered Parks and Gardens and Registered Battlefields) and non-designated assets. The NPPF draws attention to the benefits that conserving the historic environment can bring to the wider objectives of the NPPF in relation to sustainability, economic benefits and place-making (para 126).

The NPPF states that the significance of heritage assets (including their settings) should be identified, described and the impact of the proposal on the significance of the asset should be assessed. The planning application should include sufficient information to enable the impact of proposals on significance to be assessed and thus where desk-based research is insufficient to assess the interest, field evaluation may also be required. The NPPF identifies that the requirements for assessment and mitigation of impacts on heritage assets should be proportional to their significance and the potential impact (para 128).

The NPPF sets out the approach local authorities should adopt in assessing development proposals within the context of applications for development of both designated and non-designated assets. Great weight should be given to the conservation of designated heritage assets and harm or loss to significance through alteration or destruction should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional (para 132). Additional guidance is given on the consideration of elements within World Heritage Sites and Conservation Areas (para 138).

Where there is substantial harm to or total loss of significance of a designated heritage asset a number of criteria must be met alongside achieving substantial public benefits (para 133). Where there is less than substantial harm the harm should be weighted against the public benefits of the development (para 134). Balanced judgements should be made when weighing applications that affect non-designated heritage assets (para 134). The NPPF also makes provision to allow enabling development (para 140) and allowing development which enhances World Heritage Sites and Conservation Areas (para 127)

Where loss of significance as a result of development is considered justified, the NPPF includes provision to allow for the recording and advancing understanding of the asset before it is lost in a manner proportionate to the importance and impact. The results of these investigations and the archive should be made publically accessible. The ability to record evidence should not however be a factor in deciding whether loss should be permitted (para 141).

4.4 Local Policy and Guidance

The Draft Core Strategy for Birmingham

The Draft Core Strategy for Birmingham is being developed to set out a clear spatial framework for the growth of Birmingham up to 2026. The Draft document (March 2011) has closed for consultation. Once finalised it will be the principal strategic planning policy document within The Birmingham Plan, the city's Local Development Framework. The Core Strategy also outlines and seeks to assist the City Council to meet its vision and key themes and objectives as set out in the City Council's Sustainable Community Strategy. One of its main objectives is to protect and enhance the city's heritage and historic environments. The draft Core Strategy includes one policy relevant to heritage:

- Policy SP50 - Archaeology and the Historic Environment

The full text of the policy can be seen in Appendix D.

The Birmingham Unitary Development Plan

The Birmingham Unitary Development Plan was adopted in 2005 and a number of policies were "saved" by the Secretary of State in 2010 in lieu of the forthcoming publication of the Local Development Framework for Birmingham City Council. The plan contains nine policies relevant to the development and heritage:

- 3.20-3.24: Conservation of the built environment;
- 3.25: Listed Buildings;
- 3.26: The local list of buildings of local architectural interest;
- 3.27-3.28: Conservation Areas;
- 3.29: Historic landscapes;
- 3.30-3.33: Archaeology; and
- 8.36 Development Affecting Archaeological Remains.

The full text of the relevant policies can be seen in Appendix D.

Archaeology Strategy Supplementary Planning Guidance, 2004

Birmingham City Council have adopted their Archaeology Strategy (February 2004) as Supplementary Planning Guidance. The Strategy includes six policies relevant to this development and heritage:

- Policy 7 Professional standards;
- Policy 8 Assessment and evaluation;
- Policy 12 Preservation in situ and preservation by record;
- Policy 13 Post-excavation analysis and publication;
- Policy 14: Archaeological remains in the city centre; and
- Policy 15 Archaeological remains in built up areas outside of the city centre.

The full text of the relevant policies can be seen in Appendix D.

Warwick Bar Conservation Area, Supplementary Planning Policies, 2008

The Warwick Bar Supplementary Planning Policies largely relate to controls over development within the Conservation Area which cover details including protection of the existing environment, location of new development, street frontages, architectural design and public realm. The policies include one which is specifically relevant to this development, the full text of which can be seen in Appendix D:

- Development within the Conservation Area Setting.

5.0 Baseline Data

5.1 Designated Sites

There are no World Heritage Sites, Scheduled Monuments, Registered Parks and Gardens or Registered Battlefields within the study area.

There are eleven Listed Buildings and sixteen Locally Listed Buildings within the study area. These are detailed in Appendix E and their locations can be seen on Figure 2. There is one Grade I Listed Building, Curzon Street Railway Station (7906) and one Grade II* Listed Building, the Gun Barrel Proof House (8619). The remaining Listed Buildings are all Grade II. The majority of buildings relate to the industrial heritage of the area, alongside buildings relating to the associated leisure such as public baths and public houses.

The Eagle and Ball Public House (69968, currently Moby Dick) on Penn Street is a Grade II Listed Buildings within the development boundary. The Listed Building will be incorporated into the new building and has been the subject of a separate detailed report (Associated Architects, 2012). This report also draws on the previous historic building survey undertaken by University of Leicester Archaeological Services (ULAS, 2008).

There is no detailed information on the Locally Listed Buildings. The buildings are recorded in Appendix E and their locations can be seen on Figure 2. There are two Grade A Buildings, the CWS Engineering Works on Belmont Row to the north of the site (35) and Moriarty Public House to the east of the site (225). There are nine Grade B Buildings and five Grade C Buildings. The Local Listing criteria are outlined below.

- Grade A - These are buildings which are of statutory list quality and will be referred to the Secretary of State if they are threatened with demolition or unsympathetic alterations. A Building Preservation Notice can be served if the building is imminently threatened.
- Grade B - Grade B buildings, structures or features are important in the city wide context, or make a significant contribution to the local environment. Positive efforts will always be made to retain them.
- Grade C - These are of local historic significance and worthy of retention.

The locally Listed Ashted Locks on the canal abuts the development site boundary (20) and 34 Belmont Row (34) is located to the north of the development site boundary. The majority of the remaining buildings in the study area are related to the industrial development of the area or the canalside.

There is one Conservation Area within the study area. This is the Warwick Bar Conservation Area. The conservation area contains the most complete canalside quarter in Birmingham. Its significance derives from a concentration of surviving canal structures, including basins, locks and wharves, together with a wide range of historic canal related warehousing and works. The area reflects the importance of the canal system in the growth and development of Birmingham trade and industry from the late eighteenth to the mid-twentieth century and the city history as a focus of the waterways (BCC, 2008).

5.2 Archaeological and Historic Background

The Historic Environment Record holds details for twenty-nine recorded heritage sites within the study area (excluding designated sites). Details of the sites can be seen in Appendix F and their locations can be seen on Figure 3. Bracketed numbers within the text refer to the identifier in the Appendix F table and Figure 3.

5.2.1 Prehistoric (up to 43AD)

In general, until recently evidence of early prehistoric activity, Palaeolithic and Mesolithic, is relatively sparse. Within the wider region of the West Midlands evidence mainly takes the form of lithic finds from sand and gravel quarries, and from within river terraces (Buteax & Lang 2002, 7 & 9). Recent work however on a number of research projects and infrastructure projects (e.g. M6 toll road) has altered this picture with the discovery of a greater density of sites, particularly of the Bronze Age and Iron Age periods (Hodder 2011 21).

The nature and curation of the Palaeolithic evidence formed part of a research project, 'The Shotton Project: A Midlands Palaeolithic Network' with the aim of fostering a better understanding of the material and in its identification (Buteux 2003 cited in Buteax & Lang 2002, 13). A number of handaxes have been found across the area including Saltley and Erdington (Hodder 2011, 21). Mesolithic activity is evidenced by collections of lithics found close to streams and lithics dating from the Neolithic have also been recovered throughout the wider area including through systematic surveys of the area to the east of Sutton Coldfield (Hodder 2011, 25). Palaeoenvironmental evidence has been gathered from investigations including within the study area (MBM2492) where tree holes were covered by peaty clays. There were two worked flints of Upper Palaeolithic or Mesolithic date and the deposits were radiocarbon dated to 12,000-10,000BP (ULAS, 2009). Immediately overlying the early prehistoric deposits were remains of late post-medieval date indicating that deposits of intervening periods are likely to have been truncated.

The evidence for Bronze Age activity in the wider region is weighted towards the funerary monuments, settlement evidence proving a rarity (Garwood 2002, 1; Hurst 2011, 104). This evidence has been used to infer evidence of Middle and Late Bronze Age settlement in light of a lack of structural evidence. A number of burnt mounds have been recorded in the Birmingham area and are generally located in wetland areas close to streams. It has been suggested that these may represent indicators of domestic settlement, being located close-by on higher, drier ground (Hodder, 2011, 42).

Iron Age activity in the wider region is more pronounced than the earlier periods, with enclosed settlements (visible by means of aerial photography) and hillforts being prominent within the West Midlands (Hurst 2011, 106). Within Birmingham however the evidence for Iron Age settlement is limited to evidence of environmental conditions, a farmstead found during the M6 Toll excavations and findspots (Hodder, 2011, 45-8). Within the locality of the development site, the urban development and redevelopment has done much to mask any potential evidence of prehistoric activity.

5.2.2 Roman/Romano British (43AD to c.450AD)

The study area lies within the Iron Age tribal region of the *Corieltauvi*, an agricultural tribe centred on the East Midlands, the neighbouring *Cornovii* to the north and west of the region (Esmonde Cleary 2011, 141). There is little known about the nature of the Iron Age/Roman transition due to the paucity of the recorded evidence from both the Iron Age and the Roman periods (Guest 2002, 2). The development site is sited to the east of a Roman road running roughly north–south through modern day Birmingham between the fort at Metchley to the south and the fort and *burgi* at *Letocetum* (Wall) to the north (Ordnance Survey 1994). There is evidence of small but locally significant quantities of pottery found to the south-west of the study

area during redevelopment of the Bull Ring which indicates a possible Roman farmstead (Hodder, 2011, 70). There are no recorded sites of Roman date within the study area.

5.2.3 Early Medieval (450AD to 1066AD)

The early medieval period may be compared to the early prehistoric period in terms of its archaeological invisibility within the region. However, documentary sources and place-name evidence provides evidence for intensive settlement activity in the region at this time (Hooke 2011, 149). The area falls within the Anglo-Saxon territory of *Mercia*, being incorporated by the 8th century (Hooke 2011, 153). The settlements in the region are likely to have been single farmsteads or small hamlets (Hodder, 2011, 77). An early Saxon manor may be indicated near the Bull Ring by the location of St Martin's church within a circular churchyard and the nearby Parsonage Moat which was recorded on historic maps (Hodder, 2011, 79-80). There are no recorded sites of early medieval date within the study area.

5.2.4 Medieval Period (1066AD-c.1540AD)

The wider region is rich in natural resources. However, as Birmingham itself is not it had to rely on trade and exchange and a market was in existence by the 12th century (Shaw 2003, 1). As a result of this, Birmingham expanded outwards from a single, original settlement (*ibid.*). Archaeological evidence associated with the twelfth century town indicates that there was a moated manor house, parish church and a potential market place between them. To the south were water using industries such as tanneries and to the east in the area covered by the study area a deer park. A large ditch between these features may have been a boundary ditch or a town ditch (Hodder, 2011, 83-4).

Although the town of Birmingham grew throughout the medieval period the majority of the study area and the development remained undeveloped. It is unclear whether the development site itself formed part of the deer park. A conjectural map for 1553 constructed from surveys and documentary sources indicates that the land to the north of Curzon Street was in private ownership (probably Cowpers and others, later Jennens) and therefore was no longer part of the park by the end of the medieval period.

The only recorded sites within the study area relate to the extent of the medieval and early post-medieval settlement at Digbeth and Deritend in the south of the study area (MBM 2290) and a length of a north – south ditch or watercourse to the south-west of the study area (MBM2347). This watercourse was shown on the 1553 conjectural map. Other excavations and investigations within the study area have not identified

any medieval remains indicating that they have either been truncated by later development, or the area had very limited settlement.

5.2.5 Post-Medieval Period (c.1540AD to 1900AD) and Modern (1900AD to present)

The post-medieval period sees a growth in the exploitation of natural resources and with it the establishing of Birmingham as an industrial centre. The Birmingham industries included 'metalworking, leather tanning, boneworking, hemp and flax retting, and brick, tile and pottery manufacture' as evidenced through archaeological excavation (Hodder 2011, 133). This industrial growth of the 17th century led to the subsequent expansion of the urban centre and eventually to subsume the surrounding settlements.

Within the study are the Digbeth Branch Canal (MBM20336) was the catalyst for development. It was completed in 1790 and runs north-south along the east of the development site. It contains a number of individual heritage assets such as the locally listed Ashted Pumping Station (Site 22) and Ashted Canal Locks (Site 20, Figure 2). The majority of the canal corridor is also located within a Conservation Area. The canal encouraged the development of industry along its edge for water and transport. Sites such as the Belmont glassworks (MBM2152), co-operative building (MBM2561) and warehouses (MBM2563) were located to the north of the development site.

Development did not occur with the site boundary until after the construction of the railway and Curzon Street station in the 1830s. The railway enabled further industry to develop in the area with improved transport links and the goods yard. Associated with this growth in industry the population of the area also grew and housing was constructed to respond to this need. Within the development site the only recorded asset of this period is the Moby Dick public house (MBM1303 and Site 69968, Figure 2). Other developments within the site are discussed in detail in the historic mapping survey, section 6.

6.0 Historic Mapping Survey

Birmingham Record Office and Archives were visited to view historic maps and archival documents. A selection of historic maps is presented in Appendix H. The earliest mapping examined for the site is a conjectural map relating to Birmingham in 1553. This shows that the development site was undeveloped and probably held in private hands.

The earliest mapping based on a survey at the time was a map produced in 1778 by Thomas Henson. The development site was only partially represented as half of the site lay beyond the edge of the map. The

visible part of the development site was undeveloped agricultural fields and therefore the remaining site was likely to be in similar use. Maps by Snape (1779), Pye (1795) and Kempson (1810), support this assumption. These maps showed the development area was undeveloped fields. By the time of Pye's map in 1795 the Digbeth canal branch had been constructed.

A map by J Piggot Smith demonstrated that by 1828 the development site and its surrounding area had been largely turned over to small plots of allotments or market gardens. These gardens continued to the east of the development site to Lawley Street. To the south of the development site there were gardens until the canal branch and then agricultural fields. The 1828 map suggests that a substantial amount of development in the form of residential housing has occurred to the north and west of the study area by this period. A map by the Society for the Diffusion of Useful Knowledge dated 1840 showed that the development site remained as "small gardens" whilst around the site the urban expansion had almost isolated this from the surrounding area. A railway line and station for goods was been constructed to the south and west of the site. To the east and north further residential housing had been constructed.

The Piggot Smith Board of Health map of 1855 provided the first large scale and detailed map of the development site. The site itself was now bisected by Penn Street and there was a tramway down the street. The west of the site had been largely developed with back to back and terraced housing arranged around a number of courtyards. There is a large building in the north-east corner of this part of the site which correlates with the Eagle and Ball public house. To the immediate south and adjoining the public house there are two buildings which front Penn Street, these are described as numbers 13 and 14 Penn Street on the 1957 OS mapping. To the south-west of the public house building there are a further two buildings which face into the rear courtyard of the public house. These buildings are not numbered on later mapping and are therefore considered to form a southern range to the public house. To the south of this there was an area of undeveloped land. The map showed that the east of the development site remained undeveloped with the exception of one small building in the south of the site.

The 1889 OS 1:500 scale map demonstrated that development had continued within the development site. The terraced housing in the west of the site remained and there had been a degree of infilling within the courtyards. To the south of the Eagle and Ball public house further housing and other buildings had been constructed. The rear courtyard of the public house was now fully enclosed. Within the east of the development site development had now taken place and Midland Saw Mills and a number of other industrial buildings adjacent to a wharf on the canal branch were depicted. To the north of this and just within the development site were the southern range of buildings associated with a Crucible and Fire Brick

Manufactory. There were a number of yards and open areas within the east of the development and probably represented storage and working areas for the mills and other buildings.

There are few changes between the 1890, 1905 and 1918 Ordnance Survey maps of 25" to 1 mile from the 1889 1:500 scale maps. There is a limited amount of infilling to the rear of the Eagle and Ball public house, however this is likely to be related to storage and a limited number of houses. By 1957 there were alterations to the area. In the east of the site the saw mills are still present and the buildings had not significantly altered their layout. In the west of the development site the majority of the previous buildings had been demolished. The Eagle and Ball public house and housing immediately surrounding it were retained, however the other residential back to back and terraced housing had been demolished. A wireworks was present to the south of the public house and fronting Penn Street.

7.0 Site Walkover Survey

A site walkover survey was undertaken on 24th February 2012. The weather was overcast and dry. Photographs of the site can be seen in Appendix B. The north-west of the site between Penn Street and Cardigan Street was in use as a construction compound for the adjacent Phase 1 development. Access was gained to this compound, however it comprises level hard standing with temporary cabins and there are no features of heritage interest. The Eagle and Ball (Moby Dick) public house is located in the east of the construction compound. It is currently boarded up and was not entered, but shows evidence of vandalism and disrepair to the fabric of the building. The southern range to the public house is also present. The public house is the subject of a separate report (Associated Architects, 2012).

The ground to the south of the construction compound between Penn Street and Cardigan Street and to the south-east between Penn Street and the canal is level amenity grassland with no visible heritage features and evidence of site investigation test pits. The north-east of the development site is vacant ground which is currently fenced off and accessed from Belmont Row. The ground slopes down to the south in the centre of this part of the site. The ground is covered in crushed building rubble. A small substation is present on the boundary with Penn Street and there is a retaining wall and evidence of the former buildings on the boundary with the canal although these are not considered to be of heritage interest. No additional features of heritage interest were noted during the walkover survey.

8.0 Heritage Potential and Impact Assessment

The only recorded heritage site within the development site is the Eagle and Ball public house. This is a Grade II Listed Building. The effect of development on the public house is being considered in a separate report, however as the development will incorporate the building and secure its long term sustainable future the effect of the development is considered to be beneficial.

The surrounding designated assets include the Warwick Bar Conservation Area along the canal, the Co-operative Engineering Works and 34 Belmont Row, both of which are Locally Listed Buildings. These assets are all considered to be of medium heritage value. The development will affect the setting of these buildings and the Conservation Area by altering the surrounding landscape. The setting is currently poor and dominated by derelict unused land. The new development will introduce high quality design into the local environment and provide a sustainable future for the surrounding area. This may also encourage other development and regeneration within the area to secure the future of these buildings. The magnitude of impact of the effect on the setting of these features will be slight positive and the overall significance of effect would be minor beneficial.

There is considered to be minimal potential to discover archaeological remains dating to before the post-medieval period. The study area is considered to have fallen outside of the main town area and there is minimal evidence of pre-medieval activity in the area. This may be partially due to the later post-medieval development which is likely to have truncated or removed these remains. Where remains have been recorded they have been either prehistoric deposits with palaeoenvironmental information or late medieval/early post-medieval cultivation soils. The prehistoric deposits identified during the Curzon Street station works to the south-west of the development site were subject to a detailed palaeoenvironmental assessment and radiocarbon dating. It is unlikely that variation of the environment would be identified within this development site.

A potential buried topsoil was located in two site investigation test pits in the north-east of the site. This was beneath made ground at depths of 0.6 and 3.3m below ground level. Within the central area of the site across either site of Penn Street the made ground overlay directly onto the sandstone geology indicating that any earlier or drift deposits have been removed. Although the site investigations were not archaeologically monitored the descriptions of the made ground appear typical of 19th century industrial and residential remains with brick, tile, wood, plastic and metal inclusions. Site investigation logs and the location plan area included in Appendix H.

From the mid 19th century the site was developed. In the west of the site the development was primarily back to back and terraced housing of a form common across Birmingham and other industrial cities. These were arranged both on courtyards and around rows. Due to the common nature of these residential properties they are unlikely to be of heritage interest. They were demolished in the post-war period prior to 1957. The only surviving building in this area from this period is the Moby Dick public house and its associated southern range.

In the east of the site there was initially a saw mill and a number of industrial buildings that remained until at least the 1960s. Saw mills are generally not developments which have particular heritage interest and this is a late example which further reduces its heritage interest. In the north of the eastern half of the site was a crucible and firebrick manufactory. Firebricks have been recorded within some of the site investigation trial pits indicating a residual level of waste on the site from these works. The site is not referred to as a firebrick works after 1889, however the building remained until after the 1950s. If the works did not continue in production it was likely that the building was stripped out and used for other purposes. The majority of the interest in a firebrick works would be in the production processes and heat transfer systems and it is unclear whether these have survived within the development site.

It is likely that remains of post-medieval structures and any potential buried soils within the development area will be affected by the development. These remains are considered to be of local interest and therefore low heritage value. These impacts will occur during the ground works required for the cut and fill exercise and in the initial removal of sub-surface structures prior to the piled foundation construction. The magnitude of impact of these activities is likely to be substantial negative. This will result in an overall unmitigated significance of effect of intermediate-minor adverse.

9.0 Proposed Evaluation and Mitigation Measures

It is not considered that there is sufficient archaeological potential within the development site to warrant undertaking evaluation excavations in advance of development. It is recommended that a watching brief is implemented during the initial construction phase to monitor the removal of overburden and record any archaeological features of interest. A provision for allowing more detailed archaeological recording and analysis can be included should significant archaeological remains be identified at this stage.

All further works should be undertaken in accordance with the Institute for Archaeologists standards and guidance and a Written Scheme of Investigation agreed in advance with the Birmingham City Archaeologist.

10.0 Residual Effects and Conclusions

The development will have a beneficial effect on the Eagle and Ball public house and Listed Building and this is covered within the Associated Architects report of 2012. The development will also have a minor beneficial effect on the Warwick Bar Conservation Area, Co-operative Engineering Works and 34 Belmont Row Locally Listed Buildings through the improvement of their setting and surrounding environment.

There is a potential that medieval and early soils or structural remains from the mid 19th century residential and industrial development within the site will be impacted by the development. These remains are considered to be of local interest and low value. A watching brief has therefore been proposed to preserve these remains by record. The implementation of the watching brief on the site reduces the potential magnitude of impact to moderate negative and therefore the residual significance of effect would be minor adverse.

References

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Historic Mapping

Maps of Birmingham:
1731 W Westley
1751 Samuel Bradford
1778 Thomas Henson
1779 John Snape
1795 Pye
1810 John Kempson
1828 J Piggott Smith
1840 Society for the Diffusion of Useful Knowledge
1855 J Piggott Smith Board of Health maps. Sheets 96 and 112
1849 McTure, McDonald and McGregor
1884 WS Till Street Map of Birmingham

Birmingham Inclosure Map, 1798

Birmingham St Martins and St Georges Tithe Map, 1845

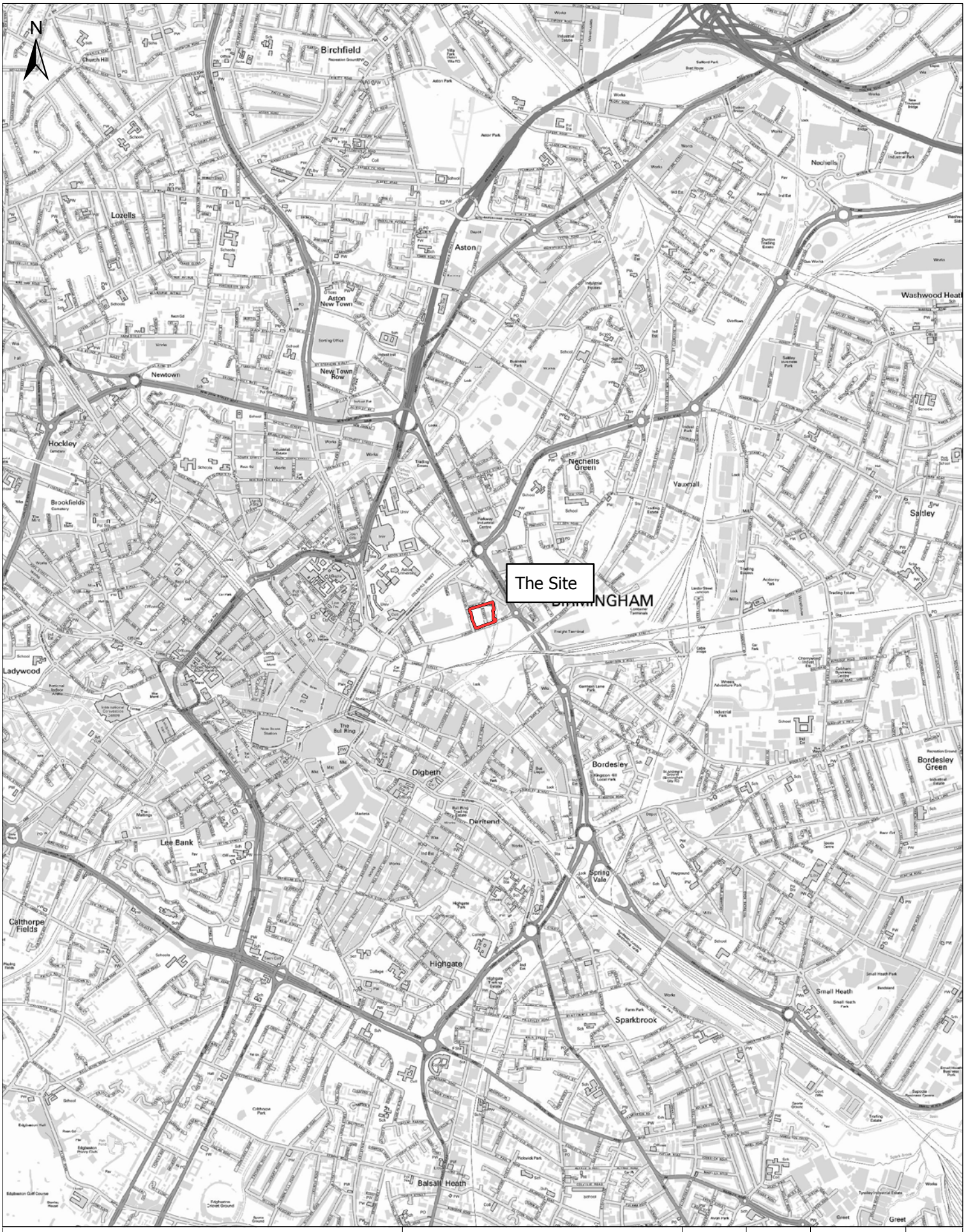
Ordnance Survey 1:500 Sheets 14-5-4 and 14-5-9. 1889

Ordnance Survey, 25" to 1mile / 1:2500 Sheet 14-5: 1890, 1905, 1918

Ordnance survey Sheet 42/0887SW, 1957

Appendices

Appendix A – Site Location Plan



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PMC	KRH	February 2012	V1
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Sheet Size: **A4** Scale of Original: **1:25,000**

Client: Birmingham City University

Project: BCU Phase 2 Development

Title: Site Location Plan

Office:	Project No:	Figure No:
4154	A071774	1

Appendix B – Site Photographs

Photograph 1: The eastern half of the development site facing north.

Photograph 2: The south-west of the development site facing west.

Photograph 3: The eastern half of the development site facing south.

Photograph 4: Limited relict building detailing adjacent to the canal in the east of the development site.

Photograph 5: Moby Dick public house from Penn Street

Photograph 6: Moby Dick public house from Gospel Street.

Appendix C – Assessment Methodology

Cultural Heritage Impact Assessment Methodology

No standard method of evaluation and assessment is provided for the assessment of significance of effects upon cultural heritage, therefore a set of evaluation and assessment criteria have been developed using a combination of the Secretary of State's criteria for Scheduling Monuments (Scheduled Monument Statement, Annex 1), Design Manual for Roads and Bridges, Volume 11, Part 3, Section 2, HA 208/07 and Transport Analysis Guidance (TAG Unit 3.3.9, Heritage of Historic Resources Sub-Objective). Professional judgement is used in conjunction with these criteria to undertake the impact assessment.

Value

The table below provides guidance on the assessment of cultural heritage value on all archaeological sites and monuments, historic buildings, historic landscapes and other types of historical site such as battlefields, parks and gardens, not just those that are statutorily designated.

Value	Examples
Very High	World Heritage Sites, Scheduled Monuments of exceptional quality, or assets of acknowledged international importance or can contribute to international research objectives Grade I Listed Buildings and built heritage of exceptional quality Grade I Registered Parks and Gardens and historic landscapes and townscapes of international sensitivity, or extremely well preserved historic landscapes and townscapes with exceptional coherence, integrity, time-depth, or other critical factor(s)
High	Scheduled Monuments, or assets of national quality and importance or than can contribute to national research objectives Grade II* and Grade II Listed Buildings, Conservation Areas with very strong character and integrity, other built heritage that can be shown to have exceptional qualities in their fabric or historical association. Grade II* and II Registered Parks and Gardens, Registered Battlefields and historic landscapes and townscapes of outstanding interest, quality and importance, or well preserved and exhibiting considerable coherence, integrity time-depth or other critical factor(s)
Medium	Designated or undesignated assets of regional quality and importance that contribute to regional research objectives Locally Listed Buildings, other Conservation Areas, historic buildings that can be shown to have good qualities in their fabric or historical association Designated or undesignated special historic landscapes and townscapes with

Value	Examples
	reasonable coherence, integrity, time-depth or other critical factor(s) Assets that form an important resource within the community, for educational or recreational purposes.
Low	Undesignated assets of local importance Assets compromised by poor preservation and/or poor survival of contextual associations but with potential to contribute to local research objectives. Historic (unlisted) buildings of modest quality in their fabric or historical association Historic landscapes and townscapes with limited sensitivity or whose sensitivity is limited by poor preservation, historic integrity and/or poor survival of contextual associations. Assets that form a resource within the community with occasional utilisation for educational or recreational purposes.
Negligible	Assets with very little or no surviving cultural heritage interest. Buildings of no architectural or historical note. Landscapes and townscapes that are badly fragmented and the contextual associations are severely compromised or have little or no historical interest.

Magnitude

The magnitude of the potential impact is assessed for each site or feature independently of its archaeological or historical value. Magnitude is determined by considering the predicted deviation from baseline conditions. The magnitude of impact categories are adapted from the Transport Assessment Guidance (TAG Unit 3.3.9) and Design Manual for Roads and Bridges, Volume 11, Part 3, Section 2, HA 208/07.

Magnitude of Impact	Typical Criteria Descriptors
Substantial	Impacts will damage or destroy cultural heritage assets; result in the loss of the asset and/or quality and integrity; cause severe damage to key characteristic features or elements; almost complete loss of setting and/or context of the asset. The assets integrity or setting is almost wholly destroyed or is severely compromised, such that the resource can no longer be appreciated or understood. (Negative) The proposals would remove or successfully mitigate existing damaging and discordant impacts on assets; allow for the restoration or enhancement of characteristic features; allow the substantial re-establishment of the integrity, understanding and setting for an area or group of features; halt rapid degradation

Magnitude of Impact	Typical Criteria Descriptors
	and/or erosion of the heritage resource, safeguarding substantial elements of the heritage resource. (Positive)
Moderate	Substantial impact on the asset, but only partially affecting the integrity; partial loss of, or damage to, key characteristics, features or elements; substantially intrusive into the setting and/or would adversely impact upon the context of the asset; loss of the asset for community appreciation. The assets integrity or setting is damaged but not destroyed so understanding and appreciation is compromised. (Negative) Benefit to, or restoration of, key characteristics, features or elements; improvement of asset quality; degradation of the asset would be halted; the setting and/or context of the asset would be enhanced and understanding and appreciation is substantially improved; the asset would be bought into community use. (Positive)
Slight	Some measurable change in assets quality or vulnerability; minor loss of or alteration to, one (or maybe more) key characteristics, features or elements; change to the setting would not be overly intrusive or overly diminish the context; community use or understanding would be reduced. The assets integrity or setting is damaged but understanding and appreciation would only be diminished not compromised. (Negative) Minor benefit to, or partial restoration of, one (maybe more) key characteristics, features or elements; some beneficial impact on asset or a stabilisation of negative impacts; slight improvements to the context or setting of the site; community use or understanding and appreciation would be enhanced. (Positive)
Negligible / No Change	Very minor loss or detrimental alteration to one or more characteristics, features or elements. Minor changes to the setting or context of the site. No discernible change in baseline conditions (Negative). Very minor benefit to or positive addition of one or more characteristics, features or elements. Minor changes to the setting or context of the site No discernible change in baseline conditions. (Positive).

Magnitude (scale of change) is determined by considering the predicted deviation from baseline conditions. Quantifiable assessment of magnitude has been undertaken where possible. In cases where only qualitative assessment is possible, magnitude has been defined as fully as possible.

During the assessment any embedded mitigation has been considered in the impact assessment and this is clearly described in this section (cross referring the development description). Therefore, the magnitude of the impacts described herein will be stated before and after additional mitigation has been taken into consideration.

Impacts may be of the following nature and will be identified as such where relevant:

- Negative or Positive.
- Direct or indirect.
- Temporary or permanent.
- Short, medium or long term.
- Reversible or irreversible.
- Cumulative.

Significance

By combining the value of the cultural heritage resource with the predicted magnitude of impact, the significance of the effect can be determined. This is undertaken following the table below. The significance of effects can be beneficial or adverse.

Significance of Effects	Magnitude of Impact			
Cultural Heritage Value	**Substantial**	**Moderate**	**Slight**	**Negligible / no Change**
Very High	Major	Major – Intermediate	Intermediate	Minor
High	Major – Intermediate	Intermediate	Intermediate – Minor	Neutral
Medium	Intermediate	Intermediate - Minor	Minor	Neutral
Low	Intermediate – Minor	Minor	Minor – Neutral	Neutral
Negligible	Minor-Neutral	Minor-Neutral	Neutral	Neutral

Significance should always be qualified as in certain cases an effect of minor significance could be considered to be of great importance by local residents and deserves further consideration. The significance of effect is considered both before and after additional mitigation measures proposed have been taken into account.

Appendix D – Planning Policies

Draft Core Strategy for Birmingham - Archaeology and the Historic Environment

SP50 Archaeology and the Historic Environment

The historic environment, consisting of archaeological remains, historic buildings, townscapes and landscapes, including locally significant assets and their settings in addition to designated and statutorily protected features, will be respected, protected, enhanced and managed for its contribution to character, local distinctiveness and sustainability.

- Development proposals will be required to demonstrate a full understanding of historic environment assets affected. Design and Access statements accompanying development proposals will be required to assess the historic character of the surroundings of the application site and the impact of the proposed development on the historic character.
- Innovative design which integrates the historic environment into new development will be encouraged.
- Character assessments and management plans will be reviewed or prepared for conservation areas and other areas of particular local significance to supplement existing policies for protection and enhancement. Characterisation studies will be used to inform and understand the contribution of the historic environment to the city's character and identity.
- Opportunities for information gain through investigations as part of proposed development will be maximised and such information will be widely disseminated.
- The Historic Environment Record will be maintained and developed to include all aspects of the city's historic environment so that it is a tool for decision-making and policy formulation.

The City Council will continue to support the canal network. Where appropriate the enhancement of canals and their settings will be secured through developer contributions such as s.106.

The historic importance of the canals is acknowledged, and wherever possible important groups of canal buildings and features will be protected. Consideration will be given to the designation of canal settings as conservation areas.

Birmingham Unitary Development Plan - October 2005

3.20: Conservation of the built environment

The historic legacy of Birmingham is considered to be of prime importance, especially as so much was demolished during the redevelopment of the 50s and 60s. Redundant historic buildings offer a range of opportunities for conversion to new uses and can be an important focus for wider urban regeneration schemes. Designated Conservation Areas within the City will continue to provide a powerful means of preserving the best of our historic and architectural heritage and within these areas and other areas identified in the Constituency Statements as of conservation importance, the emphasis will be on protecting and enhancing the individual character and appearance of the particular area. Where appropriate the Council will make use of its powers to control unauthorised development and signage.

3.21: Conservation of the built environment

Not all the City's buildings or areas of architectural interest enjoy statutory protection and consideration will therefore be given to the designation of new Conservation Areas; details of a number of such proposals are given in the Constituency Statements. There will be a periodic review of the Schedule of Listed Buildings and the extent of Conservation Area coverage to determine whether any additions or amendments should be made.

3.22: Conservation of the built environment

Proposals which would adversely affect buildings or areas of architectural interest will not normally be allowed. There are about 1,800 Listed Buildings, 27 Conservation Areas, and nine Registered Parks and Gardens of Special Historic Interest (Highbury Hall and Park, Edgbaston Hall, Birmingham Botanical Gardens, Aston Hall, Sutton Park, Key Hill Cemetery, Westbourne Road Leisure Gardens, The Vale, Edgbaston and Cannon Hill Park) within Birmingham and these will wherever practicable be guaranteed continued long-term protection. In addition, a great number of other buildings within the City are of value because of their local historic, social or architectural interest. Many of these have been included on a 'local list' which will continue to be revised and updated, and every effort will be made to encourage the preservation of buildings of local interest.

3.23: Conservation of the built environment

More generally, the quality of existing buildings and townscape will be taken into account in considering proposals for new development. The City's Conservation Strategy contains more detail on the Council's approach to conserving and enhancing Birmingham's built heritage. The development of the educational, recreational and tourist potential of Conservation Areas and Listed Buildings through management and interpretation will be encouraged.

3.24: Conservation of the built environment

More detailed policies towards Conservation Areas, Listed Buildings, the Local List, Archaeology and Historic Landscapes are set out in paras 3.25 - 3.33 following and in the Conservation Strategy which has been adopted as Supplementary Planning Guidance.

3.25: Listed buildings

Any development affecting a listed building should preserve or enhance its character. Applications affecting Listed Buildings will be considered in the light of the following policies:

- special regard will be given to the desirability of securing the retention, restoration, maintenance and continued use of the buildings of special architectural or historic interest.
- Listed Building Consent will not be granted for the demolition or partial demolition of a Listed Building unless it can be demonstrated that every possible effort has been made to preserve the structure of the building and to continue the present use or to find a suitable alternative use.
- the change of use of a listed building should not have a detrimental effect on the character or appearance of the building.
- any external or internal alteration or addition to a listed building should not adversely affect its architectural or historic character.
- the setting of listed buildings will be preserved and enhanced by the exercise of appropriate control over the design of new development in their vicinity, control over the use of adjacent land, and where appropriate, by the preservation of trees and landscape features.

3.26: The Local List of Buildings of Local Architectural Interest

The Local List includes buildings, structures or features of local architectural, archaeological or historic interest, which do not currently enjoy statutory protection, such as archaeological features or sites, historic parks, gardens and landscapes, and interiors. It is regularly reviewed and updated. The demolition of buildings or destruction of other structures or features on the 'Local List' will be resisted to the extent of the powers available and wherever possible and appropriate, the setting of such buildings will be preserved. Proposals for the demolition, alteration and/or extension of a building on the 'Local List' should ensure that

the features of historic or architectural interest are preserved and that all new work and any new buildings are of at least equivalent quality to the original building and make a similar contribution to its setting.

3.27 Conservation Areas

In order to define the special character of Conservation Areas, Conservation Area Character Appraisals and Management Plans will be prepared for all of the City's Conservation Areas. Development proposals within Conservation Areas will be considered in the light of the following policies:

- the development should preserve or enhance the character or appearance of the area, and the demolition of buildings or removal of trees or other landscape features which make a positive contribution to the area's character or appearance will be resisted.
- outline planning permission will not be granted for development within Conservation Areas unless supported by detailed proposals showing siting, design, external appearance and means of access.
- consent to demolish a building in a Conservation Area will [normally] be granted only where its removal or replacement would benefit the appearance or character of the area.
- the development should respect the character of the existing architecture, in scale, grouping and materials, and should generally reflect the character and appearance of the area.
- where a detailed Conservation Area Character Appraisal and Management Plan has been prepared for a particular conservation area, this will be a material consideration in determining applications for development within that Conservation Area.

3.28 Conservation Areas

Proposals for development adjacent to Conservation Areas should respect the character and appearance of the Conservation Area.

3.29 Historic Landscapes

The City Council will continue to work with English Heritage to complete the Register of Parks and Gardens of Special Historic Interest for Birmingham. Historic landscapes which do not merit inclusion in the National Register, but which have special local significance, will be added to the City's Local List (see above). Planning proposals should respect the historic context of sites on the Register of Parks and Gardens and their settings. In determining applications the Council will take full account of the historic significance of these areas and seek to protect their distinctive characteristics. Similarly, development proposals that would adversely affect the character and appearance of other parks, gardens and open spaces and their settings will not normally be permitted.

3.30 Archaeology

Archaeological remains are the product of human activity over thousands of years and are valuable both for their own sake and for their role in education, leisure and tourism. There are 10 scheduled Ancient Monuments in Birmingham which are statutorily protected because of their national importance. These and other archaeological remains are included on the Birmingham Sites and Monuments Record.

3.31 Archaeology

There is a need for further improvements to this Record which will continue to be monitored and updated. Wherever possible, sites and remains included on this register and their settings, and in particular scheduled ancient monuments, will be protected and enhanced according to their merits, as will further archaeological remains which may be added to the list.

3.32 Archaeology

The development of the educational, recreational and tourist potential of archaeological remains through management and interpretation will be encouraged where appropriate and where it does not have an adverse effect on the integrity of the remains and their setting.

3.33 Archaeology

More detailed development control policies towards archaeology are set out in paragraph 8.36 and in the Conservation Strategy which has been adopted as Supplementary Planning Guidance. The Archaeology Strategy will also contains detailed guidance on protecting and managing the City's archaeological resource. In addition, the Council will have regard to the advice set out in PPG16.

8.36 Development affecting Archaeological Remains

Development proposals affecting archaeological remains will be considered in the light of the following policies:-

- an assessment of the archaeological aspects of development proposals will be required from applicants before the planning application is determined. Planning permission will not be granted in cases where the assessment of the archaeological implications is inadequate.
- development proposals which will have an adverse effect on scheduled ancient monuments and other nationally important remains and their settings will not be allowed.
- development adversely affecting other known archaeological remains will be resisted although permission may be granted if the applicant has demonstrated that particular archaeological remains will be satisfactorily preserved either in situ or, where this is not feasible, by record.
- where appropriate, Section 106 agreements will be negotiated to protect, enhance and interpret archaeological remains.

More detailed policies are contained in the Conservation Strategy (Supplementary Planning Guidance) and will be included in the Archaeology Strategy which is being has been prepared as Supplementary Planning Guidance.

Archaeology Strategy – February 2004

POLICY 7 Professional standards:

The City Council will expect all archaeological work in the City to be undertaken in accordance with the Code of Conduct, Standards and Guidance of the Institute of Field Archaeologists to ensure that it is consistent with best professional practice.

POLICY 8 Assessment and evaluation:

Where existing information suggests that a proposed development is likely to affect archaeological remains, above or below ground, the City Council will require a Planning Application, application for Listed Building Consent or application for Conservation Area Consent to be accompanied by an archaeological assessment, normally including an archaeological evaluation, depending on the extent of proposed development and the archaeological sensitivity of the location. Such information should also include details of appropriate mitigation measures. The application will be refused if this information is not submitted.

POLICY 12 Preservation in situ and preservation by record:

Where the City Council considers that preservation in situ of archaeological remains which are not of national importance is appropriate and feasible, it will require design which ensures this. Where it considers

that preservation of archaeological remains by record is acceptable because preservation in situ is not feasible or necessary, or there is an opportunity for enhancing knowledge of particular areas or periods, the City Council will require archaeological mitigation measures which maximise the return of archaeological information. Innovative approaches to achieve this will be encouraged.

POLICY 13 Post excavation analysis and publication:

Where the City Council considers that preservation by record of archaeological remains is acceptable and it imposes conditions requiring archaeological excavation in advance of commencement of development, the scheme of investigation must include provision for excavation, post excavation assessment, analysis, preparation of a publishable report and publication in a recognised journal or series. Conditions will not be discharged until the on-site archaeological work has been completed to the satisfaction of the City Council and there is proof that the applicant has satisfactorily secured the implementation of post-excavation assessment, analysis, preparation of a publishable report and publication in a recognised journal or series, deposition of the archive, including finds, arising from the work, and deposition of an electronic archive with the Archaeological Data Service.

POLICY 14 Archaeological remains in the City Centre:

The City Council will require planning applications for development involving significant ground disturbance or alteration to historic buildings in Digbeth, Deritend and adjoining parts of the City Centre to be accompanied by an archaeological assessment. This will depend on the extent of proposed development and the archaeological sensitivity of the location as indicated by existing information. The assessment will normally include an archaeological evaluation. If the assessment shows that archaeological remains are likely to be affected by the proposed development, the City Council will require archaeological excavation and/or building recording in advance of commencement of development if preservation of archaeological remains in situ is not feasible.

POLICY 15 Archaeological remains in built-up areas outside the City Centre:

The City Council will require an appropriate level of archaeological assessment and recording, depending on the extent of proposed development, when application is made for development involving ground disturbance in built-up areas outside the city centre where existing information indicates that there are likely to be archaeological remains.

Warwick Bar Conservation Area Supplementary Planning Policies – 2008

2.4 Development in the Conservation Area Setting

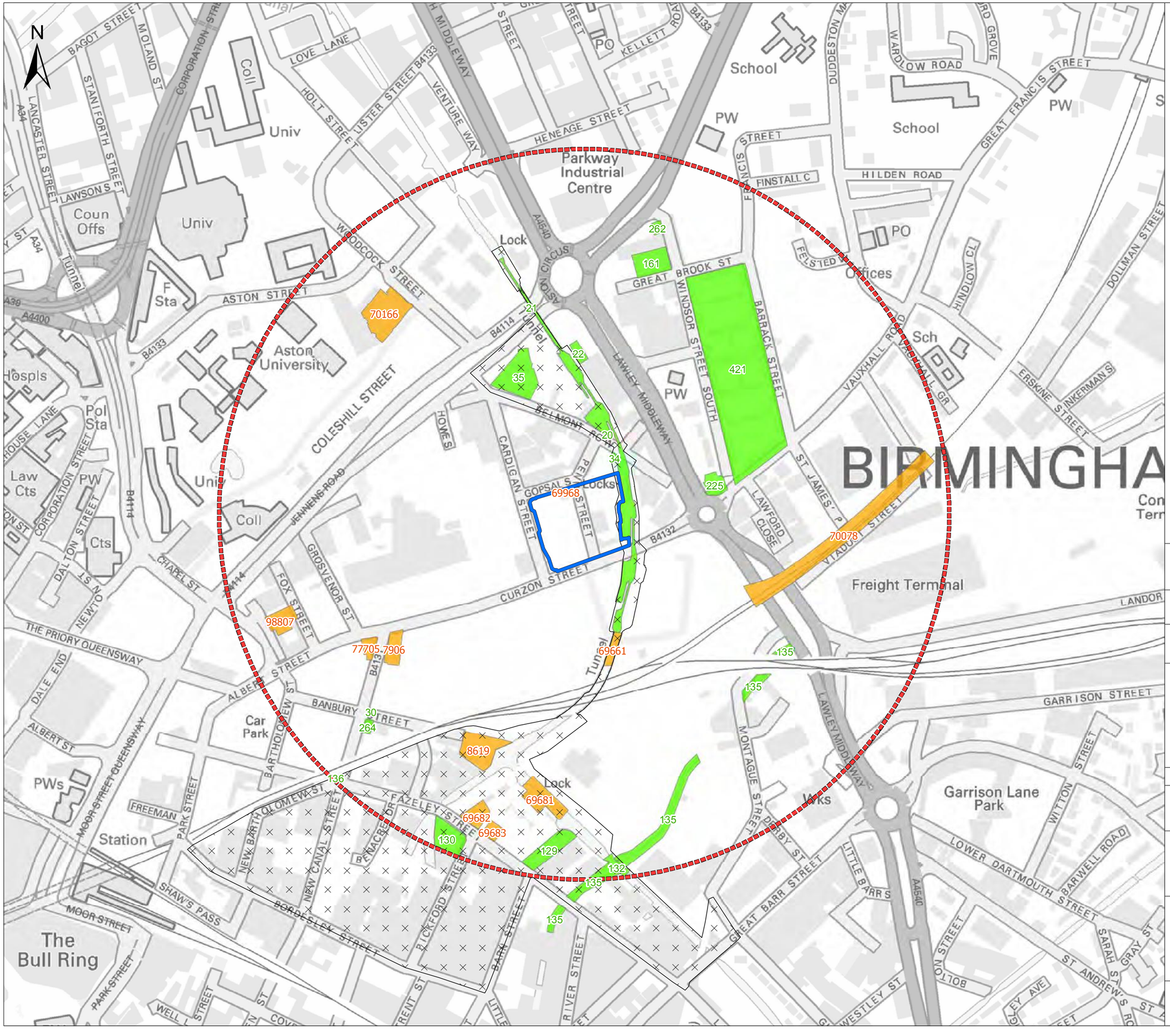
New development in the setting of the conservation area must respect and preserve characteristic views within, from and into the area. The Council will not permit new buildings or additions to existing buildings beyond the conservation area boundary to intrude on or block key views or important sightlines.

Appendix E – Designated Heritage Sites

Designated Heritage Sites (English Heritage and Birmingham Historic Environment Record)

Identifier	Grid Reference	Description	Grade
70166	SP 07800 87560	University of Aston Sports Centre (former Woodcock Street Baths). Built 1880 and an early example of buff terracotta. The exterior is screened by a 1920s extension but he interior remains largely intact, including cubicles and viewing gallery with an iron balustrade.	II
70078	SP 08425 87249	Lawley St. Railway Viaduct. The last section of the Grand Junction railway to be completed it is a viaduct of 28 arches carrying the track along Viaduct Street across Lawley Street to Curzon Station. It was heightened and doubled in the 1850s and 60s in engineering brick compared to the original brick with stone dressings.	II
69968	SP 08050 87302	Moby Dick's P.H. on Penn Street. A public house of c.1840-50 date of three storeys with red brick stucco trim. Slate roof and corniced brick chimney stacks. Also known as the Eagle and Ball	II
7906	SP 07814 87088	1 New Canal Street (Curzon Street Railway Station). Built in 1838 of ashlar in the Ionic style. It is of three storeys and three bays. It has a portico of four giant Ionic columns.	I
69681	SP 0802 8688	Canal Side Warehouse at Warwick Bar. Circa 1840 red brick canal side warehouse. The overhanging roof is supported by cast iron columns. A stone dressed brick lock and stop lock.	II
69683	SP 0795 8683	122 Fazeley Street (Supergas Ltd). A former house of c. 1840-50 date. two storeys of red brick and gable end slate roof. Yard entrance shared with No. 110 to give access to the common wharf on the canal arm.	II
69682	SP 08792 8685	106-110 Fazeley Street (even). Circa 1840-50 a row of three former houses amalgamated and extended to the rear as works. The row presents a two store elevation of brick with slate roof and boxed bargeboards to the gable end. It backs onto the canal arm.	II
69661	SP 0811 8708	Railway viaduct into Curzon Street station over Digbeth Branch Canal. Built 1838, the south-west face has been incorporated into bridge widening.	II
98807	SP 07663 87127	7 to 12 (Consec) Bartholomew Road. (C Wray Lighting). Houses and workshops now a brassware factory. Mid 19th century with possible late 18th and early 19th century remains.	II

Identifier	Grid Reference	Description	Grade
8619	SP 0794 8693	Gun Barrel Proof House. Built 1813 and entered through big double gates. The entrance gives way to a courtyard where the outer bays of the boundary wall are the office and gatekeepers lodge. The main building is to the right, of two storeys and ten bays.	II*
77705	SP 07781 87086	106 Albert Street (The Woodman PH). Public house by James and Lister Lea. Built 1896-7 of brick and terracotta with a slate roof. Public bar with original counter and bar back with engraved and gilded mirror glass and tiling. The Smoke Room has original seating and tiling.	II
264		Eagle and Tun Public House, New Canal Street	B
262		Dog & Partridge P.H., Nechells Parkway	B
225		Moriarty's Public House (former White Tower), Lawley Middleway	A
161		Cooperative Society Garage, Geat brook Street	C
136		Urinal adjoining Railway Bridge, Fazely Street	B
132		Grand Union Canal Aqueduct over River Rea, Fazeley Street	B
130		Former Fairbanks Works (Thyssen Krupp Materials (U.K) Ltd.), Fazeley Street	B
129		Former F.M.C. Warehouse, Fazeley Street	C
35		C.W.S. Engineering Premises, Belmont Row	A
34		34 Belmont Row	B
30		Public Urinal, Banbury Street	B
22		Site of Ashted Pumping Station, Ashted Row	C
21		Ashted Canal Tunnel, Ashted Row	B
20		Ashted Canal Locks, Ashted Rows	B
135		River Rea, Fazely Street	C
421		Ashcroft Estate, Windsor Street South	C
		Warwick Bar Conservation Area	



Legend

- Site Boundary
- Study Area
- Conservation Areas
- HER Listed Building
- HER Locally Listed Building

0 25 50 100 150 200 250

Metres

PMC	KRH	February 2012	V1
Created:	Checked:	Date:	Version:

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Client: Birmingham City University

Project: BCU Phase 2 Development

Title: Designated Heritage Sites

Office:	Project No:	Figure No:
4154	A071774	2

Appendix F – Recorded Heritage Sites

Recorded Heritage Sites (Historic Environment Record)

Identifier	MonUID	Grid Reference	Period	Summary
20276	MBM1914	SP 07661 87125	Post-Medieval	7-12 Bartholomew Row. House and workshops, now brassware factory. Mid 19th century with possible late 18th century and early 19th century remains, and late 19th century, early 20th century additions. Brick with painted stone or stucco dressings and slate roofs. The main Fox Street building is linked to the rear of numbers 7-10 Bartholomew Row by ranges including a workshop.
20432	MBM2082	SP 17819 87215	Post-Medieval	Goods yard for Curzon Street Station. Archaeological evaluation and building survey prior to development considered of three buildings recorded and excavation of three trenches. The buildings surveys demonstrated that the goods sheds had originally been built as stables in the late 19th century. The evaluations identified an 18th century cultivation soil and ceramics from the 16th, 17th and 19th centuries.
20336	MBM1987	SP 08141 87196	Post-Medieval	Digbeth Branch Canal completed in 1790.
20437	MBM2087	SP 08132 86720	Post-Medieval	Fazeley Street Gasworks constructed 1836, in operation 1837. Plan of 1847 shows buildings, three gas holders and in 1854 retort house, smiths shop, coke yard, condensers, coal stack, lime shed, purifiers, three gas holders, valve house, meter house, dwelling house and coal shed. It was converted to an ice manufactory by 1884. The shell of retort house survives and there is likely below-ground survival of gasholders and other features.
20637	MBM2290	SP 07724 86202	Medieval / Post-Medieval	Extent of Digbeth/Deritend Medieval and post-medieval settlement.
21077	MBM2742	SP 0777 8697	Post-Medieval	Eagle and Tun Public House, also know as the Cauliflower Ear. Two- storey public house c1897. Terracotta with slate roof. Brick two-storey manager's house. Fascia sign states c. 1897.
21075	MBM2740	SP 0800 8738	Post-Medieval	13-17 Belmont Row. Buildings recorded before demolition including 19th century terraced house and brass foundry.
20970	MBM2703	SP 0761 8726	Post-Medieval	Ropewalk marked on 1778 map on Coleshill Street.

Identifier	MonUID	Grid Reference	Period	Summary
20898	MBM2563	SP 0809 8743	Post-Medieval	Lawley Middleway Canalside Structures. 19th and 20th century buildings recorded before partial demolition but retention to canal side wall. 45-47 Lawley Street was originally a malthouse.
20897	MBM2562	SP 0791 8740	Post-Medieval	Cardigan Street/AB Row. 19th and early 20th century buildings recorded during a building survey.
20897	MBM2561	SP 0798 8746	Post-Medieval	Co-Operative Building, Belmont Road. Built in 1899 the building replaced a number of pre-existing buildings. It was a rubber and cycle company, and a baby linen company before coming into the co-operative society in 1918. It was used for stables and manufacturing.
20895	MBM2560	SP 0768 8708	Post-Medieval	Albert Street buildings. Historic building survey before demolition concluded that the buildings were all early to mid 19th century in date, although some possible elements of structures shown on the 1778 map survived in cellars.
20498	MBM2147	SP 0803 8770	Post-Medieval	Union Glass Works in existence by 1818. The partnership of Baccus and Green was dissolved in 1840 and carried on by Bacchus and Sons. Taken over by Stone, Fawdry and Stone in 1860. The last directory entry was 1896. Modern industrial units occupy the site but there is a car park between them which is the site of the glassworks itself.
20891	MBM2554	SP 07992 87492	Post-Medieval	Belmont air raid shelter. Large semi-sunken air raid shelter constructed of steel reinforced concrete. Interior divided into four chambers with two further offices or storerooms along the eastern wall.
20832	MBM2494	SP 08078 87412	Post-Medieval	Belmont Road Cleansing Station. 1939-40 cleansing station for decontamination squads. The structural integrity including many of the original design features such as airlocks and brick patterning for tactile navigation.
20830	MBM2492	SP 07737 86998	Palaeolithic	Tree holes covered by peaty clay, with radiocarbon dates of c12000 BP and c10000 BP. Two worked flints at base of deposit of Upper Palaeolithic or Mesolithic dates. Pollen analysis was undertaken. Overlying thee were 18th century deposits which may have truncated earlier prehistoric deposits.
20824	MBM2486	SP 08345 87573	Post-Medieval	Site of church and graveyard of St James the Less. Founded in 1789, opened in 1791 and consecrated in 1810. It was severely damaged in WWII and demolished in 1956.

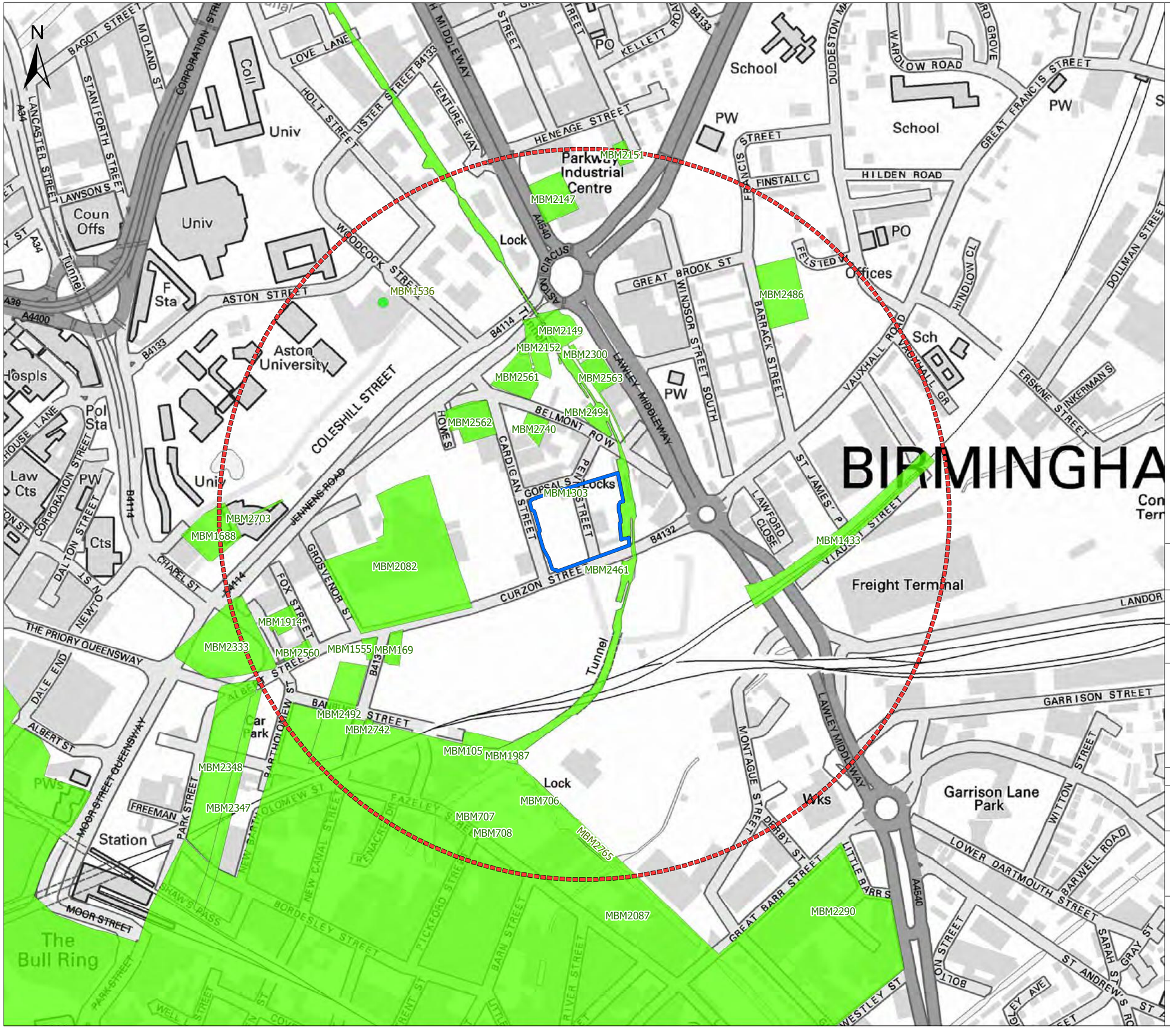
Identifier	MonUID	Grid Reference	Period	Summary
20810	MBM2469	SP 08042 87482	Modern	Ashted Air Raid Shelter or home Guard defence. Concrete and brick structure on edge of canal which may have been used as an air raid shelter for canal workers.
20803	MBM2461	SP 08106 87196	Post-Medieval	Curzon Street Pumping Station. Late 19th century brick structure of classical proportions in red brick with blue brick bands.
20692	MBM2348	SP 07578 86906	Post-Medieval	Park Street Burial Ground was an overspill burial ground for St Martin's church. Earliest legible headstone was 1814 and it was disused by 1878. Excavation in Albert Street revealed intact burials belonging to this burial ground.
20690	MBM2347	SP 07586 86877	Medieval / Post-Medieval	North-south ditch or watercourse in 1553 survey running parallel to Park Street. Marked on Hill and Bickley's conjectural map. Trenching to east of Park Street Gardens revealed extensive cellarage and near Fazeley Street a ditch containing 19th and 20th century wares were found.
20676	MBM2333	SP 07584 87102	Post-Medieval	St Bartholomew's Chapel and Burial Ground. Mid 18th century chapel. Marked on Bradford's map of 1750. Church demolished in 1943 and burial ground cleared by 1961. Evaluation showed that site of chapel and burial ground had been extensively cleared and few remains survived.
20646	MBM2300	SP 08063 87492	Post-Medieval	Ashted Row Canal pumping station originally housing Boulton and Watt engine. Built 1812 and worked continuously until 1928. The engine was taken to the Henry Ford Museum.
20500	MBM2149	SP 0804 8752	Post-Medieval	Belmont Glassworks, established before 1811. There was reclamation in the 1990s which removed much of the glassworks but there was some survival on the north-east and south-west areas of the site. Part of boundary wall survives.
20502	MBM2151	SP 08125 87764	Post-Medieval	Windsor Street glass works. Glass cone on map.
20503	MBM2152	SP 0801 8749	Post-Medieval	Belmont Glassworks. China, glass and earthenware manufactory in existence by 1806. Excavations identified some limited remains at the north end, but towards the south were the remains of a circular brick foundation which could be either a glass cone or pottery kiln.

Identifier	MonUID	Grid Reference	Period	Summary
20042	MBM1688	SP 07560 87240	Post-Medieval	Turners Brass House, Coleshill Street. Marked on Bradford's map of 1750 and as Carless's Steelhouse on Westley's 1731 Map of Birmingham. It consisted of nine furnaces in three separate buildings.
21099	MBM2765	SP 0808 8680	Post-Medieval	Minerva Works (agricultural tools) was in existence on the site by 1889 when some of the buildings extended as far west as the canal. Canal boundary wall has many phases of rebuilding. Adjacent surfaces were monitored during concrete removal and footings for former buildings were observed.
5881	MBM1986	SP 10510 84995	Post-Medieval	Grand Union Canal.

Archaeological Events (Birmingham Historic Environment Record)

Event No.	Grid Reference	Name
EBM51	SP 0782 8721	Curzon Street building recording
EBM348	SP 07925 86926	Warwick Bar Conservation Area assessment and recording
EBM602	SP 0812 8677	Fazeley Gasworks Smithy desk-based assessment and recording
EBM591	SP 0800 8738	13-17 Belmont Row building recording
EBM568	SP 0798 8685	Warwick Bar canalside features survey
EBM441	SP 07633 87107	St Bartholomew's chapel watching brief
EBM216	SP 0758 8708	St Bartholomew's Chapel evaluation
EBM365	SP 07895 87183	Curzon Street evaluation
EBM338	SP 08065 87500	Ashted Pumping Station evaluation
EBM484	SP 0809 8743	Building Survey at Lawley Middleway
EBM483	SP 0804 8729	Building Survey of Moby Dick and 13-14 Penn Street
EBM482	SP 0791 8739	Building survey at Cardigan Street/AB Row, Plots 1 and 1a
EBM481	SP 0798 8746	Building survey of the Co-operative building, Eastside Plot 26
EBM480	SP 0804 8748	Building survey, Eastside Plot 27

Event No.	Grid Reference	Name
EBM479	SP 0768 8708	Building Survey of Eastside Plot 42
EBM471	SP 07990 87481	Belmont Row Glassworks Additional Excavation
EBM442	SP 08078 87412	Belmont Row Decontamination Unit Building Recording.
EBM425	SP 07807 86774	Typhoo Wharf Desk-Based Assessment
EBM424	SP 07738 87003	Banbury Street BCU excavation
EBM411	SP 08353 87554	Barrrack Street watching brief
EBM392	SP 07692 87001	BCU Eastside Evaluation
EBM372	SP 08011 87498	Belmont Row Glassworks excavation
EBM371	SP 08058 87516	Belmont Glassworks excavation
EBM370	SP 08066 87496	Ashted Pumping Station excavation
EBM366	SP 07890 87184	Curzon Street watching brief
EBM350	SP 08047 87113	Curzon Street desk-based assessment
EBM347	SP 07625 87392	Ashton Student Village Desk-Based Assessment



PMC Created:	**KRH** Checked:	**February 2012** Date:	**V1** Version:

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Client: Birmingham City University

Project: BCU Phase 2 Development

Title: Recorded Heritage Sites

Office:	Project No:	Figure No:
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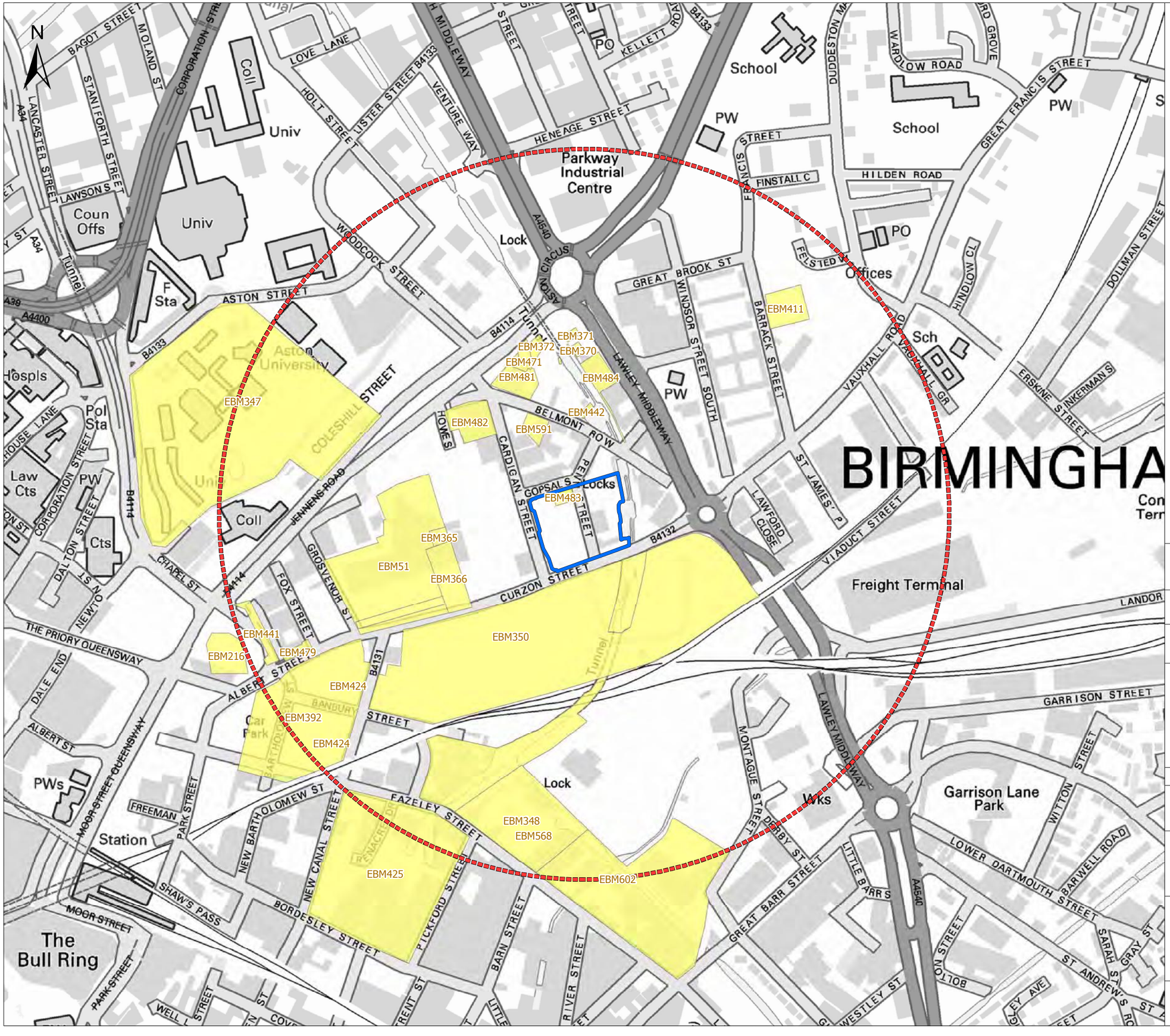

Legend

- Site Boundary
- Study Area
- Recorded Heritage Events

PMC	KRH	February 2012	V1
Created:	Checked:	Date:	Version:

Arndale Court
Headingley
Leeds
LS6 2UJ

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Sheet Size: **A3** Scale of Original: **1:5,000**

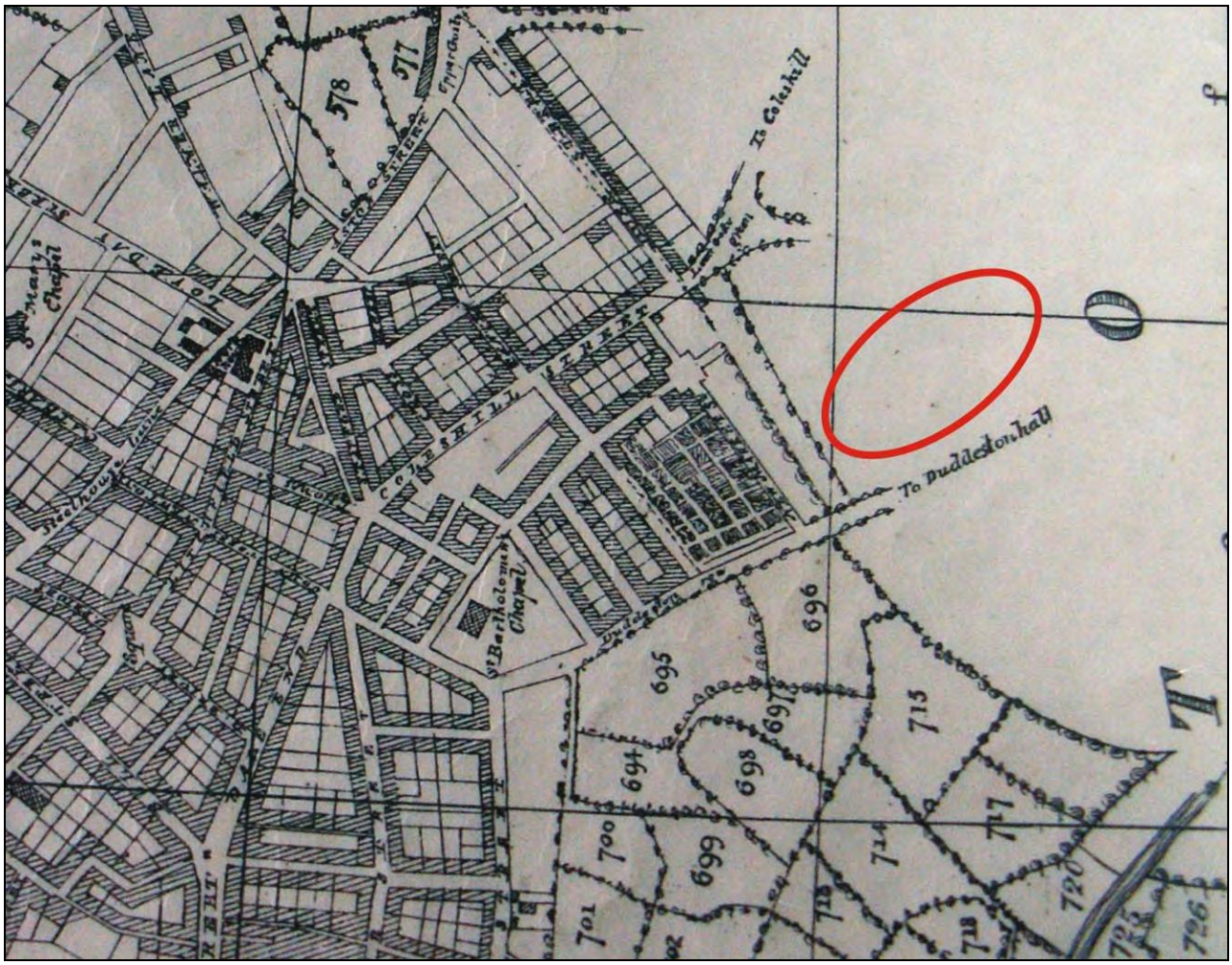
Client: Birmingham City University

Project: BCU Phase 2 Development

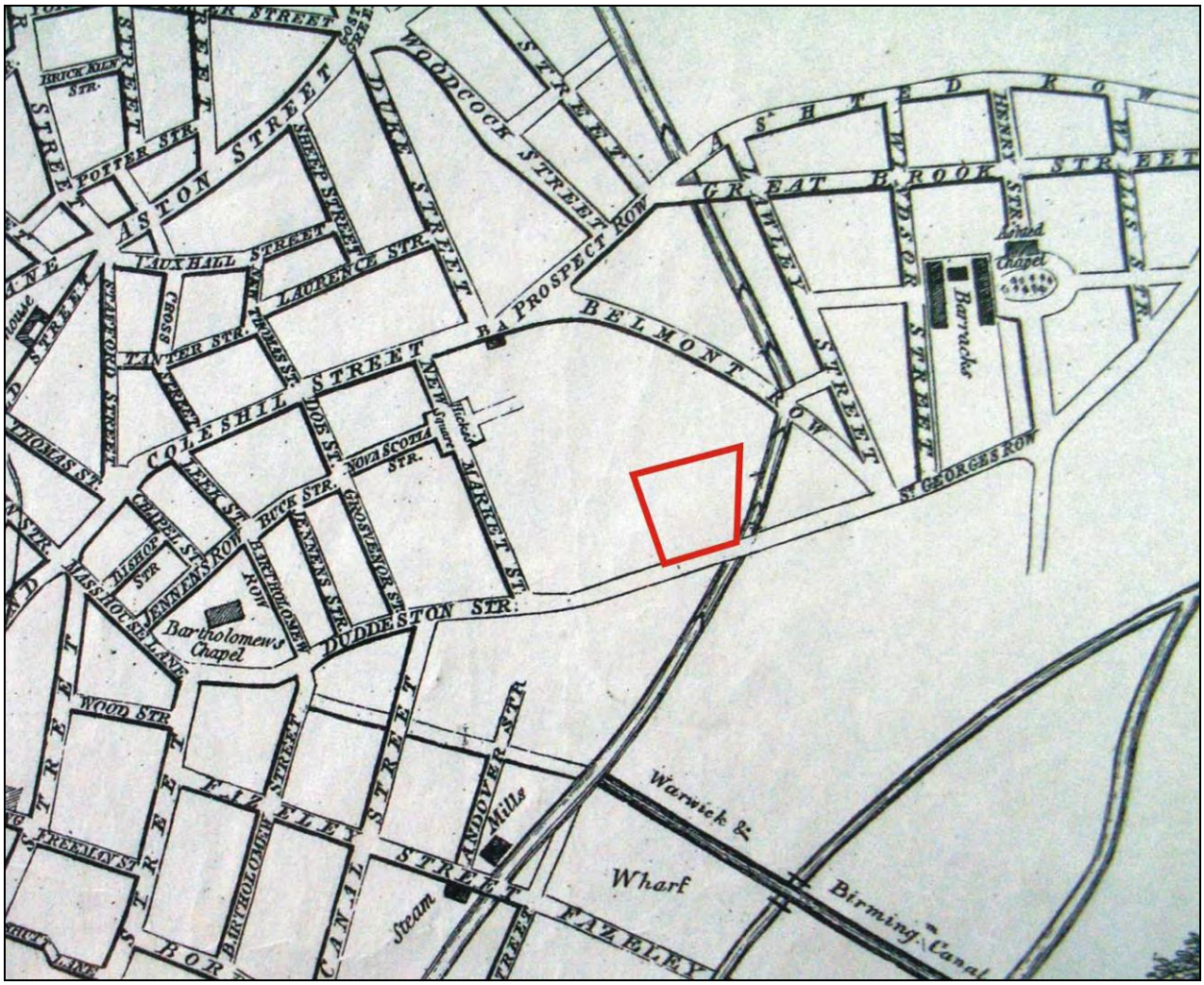
Title: Recorded Heritage Events

Office:	Project No:	Figure No:
4154	A071774	4

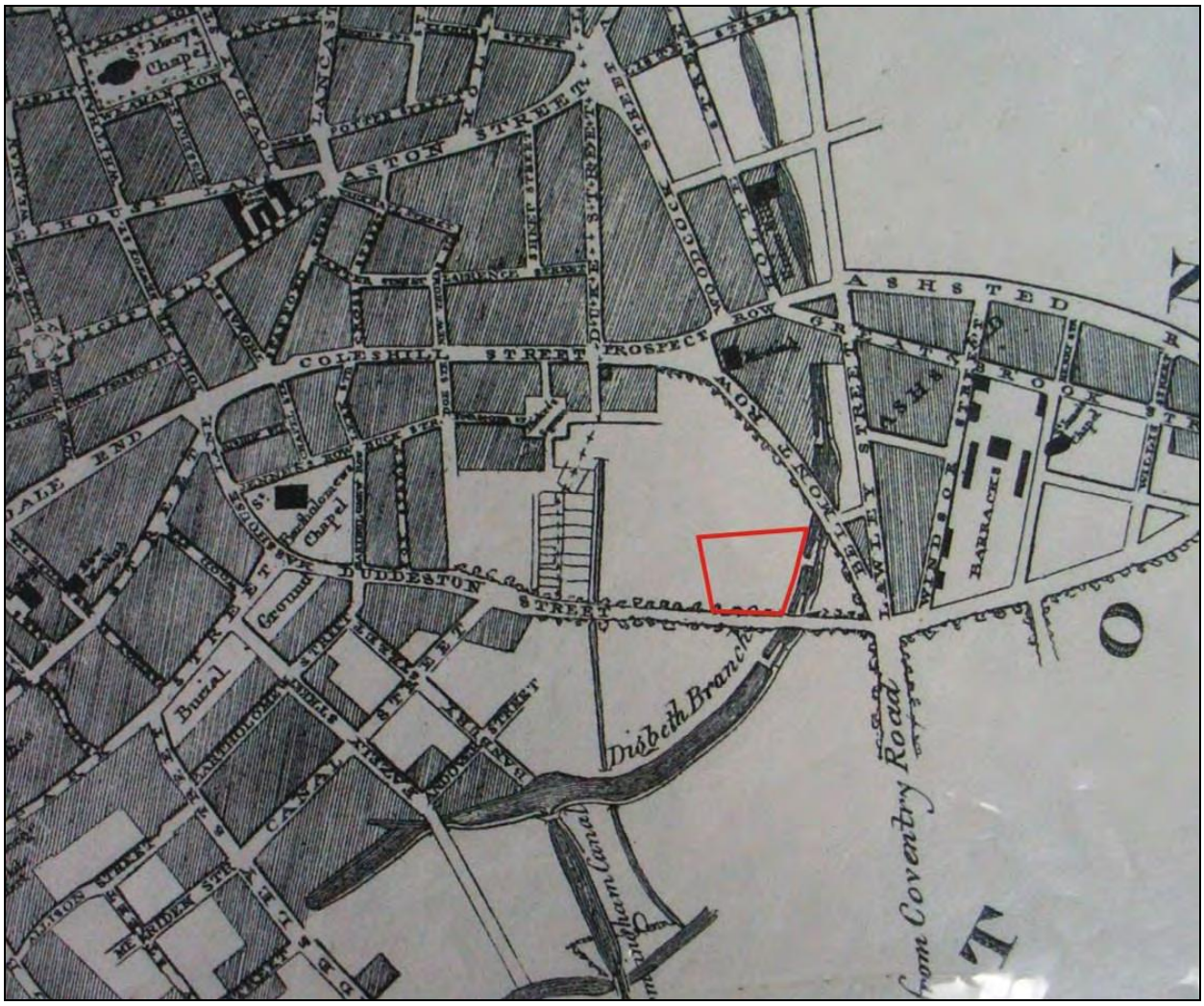
Appendix G – Historic Mapping



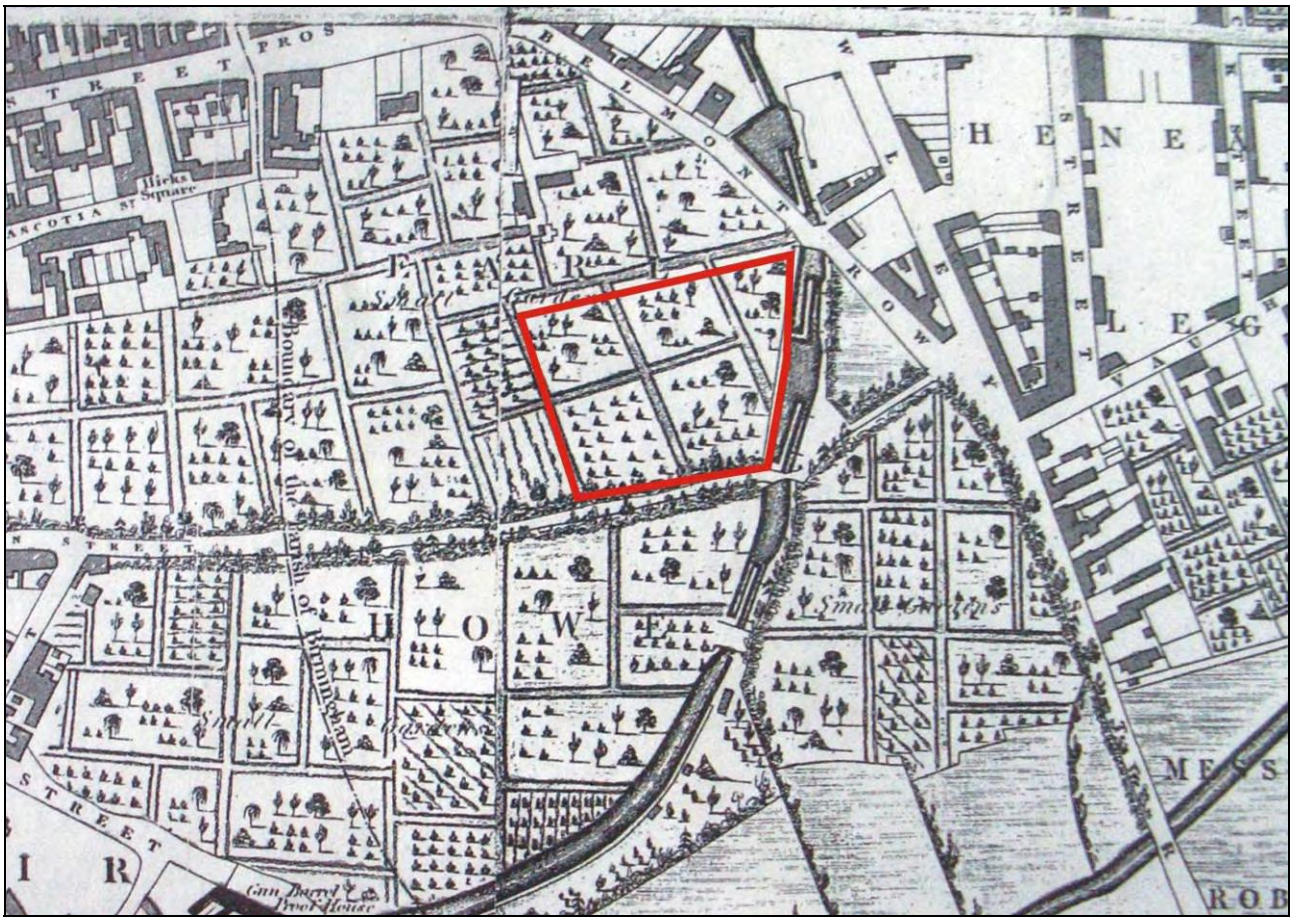
Snape's Map of Birmingham, 1779



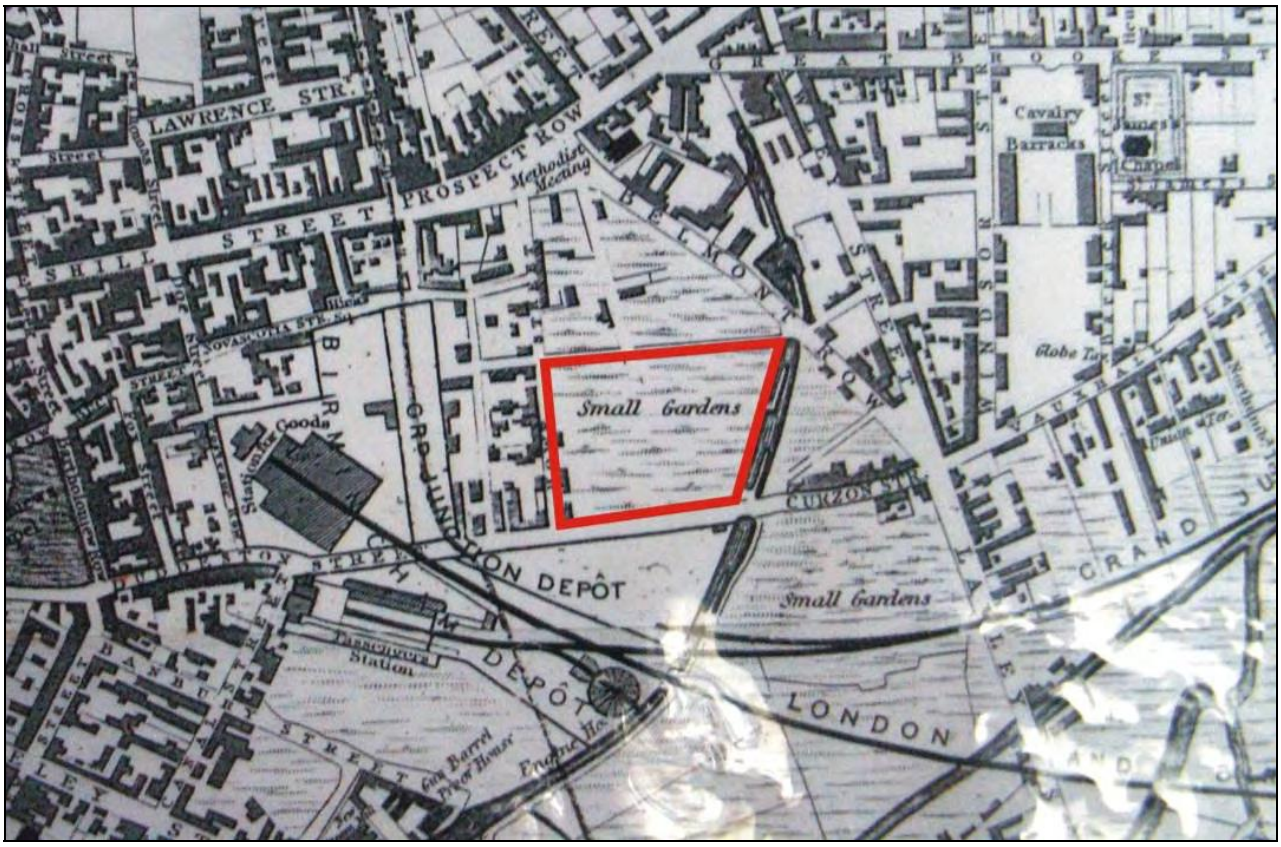
Pye's Map of Birmingham, 1795



Kempson's Map of Birmingham 1810

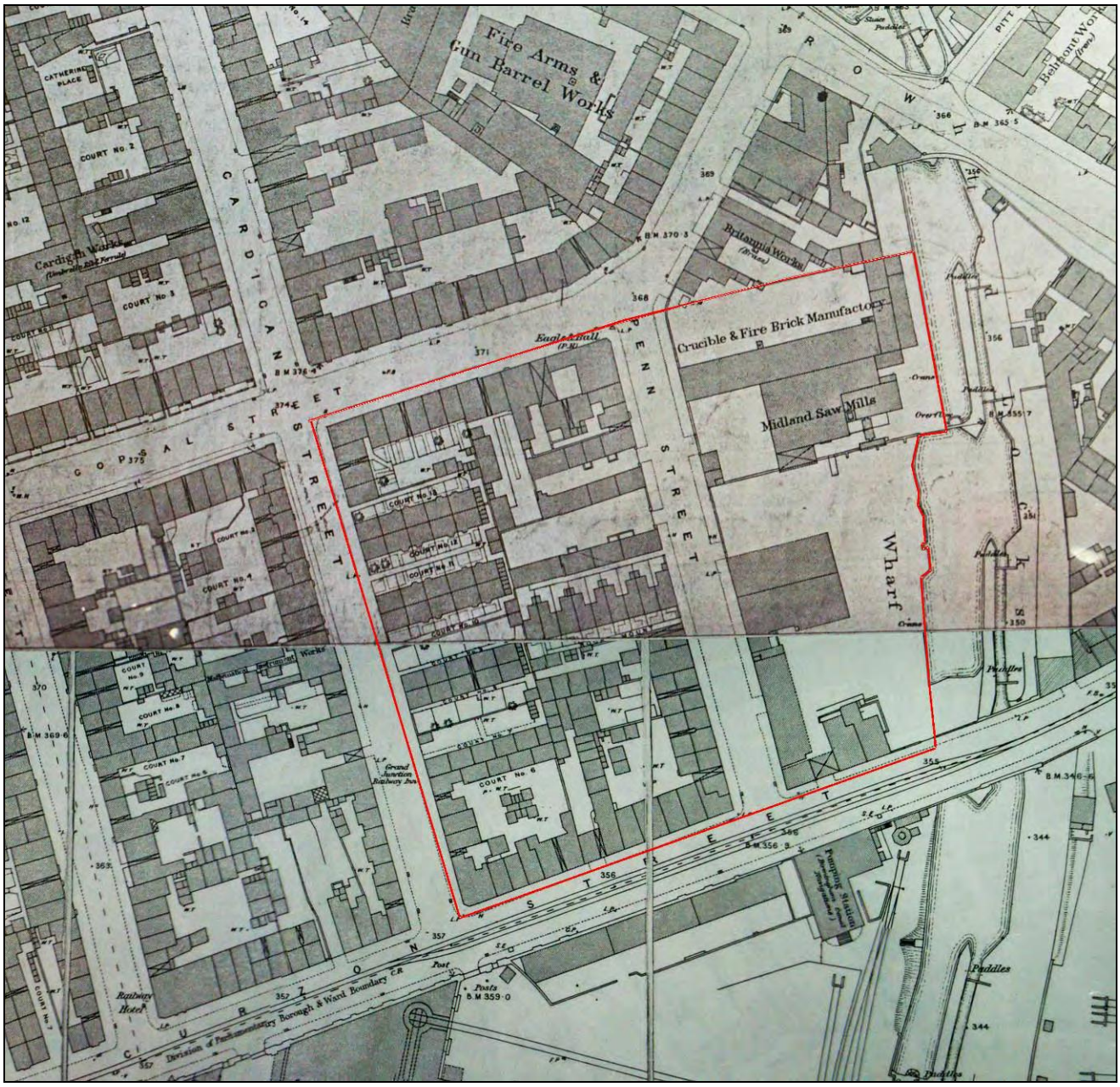


Piggot Smith's Map of Birmingham, 1828

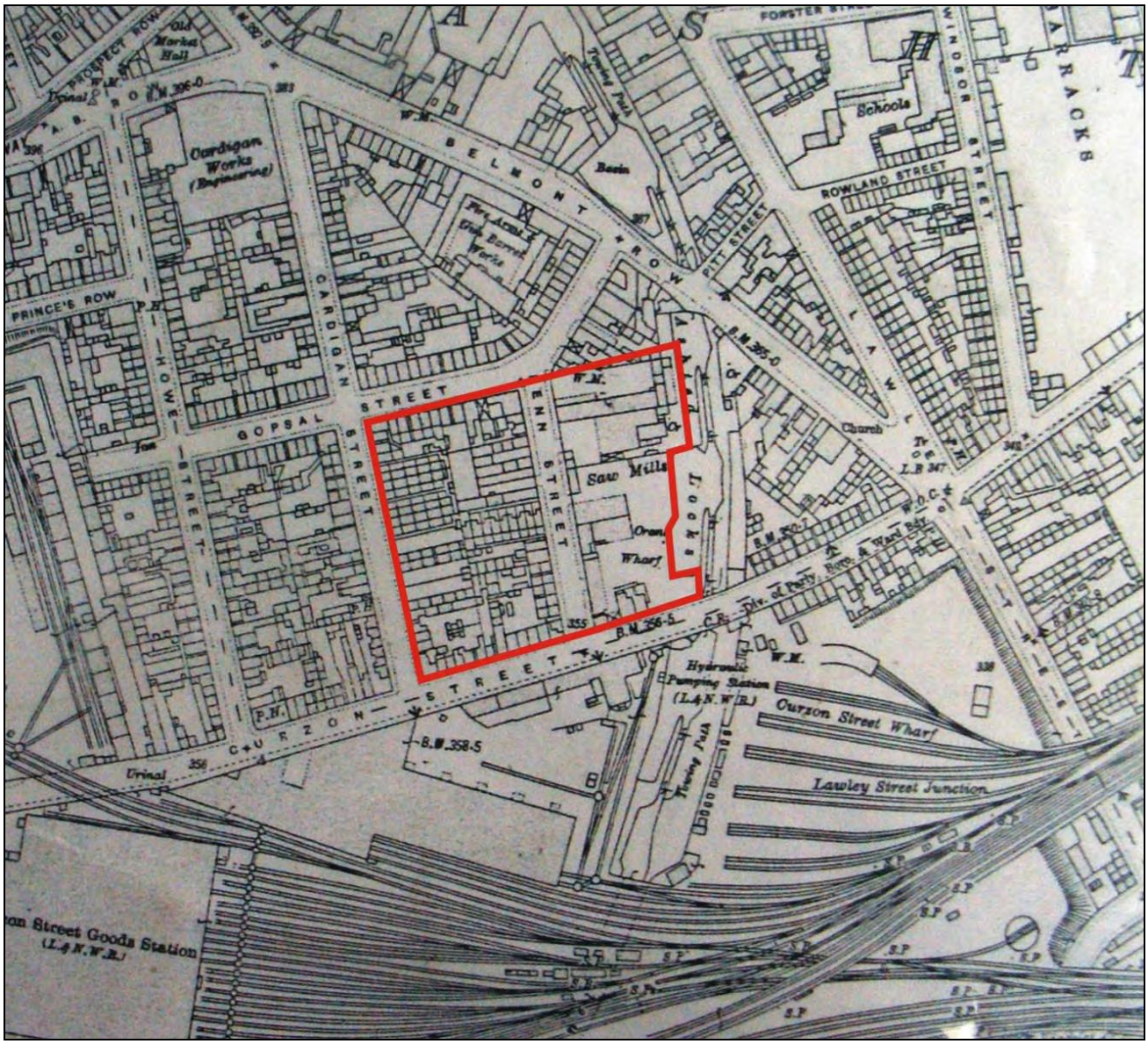


Society for the Diffusion of Useful Knowledge, 1840

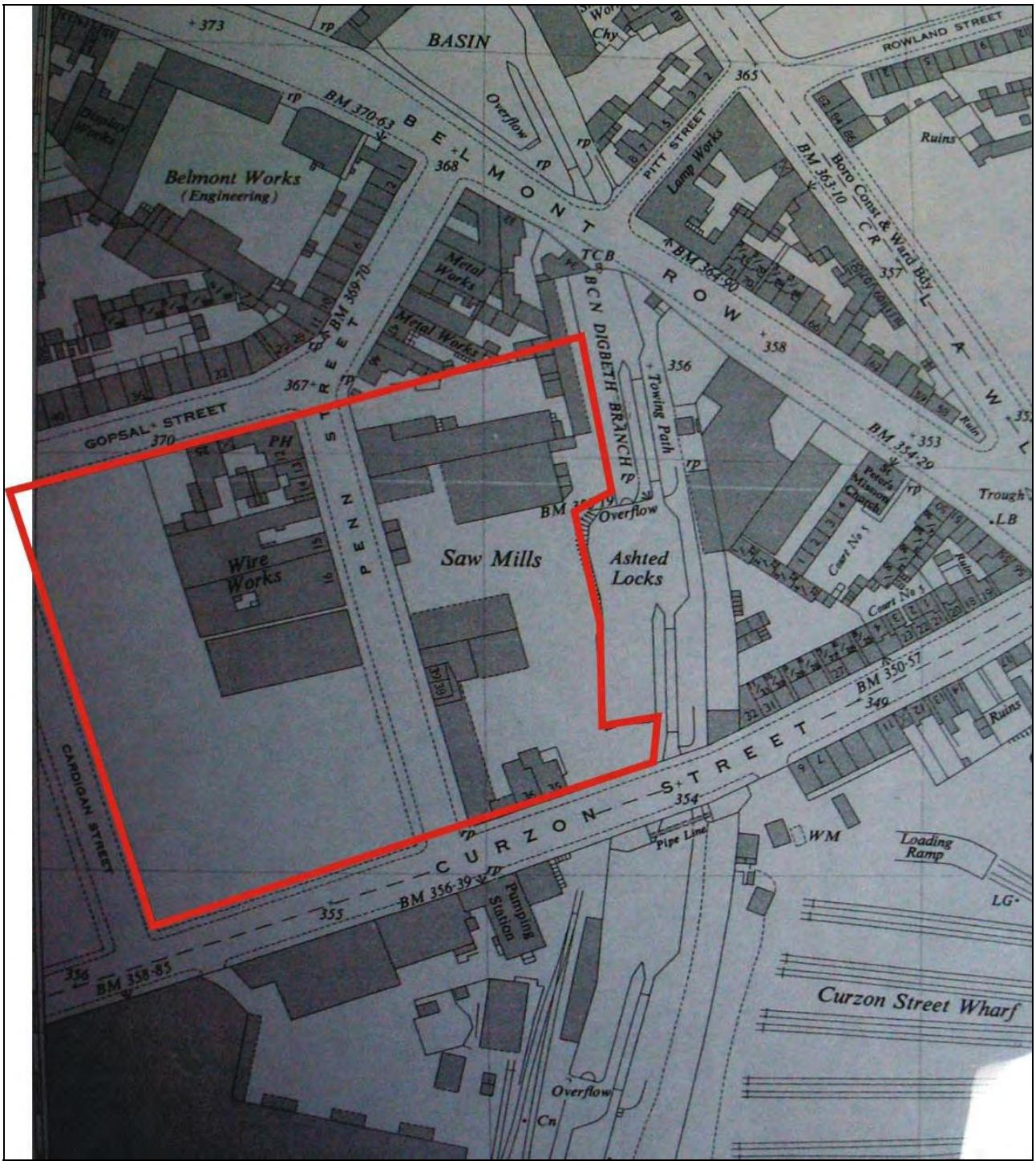
Piggot Smith Board of Health Map of Birmingham, 1855



Ordnance Survey Map 1:500, 1889

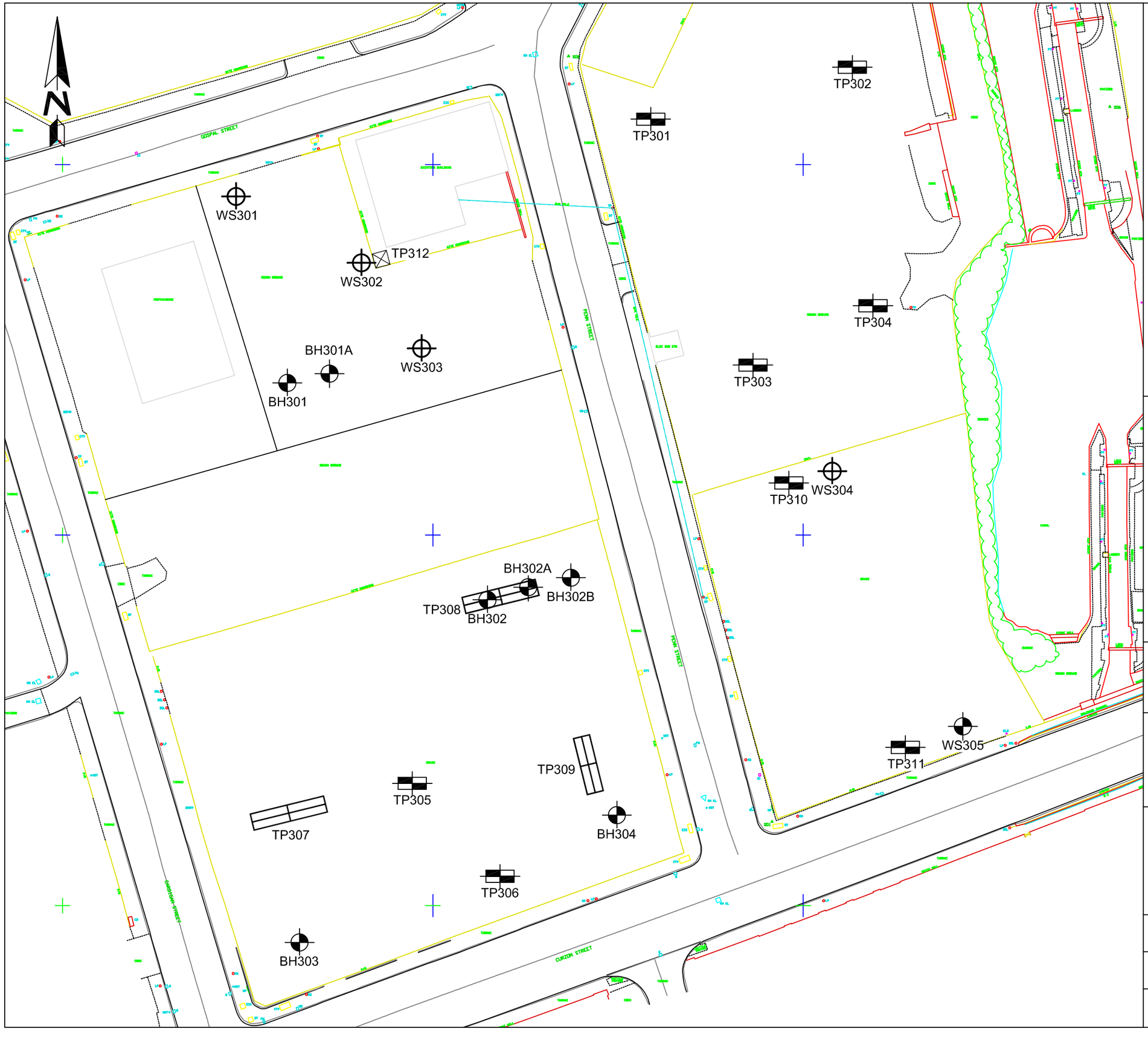


Ordnance Survey Map 25" to 1 mile, 1918



Ordnance Survey map, 1957

Appendix H – Site Investigation Logs



KEY:

TP301 — Trial Pit

TP307 — Trial Pit Trench

TP312 — Hand Dug Pit

BH301 — Cable Percussion Borehole

WS301 — Window Sample Borehole

Drawing based on Survey Operations drawing no: 11F181/001 & 11F181/002, dated Sept 2011

APPLiED GEOLOGY

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Client:

Project:
BIRMINGHAM CITY UNIVERSITY
PHASE 2

Title:
EXPLORATORY HOLE LOCATION PLAN

Drawn By:	Checked By:	Paper Size:
NP	TC	A3

Scale:	Date:
1:500	19.01.2012

Drawing No:	Revision:
AG1584-11-01	0

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Borehole Log
BH301
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Cable Percussion	24/11/2011	GJ	TC	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
300mm to 1.20m 150mm to 1.70m	1.70	112.35m AOD	408038.00 287273.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
					Asphalt. (MADE GROUND)				
	0.30 0.40-1.10	D			Black grey-brown roadstone. (Drillers description) (MADE GROUND)	112.15 112.05	0.20 0.30		
					Red-brown gravelly fine to coarse SAND. Gravel is fine to coarse angular brick and rare tile and wood. (MADE GROUND)				
	1.20 1.20-1.70	CPT D		44N 44/300					
	1.70	CPT		60/75	Concrete and brick. (Drillers description) (MADE GROUND)	110.75 110.65	1.60 1.70		
					End of Borehole at 1.70 m				

GENERAL REMARKS:

Hand dug service inspection pit excavated to 1.20m bgl. Borehole backfilled with arisings on completion.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

APPLiED GEOLOGY Tel: 02476511822 Fax: 02476697682	Job No. AG1584-11	Site: Birmingham City University Phase 2 Client: Birmingham City University Engineer: WYG	Borehole Log BH301 A Sheet 1 of 1
Method Percussive	Date 21/11/2011-05/12/2011	Logged By TC	Checked By SD	Scale 1:50
Diameter (mm) 150mm to 1.50m 88mm to 4.10m	Depth (m) 4.10	Ground Level 112.32m AOD	Co-ordinates 408042.00 287275.00	Ground Slope Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
					Asphalt. (MADE GROUND)	112.12	0.20		
	0.30 0.40-1.10	D B			Grey to black-brown roadstone. (Drillers decription) (MADE GROUND)	112.02	0.30		
	1.20 1.20-1.70 1.20	CPT B D		52N 52/300	Dark brown slightly clayey gravelly SAND with occasional brick cobbles. Gravel is fine to coarse angular brick and concrete and rare fine to medium subrounded sandstone. Rare fabric. (MADE GROUND)	111.12	1.20		
					Red-brown gravelly fine to coarse SAND. Gravel is fine to coarse angular brick and rare tile and wood (MADE GROUND)	110.72	1.60		
	2.20	ES			Red-brown brick and concrete (basement floor) (Drillers description) (MADE GROUND) Open hole with rock roller from 1.50m to 1.80m bgl.	110.52	1.80		
	2.70 2.80	ES SPT D		21N 21/300	Dark brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse subangular concrete and brick fragments. (MADE GROUND)	109.67	2.65		
	3.30 3.55 3.70 3.80	ES ES ES SPT D		50/135	Medium dense light buff-brown slightly gravelly SAND. Gravel is fine to coarse rounded quartzite. (GLACIOFLUVIAL DEPOSITS) Orange silty SAND. Sand is fine. (GLACIOFLUVIAL DEPOSITS) . becoming grey from 3.50m bgl.	109.22 108.70	3.10 3.62		
					Very dense orange SAND. Sand is fine. (WEATHERED BROMSGROVE SANDSTONE) Rotary follow on from 4.10m bgl.	108.22	4.10		
					End of Borehole at 4.10 m				

GENERAL REMARKS:

Hand dug pit to 1.20m bgl. Cable percussion to 1.50m bgl. Dynamic Percussive Sampling to 4.10m bgl. Rotary follow on from 4.10m bgl.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Borehole Log
BH302
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Cable Percussion	24/11/2011	GJ	TC	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
300mm to 1.10m	1.10	110.34m AOD	408052.00 287242.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
	0.20	D			Grass over brown slightly silty slightly gravelly fine SAND with frequent rootlets. Gravel is fine to medium angular of mixed lithology. (MADE GROUND)	110.24	0.10		
					Brown slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse mixed lithology including angular brick, concrete, rare tile,rubber and subrounded sandstone. Rare brick cobbles. (MADE GROUND)	109.34	1.00		
					Concrete obstruction.	109.24	1.10		
					End of Borehole at 1.10 m				

GENERAL REMARKS:

Hand dug service inspection pit excavated to 1.10m bgl. Attempted to remove obstructin with JCB without success. Borehole backfilled with arisings on completion.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Borehole Log
BH302A
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Cable Percussion	24/11/2011	GJ	SD	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
300mm to 1.10m	1.10	110.32m AOD	408055.00 287243.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
	0.20 0.30-1.00	D B			Grass over brown slightly silty slightly gravelly fine SAND with frequent rootlets. Gravel is fine to medium angular of mixed lithology. (MADE GROUND)	110.22	0.10		
					Brown slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse mixed lithology including angular brick, concrete and rare tile and rubber and subrounded sandstone. Rare brick cobbles. (MADE GROUND)	109.32	1.00		
					Concrete obstruction.	109.22	1.10		
					End of Borehole at 1.10 m				

GENERAL REMARKS:

Hand dug service inspection pit excavated to 1.10m bgl. Attempted to remove obstruction with JCB without success. Borehole backfilled with arisings on completion.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

APPLiED GEOLOGY Tel: 02476511822 Fax: 02476697682	Job No. AG1584-11	Site: Birmingham City University Phase 2 Client: Birmingham City University Engineer: WYG	Borehole Log BH302 B Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Cable Percussion	24/11/2011	GJ	TC	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
300mm to 1.20m 140mm to 3.10m	3.10	110.09m AOD	408069.00 287246.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
	0.20 0.30-1.10	D B			Grass over brown to orange-brown slightly clayey gravelly fine to coarse SAND. Gravel is fine to coarse angular mixed lithology including brick, concrete and rare subrounded sandstone. (MADE GROUND)				
	1.20 1.20-1.70	CPT D B		20N 20/300					
	2.00 2.00-2.50	CPT D B		63N 63/300					
	3.00 3.00-3.30	SPT D B		53/75	Brown slightly gravelly fine SAND. Gravel is fine to medium angular brick fragments. (MADE GROUND)	107.29 107.09	2.80 3.00		
					Orange-brown slightly silty fine SAND with weak sandstone lithorelicts. (BROMSGROVE SANDSTONE) Rotary follow on from 3.10m bgl.	106.99	3.10		
					End of Borehole at 3.10 m				

GENERAL REMARKS:

Hand dug service inspection pit excavated to 1.20m bgl. Cable percussion to 3.10m bgl. Rotary follow on from 1.50m to 8.60m bgl.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Borehole Log
BH303
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Cable Percussion	24/11/2011	GJ	TC	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
300mm to 1.20m	1.20	109.46m AOD	408025.00 287220.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
	0.20 0.30-1.10	D B			Brown slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse angular brick, sandstone fragments and occasionally subrounded sandstone gravels. Locally slightly clayey. (MADE GROUND)	109.26	0.20		
	1.20	CPT D		44/250	Orange-brown gravelly fine to coarse SAND. Gravel is fine to coarse angular brick fragments with rare coal, tile and glass fragments. (MADE GROUND) End of Borehole at 1.20 m	108.26	1.20		

GENERAL REMARKS:

Hand dug service inspection pit excavated to 1.20m bgl. Borehole backfilled with arisings on completion.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

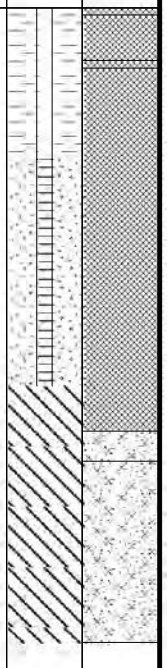
Borehole Log
BH303A
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Cable Percussion	24/11/2011	GJ	TC	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
300mm to 1.20m 150mm to 4.20m	4.20	108.92m AOD	408035.00 287199.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)
	0.20	D			Grass onto dark brown slightly silty gravelly fine to coarse SAND with frequent rootlets. Gravel is fine to coarse angular brick and ceramic fragments. (MADE GROUND)	108.87	0.05
	0.30-1.10	ES				108.57	0.35
	0.55	B				108.52	0.40
		ES					
		D			Orange slightly gravelly fine to medium SAND. Gravel is fine to coarse angular concrete and rare asphalt fragments and occasional subrounded sandstone and possible limestone. (MADE GROUND)		
	1.20	CPT		15N			
	1.20-1.70	D		15/300			
		B			Medium dense dark brown to black very gravelly fine to coarse SAND with occasional concrete cobbles. Gravel is fine to coarse angular concrete. (MADE GROUND)		
	2.00	CPT		11N			
	2.00-2.50	D		11/300	Medium dense dark brown slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse angular brick, concrete, clinker and rare glass. (MADE GROUND)		
		B					
						106.12	2.80
	2.90	SPT		53N	Brown slightly silty fine SAND with rare fine subangular to subrounded sandstone gravels. (GLACIOFLUVIAL DEPOSITS)	105.92	3.00
	2.90-3.40	D		53/300			
		B			Very dense ed-brown slightly silty fine SAND with rare extremely weak sandstone lithorelicts. (BROMSGROVE SANDSTONE)		
	4.00	SPT		95/75			
	4.00-4.20	B					
						104.72	4.20
					End of Borehole at 4.20 m		

Stand Pipe / Legend



GENERAL REMARKS:

Hand dug service inspection pit excavated to 1.20m bgl. 50mm standpipe installed to 2.50m bgl, plain pipe ground level to 1.00m with bentonite seal and slotted pipe 1.00m to 2.50m with gravel pack. Backfiled with bentonite 2.50m to base.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Borehole Log
BH304
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Cable Percussion	24/11/2011	GJ	SD	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
300mm to 1.20m 150mm to 4.30m	4.30	108.73m AOD	408072.00 287214.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
	0.20 0.30-1.10	D B			Grass over dark brown slightly clayey slightly gravelly SAND with frequent rootlets. Gravel is fine to medium angular mixed litholorelicts. (MADE GROUND)	108.63	0.10		
	1.20 1.20-1.70	CPT D B		17N 17/300	Medium dense brown slightly silty gravelly fine to coarse SAND. Gravel is fine to coarse angular brick, concrete, rare tile, glass, coal and fine to medium subrounded to rounded sandstone. (MADE GROUND)				
	2.00 2.00-2.50	CPT D B		25N 25/300					
					Brown slightly silty fine SAND with rare fine to medium subrounded to rounded sandstone and possible limestone gravels. (GLACIOFLUVIAL DEPOSITS)	106.43	2.30		
	3.00 3.00-3.50	CPT D B		45N 45/300	Dense orange-brown slightly silty fine SAND. (BROMSGROVE SANDSTONE)	105.83	2.90		
	4.10 4.10-4.30	SPT D B		75/150	From 4.10m bgl: Very dense with occasional fine to medium gravel sized extremely weak sandstone lithorelicts.	104.43	4.30		
					End of Borehole at 4.30 m				

GENERAL REMARKS:

Hand dug service inspection pit excavated to 1.20m bgl. 50mm standpipe installed to 2.00m bgl, plain pipe ground level to 1.00m with bentonite seal and slotted pipe 1.00m to 2.00m with gravel pack.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

APPLiED GEOLOGY Tel: 02476511822 Fax: 02476697682	Job No. AG1584-11	Site: Birmingham City University Phase 2 Client: Birmingham City University Engineer: WYG	Borehole Log WS305 Sheet 1 of 1
Method Cable Percussion	Date 24/11/2011	Logged By GJ	Checked By TC	Scale 1:50
Diameter (mm) 300mm to 1.20m 150mm to 4.00m	Depth (m) 4.00	Ground Level -	Co-ordinates 408119.00 287231.00	Ground Slope Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level
	0.20 0.30 0.30-1.10	D D B			Grass over medium dense brown to orange-brown slightly silty gravelly fine to coarse SAND with occasionally to frequent brick cobbles. Gravel is fine to coarse angular brick and occasional concrete and slate. (MADE GROUND)	
	1.20 1.20-1.70	CPT D B		11N 11/300	From 1.20m bgl: Locally slightly clayey.	
	2.00 2.00-2.50	CPT D B		14N 14/300		
	2.90 2.90-3.40	SPT D B		20N 20/300	Medium dense locally grey, locally brown slightly silty fine SAND with rare fine to medium subrounded to rounded sandstone gravels. (GLACIOFLUVIAL DEPOSITS)	
	3.90	SPT D		108/240	Recovered as red-brown slightly silty fine SAND with rare fine to medium gravel sized extremely weak sandstone lithorelicts. (BROMSGROVE SANDSTONE)	
					End of Borehole at 4.00 m	

Depth (m)	Stand Pipe	Legend
2.80		
3.40		
4.00		

GENERAL REMARKS:

Hand dug service inspection pit excavated to 1.20m bgl. Cable perceussion borehole drilled in place of driven continuous sampling. 50mm standpipe installed to 3.50m bgl, plain pipe ground level to 3.00m with bentonite seal and slotted pipe 3.00m to 3.50m with gravel pack.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11	Site: Birmingham City University Phase 2		Rotary Log
	Client: Birmingham City University		BH301A
	Engineer: WYG		Sheet 1 of 2

Method	Date	Logged By	Checked By	Scale
Rotary Cored	05/12/2011-06/12/2011	TC	SD	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates
140	10.10	112.315	(408042.00) (287275.00)

Depth (m)	Core Details TCR	SCR	RQD	If	Water/ Field Record	Description of Strata	O.D. Level (m)	Depth (m)	Stand Pipe	Legend
						Cable percussion to 1.50m bgl. Dyanmic percussive sampling to 4.10m bgl (see BH log 301 B) then rotary follow on.				
						Open hole with rock roller from 1.50m to 1.80m bgl.				
4.10							108.22	4.10		
	0.00	0.00	0.00			No core recovery - (driving quartzite cobble to 5.60m bgl) (sandstone recovered as fine orange sand) (BROMSGROVE SANDSTONE FORMATION)				
5.60							106.72	5.60		
	89.00	82.00	17.00			Extremely weak red-brown thinly bedded fine grained silty SANDSTONE. (BROMSGROVE SANDSTONE FORMATION) Suspected drilling induced fractures between 5.60m and 6.05m bgl.				
7.10						Close subvertical planar to curvi planar joints rough clean between 6.70m and 8.04m bgl.				
	95.00	71.00	13.00	20 50 200						
						Black mineral staining to bedding plane at 8.04m bgl.				
8.60										
						Suspected drilling induced fractures between 8.88m and 9.02m bgl.				
	95.00	86.00	27.00	20 50 200						
						Continued next sheet				

REMARKS
Hand dug pit to 1.20m bgl. Cable percussion to 1.50m bgl. Rotary follow on from 1.50m to 10.10m bgl. 50mm standpipe installed to 10.10m bgl, plain pipe GL to 4.00m with bentonite seal and slotted pipe 4.00m to 10.10m with geosock & gravel screen.

KEY

TCR - Total Core Recovery % (of core run)
SCR - Solid Core Recovery % (of core run)
RQD - Rock Quality Designation % (of core run)
If - Fracture Spacing (mm)
▼ - Water Level
▽ - Water Strikes

GROUNDWATER STRIKES

Depth (m) No.	Struck	Rose to	Rate	Cased	Sealed
No Groundwater Encountered					

GROUNDWATER OBSERVATIONS

Depth	Depth (m) Hole	Casing	Water

APPLIED GEOLOGY Tel: 02476511822 Fax: 02476697682	Job No. AG1584-11	Site: Birmingham City University Phase 2 Client: Birmingham City University Engineer: WYG	Rotary Log BH301A Sheet 2 of 2

Method	Date	Logged By	Checked By	Scale
Rotary Cored	05/12/2011-06/12/2011	TC	SD	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates
140	10.10	112.315	(408042.00) (287275.00)

Depth (m)	Core Details				Water/ Field Record	Description of Strata	O.D. Level (m)	Depth (m)	Stand Pipe	Legend
	TCR	SCR	RQD	If						
10.10						Extremely weak red-brown thinly bedded fine grained silty SANDSTONE. (BROMSGROVE SANDSTONE FORMATION)	102.22	10.10		
						End of Borehole at 10.10 m				

REMARKS
Hand dug pit to 1.20m bgl. Cable percussion to 1.50m bgl. Rotary follow on from 1.50m to 10.10m bgl. 50mm standpipe installed to 10.10m bgl, plain pipe GL to 4.00m with bentonite seal and slotted pipe 4.00m to 10.10m with geosock & gravel screen.

KEY

TCR - Total Core Recovery % (of core run)
SCR - Solid Core Recovery % (of core run)
RQD - Rock Quality Designation % (of core run)
If - Fracture Spacing (mm)
▼ - Water Level
▽ - Water Strikes

GROUNDWATER STRIKES						
	Depth (m)					
No.	Struck	Rose to	Rate	Cased	Sealed	
No Groundwater Encountered						

GROUNDWATER OBSERVATIONS			
Depth	Depth (m)		
	Hole	Casing	Water

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11	Site: Birmingham City University Phase 2		Rotary Log
	Client: Birmingham City University		BH302B
	Engineer: WYG		Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Rotary Cored	05/12/2011	TC	SD	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates
140	8.60	110.090	(408069.00) (287246.00)

Depth (m)	Core Details TCR	SCR	RQD	If	Water/ Field Record	Description of Strata	O.D. Level (m)	Depth (m)	Stand Pipe	Legend
						Cable percussion to 3.10m bgl (see BH302 B log) then rotary follow on.				
3.10						No recovery between 3.10m and 3.70m bgl across range of SPT test.	106.99	3.10		
	57.00	44.00	0.00			Extremely weak orange thinly bedded fine grained SANDSTONE. Discontinuites are closely to very closely spaced subhorizontal undulating clean rough. Partially weathered. (BROMSGROVE SANDSTONE)	106.39	3.70		
4.60										
	97.00	87.00	9.00	7 4 13						
6.10										
	100.00	61.00	0.00			Weathered to light brown mottled orange sand with weakly cemented sandstone lithorelicts between 6.74m and 7.34m bgl.				
						Strong orange fine grained SANDSTONE. Discontinuites are close to very closely spaced horizontal planar rough clean. (BROMSGROVE SANDSTONE) Horizontal dark red-brown mineral staining to discontinuities at 7.56m and 8.13m bgl.	102.75	7.34		
7.60										
	100.00	94.00	49.00	7 2 22						
8.60						End of Borehole at 8.60 m	101.49	8.60		

REMARKS
Hand dug service inspection pit excavated to 1.20m bgl. Cable percussion to 3.10m bgl. Rotary follow on from 3.10m to 8.60m bgl. 50mm standpipe installed to 2.80m bgl, plain pipe ground level to 1.00m with bentonite seal & slotted pipe 1.00m to 2.80m bgl with gravel screen. Backfilled with bentonite 2.80m to 8.60m bgl.

KEY

TCR - Total Core Recovery % (of core run)
SCR - Solid Core Recovery % (of core run)
RQD - Rock Quality Designation % (of core run)
If - Fracture Spacing (mm)
▼ - Water Level
▽ - Water Strikes

GROUNDWATER STRIKES						GROUNDWATER OBSERVATIONS			
	Depth (m)						Depth (m)		
No.	Struck	Rose to	Rate	Cased	Sealed	Depth	Hole	Casing	Water
No Groundwater Encountered									

APPLiED GEOLOGY
Tel: 02476511822
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Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP301

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	23/11/2011	GJ	TC	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
2.00	0.70	90	3.60	111.520	408083.00 287308.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.25	ES D				Brick and concrete cobbles onto dark brown slightyl clayey gravelly fine to coarse SAND with frwequent brick and concrete cobble. Gravel is fine to coarse angular to subangular brick, concrete, tile, rare plastic and wood fragments. Occasional brick and mortar cobbles. (MADE GROUND)			
0.55	ES D					110.92	0.60	
0.75	ES D				Brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is fine to medium subrounded sandstone and angular coal. (TOPSOIL/MADE GROUND)	110.62	0.90	
1.20	D			E	Pale brown slightly clayey slightly gravelly fine to medium SAND with occasional very clayey pockets. Gravel is fine to coarse subrounded to rounded sandstone and possible limestone. (GLACIOFLUVIAL DEPOSITS)			
2.00	D			E	Stiff friable red-brown slightly silty slightly gravelly CLAY with extremely closely spaced randomly orientated fissures and manganese staining. Gravel is fine to medium subangular to subrounded sandstone, siltstone and coal. Locally slightly sandy. (GLACIAL TILL)	109.72	1.80	
3.00	D			H				
3.60	D			VH				
					End of Trial Pit at 3.60 m	107.92	3.60	

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Stable.

GENERAL REMARKS:
Trial pit backfilled with arisings on completion.

KEY

SAMPLES: B = Bulk; D = Tub; W = Water; ES = Amber Glass Jar; CBR = CBR Test; SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2): V=Hand Vane; P=Hand Penetrometer

GROUNDWATER: ▽ Entry; ▼ Standing Level

Ease of Dig: E = Easy; M = Moderate; H = Hard; VH = Very Hard

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP302

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	23/11/2011	GJ	TC	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
2.70	0.60	90	4.00	111.425	408108.00 287325.00	

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.30	ES D			M	Dark brown silty very gravelly fine to coarse SAND with frequent brick and concrete. Gravel is fine to coarse angular brick, concrete, tile, wood, electrical wire, cardboard and metallic fragments. (MADE GROUND)			
0.90	ES D							
						109.93	1.50	
1.80	D ES			E	Grey-brown slightly silty very gravelly fine to coarse SAND with frequent brick and coal cobbles and rare tile. Gravel is fine to coarse angular to subangular brick, concrete and rare wood and subangular to subrounded sandstone. (MADE GROUND)			
						108.43	3.00	
3.15	D			E	Brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is fine to medium subrounded sandstone and angular coal. (FORMER TOPSOIL/MADE GROUND)			
						108.13	3.30	
3.50	D			M-H	Stiff friable red-brown slightly gravelly CLAY with extremely closely spaced randomly orientated fisures and manganese staining. Gravel is fine to medium subangular to subrounded sandstone, siltstone and coal. Locally slightly sandy (GLACIAL TILL)			
					End of Trial Pit at 4.00 m	107.43	4.00	

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Spalling in Made Ground.

GENERAL REMARKS:
Trial pit backfilled with arisings on completion.

KEY

SAMPLES B = Bulk, D = Tub, W = Water, ES = Amber Glass Jar, CBR = CBR Test, SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2) V=Hand Vane P=Hand Penetrometer

GROUNDWATER ▽ Entry ▼ Standing Level

Ease of Dig E = Easy M = Moderate H = Hard VH = Very Hard

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP303

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	23/11/2011	GJ	TC	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
2.20	0.60	90	2.20	109.545	408091.00 287271.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.20	D ES				Rough vegetation over brown slightly silty gravelly fine SAND. Gravel is fine to coarse angular brick and concrete fragments. (MADE GROUND)			
					Orange-brown slightly silty fine SAND. (MADE GROUND)	109.25	0.30	
				E	Brick and concrete cobbles onto dark brown slightly clayey gravelly fine to coarse SAND with frequent brick and concrete cobble. Gravel is fine to coarse angular to subangular brick, concrete, tile, rare plastic and wood fragments. Occasional brick and mortar cobbles. (MADE GROUND)	109.20 109.05	0.35 0.50	
				E	Brown becoming orange-brown fine SAND with frequent fine to medium occasionally coarse tabular extremely weak sandstone lithorelicts. (BROMSGROVE SANDSTONE)			
1.25	D							
				E				
				M	Extremely weak orange fine grained SANDSTONE. (BROMSGROVE SANDSTONE)	107.75	1.80	
2.20	D				End of Trial Pit at 2.20 m	107.35	2.20	

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Stable.

GENERAL REMARKS:
Trial pit backfilled with arisings on completion.

KEY

SAMPLES B = Bulk, D = Tub, W = Water, ES = Amber Glass Jar, CBR = CBR Test, SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2) V=Hand Vane P=Hand Penetrometer

GROUNDWATER ▽ Entry, ▼ Standing Level

Ease of Dig E = Easy, M = Moderate, H = Hard, VH = Very Hard

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP304

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	23/11/2011	GJ	TC	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
2.10	0.70	90	4.05	109.300	408110.00 87291.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	SOIL SAMPLES/TESTS Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.35	D ES				Dense rubble onto dark brown slightly silty gravelly fine to coarse SAND with frequent brick and core cobbles. Gravel is fine to coarse angular brick and coarse subangular to subrounded and rare glass and coal. (MADE GROUND)			
					At 0.50m bgl: Concrete boulder approximately 500mm in diameter.			
0.85	ES D			M	From 1.20m bgl: Frequent brick and brick wall mortar cobbles.			
						107.40	1.90	
				E	Brown locally pale brown slightly silty fine SAND with occasionally fine to coarse subrounded to rounded sandstone and possible limestone gravels and rare quartz. (GLACIOFLUVIAL DEPOSITS)			
2.50	D							
				E				
						106.15	3.15	
3.30	D				Orange-brown slightly silty fine SAND with occasional fine gravel sized extremely weak sandstone lithorelicts. (BROMSGROVE SANDSTONE)			
3.50	ES				From 3.40m bgl: sporadically discoloured grey with a hydrocarbon odour.			
				E/M				
					End of Trial Pit at 4.05 m	105.25	4.05	

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Spalling in Made Ground.

GENERAL REMARKS:
Trial pit backfilled with arisings on completion.

KEY

SAMPLES: B = Bulk; D = Tub; W = Water; ES = Amber Glass Jar; CBR = CBR Test; SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2): V=Hand Vane; P=Hand Penetrometer

GROUNDWATER: ▽ Entry; ▼ Standing Level

Ease of Dig: E = Easy; M = Moderate; H = Hard; VH = Very Hard

APPLiED GEOLOGY
Tel: 02476511822
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Job No. AG1584-11	Site: Birmingham City University Phase 2	Trial Pit Log	
	Client: Birmingham City University	TP305	
	Engineer: WYG	Sheet 1 of 1	

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	23/11/2011	GJ	TC	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
2.50	1.00	-	3.90	109.830	408047.00 287225.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.10	D				Grass over brown slightly silty gravelly fine to coarse SAND with occasional brick and concrete cobbles. gravel is fine to coarse angular to subangular brick and concrete. (MADE GROUND)	109.68	0.15	
0.25	ES							
	D							
					Red-brown gravellyfine to coarse SAND with brick cobbles. Gravel is fine to coarse angular brick. (MADE GROUND)	109.43	0.40	
				H				
					Brown gravelly fine to coarse SAND with frequent brick, concrete and rare asphalt cobbles. Gravel is fine to coarse angular brick, concrete, asphalt and metal rods, wood and plastic. Rare fabric and electrical wire. (MADE GROUND)			
0.80	D							
	ES							
				H				
					At 1.30m bgl: Concrete boulders.			
1.50	ES			H				
	D							
				E		107.83	2.00	
					Pale brown slightly silty slightly gravelly fine SAND. Gravel is fine to coarse subrounded to rounded sandstone and possibly limestone. (GLACIOFLUVIAL DEPOSITS)			
2.25	D							
				E				
3.25	D							
						106.03	3.80	
				M	Red-brown fine SAND. (BROMSGROVE SANDSTONE)	105.93	3.90	
					End of Trial Pit at 3.90 m			

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Spalling in Made Ground.

GENERAL REMARKS:
Trial pit backfilled with arisings on completion.

KEY

SAMPLES B = Bulk; D = Tub; W = Water; ES = Amber Glass Jar; CBR = CBR Test; SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2) V=Hand Vane; P=Hand Penetrometer

GROUNDWATER ▽ Entry; ▼ Standing Level

Ease of Dig E = Easy; M = Moderate; H = Hard; VH = Very Hard

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP306

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	23/11/2011	GJ	TC	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
2.90	0.70	-	3.95	108.675	408049.00 287209.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.25	ES D			H	Grass over brown slightly silty gravelly fine to coarse SAND with frequent brick and concrete cobbles. Gravel is fine to coarse angular to subangular brick, concrete, tile and coal. Frequent brick, concrete and paving slab boulders witt frequent red brick SAND pockets. (MADE GROUND)			
						107.98	0.70	
				H	Red fine to coarse brick and concrete GRAVEL and COBBLES. (MADE GROUND)			
						107.28	1.40	
1.50	ES D			M	Brown gravelly fine to coarse SAND. Gravel is fine to coarse brick fragments. Frequent brick cobbles. (MADE GROUND) At 1.40m bgl: Metal sheet.			
2.00	ES D			E				
						106.43	2.25	
2.45	D				Grey mottled brown silty fine SAND. Becoming brown mottled yellow with depth. (GLACIOFLUVIAL DEPOSITS)			
				E				
						105.53	3.15	
3.25	D				Red-brown fine SAND with frequent tabular extremely weak fine grained red-brown sandstone lithorelicts. (BROMSGROVE SANDSTONE)			
				M				
						104.78	3.90	
3.95	D			H	Weak red-brown fine grained SANDSTONE. Recovered as tabular gravel. (BROMSGROVE SANDSTONE)	104.73	3.95	
					End of Trial Pit at 3.95 m			

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Spalling in Made Ground.

GENERAL REMARKS:
50mm diameter black plastic pipe encountered at 0.30m,0.5m and 0.70m bgl. Trial pit backfilled with arisings on completion.

KEY

SAMPLES B = Bulk, D = Tub, W = Water, ES = Amber Glass Jar, CBR = CBR Test, SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2) V=Hand Vane P=Hand Penetrometer

GROUNDWATER ▽ Entry ▼ Standing Level

Ease of Dig E = Easy M = Moderate H = Hard VH = Very Hard

APPLiED GEOLOGY
Tel: 02476511822
Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP307

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	05/12/2011	TC	SD	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
7.00	0.68	82	1.90	109.695	408031.00 287222.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.10	ES			E	Turf over brown organic slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse rounded quartzite, subangular fragments of concrete and shards of glass. (MADE GROUND)	109.44	0.26	
0.50	ES			M	Orange-brown gravelly cobbly SAND. Gravel is fine to coarse subangular fragments of brick and concrete cobbles, occasional half, quarter, full and mortared bricks and occasional fragments of concrete, glazed pipe, plastic pipe, metal wire, manhole cover and concrete paving slabs. (MADE GROUND) Manhole chamber encountered at 0.70m bgl brick chamber well in south face of pit.			
					Double skin wall encountered at 1.50m bgl running approximately east to west.			
1.80	ES			VH				
				VH	End of Trial Pit at 1.90 m	107.80	1.90	

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Some spalling of sidewalls.

GENERAL REMARKS:
Trial pit backfilled with arisings on completion.

KEY

SAMPLES: B = Bulk; D = Tub; W = Water; ES = Amber Glass Jar; CBR = CBR Test; SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2): V=Hand Vane; P=Hand Penetrometer

GROUNDWATER: ▽ Entry; ▼ Standing Level

Ease of Dig: E = Easy; M = Moderate; H = Hard; VH = Very Hard

APPLiED GEOLOGY
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Fax: 02476697682

Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP308

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	05/12/2011	TC	SD	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
8.70	0.68	64	0.46	110.222	408057.00 287243.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.10	ES			E	Turf over brown organic slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse rounded to subrounded limestone. (MADE GROUND)	110.06	0.16	
0.40	ES B			VH	Dark brown gravelly cobbly SAND. Gravel is fine to coarse angular fragments of brick and concrete, wire, glass, cobbles are full, half brick, concrete, occasional concrete boulders upto 0.50m x 0.50 x 0.40 onto concrete slab and asphalt. West end of pit terminated on concrete. East end of pit terminated on asphalt. (MADE GROUND)	109.76	0.46	
					End of Trial Pit at 0.46 m			

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Stable.

GENERAL REMARKS:
Trial pit 308 excavated close to BH302 where obstruction encountered.
Trial pit backfilled with arisings on completion.

KEY

SAMPLES: B = Bulk; D = Tub; W = Water; ES = Amber Glass Jar; CBR = CBR Test; SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2): V=Hand Vane; P=Hand Penetrometer

GROUNDWATER: ▽ Entry; ▼ Standing Level

Ease of Dig: E = Easy; M = Moderate; H = Hard; VH = Very Hard

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Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP309

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	05/12/2011	TC	SD	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
3.10	0.68	340	2.50	108.950	408072.00 287220.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.10	ES			E	Brown organic sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse rounded quartzite. (TOPSOIL)	108.72	0.23	
0.40	ES			E	Orange fine gravelly SAND. Gravel is fine to coarse subangular sandstone. (MADE GROUND)	108.39	0.56	
0.70	ES			E	Dark brown organic gravelly SAND. Gravel is fine to coarse fragments of brick, concrete, roofing slate, ceramic fragemnts, rounded quartzite, occasional half and quarter bricks. (MADE GROUND)			
1.40	ES			E	Orange fine SAND.	106.55	2.40	
					End of Trial Pit at 2.50 m	106.45	2.50	

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Minor spalling from sidewalls.

GENERAL REMARKS:
Adjacent to BH304. No solid obstruction encountered to base of Made Ground. Trial pit backfilled with arisings on completion.

KEY

SAMPLES: B = Bulk; D = Tub; W = Water; ES = Amber Glass Jar; CBR = CBR Test; SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2): V=Hand Vane; P=Hand Penetrometer

GROUNDWATER: ▽ Entry; ▼ Standing Level

Ease of Dig: E = Easy; M = Moderate; H = Hard; VH = Very Hard

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Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP310

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	05/12/2011	TC	SD	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
2.40	0.68	240	1.53	109.027	4080102.00 287262.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.10	ES			E	Turf over brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse rounded quartzite. (TOPSOIL)	108.84	0.19	
0.60	ES			m	Dark brown organic gravelly slightly clayey SAND. Sand is fine to coarse. Gravel is fine to coare angular fragments of brick, concrete, rare wood. Bricks up to quarter size. (MADE GROUND)	108.20	0.83	
				h	Weak orange fine grained SANDSTONE. (BROMSGROVE SANDSTONE)			
1.50	ES			VH	becoming difficult to excavate from 1.30m bgl.	107.50	1.53	
					End of Trial Pit at 1.53 m			

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Stable.

GENERAL REMARKS:
Adjacent to WS304. Trial pit backfilled with arisings on completion.

KEY

SAMPLES: B = Bulk; D = Tub; W = Water; ES = Amber Glass Jar; CBR = CBR Test; SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2): V=Hand Vane; P=Hand Penetrometer

GROUNDWATER: ▽ Entry; ▼ Standing Level

Ease of Dig: E = Easy; M = Moderate; H = Hard; VH = Very Hard

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Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP311

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Backhoe excavator	05/12/2011	TC	SD	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
2.50	0.68	240	3.10	108.180	408112.00 287228.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
0.10	ES				Turf over brown organic slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to coarse rounded quartzite. (TOPSOIL)	107.98	0.20	
0.50	ES				Brown organic slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse angular to subangular fragments of brick and concrete, occasional full bricks and rare fragments of wood. (MADE GROUND)			
					Full bricks becoming more abundant from 1.50m bgl.			
2.20	ES							
					Light yellow-brown slightly gravelly SAND. Sand is fine. Gravel is fine to coarse rounded quartzite. (GLACIOFLUVIAL DEPOSITS)	105.38	2.80	
3.00	ES							
					End of Trial Pit at 3.10 m	105.08	3.10	

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Stable, slight spalling.

GENERAL REMARKS:
Adjacent to WS305. Trial pit backfilled with arisings on completion.

KEY

SAMPLES B = Bulk, D = Tub, W = Water, ES = Amber Glass Jar, CBR = CBR Test, SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2) V=Hand Vane P=Hand Penetrometer

GROUNDWATER ▽ Entry, ▼ Standing Level

Ease of Dig E = Easy, M = Moderate, H = Hard, VH = Very Hard

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Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Trial Pit Log

TP312

Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Hand dug	13/12/2011	TC	SD	1:25

Length (m)	Breadth (m)	Orientation	Depth (m)	Ground Level	Co-ordinates	Ground Slope
0.50	0.24	156	0.74	112.700	408031.00 287292.00	Flat

Depth (m)	SOIL SAMPLES/TESTS Type	Strength	PID (ppm)	Ease of Dig	Description of Strata	O.D Level	Depth (m)	Legend
				E	Black-brown organic slightly clayey gravelly SAND. Gravel is fine to coarse rounded quartzite. Sand is fine to coarse. (MADE GROUND)			
				VH	Concrete. (edge broken and pit progressed)	112.30	0.40	
				H	Light brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse rounded quartzite with rare fragments of brick. (MADE GROUND)	112.20	0.50	
0.70	ES				At 0.74m bgl: Concrete cobble/boulder.	111.96	0.74	
					End of Trial Pit at 0.74 m			

GROUNDWATER DETAILS:
Groundwater not encountered.

STABILITY OF PIT WALLS:
Stable.

GENERAL REMARKS:
Trial pit backfilled with arisings on completion.

KEY

SAMPLES B = Bulk, D = Tub, W = Water, ES = Amber Glass Jar, CBR = CBR Test, SPT = Insitu Penetration Test

SHEAR STRENGTH (kN/m2) V=Hand Vane P=Hand Penetrometer

GROUNDWATER ▽ Entry ▼ Standing Level

Ease of Dig E = Easy, M = Moderate, H = Hard, VH = Very Hard

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Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Borehole Log
WS301
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Driven Continuous Sampling	21/11/2011	TC	SD	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
300mm to 1.20m 88mm to 1.80m	1.80	-	-	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
	0.50	ES D			Asphalt. (MADE GROUND)		0.20		
					Dark brown gravelly SAND. Gravel is fine to coarse angular fragments of brick. Sand is fine to coarse crushed brick and ash. (MADE GROUND)				
					From 1.60m to 1.80m bgl: Possible concrete obstruction.		1.80		
					End of Borehole at 1.80 m				

GENERAL REMARKS:

Asphalt broken out with hydraulic breaker. Hand dug service inspection pit excavated to 1.20m bgl. Chiselling from 1.60m to 1.80m bgl. Borehole abandoned and moved to WS301A. Borehole backfilled with arisings on completion.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

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Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Borehole Log
WS301A
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Driven Continuous Sampling	21/11/2011	TC	SD	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
	5.45	112.44m AOD	408024.00 287308.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
					Asphalt. (MADE GROUND)	112.24	0.20		
	0.60	ES			Red-brown sandy GRAVEL. Gravel is fine to coarse gravel sized fragments of brick. Sand is fine to coarse crudhes brick. (MADE GROUND)				
	1.20	SPT		1N 1/300					
	1.60	ES			with rare fragments of roof slate from 1.60m bgl.				
	2.00	SPT		8N 8/300	. . becoming stained black from 1.80m bgl.	110.54	1.90		
	2.60	ES			Loose becoming medium dense brown slightly gravelly SAND. Gravel is fine to coarse rounded quartzite. Sand is fine. (GLACIOFLUVIAL DEPOSITS)				
	3.00	SPT		22N 22/300	. . becoming red-brown from 3.10m bgl.				
	3.60	ES							
	4.00	SPT		20N 20/300					
	4.60	ES			Very dense grey-brown thinly bedded silty SAND. Sand is fine.	107.85	4.59		
	5.00	SPT		50/280					
					End of Borehole at 5.45 m	106.99	5.45		

GENERAL REMARKS:

Asphalt broken out with hydraulic breaker. Hand dug service inspection pit excavated to 1.20m bgl. Borehole diameter 98mm 1.20m to 2.00m bgl, 88mm 2.00m to 3.00m bgl, 78mm 3.00m to 4.00m bgl & 58mm 4.00m to 5.00m bgl. 50mm standpipe installed to 1.90m bgl, plain pipe ground level to 0.50m with bentonite seal and slotted pipe 0.50m to 1.90m with gravel pack. Backfilled with bentonite from 1.90m to 2.20m and arising 2.20m to 5.45m bgl.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

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Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Borehole Log
WS302
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Driven Continuous Sampling	21/11/2011	TC	SD	1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
	5.45	112.52m AOD	408015.00 287266.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
					Asphalt. (MADE GROUND)	112.32	0.20		
	0.60	ES			Dark brown gravelly SAND. Gravel is fine to coarse rounded quartzite, full, quarter and half bricks, fragments of metal and plastic. Sand is fine to coarse crushed brick and ash. (MADE GROUND)				
	1.20	SPT		9N 9/300					
	1.50	ES			Stiff red-brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded quartzite. Sand is fine. (GLACIOFLUVIAL DEPOSITS)	111.22	1.30		
	1.90	D				110.66	1.86		
	2.00	SPT		44N 44/300	Orange slightly gravelly SAND. Gravel is fine to coarse rounded quartzite. Sand is fine. (GLACIOFLUVIAL DEPOSITS)	110.48	2.04		
	2.60	ES			Medium dense orange fine SAND. (GLACIOFLUVIAL DEPOSITS)				
	3.00	SPT		11N 11/300					
	3.60	ES			. . . becoming brown and slightly gravelly from 3.20m bgl - fine to coarse rounded quartzite.				
	4.00	SPT		32N 32/300					
	4.20	D							
	4.60	ES			. . . becoming red-brown from 4.30m bgl. (wet)				
	5.00	SPT		40N 40/300	From 5.00m bgl: Very dense.				
					End of Borehole at 5.45 m	107.07	5.45		

GENERAL REMARKS:

Asphalt broken out with hydraulic breaker. Hand dug service inspection pit excavated to 1.20m bgl. Borehole diameter 100mm 1.20m to 2.00m bgl, 88mm 2.00m to 3.00m bgl, 78mm 3.00m to 4.00m bgl & 68mm 4.00m to 5.45m bgl. 50mm standpipe installed to 5.00m bgl, plain pipe ground level to 2.00m with bentonite seal and slotted pipe 2.00m to 5.00m with gravel pack.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

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Job No. AG1584-11

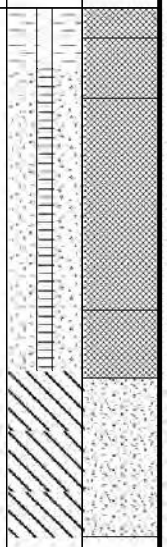
Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Borehole Log
WS303
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Driven Continuous Sampling	21/11/2011	TC		1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
	3.50	111.87m AOD	408497.00 287277.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)
					Asphalt. (MADE GROUND)	111.67	0.20
					Light brown sandy GRAVEL. Gravel is fine to coarse subangular to angular Sand is fine to coarse. (SUBBASE)	111.27	0.60
	0.70	ES					
	1.00	CPT		43/300	Dark grey gravelly SAND. Gravel is fine to coarse subangular to angular asphalt fragments and clinker. Sand is fine to coarse. (MADE GROUND)		
	1.60	ES			Rare fragments of brick from 1.50m to 1.90m bgl.		
	2.00	CPT		27N 27/300	Stiff brown sandy slightly gravelly CLAY. Sand is fine to coarse crushed brick and ash. Gravel is fine to coarse angular brick and clinker fragments and fine to coarse rounded quartzite. (MADE GROUND)	109.87	2.00
	2.60	ES			Medium dense orange slightly gravelly SAND. Gravel is fine to coarse rounded quartzite. (GLACIOFLUVIAL DEPOSITS)	109.42	2.45
	3.00	SPT		23N 23/300			
	3.40	ES			. . becoming red from 3.00m bgl		
	3.50	SPT		50/40	End of Borehole at 3.50 m	108.37	3.50



Stand Pipe / Legend

GENERAL REMARKS:

Asphalt broken out with hydraulic breaker. Hand dug service inspection pit excavated to 1.20m bgl. Borehole diameter 97mm to1.50m bgl, 87mm 1.50m to 2.00m bgl, 77mm 2.00m to 3.00m bgl and 67mm 3.00m to 3.50m bgl. Refusal at 3.50m bgl. 50mm standpipe installed to 2.40m bgl, plain pipe ground level to 0.40m with bentonite seal and slotted pipe 0.40m to 2.40m with gravel pack. Backfilled with arisings 2.40m to 3.50m bgl.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

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Job No. AG1584-11

Site: Birmingham City University Phase 2
Client: Birmingham City University
Engineer: WYG

Borehole Log
WS304
Sheet 1 of 1

Method	Date	Logged By	Checked By	Scale
Driven Continuous Sampling	21/11/2011	TC		1:50

Diameter (mm)	Depth (m)	Ground Level	Co-ordinates	Ground Slope
	1.70	108.82m AOD	408107.00 287265.00	Flat

Date & Casing Depth	Depth (m)	Sample Type	PID (ppm)	SPT N or Cu	Description of Strata	O.D Level	Depth (m)	Stand Pipe	Legend
	0.50	ES			Turf over brown organic slightly clayey gravelly SAND. Sand is fine to coarse mostly ash and brick dust. Gravel is fine to coarse subangular brick fragments. (MADE GROUND)				
	1.20	SPT		6N					
	1.20-1.65	D		6/300					
	1.50	ES				107.32	1.50		
					Orange fine SAND.				
	1.70	SPT		50/125		107.12	1.70		
		D			End of Borehole at 1.70 m				

GENERAL REMARKS:

Hand dug service inspection pit excavated to 1.20m bgl. Borehole diameter 300mm 1.20m 97mm to 1.70m bgl. Refusal at 1.70m bgl. 50mm standpipe installed to 1.50m bgl, plain pipe ground level to 0.50m with bentonite seal and slotted pipe 0.50m to 1.50m with gravel pack. Backfilled with bentonite 1.50m to 1.70m bgl.

GROUNDWATER

Struck	Cased	20 mins	Sealed	Date	Remarks
No Groundwater Encountered					

Appendix I – Report Conditions

Archaeology and Heritage Desk-Based Assessment, City Centre Campus Phases 2 and 3

This report is produced solely for the benefit of **Birmingham City University** and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of WYG using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to WYG by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors.

November 2008

WYG Environment Planning Transport Ltd