12 Archaeology and Cultural Heritage

12.1 INTRODUCTION

12.1.1 This chapter assesses the impact of the Proposed Development on archaeology and cultural heritage. In particular it considers the potential impacts from the loss of buried archaeological remains, positive earthworks (such as boundary features) and standing historic structures. Potential impacts associated with the change in the setting of statutory sites, including listed buildings, conservation areas, Scheduled Ancient Monuments (SAM) and World Heritage Site (WHS) during the operational phase of the Proposed Development are comprehensively considered in **Chapter 11 – Townscape and Visual**.

12.1.2 This chapter (and its associated figures and appendices) is not intended to be read as a stand alone assessment and reference should be made to the Front End of this ES (**Chapters 1 – 5**), as well as **Chapter 15 - Cumulative Effects**.

12.2 LEGISLATION, POLICY AND GUIDANCE

Legislative Framework

12.2.1 The applicable legislative framework is summarised as follows:

- Ancient Monuments and Archaeological Areas Act (AMAAA) 1979 (Ref. 13.1);
- Planning (Listed Buildings and Conservation Areas) (P(LBCA)) Act 1990 (Ref. 13.2); and

12.2.2 The AMAAA largely deals with SAMs and designated archaeological areas, detailing in particular what can and cannot be undertaken on archaeological grounds. Part III of the Act also details financial implications relating specifically from archaeological investigations. The precursor of the guidance provided in further planning policy guidance is described below.

12.2.3 The P(LBCA) Act provides for the protection of Listed Buildings and Conservation Areas, and is largely expressed in the planning process through policies in regional and local planning guidance, as outlined below.

Planning Policy

12.2.4 Planning policy at the national, regional, sub-regional and local level is discussed in **Chapter 5 – Planning Policy Context**, and **Appendix 5.1**. A summary of the scheme's compliance with legislation and planning policy is included in Section 12.6 of this Chapter.

Guidance

12.2.5 All archaeological desk based studies undertaken, which have informed this Chapter, have been carried out to the relevant standards and guidance as defined by the Institute of Field Archaeologists (IFA, 2008).

12.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

Scope of the Assessment

12.3.1 A formal Environmental Scoping Letter was issued to WMBC (October 2009) (**Appendix 2.2**). This document identified the impacts that the development will potentially have on archaeology and cultural heritage during the site preparation, earthworks and construction and operational stages of the development.

12.3.2 The Environmental Scoping Letter identified the following potentially significant effects:

Site Preparation, Earthworks and Construction Phase

- Disturbance of buried known/unknown archaeological deposits; and
- Increase in traffic, dust and vibration and increase in risk of damage to sensitive cultural heritage receptors.

12.3.3 As discussed above, the change in setting of cultural heritage receptors (associated with the proposed built form) will be dealt with under **Chapter 11 – Townscape and Visual.**

Extent of the Study Area

12.3.4 The following search areas have been used to establish the presence of known archaeological and built heritage remains within and in the vicinity of the site. The centre of the site at National Grid Reference (NGR SJ 316 900) has been used for all searches and the extent of the study area from the centre is outlined below unless specifically stated:

- Scheduled Ancient Monuments (SAM) – 1km radius from the site centre;
- English Heritage Registered Historic Parks and Gardens – 1km radius from the site centre;
- English Heritage Registered Battlefields – 1km radius from the site centre;
- Listed Buildings – c0.75km buffer zone from the site centre;
- Merseyside Sites and Monuments Record (MSMR) Information – c.0.75km radius from the site centre.

12.3.5 The search areas for features that are statutorily or non-statutorily protected (SAMs, English Heritage Registered Historic Parks and Gardens, English Heritage Registered Battlefields, Listed Buildings and Conservation Areas) are considered suitable and enable a fuller understanding of these features as part of the continuous historic environment. The search area for the MSMR information is considered suitable to enable a judgement to be made in the determination of the known and potential archaeological resource surrounding the site.

Consultation

12.3.6 Consultation with the Merseyside Archaeological Service was undertaken on several occasions during November 2009. During the consultation, both the methodology and outcome of the assessment were discussed.

Method of Baseline Data Collation

Desk Study

12.3.7 The following data sources have been reviewed to assess previous land use and archaeological potential:

- National, regional and local planning policies;
- MSMR, including Listed Building data;
- Information held at the National Monuments Record (NMR) in Swindon including archaeological records, bibliographic sources and aerial photographs;
- Cartographic, photographic and bibliographic information held by the Merseyside Archives and British Library;
- SAM and Listed Building Information (obtained from English Heritage);
- Walkover surveys of the site; and
- Other background material (various internet sources including http://www.magic.gov.uk;http//www.heritagegateway.org.uk;http://ads/ahds.ac.uk; http://www.british-history.ac.uk).

12.3.8 In addition to the above the Site lies within an area which has been subject to considerable research as part of the wider regeneration plans for Wirral Waters and the consented Northbank East planning application which lies adjacent to the Site's northern boundary. The three most relevant assessments for archaeological purposes are:

- Wirral Waters Baseline Study and Plans (2008);
- Environmental Statement for Northbank East (2009); and

- Environmental Statement Addendum for Northbank East (2009).

12.3.9 In terms of previous assessment of designated heritage assets, significant work has been completed as part of obtaining the Listed Building consent for the Hydraulic Tower.

Significance Criteria

12.3.10 The assessment of potential impacts as a result of the Proposed Development has taken into account both the construction and operational phases. The significance level attributed to each impact has been assessed based on the magnitude of change due to the development proposals, and the sensitivity of the affected receptor/receiving environment to change, as well as a number of other factors that are outlined in more detail in **Chapter 2 – Approach to the EIA**. Magnitude of change and the sensitivity of the affected receptor/receiving environment are both assessed on a scale of high, medium, low and negligible (as shown in **Table 2.2** in **Chapter 2 – Approach to the EIA**).

Impact Significance

12.3.11 The following terms have been used to define the significance of the impacts identified:

- **Major impact**: where the Proposed Development could be expected to have a very significant impact (either positive or negative) on archaeological features/areas. Positive effects may result from the recovery of new archaeological evidence or moderate improvements in the general historic environment which improve the way in which members of the public may experience historic or archaeological assets. This may extend to the removal of modern structures which have impaired the integrity of the historic environment and restoration of historic landscape features. Major negative impacts could constitute very significant effects on an archaeological sites or its settings of national importance. Could also constitute effect upon archaeological sites or elements of the historic or built environment of regional value without adequate record or mitigation or alterations to historic landscape features that significantly change the visibility, height and/or overall form of the feature;
- **Moderate impact**: where the Proposed Development could be expected to have a noticeable impact (either positive or negative) on archaeological features/areas. Positive effects may result from the recovery of new archaeological evidence or moderate improvements in the general historic environment which improve the way in which members of the public may experience historic or archaeological assets. This may extend to the removal of modern structures which have impaired the integrity of the historic environment. Moderate negative impacts could constitute noticeable effects on an archaeological sites or elements of the historic and built environment of regional importance and/or extensive long term change to the setting or visual amenity of such a site. Could also constitute alterations to historic landscape features that change the visibility, height and/or overall form of the feature or of a locally important archaeological site or elements of the historic or built environment without appropriate mitigation;
- **Minor impact**: where the Proposed Development could be expected to result in a small, barely noticeable impact (either positive or negative) on archaeological features/areas. Positive effects may result from the recovery of new archaeological evidence or minor improvements in the general historic environment which improve the way in which members of the public may experience historic or archaeological assets. Minor negative impacts could constitute small, barely noticeable effects on archaeological features/areas or where appropriate mitigation of preservation through record has been implemented. Could also constitute change to an area of locally important archaeological remains or their setting or alterations to historic landscape features that do not affect the visibility, height and/or overall form of the feature, landscaping or ecological planting on an area where archaeological features have been identified and change to elements of the historic or built environment following the implementation of appropriate scheme of preservation through record; and
- **Negligible**: where no discernible impact is expected as a result of the Proposed Development on the condition or setting of archaeological features, or elements of the historic or built environment.

Assessment of Importance, Potential and Magnitude of Impact

12.3.12 While there are no universally applicable measures by which the importance and potential of archaeological and cultural heritage resources can be measured, the qualitative assessment of these attributes has been guided by the following framework outlined in **Tables 12.1 and 12.2**.

Table 12.1: Establishing the Importance of a Feature

Importance	Receptor
Highest	World Heritage Sites
High	Scheduled Ancient Monuments Grade I and Grade II* Listed Buildings Sites suitable for scheduling or considered to be of national importance Other sites not listed on the SMR but considered to be of national importance
Moderate	Sites listed on the Sites and Monuments Record/Historic Environment Record which are of a reasonably well defined extent, nature and date and significant examples in the regional/county context Grade II Listed Buildings Registered Historic Battlefields Registered Historic Parks and Gardens Conservation Areas Other sites not listed on the SMR but considered to be of regional importance
Low	Sites listed on the Sites and Monuments Record/Historic Environment Record which are of a less well defined extent, nature and date Other sites not listed on the SMR but considered to be of local importance
Negligible	Sites of some local heritage interest Sites of uncertain importance meriting further study Poorly provenanced sites
Unknown	Sites of uncertain importance meriting further study

Table 12.2: Archaeological Potential

Archaeological Potential	Criteria
High	Existing sites that are readily visible as standing structures or earthworks that survive in a good state of preservation Known sites comprising buried archaeological remains Areas where numerous sites of certain dates or periods are known within the vicinity, indicating similar sites are likely to be present within a site area
Moderate	Areas where a few sites of certain dates or periods are known within the vicinity, indicating similar sites may be present within a site area Areas where numerous sites of certain dates or periods are known within the vicinity, but where the site area has been subject to some previous development or disturbance
Low	Areas where very few sites of certain dates or periods are known within the vicinity, indicating similar sites may possibly be present Areas where numerous sites of certain dates or periods are known within the vicinity, but where the site area has been subject to extensive previous disturbance through modern development or industrial processes Areas where significant build up of material has occurred in modern times associated with levelling, spoil tipping or other industrial activities sealing areas where archaeological deposits

	may be present
Negligible	Areas where no known archaeological remains have been identified through previous archaeological investigations Areas where previous disturbance through modern development or industrial activity has completely removed archaeological remains that were known or may have been present
Unknown	Where there is no available archaeological information indicating the presence or absence of archaeological remains

12.3.13 The magnitude of change upon archaeological and cultural heritage resources as a result of the Proposed Development can range from high to neutral. To establish the magnitude of change Table 12.3 is used. The figures of truncation or damage indicated are utilised as a starting point for assessment. For example, the loss of a small proportion of a densely occupied portion of a prehistoric enclosure **may** have a greater magnitude of change than the loss of a large proportion of homogenous Medieval ridge and furrow in some areas.

Table 12.3: Establishing the Magnitude of Change

Magnitude of Change	Description of Impact
High	Removal of or damage to at least 50% of a site or feature Fundamental alteration to the setting of features for which the concept of setting is applicable
Medium	Removal of or damage to up to 50% of a site or feature Considerable alteration to the setting of a site or feature for which the concept of setting is applicable
Low	Some disturbance to site or feature Discernible alteration to the setting of a site or feature for which the concept of setting is applicable
Neutral	No disturbance to site or feature No alteration to the setting of a site or feature

12.4 BASELINE CONDITIONS

12.4.1 As part of the desk study undertaken, data was obtained for any archaeological site protected by legislation or recorded on a national register. This data included SAMs, English Heritage Registered Parks and Gardens, English Heritage Registered Battlefields and locally designated areas of archaeological potential. A search radius of c1.25km was applied around the centre of the Site.

12.4.2 A single English Heritage Registered Parks and Gardens was identified by the search, as summarised in **Table 12.4**.

Table 12.4: English Heritage Registered Parks and Gardens

Park Name	Reference No.	Period	Location (distance from Site boundary)	Description
Birkenhead Park	1992	Post Medieval (opened 1847)	South (c650m)	Birkenhead Park was laid out by Joseph Paxton (1803-65) following the Third Improvement Act (Birkenhead) 1843.

12.4.3 While Birkenhead Park is of considerable value (designated as a Grade I Registered Park and Garden), there is no evidence to suggest that there is a significant archaeological component associated with its value.

12.4.4 All MSMR data is illustrated on **Figure 12.1** and listed in **Appendix 12.1**. The number in square brackets (i.e. [10406]) is identified on **Figure 12.1**. Distances from the Site boundary to individual MSMR points are provided for illustration purposes only, based on a 10 figure grid reference for the Site and the data from the MSMR for the record in question. The data set derived from the MSMR for this purpose was at a sufficiently accurate level to define distances within minimal error levels. **Table 12.5** indicates the time periods pertinent to this assessment.

Table 12.5: Time Periods Used in the Archaeological Assessment

Name of Time Period	Start of Period	End of Period
Prehistoric		
Palaeolithic	450,000	-12,000 BC
Mesolithic	12,000	- 4,000 BC
Neolithic	4,000	- 1,800 BC
Bronze Age	2,000	- 700 BC
Iron Age	700 BC	- AD 43
Historic		
Roman	AD 43	- 410
Early/Mid Saxon	AD410	- 850
Late Saxon/Early Medieval	AD 850	- 1066
Medieval	AD 1066	- 1485
Post Medieval	AD 1485	- 1900
Modern	AD 1900	- Present Day

Prehistoric

12.4.5 The MSMR search indicated that there were two instances of prehistoric material recovery within the Site. Both separate MSMR indicate the recovery of worked stone artefacts which are indicated as being of prehistoric date: two 'ancient flint arrowheads' [3189/2] being recovered from around the edge of Wallasey Pool in 1819, and a 'stone implement' with a piece of worked antler which was recovered during the excavation of Vittoria Dock in 1908 [3189/1+7].

12.4.6 The surrounding study area contains additional examples of stone artefacts dated to the prehistoric period, but no examples of structural features (pits, postholes or ditches). To the north west of the study area, palaeo-environmental remains and stone artefacts have been recovered from Bidston Moss.

12.4.7 The remains anticipated as being present in line with the above data are considered to be of low to medium sensitivity given the ease in which both isolated artefacts may be disturbed and also how artefact scatters may be impacted upon through changes in the environment. However, the remains are considered to be of low importance based on the criteria outlined in **Table 12.1** and it is considered that there is a low to moderate potential for further remains based on the criteria outlined in **Table 12.2**.

Roman

12.4.8 The MSMR search indicated that there were no instances of Roman material recovery within the Site or study area. However, within the study area a single site of Roman date is recorded on the MSMR. Material interpreted as being elements of a possible Roman bridge (through construction technique) was recovered approximately 200m to the southeast of the Site boundary in 1845 [3289/1-2]. The MSMR record indicates that the oak bridge was set in silt at a depth of 4m beneath the dock railway lines and measured approximately 100ft by 24ft wide. The original interpretation presented by Rev William H Massie suggested a relationship to the Roman road network from Chester to the Wirral.

12.4.9 The remains anticipated as being present in line with the above data are therefore considered to be of medium sensitivity given the quality of preservation which could be expected if remains are buried at similar depth. The remains are considered to be of moderate importance based on the criteria outlined in **Table 12.1** and it is considered that there is a low to moderate potential for further remains based on the criteria outlined in **Table 12.2.**

Anglo Saxon

12.4.10 The MSMR search indicated that there were no instances of Anglo Saxon material recovery within the Site or study area.

12.4.11 The remains anticipated as being present in line with the above data are considered to be of negligible sensitivity. The remains are considered to be of low importance based on the criteria outlined in **Table 12.1** and it is considered that there is a negligible to low potential for further remains based on the criteria outlined in **Table 12.2.**

Medieval

12.4.12 The MSMR search indicated that there were no instances of Medieval material recovery within the Site.

12.4.13 The possible location of Birkenhead Priory watermill has been noted approximately 250m to the southeast of the Site boundary [3289/3]. The supporting evidence includes its name (*Mulne How* infers a 'mill mound' or hill') and documentation of 1305 which indicates the mill's existence on the shore of Wallasey Pool. Early cartographic evidence indicates that Bridge Street was constructed upon an embankment built on the Priory watermill dam.

12.4.14 The manor house of Woolton-in-Wirral is thought o be present approximately 200m to the southwest of the Site boundary [3189/3]. The area immediately surrounding the NSMR location point is developed and no evidence of the 'Moat Croft' marked on map imprints of 1823 can be identified.

12.4.15 The remains anticipated as being present in line with the above data are therefore considered to be of low sensitivity given the expectation that if remains are present, they will have been disturbed, potentially to a high degree. The remains are considered to be of low to moderate importance based on the criteria outlined in **Table 12.1** and it is considered that there is low to moderate potential for further remains based on the criteria outlined in **Table 12.2**.

Post Medieval

12.4.16 The search of records on the NSMR indicated a series of instances of known Post Medieval activity within the Site boundary, the majority of which relate to infrastructure associated with the docks. The largest group feature type relates to the bridge network which facilitated movement around the docks within Wallasey Pool. The bridges were originally built as swing bridges (built to a Dock Trustees pattern). Examples are known at Alfred Dock (both the south [3290/33] and north entrances [3290/24]) as well as at several locations within the study area including Wallasey [3289/43] Egerton [3289/45] and Egerton/Morpeth [3289/42]. The customs house [3289/41], located opposite Wallasey Dock, and a dockyard [3289/33] are also recorded within the Site boundary.

12.4.17 The presence of a mortar mill and cement works [3290/25], a warehouse [3190/17] and a railway goods station built for the use of a conglomerate of railway companies [3189/12] is also known from within the Site boundary.

12.4.18 The evidence noted within the study area comprises similar evidence in terms of adjacent docks (including Morpeth Dock and Bidston Dock, though the latter was constructed in 1933), dock related activity (including locations of bridges and warehouses) and also encompasses the boundary of industrial to residential activity. The site of the 19th century Swan Hotel [3190/8] to the north of the Site is the closest known Post Medieval building (though it has been redeveloped) with more dense locations of structures known within Poulton and Seacombe.

12.4.19 The remains anticipated as being present in line with the above data are therefore considered to be of medium sensitivity given the high local relevance of remains, and the documented projects to maintain

remains of this period in the study area. The remains are considered to be of moderate importance based on the criteria outlined in **Table 12.1** and it is considered that there is moderate potential for further remains based on the criteria outlined in **Table 12.2**.

Built Heritage

12.4.20 Within the Site there is one structure which is designated as having historic interest. At the eastern boundary of the Site lies a hydraulic generating system [3289/40]. The system (comprising a Hydraulic Engine House Tower) and is Grade II Listed. It was originally built in 1863 but was damaged during World War II and subsequently restored with some loss of detail. Within the curtilage there are historic surfacing materials such as stone pavings, setts and railway tracks, as well as capstans bollards and mooring posts.

12.4.21 Immediately to the Site's northern boundary, there are two brick grain houses [3190/16]. These are the earliest elements of the development of Great Float, built in 1868. These were the first of a large number of warehouses to be constructed in the area as the importance of the docks grew and trade increased.

12.4.22 Collectively, the built heritage resources are judged to have moderate importance based on the criteria outlined in **Table 12.1**. There is no potential for hitherto unidentified built heritage resources.

Cartographic Evidence

12.4.23 The following section represents a commentary indicating the changes recorded as a result of a map regression exercise for the available map imprints. This commentary provides a chronological context to development in the study area, though evidence in relation to the Site specifically is limited given the relatively early construction of the dock complex itself and relatively limited change over the course of the reviewed map imprints.

1882

12.4.24 The Site is characterised by a mix of uses. These comprise a large presence of industrial works, along with several hotels and churches. A railway runs in a generally north-east to south-west direction servicing the dockland industries and waterfront. A goods station is present adjacent to the waterfront to the east of Vittoria Sheds.

12.4.25 The area to the south of Great Float shows terraced streets. Among the churches present are St Anne's Church, St Mary's Roman Catholic Chapel, St Peters Church, St Lawrence Roman Catholic Church, and Holy Trinity Church. Two schools are clearly visible and appear adjacent to churches. Birkenhead Borough Hospital lies to the south. South of this, lies Birkenhead Park.

12.4.26 Industrial uses on the Site include Chain and Anchor testing works, Albion Chemical works, Smithy, Britannia Engine Works, Brick Fields, Saw mill, Lubricating Works, Birkenhead Brewery, Mortar Mill, Cement Works and a number of warehouses line the waterfront associated with Great Float. Vittoria Dock is not yet present though Vittoria Sheds exist in its present day location.

12.4.27 Hydraulic swing bridges cross the channels of water between Great Float and Alfred Dock.

1899 – 1900

12.4.28 Churches within the area remain, an additional school is present. Vittoria Wharf has expanded and Vittoria Sheds now line the waterfront in the immediate area. The hospital is also still present.

12.4.29 Many of the industrial works remain. Many of the hotels are no longer marked and several have become public houses.

12.4.30 An additional railway line 'Wirrall Railway' is now present. This railway extends from the north east into the residential area, south of Great Float East. The line features a station and appears to continue to the south east in a tunnel. The terraced streets have expanded and significant infill has occurred. Birkenhead Park remains to the south.

1913

12.4.31 Vittoria Dock is now clearly visible. The buildings known as Vittoria Sheds are now Vittoria Wharf and lie adjacent to Vittoria dock and East Float to the north.

12.4.32 The hospital appears to have expanded northward and the churches, schools and railway stations are still present. A football ground is now present. The area remains industrial with warehouses and various works. Industrial works such as brick fields have now disappeared. Hydraulic bridges now separate the East Float from the three docks to the east.

1938

12.4.33 The area remains largely unchanged. Industrial works have largely been replaced by residential terraced streets. A notable addition is an employment exchange. The area to the North of East Float remains industrial.

1954 - 1956

12.4.34 Waterfronts adjacent to warehouses are now loading berths. With the exception of some minor changes to some building layouts the area is considered unchanged.

1956 – 1967

12.4.35 A scrap yard is now present. With the exception of some minor changes to some building layouts the area is considered unchanged.

1978 - 1991

12.4.36 For the first time it is evident that many of the Churches are no longer present as Places of Worship. There are now four schools within the area and the hospital is no longer present. Some of the old terraced street layout has now changed to depots and in one case to a group of buildings called Neston Gardens.

12.4.37 The goods station on the railway is no longer present; however, the railway does still service the warehouses adjacent to East Float. The area to the north of East Float remains primarily industrial.

1999

12.4.38 Railway sidings present adjacent to the south of East Float and the West of Vittoria Dock are now Wharf buildings. A business building now exists south west of Vittoria Wharf. A Rugby Union Football Ground is now present within the north west of Birkenhead Park.

2006

12.4.39 The areas immediately north and south of the East Float and Vittoria Docks remain primarily industrial. They feature works, warehouses, and a factory to the north. Much of the area to the south remains as terraced streets with schools, Places of Worship and a railway station. Birkenhead Park lies to the south and an area of commercial buildings with a superstore lie to the south east, called The Pyramids.

12.4.40 An additional station is now present to the east. This exists above the already existing railway tunnel.

Future Baseline

12.4.41 In the absence of any development on the Site, any potential archaeological remains within the Site boundary may be at risk of gradual disturbance or destruction as a result of both natural processes and also potentially the cumulative effect of large numbers of impacts from small disturbances not subject to planning control.

12.4.42 Built heritage remains (subject to proper maintenance as required by legislation should they be Listed) will not be subject to significant change.

12.5 ASSESSMENT OF IMPACTS, MITIGATION AND RESIDUAL EFFECTS

Site Preparation, Earthworks and Construction

Disturbance of buried known/unknown archaeological deposits.

12.5.1 The assessment of the available evidence presented above has indicated that the Site has limited potential for the recovery of archaeological remains of known date. The most likely remains are those associated with activity in the prehistoric period (mainly isolated worked stone artefacts and ecofacts) and Post Medieval period (as part of the dock operations such as elements of disused bridges and warehouses).

12.5.2 The recovery of material of prehistoric date from the period up until the construction of the docks indicates that there is potential for further material to be discovered from strata near the present ground surfaces and also potentially significantly deeper strata. Based on the criteria within **Table 12.2** it is considered that there is low to moderate potential for further remains to be present and remains are considered to be of low importance based on the criteria within **Table 12.1**.

12.5.3 The potential for recovery of material from the Post Medieval period is more variable given that the docks were an ongoing concern, and elements of the docks and infrastructure would be expected to be refined and/or replaced, a key example being the replacement of the early swing bridges with the more efficient Scherzer-type bascule lift bridges. This is likely to have resulted in Post Medieval remains being the subject of greater cumulative disturbance. Based on the criteria within **Table 12.2** it is considered that there is moderate potential for further remains to be present and remains are considered to be of moderate importance based on the criteria within **Table 12.1**.

12.5.4 The cumulative sensitivity of buried known/unknown archaeological deposits of primarily Prehistoric and Post Medieval date is considered to be low to medium and the magnitude of change, prior to mitigation, is predicted to be medium to low. Therefore, there is likely to be a direct, permanent, long-term effect on such features of **minor negative** significance prior to the implementation of mitigation measures.

Mitigation

12.5.5 In order to determine the presence, form and condition of remains associated with primarily Prehistoric and Post Medieval activity, a programme of archaeological observations should be undertaken. Given the intention to utilise piled foundations to significant depth in some locations, it may be beneficial to observe the piling works (the construction of the piling mat and piling itself) to determine if any archaeological deposits have survived. The baseline data presented above indicates material may survive at significant depths (c4m beneath the current ground surface) and therefore a programme of trial trenching would be impractical.

Residual Effects

12.5.6 The cumulative sensitivity of buried known/unknown archaeological deposits of primarily Prehistoric and Post Medieval date is considered to be low to medium and the magnitude of change, following mitigation, is considered to be low. Therefore, there is likely to be a direct, permanent, long-term effect on such features of **minor to negligible negative** significance following the implementation of mitigation measures.

Increase in traffic, dust and vibration and increase in risk of damage to sensitive cultural heritage receptors.

12.5.7 The Hydraulic Engine House and tower lies within the Site. The parameters for Marina View and Four Bridges outline new buildings or clusters of buildings (up to 16m in height) to the north and south of this existing feature. The Grain Warehouses lie outside of the Site, to the north of the Site and specifically to the east of Northbank West. The parameters for Northbank West outline new buildings or clusters of buildings (up to 70m in height) to the west of this existing feature.

12.5.8 Although the final foundation methodology will be the subject of further studies, piling has been considered a likely technique due to the underlying ground conditions and height of some of the buildings. The new buildings or clusters of buildings at the dockside elevation are likely to be limited to two stories in height, and may adjoin the Hydraulic Engine House at or below this level. They will respond sympathetically

to the Hydraulic Engine House. The buildings or clusters of buildings associated with Northbank West are set back from the Site boundary and the Grain Warehouses are already set within their own grounds.

12.5.9 Excavation of material and piling in the vicinity of the above features but particularly the Hydraulic Engine House and Tower, may result in vibration and therefore destabilisation of the soil strata which increases the risk of damage to the existing feature from these construction activities. The Conservation Statement and Heritage Impact Assessment (De Figueiredo, 2007) (**Appendix 12.2**) has identified that overall the structure of the Hydraulic Engine House and tower is sound. For further assessment of vibration, please refer to **Chapter 8 – Noise and Vibration**. In addition, construction traffic and activities are likely to increase the levels of dust deposited on both existing features.

12.5.10 The built heritage resources are judged to have moderate importance based on the criteria outlined in **Table 12.1**.

12.5.11 The sensitivity of the built heritage resources is medium and the magnitude of the change, prior to mitigation is potentially medium to low. Therefore, there are likely to be direct and indirect, temporary and permanent, short-term effects on such features of **minor to moderate negative** significance prior to the implementation of mitigation measures.

Mitigation

12.5.12 Provision should be made for adequate protection of the Hydraulic Engine House and Tower as well as the historic surfacing materials and quayside artefacts (by means such as fencing with appropriate signing) to acknowledge and disseminate the location of historic assets and reduce the potential for activity in the near vicinity of this feature. It has been assumed that as the Grain Warehouses lie outside of the Site, they will benefit from hoarding associated with Northbank West.

12.5.13 As outlined in **Chapter 8 – Noise and Vibration** it is recommended that a detailed construction vibration assessment is undertaken for each Quarter to ensure suitable set back distances and acceptable construction and foundation techniques are adopted.

Residual Effects

12.5.14 The sensitivity of built heritage receptors is medium and the magnitude of change, following mitigation, is considered to be low. Therefore, there are likely to be a **negligible** effect following the implementation of mitigation measures.

Monitoring and Follow Up

12.5.15 As further archaeological investigation (observations during construction works) is recommended, a detailed 'Written Scheme of Investigation' (WSI) will need to be prepared for the proposed archaeological works that will be implemented, and approval from the Merseyside Archaeological Service will be required prior to the commencement of these works.

12.5.16 Any archaeological fieldwork will be monitored by the archaeological consultant to ensure that the work is being undertaken to the agreed level of the WSI or, agree any changes due to site conditions. Liaison with Merseyside Archaeological Service will be undertaken to ensure that the works are being carried out to their satisfaction.

12.5.17 All archaeological investigations will include on-site works, post-excavation analysis, reportage and archiving of all information. These will all need to be completed to fulfil any relevant planning conditions.

Limitations and Assumptions

12.5.18 This assessment of the archaeological potential of the Site is reliant on the data provided by the local and national authorities regarding known archaeological sites within or in the locality of the Site. The results of the desk-based study have provided an archaeological and historic environment baseline for the Site, although as is always the case with buried archaeological remains, there is still the potential for hitherto unexpected remains to be discovered at the Site.

12.5.19 The data presented from the MSMR is a combination of records obtained directly from the MSMR and that presented within the previously released archaeological assessments as opposed to being entirely sourced from MSMR.

Cumulative Impacts

12.5.20 Archaeological resources are finite and irreplaceable, therefore any change to their condition directly or loss to other resources which may add towards either the innate value of known resources or the wider understanding requires consideration.

12.5.21 In general it is not possible to definitively judge what archaeological deposits may exist within specific sites within the study area without the level of investigation completed for the Proposed Development. However given the availability of archaeological and cultural heritage assessment which have been completed both for the wider Wirral Waters development and also the consented Northbank East development, it has been possible to assess the cumulative effects of East Float and Northbank East.

12.5.22 In both these cases full consideration has been given to the presence of archaeological remains and built heritage assets.

12.5.23 The proposals for Northbank East involve comparable impacts upon archaeological resources from similar time periods. However, there is limited known archaeological potential (prior to the construction of the docks) within either of these sites, which would be lost as part of East Float and Northbank East, particularly when compared to the historical value in the wider area beyond both Sites.

12.5.24 Under national, regional and local planning policy guidance full consideration will be given to the preservation or recording of archaeological deposits of overriding importance if appropriate. Based upon the above, the cumulative effect has been considered negligible based on the assumption that mitigation measures outlined above and within the Northbank East Environmental Statement (2009) will be followed.

12.5.25 It has been assumed that the mitigation measures detailed above which aim to reduce the significance of construction related effects will be further investigated and appropriately implemented across East Float and Northbank East and therefore, the cumulative effect has been considered negligible.

12.6 SUMMARY

12.6.1 The Application Site lies within an area which has historically been in use as docklands. Early evidence is known of prehistoric and post medieval activity within the study area, though few sites of these dates have been investigated to fully determine their relative importance in the wider landscape. The prehistoric data available suggests little structured settlement within the study area, and post medieval activity is largely associated with the features associated with the dock basin.

12.6.2 The construction of the dock complex itself will have had an effect on remains from earlier periods within the area of the dock basin construction which will significantly limit the potential for survival of archaeological deposits.

12.6.3 Due to the depth at which material may survive, a programme of trial trenching would be impractical and therefore a programme of archaeological observations has been recommended which will focus on the piling works (the construction of the piling mat and piling itself) to determine if any archaeological deposits have survived.

12.6.4 The full scope of archaeological investigation will be approved by the Merseyside Archaeological Service prior to the implementation of the archaeological works.

12.6.5 The construction activities may result in increases in both dust deposits and vibration (associated with piled foundation) and this may increase the risk of damage to the listed buildings but in particular the Hydraulic Engine House and Tower which lies within the Site. However, set backs or/and other appropriate measures will be informed by a detailed construction vibration assessment which has been recommended for each Quarter. This will aim to minimise risks wherever possible. Other provisions such as fencing will also be included to minimise dust deposits.

12.6.6 **Table 12.6** contains a summary of the likely significant effects of the Proposed Development.

Table 12.6: Summary of Effects Table for Archaeology and Cultural Heritage

Description of Likely Significant Effects	Significance of Impacts					Summary of Mitigation / Enhancement Measures	Significance of Residual Effects					Relevant Policy	Relevant Legislation
	(Major, Moderate, Minor, Negligible)	Positive / Negative	(P/T)	(D/I)	ST/MT/LT)		(Major, Moderate, Minor, Negligible)	Positive / Negative	(P/T)	(D/I)	ST/MT/LT)		
Site Preparation, Earthworks and Construction													
Disturbance of buried known/unknown archaeological deposits	Minor	Negative	P	D	LT	▪ Archaeological observation of piling works to an agreed methodology.	Minor to negligible	Negative	P	D	LT	WUDP CO1	PPG 16
Increase in traffic, dust and vibration and increase in risk of damage to sensitive cultural heritage receptors	Minor to Moderate	Negative	P/T	D/I	ST	▪ Appropriate fencing and signage to acknowledge the presence of cultural heritage receptors. ▪ Detailed Construction Vibration Assessment	Negligible	N/A	N/A	N/A	N/A	WUDP CHO1 and CH1	PPG 15

Key to table:

P/T = Permanent or Temporary, D/I = Direct or Indirect, ST/MT/LT = Short Term, Medium Term or Long Term

N/A = Not Applicable

12.7 REFERENCES

Documentary sources

De Figueiredo, Peter (2007) *Hydraulic Tower, Tower Road, Birkenhead Docks - Conservation Statement and Heritage Impact Assessment*

Waterman CPM (2008) *Wirral Waters: Strategic Regeneration Framework - Archaeology & Cultural Heritage Appraisal*

Waterman EED (2009a) *Northbank East, Wirral Waters EIA – Archaeology and Built Heritage* Place of Publication: Publisher

Waterman EED (2009b) *Northbank East Environmental Statement Addendum* Place of Publication: Publisher

Online Sources

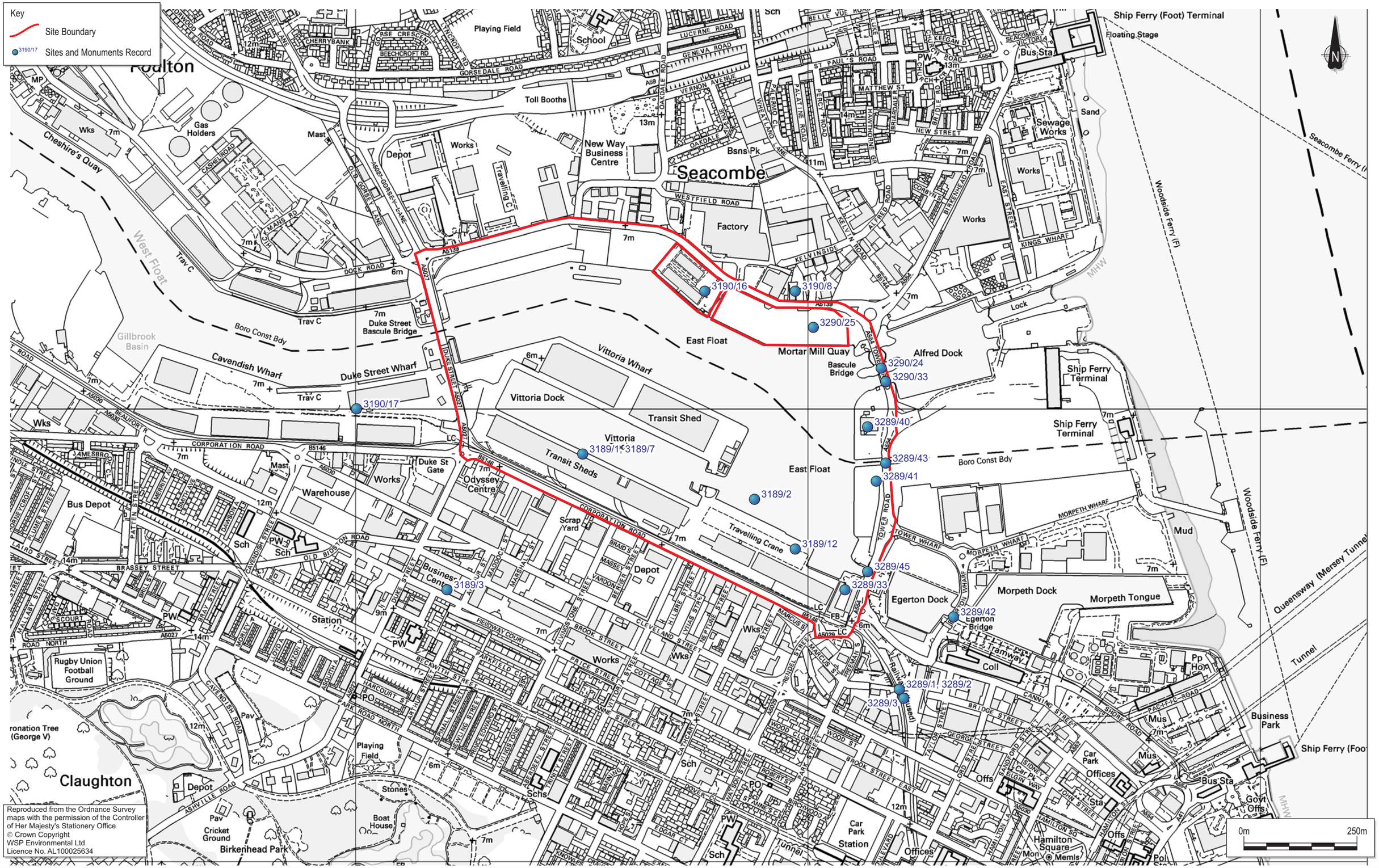
The following sources were searched based on a search radius or keyword search.

http://www.magic.gov.uk; [Date accessed: 08.11.09]

http//www.heritagegateway.org.uk [Date accessed: 08.11.09]

http://ads/ahds.ac.uk [Date accessed: 08.11.09]

http://www.british-history.ac.uk [Date accessed: 08.11.09]



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