TIDAL LAGOON CARDIFF

# Chapter 18.0
# Cultural Heritage: Marine and Terrestrial

# 18.0 Cultural Heritage: Marine and Terrestrial

## 18.1 Overview of existing situation

18.1.0.1 The Project is situated in the Severn Estuary, a location with a distinctive environment and a rich history of archaeological discoveries. The breakwaters will encompass an inter-tidal area of the Gwent Levels (Figure 18.1). The Gwent Levels have produced numerous important archaeological remains from a range of periods, including the Caldicot Bronze Age boat, the Romano-British boat from Barlands Farm, and the site Goldcliff, where an array of Iron Age wooden structures was revealed by the sea. Excavation and recording of such sites has taken place in often harsh and very challenging conditions on the exposed mud flats, and much of our knowledge is the result of a small number of individuals and organisations such as the Severn Estuary Levels Research Committee. Introduction

18.1.0.2 The Project is situated in the Severn Estuary, a location with a distinctive environment and a rich history of archaeological discoveries. The breakwaters will encompass an inter-tidal area of the Gwent Levels (Figure 18.1). The Gwent Levels have produced numerous important archaeological remains from a range of periods, including the Caldicot Bronze Age boat, the Romano-British boat from Barlands Farm, and the site Goldcliff, where an array of Iron Age wooden structures was revealed by the sea. Excavation and recording of such sites has taken place in often harsh and very challenging conditions on the exposed mud flats, and much of our knowledge is the result of a small number of individuals and organisations such as the Severn Estuary Levels Research Committee.

18.1.0.3 The tidal processes of the river have produced a distinctive sequence of estuarine deposits across the Gwent Levels, with numerous periods of shifting coastlines and tidal inundation and retreat. Research over the last twenty or thirty years in particular has gone a long way in understanding these periods of change, and the resultant buried ground surfaces dating to different periods that might be expected. The shifting forces of the Severn similarly reveal remains such as wooden structures, and even footprints, which have been covered by silt and sand for centuries or millennia.

18.1.0.4 This chapter summarises the distinctive historic resource of the ‘marine’ and ‘terrestrial’ elements of the site and its environs, and the ways in which the Project may potentially affect the historic resource. The chapter sets out a framework for assessing the nature and significance of such effects, which has been guided by pre-application consultation and meetings with key heritage stakeholders.

## 18.2 Scope of potential impact to be assessed

### 18.2.1 'Historic assets' and 'heritage assets'

18.2.1.1 Planning Policy Wales 7th Edition (Section 6.1) (Welsh Government, 2014) utilises the term 'historic environment' as encompassing archaeology, ancient monuments, Listed Buildings, Conservation Areas and historic parks, gardens and landscapes. Cadw's Conservation Principles for the Sustainable Management of the Historic Environment in Wales (the 'Conservation Principles') (Cadw, 2011) uses the term 'historic assets' for elements of the historic environment, and this term will be used for assets in both Wales and England to avoid confusion. The term 'historic asset' should be read as synonymous with 'heritage asset' as defined by the National Planning Policy Framework ('the Framework') (Department for Communities and Local Government, 2012). Historic assets are defined by the Conservation Principles as 'any part of the historic environment to which people have given a distinctive historical association or identity.'

### 18.2.2 Potential Impacts

18.2.2.1 The heritage assessment will address the potential effects of the Project upon the historic environment and historic assets. This will include both 'marine' assets and 'terrestrial' assets. 'Marine' historic assets include stratified deposits of archaeological interest and potential, as well as remains on the seabed including shipwrecks and other potential artefacts. 'Terrestrial' historic assets also include stratified deposits of archaeological interest and potential, as well as archaeological remains, designed and historic landscapes and important buildings. Modelling and assessment of former ground levels will have a great deal of overlap between 'marine' and 'terrestrial' deposits, due to the particular environment of the Severn Estuary, and a 'joined up' approach considering both marine and terrestrial evidence will be used.

18.2.2.2 The historic environment and its historic assets may be physically affected by the Project, both directly (such as from construction of the breakwaters) and indirectly (such as from alterations to existing tidal regimes). The historic environment may also be affected in a non-physical manner, through the alteration of the settings of historic assets. Both physical and non-physical effects will be assessed.

18.2.2.3 The key questions which the assessment will address are:

i. What direct physical effects will the Project have upon the historic environment and historic assets? This will include consideration of both construction impacts such as from the tidal wall itself, and associated infrastructure, as well as operational impacts such as from dredging

ii. What indirect effects will construction have upon the historic environment and historic assets? An important consideration will be any effects that the Project will have upon the tidal processes within the estuary, and thus any

indirect effects upon archaeological remains (such as, for example, through changes in estuary bed scouring rates, or rates of sediment deposition)

iii. What non-physical effects will the Project have upon the historic environment and historic assets? The significance of historic assets may be altered, either adversely or beneficially, through the alteration of their 'setting'. Setting comprises the surroundings from which an asset may be experienced, and it contributes to its overall historic significance

### 18.2.3 Specific important heritage considerations

18.2.3.1 The key issues associated with the construction phase are likely to be as follows: the construction of the breakwaters; the dredging of any material used to form the walls (or similar construction techniques); the excavation of the turbine housing 'construction trench'; and changes to the tidal regime both within and outside of the lagoon. The latter point will include possible de-watering of wetlands associated with a reduction of the upper range of the tidal cycle and erosion caused by changes to the tidal regime and the constriction of the estuary. The scope of these changes will not be limited to the area within and adjacent to the lagoon (i.e. on the Welsh side of the estuary) but will include possible effects upon deposits and sites along the English coastline. From a specifically terrestrial standpoint, the key issues associated with the construction phase are likely to arise from the construction of onshore cable routes and at the landfall of the breakwaters. The construction of any associated infrastructure also has the potential to impact upon archaeological remains.

18.2.3.2 An understanding of the geological and in particular the sedimentary sequence within the estuary, used in conjunction with an understanding of the sequence of sea level changes over the c.1,000,000 history of hominid occupation of Britain, will be key to understanding the archaeological potential within the inter-tidal and sub-tidal zones. The wetlands adjacent to the Project are characterised by a sequence of deposits that are of high national importance on the basis of the known archaeological sites and palaeo-environmental remains that they contain. These deposits have been recorded across the inter-tidal zone and into the sub-tidal areas on both sides of the estuary.

18.2.3.3 As with the marine and intertidal remains, understanding the geological sequence within the terrestrial parts of the study area will be key to understanding its archaeological potential. The landscape within the vicinity of the Project is characterised by a complex sequence of sediments including peat and clays, the Wentlooge Formation, which characterise the terrestrial part of the Gwent Levels above the Mean High Water Spring (MHWS), and stretch out into the intertidal zone. These deposits can be up to 15m in thickness and have been found to contain extremely well preserved remains of activity dating from the Mesolithic period onward. Understanding the marine transgressions and regressions, and thus establishing when areas currently within the terrestrial zone have been submerged and when they have been dry land will be a key consideration of the assessment.

This will inform how the area may have been used during different periods, thus giving an indication of the potential archaeological remains.

18.2.3.4 Detailed studies of the evolution of the Gwent Levels have been carried out by numerous authors, and recorded evidence shows a complex history of land reclamation from the Roman period onward. Remains within the area may include evidence of drainage, agriculture, settlement and wetland exploitation. The Gwent Levels, identified as a Landscape of Outstanding Historic Interest in Wales, is also noted for its exceptional preservation of both archaeological and palaeoenvironmental remains, facilitated by the waterlogged state of the area.

18.2.3.5 Within the intertidal zone, the sites present range from fully terrestrial archaeology that relates to periods of lower sea level to sites associated with coastal exploitation such as fish traps. Sites associated with access to the sea for boast (quays, hards, etc.) are also present but are likely to be a lesser issue.

18.2.3.6 The other main type of historic asset that may be affected by the Project is wrecks. This includes wrecks known from hydrographic surveys and/or diver activity within the estuary, currently unknown sites that lie buried within sandbanks and seabed sediments and wrecks within the inter-tidal zone that are preserved in the muds that overly the peat deposits within these areas. Consideration will have to be given to the possibility that wrecks may be affected by changes to the tidal regime (principally erosion) as well as direct physical impact from construction and dredging.

18.2.3.7 The general distribution of known wrecks is one of a thin scatter of mostly 19th and 20th century wrecks that would have a lower level of importance than 18th century or earlier vessels. Most of the known wrecks lie away from the sandbanks that are common within the area. The area of sandbanks represents the offshore area with the greatest potential for the presence of currently unknown wreck sites.

## 18.3 Existing baseline data, consultation and need for survey

### 18.3.1 Existing baseline data

18.3.1.1 Key sources regarding existing baseline data are set out in detail in sections 18.4.3.3 and 18.4.4.2 below. Section 18.4 ('proposed assessment methodology') also sets out the available techniques for gathering further new information on the historic resource. In this regard a 'tiered' assessment approach is proposed, agreed in-principle during pre-application engagement with heritage stakeholders. Staged assessment works will each inform the detailed scope and methodology of the next; also in consultation with key heritage stakeholders.

### 18.3.2 Consultation carried out to inform the Scoping Report

18.3.2.1 Pre-application consultation has been carried out with statutory heritage consultees and other heritage stakeholders in order to inform the current Scoping Report chapter. The objective of this consultation was to ensure that the scope and

the methodology of the assessment is appropriate, and advice provided by consultees has informed the content of this chapter. Consultation was based around two heritage meetings, which provided the opportunity for round-table discussion on the Project; the likely key heritage issues; and appropriate survey methodology.

18.3.2.2 The first pre-application heritage meeting was held at the Cadw offices, Cardiff on 8th December 2014. Attendees at the meeting comprised:

i. Members of the Tidal Lagoon Cardiff Ltd Project Team

ii. Cadw

iii. Glamorgan Gwent Archaeological Trust (GGAT)

iv. the Royal Commission on the Ancient and Historical Monuments in Wales (RCAHMW)

18.3.2.3 The second pre-application heritage meeting was held at the English Heritage offices, Bristol on 16th January 2015. Attendees at the meeting comprised:

i. Members of the Tidal Lagoon Cardiff Ltd Project Team

ii. English Heritage

### 18.3.3 Consultation during assessment

18.3.3.1 Consultation with heritage stakeholders will be an important element of the assessment. Emerging baseline data will be discussed at stages during the assessment process, including data sets of existing information as well as results of new survey data. This data will include relevant studies such as those on current and post-development coastal processes, as well as heritage information. As the results of such surveys are not currently known, ongoing consultation is a measure which will ensure that the overarching assessment methodology is adapted and refined suitably during the assessment, through peer review. The opinion and expertise of heritage stakeholders with particular experience of the inter-tidal zone will be sought.

18.3.3.2 Key stakeholders to be included in the assessment consultation include:

i. The stakeholders listed above who have already been consulted at pre-application stage (Cadw, GGAT, RCAHMW and English Heritage)

ii. The archaeological advisors to North Somerset Council, Bristol City Council and South Gloucestershire Council

iii. The Severn Estuary Levels Research Committee (SELRC). SELRC is an organisation that champions the archaeology of the Levels in England and Wales, and promotes archaeological research into the Severn Estuary. The opinion and advice of members of SELRC will be sought during the assessment process to guide the ongoing review of the methodology and interpretation of survey results

## 18.4 Proposed assessment methodology

### 18.4.1 Key statute and policy

18.4.1.1 Key statute and policy guiding the Cultural Heritage chapter will comprise:

i. Ancient Monuments and Archaeological Areas Act 1979

ii. Planning (Listed Buildings and Conservation Areas) Act (1990)

iii. Planning Policy Wales 7th Edition (Welsh Government, July 2014)

iv. Welsh Circular 60/96 'Planning and the Historic Environment: Archaeology' (1996)

v. Welsh Circular 61/96 'Planning and the Historic Environment: Historic Buildings and Conservation Areas' (1996)

vi. Marine and Coastal Access Act (2009)

vii. UK Marine Policy Statement (HM Government 2011)

viii. Historic Environment Strategy for Wales (Welsh Government, 2013)

ix. Rules of the Annex to the UNESCO Convention on the Protection of Underwater Cultural Heritage (2001, adopted by the UK government in 2005)

x. Merchant Shipping Act (1995)

xi. Protection of Military Remains Act (1986)

xii. Protection of Wrecks Act (1973)

18.4.1.2 Pertaining to Wales, the guidance on development management and the historic environment set out in Planning Policy Wales (PPW) will provide the key policy framework for the heritage report. Thus the 'Objectives' of PPW and its emphasis on 'Working with others' will be at its core. The guidance includes specific advice regarding the treatment of 'Archaeological remains'; 'Listed buildings'; 'Conservation Areas'; and 'World Heritage Sites and historic landscapes, parks and gardens'. Pre-application consultation with Cadw has established that a Heritage Bill is to be presented to the Welsh Assembly in 2015 and, if enacted, is likely to come into force in 2016-2017 with accompanying guidance documents. Emerging policy and guidance will be reviewed and will inform the assessment as appropriate.

18.4.1.3 For the assessment of sites in England, the National Planning Policy Framework ('the Framework') and the National Planning Practice Guidance will be the key guidance.

### 18.4.2 Key guidance

18.4.2.1 The following published professional guidance will form the framework for the assessment:

i. 'Historic Environment Guidance for Wave and Tidal Energy' – EH, Cadw, Welsh Government and Historic Scotland 2013. This is considered to be the lead guidance pertaining to the scope, methodology and content of the heritage report

ii. 'Historic Environment Guidance for the Offshore Renewable Energy Sector' – Wessex Archaeology and COWRIE 2007. This guidance is also relevant, but the above guidance is considered to be more appropriate as lead guidance

iii. 'Joint Nautical Policy Committee (JNAPC) Code of Practice for Seabed Development' - The Crown Estate 1998. This guidance is still generally relevant, but has been superseded by more recent guidance documents targeted at specific offshore development activities, such as the Wave and Tidal guidance referenced above.

iv. 'Coastal Heritage' – Cadw n.d

v. 'Conservation Principles' – Cadw 2011. The approach to defining the significance of historic assets set out in Conservation Principles will be utilised (evidential value; historical value; aesthetic value; and communal value)

vi. 'Conservation Principles' – English Heritage 2008 (as above, for assessing significance in England)

vii. 'The Setting of Heritage Assets' – English Heritage 2011 (for assessing non-physical effects upon historic assets in England)

### 18.4.3 Marine

**Study area**

18.4.3.1 In order to take account of both direct and indirect effects a study area that extends some distance up and down the estuary, taking in the foreshore and marine areas, will be required. An example area of a 10km study area around the Project is shown in Figure 18.2, however the exact extent of the study area will depend upon the results of the Coastal Processes work. As it is assumed that this will not be complete at the start of the Cultural Heritage assessment, a study area based on informed estimates of the likely extent of the far-field effects of the Project will initially be used, and then refined as necessary according to the coastal processes results.

**Tiered approach to additional survey work through the assessment process**

18.4.3.2 A 'tiered' approach to additional survey work will be taken during the assessment process. The rationale behind this approach is that the results of each phase of survey work inform the requirement and scope of subsequent potential survey techniques. Such a tiered approach, allowing survey techniques to be properly focussed in the most effective manner, has been agreed as suitable during the pre-application scoping.

**Desk-based assessment - sources of existing information**

18.4.3.3 The assessment will establish the baseline evidence for archaeological remains within the inter-tidal and sub-tidal components of the study area, and those elements of the terrestrial archaeological record that relate to maritime activity. In order to do this a number of existing data sources will be consulted (i.e. 'desk-based' assessment), comprising:

i. Records of wrecks and obstructions and historic charts of the estuary held by the UK Hydrographic Office (UKHO)

ii. Cadw register of designated heritage assets

iii. The Glamorgan Gwent Archaeological Trust Historic Environment Record

iv. The National Monuments Record for Wales

v. Historic mapping at the Glamorgan Archives, Cardiff and the Gwent Archives, Ebbw Vale

vi. Central Register of Air Photography for Wales

vii. A site visit/walkover

viii. English Heritage Archives (EHA), for sites along the English coast that may be affected, aerial photographs (unless these are also held by the Welsh Assembly Government archive) and wrecks within the English half of the estuary

ix. Somerset Historic Environment Record, for sites along the English coast

x. Historic maps held by the Somerset Record Office

xi. Key studies that have already been undertaken, including the Rapid Coastal Zone Assessment Surveys (RCZASs).

18.4.3.4 Initial analysis of the UKHO database indicates that there are no known wrecks or obstructions situated directly under the line of the Project (Figure 18.2). However, vessels have been reported as lost in the vicinity such as *Longley Lass,* sunk in 1927. Other wrecks, whose identity is as yet unknown, have been identified by UKHO surveys within the vicinity of the breakwaters. Figure 18.2 shows the UKHO wrecks and obstructions recorded within 10km of the breakwaters. As discussed above, this 10km area forms only an example, and the extent of the study area will be defined with reference to coastal processes studies. Table 18.1 details the UKHO record of wrecks, obstructions and fouls within 1km of the breakwaters (see Figure 18.2).

**Table 18.1 UKHO record of wrecks, obstructions and fouls within 1km of the breakwaters. See Figure 18.2 for the location of each record.**

| Obstruction type/name | Description | State |
|---|---|---|
| Unknown | Wreck | Live |
| Unknown | Wreck | Live |
| Unknown | Wreck | Live |
| *Carbon* | Steam Barge | Dead |
| *Longley Lass* | Wreck | Dead |
| *Lily* | Wreck | Dead |
| Obstruction | Possible intact wreck | Live |
| Obstruction | Geological feature | Live |
| Obstruction | Geological feature | Live |
| Foul | Geological Features | Live |
| Foul | Possible Scour around small wreck | Live |
| Note: in the 'State' column 'Live' refers to circumstances when seabed remains have been identified by surveys. The three 'dead' wrecks were all known to have been lost in the area, but their remains have not found by surveys. | | |

18.4.3.5 While the extent of direct impacts associated with hydrological changes in the estuary has not yet been determined, the RCZASs and other detailed studies have identified various intertidal features which may be affected by changes in the hydrodynamic regime. Archaeological sites within the estuary potentially sensitive to changes of this nature include landscape-scale remains such as Wentlooge deposits and evidence of land reclamation, both of which may also be directly affected by the construction of the breakwaters, and more discrete features such as fish traps. Remains of the latter have been recorded at Woodspring Bay, on the English coastline facing the location of the Project.

18.4.3.6 The evidence from the local and national archaeological databases and historic maps and air photos will be supported by information from published studies and grey literature. This will include reports compiled for the Severn Tidal Power Strategic Environmental Assessment (SEA) and publications arising from the Severn Estuary Levels Research Committee.

18.4.3.7 The crossover between the marine and terrestrial zones in terms of the known and potential prehistoric archaeological archaeology will be dealt with by adopting a seamless approach to the assessment for the periods up until the sea level reaches approximately its current level.

**Unmanned Aerial Vehicle survey and LiDAR survey**

18.4.3.8 The pre-application consultation has established that the use of Unmanned Aerial Vehicle (UAV) survey and use of LiDAR (Light detection and ranging) survey will be informative techniques to provide further information on the potential for currently unrecorded archaeological remains within the study area, as well as defining currently known sites further. Initial discussion has been held with specialist companies carrying out UAV photographic survey, and it has been

established as a suitable technique. For example, geo-located photographic images may be produced for use with Geographic Information Systems (GIS) at a resolution of up to 2cm per pixel. LiDAR would be a suitable technique for establishing the presence of palaeo-channels and other topographic information of aid to informing on archaeological potential. The detailed use and scope of these techniques will be established following the initial analysis of existing information ('desk-based' research), in consultation with the noted heritage consultees.

**Walkover Survey (inter-tidal zone)**

18.4.3.9 A visual site inspection comprising of a walkover survey will be informed by the preceding phases of work i.e. the desk-based research and use of techniques such as UAV/LiDAR. The objective of the walkover survey will be to examine potentially significant historic assets identified and to gain further information on their form, date and heritage value. Given the difficult physical conditions of carrying out field investigation in the inter-tidal zone, this informed and focussed approach has been agreed as suitable and effective during the pre-application scoping process. The walkover survey will include detailed photographic record; written description; and measurements (utilising GPS to complement the other GIS-based data sets). There are likely to be some restrictions to the walkover survey, including ecological restrictions (e.g. nesting birds).

**Geotechnical Cores**

18.4.3.10 The above stages of the assessment process will assess the extent to which current geotechnical coring within the area of the site and the estuary as a whole is able to interpret the archaeological sites and deposits that will be affected by the Project. Where there is a need for further information this will be highlighted as a possible requirement for further survey, and will be a matter to be discussed with the heritage consultees (identified in section 19.3.5.2 above). The principal area of concern for any geotechnical work will be to identify the level within the sedimentary sequence that deposits with archaeological potential survive, and the level of that potential. This approach will be seamless between the coastal wetlands and the fully sub-tidal parts of the study area.

**Geophysical Data Analysis**

18.4.3.11 The analysis will require the archaeological assessment of marine geophysical data, including sidescan, magnetometer, seismic and bathymetry. The seismic and bathymetric data assessments will be used in conjunction with the geotechnical data to inform the production of an outline deposit model for the lagoon area. The sidescan, magnetometer and bathymetry data will be used to assess the known wrecks and identify any additional anomalies with archaeological potential on the surface of the seabed. The bathymetry, magnetometer and seismic data will be used to investigate the potential for the presence of buried shipwrecks, both within and away from the sandbanks.

**Data Processing**

18.4.3.12 The data utilised by the assessment as a whole will be managed through GIS and databases. A metadata record will be produced at project inception and updated as required throughout the project. The approach will include the assessment of the positional accuracy of existing data records (often an issue offshore), and to take this into account when assessing the requirements for survey at EIA level as well as during the impact assessment.

18.4.3.13 The research will include the collation of a gazetteer of archaeological sites. The main body of the gazetteer will flow from the nature of the evidence used to generate the entry, through a generic interpretation and identification to an archaeological potential rating. The intention is to build through tiers of evidence to a 'professional judgement' on the potential of the site to require consideration within the Impact Assessment. An assessment of heritage significance (Sensitivity) will be conducted in line with existing guidance.

## 18.4.4 Terrestrial

**Study area**

18.4.4.1 In order to provide suitably detailed information pertaining to potential archaeological remains within the footprint of onshore elements of the site, and to help characterise the heritage resource within its environs, a study area with a 1km radius will be utilised. This study area would include the footprints of onshore elements of the Project including cable routes and infrastructure, and a 1km radius around these elements. It should be noted that this study area pertains to physical development effects; a much larger study area will be used for non-physical effects, for which see section 18.4.4.4 below.

**Data sources**

18.4.4.2 The assessment will establish the baseline evidence for archaeological remains within the terrestrial components of the site and study area. In order to do this a number of data sources would be consulted, comprising:

i. Cadw register of designated historic assets (including Scheduled Monuments, Listed buildings, Registered Parks and Gardens, Registered Landscapes and Registered Battlefields);

ii. The Glamorgan Gwent Archaeological Trust Historic Environment Record, for details of previously completed archaeological works in the vicinity and recorded heritage assets;

iii. The National Monuments Record for Wales;

iv. Historic mapping at the Glamorgan Archives, Cardiff and the Gwent Archives, Ebbw Vale;

v. Central Register of Air Photography for Wales, Welsh Government (or the RCAHMW air photograph collection if this is no longer available at the time of assessment);

vi. Information from specific publications and studies addressing the area, such as RCZASs, The Gwent Levels: the evolution of a wetland landscape (Rippon 1996) and The Severn Estuary: the evolution of a wetland landscape (Rippon 1997), and publications by academics including Martin Bell, Michael Fulford and John Allen (many of which have been produced through the Severn Estuary Levels Research Committee); and

vii. A site visit/walkover.

18.4.4.3 Due to the connection between marine, terrestrial and intertidal archaeology in this area assessment of potential terrestrial remains will give detailed consideration to the marine and intertidal potential. Thus data sources used in the assessment of the marine and intertidal zones will, by proxy, also inform the assessment of terrestrial archaeological remains.

**Assessment of non-physical effects (settings assessment)**

18.4.4.4 The Historic Environment Guidance for Wave and Tidal Energy provides guidance on potential effects on the setting of historic assets, and states that they must be 'assessed adequately'. The guidance notes that 'the degree to which a scheme has visual impacts on the historic environment is strongly related to the appearance of the proposed devices or structures' (page 22). The Guidance is endorsed by Cadw, the Welsh Government and English Heritage, and will be the primary guidance regarding non-physical effects. Regarding historic assets in England, the English Heritage Settings Guidance will be utilised (English Heritage, 2011). Cadw is in the process of drafting Welsh settings guidance, and is likely to include a statement on setting in the draft Technical Advice Note to the Heritage Bill, which may be available from May 2015. The assessment will make use of such documents as they become available.

18.4.4.5 The settings assessment will follow a staged approach. An initial 'study area' of a 10km buffer around the Project will be utilised, although extended to approximately 15km on the English side (Figure 18.1). These will represent the minimal data gather areas, and where appropriate designated heritage assets may be included from beyond this area. In the North Somerset, for example, designated heritage assets which fall within the Zone of Theoretical Visibility (ZTV) along the ridge overlooking the Levels will be considered for inclusion in the assessment (see Figure 18.1 for ZTV over the ridgeline). This approach was discussed with heritage consultees at the pre-application meetings and agreed as acceptable and appropriate. Designated historic assets will include Scheduled Monuments; Listed buildings; Registered Parks and Gardens; Registered Battlefields; and Conservation Areas. Initial data review identifies that up to two thousand designated historic assets lie within the study area. The ZTV will be used to filter the initial ZTV dataset, which is anticipated to reduce the number of assets significantly. The ZTV to inform

the assessment will consider the screening effect of vegetation and buildings etc. The Landscape and Visual Impact Assessment carried out for the EIA will also inform the settings assessment.

18.4.4.6 Initial data processing indicates that within the 'bare-earth' ZTV and 10km study area in Wales, there are:

i. 53 Scheduled monuments

ii. 29 Registered Parks and Gardens

iii. 919 Listed buildings (all Grades)

18.4.4.7 While in England, within the ZTV and extending to the 15km study area there are:

i. 13 Scheduled monuments

ii. 1 Registered Park and Garden

iii. 174 Listed buildings (all Grades)

18.4.4.8 Once this initial data set is established, the next step will be to identify which of the historic assets has a low tolerance to change as a result of the Project. This process will include a review of the designation descriptions provided by Cadw and English Heritage. Conservation Area appraisal documents will also be assessed during this stage. Those assets that are considered to have a low tolerance to the Project, will be proposed for further assessment, including field inspection. Ordnance Survey mapping and satellite imagery will also be utilised during this assessment. Further settings assessment will then determine which assets derive importance from their setting, and if so, how and why. Those historic assets considered to derive importance from a relationship with the seascape, for example, are likely to be considered to have a low tolerance to change within this seascape setting, and will be assessed in greater detail. This consideration will be guided by paragraphs 12.8 to 12.16 of the Wave and Tidal Energy Guidance. This notes that historic assets with a low tolerance will primarily include those with a specific association with the seascape. It may also include:

i. assets which are prominent on the coast

ii. views of monuments across the water from one piece of land to another

iii. where visibility contributes to the context in which the asset is appreciated today, then it needs to be taken into account. For example, historic coastal defence batteries

iv. past visibility from the sea (for example, features that could be 'lined up' from sea to provide a route through a channel)

v. some submerged assets may have relationships with their surroundings that can be perceived and appreciated – the guidance does recognise this, however, as 'rare instances'

18.4.4.9 Examples of the assets which may fall within these criteria, and are known to lie within the ZTV and study area as outlined in the initial data scoping exercise above, include:

i. the Scheduled multi-period site on Brean Down, prominent on the English coastline and including remains such as Bronze Age burial mounds and an Iron Age hillfort which may include views (to and from the assets) as a part of their significance;

ii. the Grade II Listed West Usk Lighthouse and other assets of the same type;

iii. The Scheduled gun batteries on Steep Holm and associated Listed buildings, which comprise features of historic coastal defence;

iv. Penarth Registered Park and Garden with its 'significant views' (as defined by Cadw) looking seaward from the Welsh coast.

18.4.4.10 The objective of this assessment approach is therefore to identify those historic assets that may actually be affected by the Project, and to focus an appropriate level of assessment and research on these. This approach will provide highly informative, focussed and manageable information for stakeholders, including the public, to read.

### 18.4.5 The Gwent Levels Landscape of Outstanding Historic Interest

18.4.5.1 Part of the Gwent Levels Landscape of Outstanding Historic Interest lies within the tidal lagoon area (Figures 18.1 and 18.2). Pre-application consultation has established that an ASIDOHL(2) assessment will be carried out to assess the potential effects of the Project (both physical and non-physical effects) upon this landscape. Consultation has similarly established that an ASIDOHL(2) assessment is not required for the Lower Wye Valley Landscape of Outstanding Historic Interest, due to the lack of inter-visibility, and therefore will not be carried out.

### 18.4.6 Assessment of historic asset significance and development effect

18.4.6.1 The assessment of significance of historic assets will primarily be guided by the volumes 'Conservation Principles' by Cadw and English Heritage as relevant. These volumes identify significance as a combination of various values including the aesthetic, communal, evidential and historical. The guidance pertaining to 'significance' as set out in the Historic Environment Guidance for Wave and Tidal Energy (Chapter 11) will also be of relevance.

18.4.6.2 The assessment of the significance of the effect of Project will be expressed as a combination of the significance of the historic asset and the magnitude of the effect of the Project upon it. Emphasis will be placed on a focussed qualitative description of the key effects, with reference to national and development plan policy, statute and professional guidance.

18.4.6.3 The assessment of effects will include consideration of in-combination or 'cumulative' effects with regard to other consented or in-planning developments.

The assessment of cumulative effects will incorporate both physical and non-physical impacts. In terms of impacts upon the setting of heritage assets, assessment would take into account the 10-15km setting study areas as defined above, in addition to designated heritage assets which may be affected beyond this area, such as those within the ZTV on the ridgeline overlooking the Somerset Levels.

### 18.4.7 Mitigation

18.4.7.1 Mitigation measures will be proposed as part of the assessment. Appropriate measures will be discussed with the heritage stakeholders during the assessment process, and may include long-term measures such as monitoring of particular areas. The detail of such measures will be set out in a separate Heritage Conservation Strategy, which will provide a framework for heritage monitoring, survey and recording during the construction and operational phases of the Project.

18.4.7.2 Consideration of the effects of the Project following the implementation of mitigation will be provided.

## 18.5 References

Cadw (2011) Conservation Principles for the Sustainable Management of the Historic Environment in Wales

Department for Communities and Local Government (2012) National Planning Policy Framework (NPPF)

English Heritage (2011) Settings Guidance

Historic Environment Guidance for Wave and Tidal Energy

Welsh Government (July 2014) Planning Policy Wales 7th Edition

# Figures

N

Key

- Cardiff Lagoon Wall
- Study Area
- Registered parks and gardens
- Scheduled Monument
- Grade I Listed Building
- Grade II Listed Building
- Grade II* Listed Building
- Cardiff Lagoon ZVI

Landscape of Outstanding Historic Interest

- The Gwent Levels

0 5km



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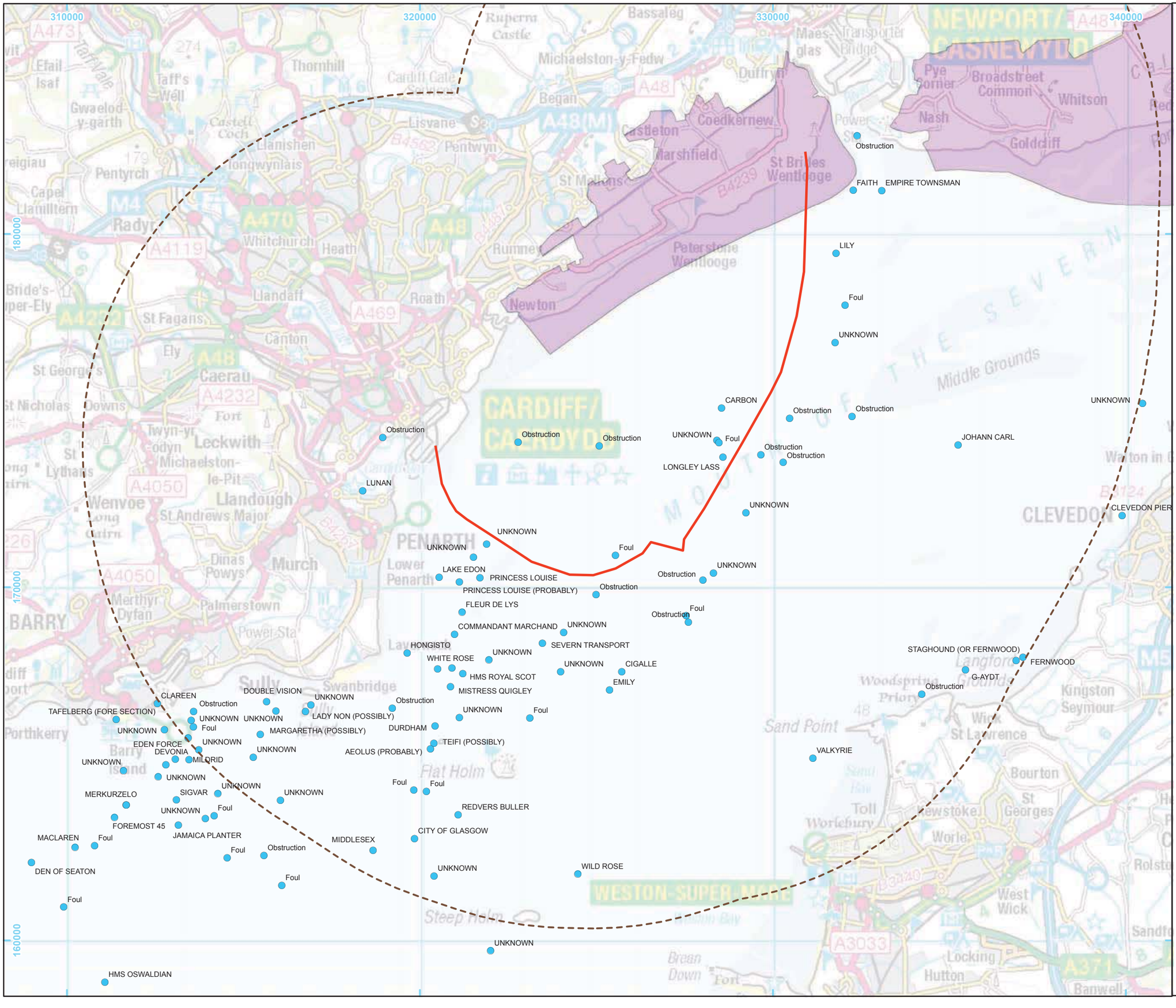
PROJECT TITLE
Cardiff Tidal Lagoon

FIGURE TITLE
**Designated Heritage Assets within the ZVI and 10-15km study area**

| | | | | | |
|---|---|---|---|---|---|
| PROJECT NO. | 5168 | DATE | 19/02/2015 | FIGURE NO. | 18.1 |
| DRAWN BY | JB/LJH | REVISION | NA | | |
| APPROVED BY | JB | SCALE@A3 | 1:150,000 | | |



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PROJECT TITLE
Cardiff Tidal Lagoon

FIGURE TITLE
**Location of proposed Tidal Lagoon wall showing UKHO Wrecks and Obstructions and the Gwent Levels Landscape of Outstanding Historic Interest**

| | | | | | |
|---|---|---|---|---|---|
| PROJECT NO. | 5168 | DATE | 19/02/2015 | FIGURE NO. | 18.2 |
| DRAWN BY | LJH | REVISION | NA | | |
| APPROVED BY | JB | SCALE@A3 | 1:100,000 | | |