Tidal Lagoon Swansea Bay

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Written Scheme of Investigation
Terrestrial Heritage Assets
Tidal Lagoon Swansea Bay

April 2016

47065127

Prepared for: Tidal Lagoon Swansea Bay

Prepared by: AECOM
## Tidal Lagoon Swansea Bay

### Scheme of Investigation – Terrestrial Tidal Lagoon Swansea Bay

### May 2016

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1. INTRODUCTION

1.1 Background

1.1.1 AECOM was commissioned by Tidal Lagoon Swansea Bay to prepare a Written Scheme of Investigation (WSI) and a written scope of works to discharge Requirements 16 and 17 of the approved Development Consent Order (DCO), The Swansea Bay Tidal Generating Station Order 2015, for the standing pillboxes, gun emplacement and tank traps situated seaward of Queen’s Dock Swansea. Since the publishing of the requirements, the navigational light was no longer found to be of heritage interest due to its replacement. This has now been removed from the WSI.

1.1.2 Tidal Lagoon Swansea Bay (TLSB) is to construct and operate a tidal energy lagoon, located in Swansea Bay, South Wales. The tidal lagoon will generate renewable energy in the form of electricity using the large tidal range (the difference between high and low water) which is a distinguishing feature of the Bay. The Lagoon will have an installed capacity of 320 Megawatts (MW), generating in excess of 500GWh net annual output. This is enough electricity for approximately 121,000 homes: more than Swansea’s annual domestic electricity use (109,000 households); c.70 percent of Swansea Bay's annual domestic electricity.

1.1.3 The Lagoon will enclose part of Swansea Bay, from the eastern side of the River Tawe (western landfall) to the eastern edge of the new Swansea University Bay Campus (SUBC). The breakwaters impounding the Lagoon will extend approximately 1.5km directly offshore from SUBC, adjacent to Crymlyn Burrows Site of Special Scientific Interest (SSSI). The breakwaters will then extend in a southwest direction along the western boundary of the training wall of the River Neath Channel. A turbine and sluice gate housing structure will be located in the south west of the Lagoon, at an oblique angle to the dredged channel of the River Tawe. The breakwater will then extend north towards Swansea Port, close to the mouth of the River Tawe, parallel but offset by 100m from the dredged channel for the River Tawe and Port of Swansea. In total, this will form an approximately 9.5km-long, U-shaped, breakwater which will impound approximately 11.5km² of the seabed, foreshore and intertidal area of Swansea Bay.

1.1.4 As the Project is an offshore electricity generating station with a capacity in excess of 100MW, it is classed as a nationally significant infrastructure project (NSIP) under the Planning Act 2008 (PA 2008). Construction of such a project requires that a DCO is made by the appropriate Secretary of State, in this case the Secretary of State for Energy and Climate Change, via an application to the Planning Inspectorate under PA 2008.

1.1.5 The DCO for the Project includes a number of consents formerly required separately for a project of this type. Section 33 of PA 2008 dispenses with the need for separate planning permission or deemed planning permission under the Town and Country Planning Act 1990 (TCPA 1990) and consents under Section 36 of the Electricity Act 1989. Any additional permissions required under TCPA 1990 will be sought following the grant of development consent, as such elements would not form an integral part of the Project as authorised by the DCO.

1.1.6 Consent was granted by the Secretary of State for Energy and Climate Change when she made an Order (the Development Consent Order, DCO) authorising the development on 9 June 2015. The DCO authorises the construction and operation of the generating station itself, and its component parts. These include both offshore and onshore elements of the Project. A separate application under the TCPA is being sought for the 275kV electrical grid connection works.

1.1.7 Environmental Statement (ES) Chapter 21 provided an assessment of the potential effects of the Project on cultural heritage: terrestrial archaeology and historic landscape. The ES detailed the
legislation and planning policy relevant to cultural heritage in the terrestrial environment, the methodology by which the assessment has been carried out, a description of the baseline conditions, an assessment of the potential effects that could arise from the construction, operation and decommissioning phases of the project, and any mitigation required.

1.1.8 The Project will involve the construction of new infrastructure and public realm that will incorporate the World War II (WWII) defensive structures: three pillboxes, a gun emplacement and tank traps.

1.1.9 The programme of archaeological works that is set out in this Written Scheme of Investigation (WSI) is to be submitted to and approved by the relevant planning authority in consultation with Cadw and Glamorgan-Gwent Archaeological Trust (GGAT).

1.1.10 This WSI specifically relates to the terrestrial elements of Requirements 16 and 17 of the DCO. The marine elements of DCO Requirement 16 and 17 will be outlined in a separate document. Details of a proposed watching brief on cable trenching works for the grid connection are also included in this WSI although this is subject to TCPA consent, as discussed above. The associated archaeological condition for watching brief has been confirmed in consultation with GGAT.

1.1.11 Requirement 16 states:

Archaeology

16.—(1) No part of the authorised development in any phase is to commence until a programme of archaeological work including a written scheme of investigation has been submitted to and approved by the relevant planning authorities following consultation with Cadw. The written scheme of investigation is to include an assessment of significance and research questions appropriate for investigation; and—

(a) a programme and methodology of site investigation and recording having regard to the on- and offshore nature of the authorised development;

(b) a programme for post investigation assessment;

(c) provision for analysis of the site investigation and recording, as well as retention of historic assets in situ where reasonably practicable;

(d) provision for publication and dissemination of the analysis and records of the site investigation;

(e) provision to be made for archive deposition of the analysis and records of the site investigation; and

(f) nomination of a competent person or persons to undertake the works set out within the written scheme of investigation.

(2) No part of the authorised development is to take place other than in accordance with the written scheme of investigation approved under paragraph (1) of this Requirement.

(3) The site investigation and post-investigation assessment are to be completed in accordance with the programme set out in the written scheme of investigation approved under sub-paragraph (1) and provision is to be made in the written scheme of investigation for analysis, publication and dissemination of results and archive deposition.
1.1.12 Requirement 17 states that:

Retention of historic assets

17.—(1) No part of the authorised development is to commence until a written scope of work required for the retention (where reasonably practicable), or (as the case may be in relation to item (b) below) relocation, and enhancement of identified historic assets, including in particular—

(a) the standing pillboxes, gun emplacement and tank traps situated seaward of Queen’s Dock Swansea, with a buffer zone of approximately 5m, together with suitable landscape treatment; and

(b) the navigation light situated on the existing Swansea Harbour East Pier, has been submitted to and approved by the relevant planning authority in consultation with Cadw and the Glamorgan-Gwent Archaeological Trust Ltd.

(2) The authorised development is to be carried out in accordance with the approved details.
2. SITE BACKGROUND

2.1 Site Location

2.1.1 The Project straddles the administrative areas of the City and County of Swansea Council (CCSC) and Neath Port Talbot County Borough Council (NPTCBC). The main onshore development lies within the Port of Swansea area, immediately south of Fabian Way (A483) which is the main trunk road from Junction 42 of the M4 into Swansea. Queens Dock, and the associated WWII defensive structures, form one part of the Port of Swansea complex. It is situated approximately 2.2km southeast of Swansea city centre.

2.1.2 Overall there are four docks that make up the Port of Swansea Docks. The South Dock is located to the west of the River Tawe and is now Swansea Marina. The Prince of Wales Dock is located near to Fabian Way and east of the River Tawe. The Kings Dock is situated to the south of the Prince of Wales Dock and north of the Queens Dock, on the east side of the River Tawe. The King’s Dock is the principal dock in the Port of Swansea which is still in use today for cargo operations. The working docks area today is owned and operated by Associated British Ports (ABP) as the Port of Swansea. The Queens Dock lies furthest south and is adjacent to the main Port coastal road. The Port road is bounded by a 2m high port sea wall, which also incorporates the WWII defensive structures.

2.2 Site Description

2.2.1 Queens Dock is a rough rectangular plan. The lock entrance is located to the west in between the West pier and the existing Eastern breakwater. It follows the same course as the River Tawe before branching to the east through a series of lock gates. The locks also serve the Prince of Wales Dock and Kings Dock. Queens Dock represents the last phase of dock construction which was undertaken in the 1920s and was principally built to serve the import of fuel stores. The dock retains many of its original features, including some of the jetties and dockside furniture such as bollards and rope stays.

2.2.2 The site also includes the Eastern breakwater. This pier was originally built in 1800 and housed a 1909 harbour light of timber frameworks structure. However, the whole pier was rebuilt in the 1960s and the harbour light replaced at that time with a modern navigational light.

2.2.3 The most significant build elements at Queens Dock relate to the military defensive structure of WWII. The Queens Dock is not listed or scheduled, as are none of the defensive structures.

2.2.4 During the early part of WWII five pillboxes were constructed into the 2m high Port sea wall to defend the harbour and docks against any sea borne attacks. Along the south seaward stretch of the port sea wall are three pillboxes, a gun emplacement and tank traps. In addition, one collapsed pillbox is located to the eastern end of the port sea wall. A scar in the port sea wall indicates a likely location of a further pillbox to the west. A gun emplacement was also built to accommodate a 4.7” naval gun originally of late 19th century date. The platform for the gun still survives in the port sea wall. Towards the eastern end of the port sea wall are two in situ tank traps and a further two close by that are no longer in situ.

2.2.5 The three in situ pillboxes are constructed of brick and concrete with concrete foundations and thick cement render. All surviving structures are in a good to fair condition, although significant structural cracks were identified in two of the three pillboxes. The westernmost pill box no longer exists. The eastern most pill box has been demolished and debris of the structure is still present.

2.2.6 The gun emplacement is an open area structure constructed of a raised concrete pad and a semi-
circular addition to the top of the port sea wall. It is possible that the gun emplacement would have had a crew shelter and magazine store and possible other elements associated with it.

2.2.7 The tank traps are constructed of concrete. Two are in situ and the other two whilst adjacent to them have been removed from their original location. There would have originally been two located at the other side of the Port road to allow a road block.

2.2.8 Although not currently statutorily protected, all of the WWII defence structures are of high historic significance. Previous research undertaken has revealed evidence that the pillboxes are unique in their design and, as such, are likely to be of at least national significance. Together with the gun emplacement and tank traps, the surviving pillboxes form a distinctive group of structural remains which represent a rare survival in Wales. As such, it is understood that Cadw will be applying for scheduling of the WWII structures in the near future, to ensure their long term protection.

2.3 Historic Background

2.3.1 The first large dock on the east side of the River Tawe was the Prince of Wales Dock, which opened in 1881 and was extended in 1898. This was followed by Kings Dock in 1909 and a further extension, which opened at Queens Dock in 1920. Queens Dock is of historic importance and contributes to the story of the industrial development of Swansea in the 19th and 20th century, the dock was built to accommodate the expansion of trade by the Anglo-Asian Oil Company. Structural additions have been made over the years including several further jetties. The Queens Dock and the neighbouring Kings Dock were important for the exportation of coal, coke and patent fuel. Queens Dock handled up to 2,000 tankers a year discharging millions of tons of crude oil to from the Middle East and loading petroleum and other refined products for the UK, and for destinations such as Africa, Europe and Scandinavia. Oil traffic peaked in the 1950s but rapidly declined in the 1960.

2.3.2 During the 19th century Swansea was still a centre for the production of non-ferrous metals. By the start of the Second World War, the port was also used to export weapons and reinforcements from and to the Empire and Commonwealth nations, putting Swansea on the radar of the German High Command and making it a target for the Luftwaffe. However, whilst the city was extensively devastated by bombing in four major Blitz raids, requiring subsequent demolition and redevelopment in the post-war era, the industrial quarters in Swansea were by comparison relatively unscathed.

2.3.3 Following the Dunkirk evacuation a German invasion of Britain was expected daily. A programme to construct a network of fixed anti-invasion defences was implemented. The decision to make fixed defensive points as opposed to mobile and flexibly responses (the preferred strategy) was a reaction to the limited military equipment available following the destruction by enemy action or abandonment on the beaches of France. The fixed defensive structures were designed to create delays for an invading force. It is thought that upwards of 18,000 pillboxes were constructed in the nine months following Dunkirk. The majority of these were located in the Coastal Crust. The Coastal Crust extended from the far north of Scotland, down the entire east coast, and around the south coast to the West Country, turning round Land’s End and running back as far as Bristol. The South Wales coast was also fortified, as were most ports. Swansea Docks played an important part in this.

2.3.4 A further objective was to protect the South Wales coal fields and industrial belt. The threat was from the attack via the Republic of Ireland as it was thought that there was a possibility that the Germans would use the Republic of Ireland as a stepping stone to Britain. Many parts of Wales were therefore protected against any potential attack including the defences at Queens Dock.

2.3.5 At the war office, the Directorate of Fortifications and Works (DFW) was responsible for the design of all military structures, from ablution-blocks to bridges to Z-batteries. In May 1940 the construction of
anti-invasion defences became the priority for the Directorate and, in recognition of this, a dedicated department was established, known as DFW3. They produced a number of drawings nine of which were for pillboxes. These drawings would have been issued to Royal Engineer (RE) officers in the field. The RE officers briefed, supervised and oversaw the local contractors whom built the defensive structures. Other designs were also prepared by commercial companies and submitted to the War Office for sale. In addition, the RE officers and the contractors undertaking the work added their own modifications.

2.3.6 The construction of pillboxes was essentially a civilian operation overseen by the RE officer. They were generally shuttered in timber and the concrete in-fill was generally applied in two pouring’s. When timber was in short supply brick were used as shuttering. Cement was also hard to come by which in July 1940 led to the War Office issuing a memorandum entitled ‘Economy of Cement in Defence Post’ drawing attention to chief Engineers of the measures to be taken. This included reducing the thickness of floors, or even omitting them altogether, sinking walls below ground-level in order to avoid reinforcing, using lime instead of cement and even using a weaker mix of concrete.

2.3.7 Most designs consisted of: minimum of Bullet/Splinter Proof protection; no living accommodation; enhanced shell proofing; simple blast walls to protect open entrances; and, external flat side walls with rectangular or polygonal shape.

2.3.8 Gun emplacements were an essential part of the defence of the coastal areas. The guns they housed had the specific function of engaging high flying strategic bombers, hence their location around the south and east coasts, and close to large cities and industrial and military targets.

2.3.9 Tank traps were one of many differing types of concrete structures that were designed to stop tanks. The ones located on Queens Dock were used with the specific function to supplement a road block.

2.3.10 Despite the overwhelming devastation of the Second World War, Swansea recovered reasonably well. Although there were further changes to the docks. The development of the new docks system on the east side of the River Tawe, together with the progressive reduction of coal exports due to the increase use of oil, resulted in the docks on the west side of the river becoming largely obsolete. The Prince of Wales Dock closed in 1930, although it is now part of a new redevelopment. The South Dock closed in 1971 although it is now used as Swansea Marina. Queens Dock was rendered virtually redundant by the closure of both Llandarcy Oil Refinery and the BP Chemicals Plant at Baglan Bay, though more recently is now used for roped mussel farming. The Kings dock continues to handle the remaining commercial traffic of the Port of Swansea.
3. REQUIREMENT 16

3.1 RESPONSIBILITIES AND COMMUNICATION

3.1.1 The responsibility for implementing this WSI rests with TLSB.

3.1.2 TLSB will retain the services of a suitably qualified and experienced Archaeologist (the Retained Archaeologist) to ensure the effective implementation of the WSI and other commitments in relation to onshore archaeology. The Retained Archaeologist is ……………………………………………….. (complete once known). His/her contact details are:

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3.1.3 TLSB will provide the Archaeological Curator with the name and contacts details of the Retained Archaeologist, as well as his/her qualifications and experience prior to the commencement of construction.

3.1.4 The Archaeological Curator at Cadw is

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3.1.5 The Archaeological Curator at GGAT is

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3.1.6 TLSB’s Environmental Manager, advised by the Retained Archaeologist, will liaise with the Archaeological Curator with regard to offshore archaeology and the implementation of this WSI. TLSB’s Environmental Manager is ……………………………………………….. (complete once known). His/her contact details are:

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3.1.7 In relation to the implementation of the WSI, the Retained Archaeologist will report to TLSB’s Environmental Manager who will advise the Retained Archaeologist of TLSB’s requirements or responsibilities under the Construction or Operational Environmental Management Plans and/or any Construction Method Statement/s produced for the Project.

3.1.8 Similarly, the Retained Archaeologist will advise TLSB’s Environmental Manager with regard to the implementation of archaeological requirements applicable to the Project-related activities identified below which may affect archaeological receptors. The Retained Archaeologist will also provide input into and review all relevant Project-related method statements, to ensure that they meet licence conditions in respect of archaeological considerations.

3.1.9 Interaction with TLSB’s construction contractors in respect of this WSI and any matters relating to onshore archaeology and the historic environment will be administered by TLSB’s Environmental Manager, advised by the Retained Archaeologist.

3.2 Archaeological Evaluation of the Gun Emplacement

3.2.1 This section of the WSI describes the objectives and methodology for targeted trial trenching at the location of the gun emplacement. The evaluation has been requested by Cadw and GGAT as part of the archaeological Requirement 16 of the DCO. A separate scope of works to undertake building recording, presented below, will be undertaken on the gun emplacement itself.

Aims and Objectives of the Trial Trench Evaluation

3.2.2 The objectives of the works are:

(a) To evaluate the survival of archaeological deposits or features associated with the crew quarters of the gun emplacement (including its presence or absence, character, extent, date, integrity, state of preservation, quality and significance); and

(b) If archaeological remains are identified, to inform the preparation of a strategy to mitigate the impact of development.

Methodology

3.2.3 All work shall be carried out in accordance with the Code of Conduct (2014) and Standard and Guidance for Archaeological Field Evaluation (2014) produced by the Chartered Institute for Archaeologists (CIfA), which states:

“An archaeological field evaluation will determine, as far as is reasonably possible, the nature of the archaeological resource within a specified area using appropriate methods and practises. These will satisfy the stated aims on the project, and comply with the Code of Conduct and other relevant regulations of CIfA.”

3.2.4 The works shall be carried out in accordance with the above and all other relevant standards and guidance.

Schedule of Works

3.2.5 The work will be undertaken by a CIfA Registered Archaeological Organisation (RAO) commencing at a date to be confirmed, but prior to any construction works commencing in the vicinity of the assets.

Trench Specifications and Excavation Methodology

3.2.6 One linear trench will be excavated approximately 6m to the north of the gun emplacement step.
The trench dimensions will be: 20m long, 1.8m wide at the base with the central point (10m) located directly opposite the gun emplacement.

3.2.7 The trench will be CAT-scanned prior to setting-out. The trench would be excavated through any made ground or subsoil to a maximum depth of no more than 1.2m, using an appropriate mechanical excavator equipped with a toothless ditching bucket.

3.2.8 The excavation will proceed under direct archaeological supervision, in level spits, until either the top of the first archaeological horizon or undisturbed natural deposits are encountered. If archaeological horizons are revealed within 1.2m the resulting surface will be inspected for archaeological remains.

3.2.9 Any archaeological deposits/features will be hand-excavated in an archaeologically controlled and stratigraphic manner in order to meet the aims and objectives of the investigation.

3.2.10 A sufficient sample of deposits/features will be investigated in the trench to understand the complete stratigraphic sequence down to naturally occurring deposits. No archaeological deposits would be entirely removed unless this is unavoidable. Excavation will be undertaken with a view to avoiding damage to any features or deposits which appear to be worthy of preservation in situ.

3.2.11 The following excavation strategies will be employed along the main trench, where appropriate:

(a) Linear features: A minimum of 20% along the length (each section not less than 1m wide) or a minimum of a 1m wide section through if the feature is less than 1m in length. All intersections will be investigated to determine the relationship between the component features;

(b) Discrete features: Pits, post-holes, floor surfaces and other isolated features will normally be half-sectioned. If large pits or deposits are encountered then the sample excavated should be sufficient to define the extent of the feature and to achieve the objectives of the investigation;

(c) Built structures: To be excavated sufficient to define the extent of the feature and to achieve the objectives of the investigation;

(d) If no deposits are revealed within the first 1.2m, machine excavation may then continue and any deposits revealed recorded initially from the edge of the trench until made safe; and

(e) Should any potentially significant remains be revealed at a depth greater than 1.2 m below ground level, the contractor will inform the Retained Archaeologist and a strategy by which to proceed will be agreed following consultation with Cadw and GGAT. This is likely to take the form of shoring or battering depending on the nature of overburden.

3.2.12 Should the above percentage excavation not yield sufficient information to allow the form and function of archaeological features/deposits to be determined, additional excavation of such features/deposits may be required to a maximum of 5 m additional trench excavation.

Archaeological Recording

3.2.13 An adequate photographic record of the excavation will be prepared. This will include photographs illustrating the principal features and finds discovered, in detail and in context. The photographic record will also include working shots to illustrate more generally the nature of the archaeological operation mounted. All photographs of archaeological detail will feature an appropriately-sized scale. Laser or inkjet prints of digital images, while acceptable for inclusion in the report, are not an acceptable medium for archives. Digital images taken during the course of the fieldwork will form part of the digital archive to be submitted and curated by the Archaeology Data Service (ADS) – see archive
3.2.14 The excavated trench limits will be accurately located using electronic survey equipment and fixed in relation to the Ordnance Survey grid.

3.2.15 Bulk finds will be collected by context. Finds will be stored in controlled conditions where appropriate. All artefacts will be retained, cleaned, labelled and stored as detailed in the guidelines of the United Kingdom Institute for Conservation (UKIC).
3.3 Archaeological Watching Brief

3.3.1 This section of the WSI describes the objectives and methodology for an archaeological watching brief on the excavation of a cable trench at Crymlyn Burrows. The cable trench is for a grid connection which is subject to a separate application and was not part of the DCO application. However, the watching brief is expected to be a condition of the planning consent for the grid connection as recommended by GGAT. This is the only section of the cable route that is not located in modern made ground or in areas of modern disturbance (TLSB ES, 2014).

Aims and Objectives of the Archaeological Watching Brief

3.3.2 The principal objective of the programme shall be to observe, excavate and record any surviving below-ground archaeological artefacts and deposits across the area where the cable route runs through previously undisturbed ground.

3.3.3 The specific objectives of the works are:

(a) To contribute towards the discharge of the potential Planning Condition;

(b) To provide a clearer understanding of the level of archaeological activity within the development site;

(c) To mitigate the impact of the development upon any archaeological features encountered during construction, by archaeological excavation and recording;

(d) To determine the nature of further archaeological features and/or deposits which may be encountered; and

(e) To disseminate the results of the watching brief by means of an archaeological report.

Methodology

3.3.4 All work shall be carried out in accordance with the Code of Conduct (2014) and Standard and Guidance for Archaeological Watching Brief (2014) produced by the Chartered Institute for Archaeologists (CIIfA), which states:

3.3.5 “An archaeological watching brief will record the archaeological resource during development within a specified area using appropriate methods and practices. These will satisfy the stated aims of the project, and comply with the Code of Conduct and other relevant regulations of the CIIfA.”

3.3.6 The works shall be carried out in accordance with the above and all other relevant standards and guidance.

3.3.7 The archaeological watching brief shall take place on the excavation of the section of the cable trench that crosses Crymlyn Burrows, illustrated on Figure 1.

Archaeological Monitoring and Recording of Groundworks (Watching Brief)

3.3.8 All topsoil stripping and groundworks for the cable trench will be undertaken by a machine fitted with a toothless grading bucket under the supervision and control of the site archaeologist to the depth of formation, the surface of in situ subsoil/weathered natural or archaeological deposits whichever is highest in the stratigraphic sequence. Should archaeological deposits be exposed machining will cease in that area to allow the site archaeologist to investigate the exposed deposits.
3.3.9 Archaeological features and deposits will be cleaned and excavated by hand and will be fully recorded by context as per the Chartered Institute for Archaeologists’ Standard and Guidance for an Archaeological Watching Brief (2014). All features shall be recorded in plan and section at scales of 1:10, 1:20 or 1:50. All scale drawings shall be undertaken at a scale appropriate to the complexity of the deposit/feature and to allow accurate depiction and interpretation.

3.3.10 As a minimum:

(a) small discrete features will be fully excavated;
(b) larger discrete features will be half-sectioned (50% excavated); and
(c) long linear features will be sample excavated along their length within the trench - with investigative excavations distributed along the exposed length of any such feature and to investigate terminals, junctions and relationships with other features.

3.3.11 Should the above percentage excavation not yield sufficient information to allow the form and function of archaeological features/deposits to be determined full excavation of such features/deposits will be required. Spoil will be examined for the recovery of artefacts.

3.3.12 Should deposits be exposed that contain palaeoenvironmental or datable elements appropriate sampling and post-excavation analysis strategies will be initiated.

3.3.13 In the event of particularly significant discoveries, Cadw and GGAT will be informed and a site meeting between the Retained Archaeologist, Cadw, GGAT and the TLSB Environmental Manager will take place to determine an appropriate mitigation strategy.

Archaeological Recording

3.3.14 An adequate photographic record of the watching brief will be prepared. This will include photographs illustrating the principal features and finds discovered, in detail and in context. The photographic record will also include working shots to illustrate more generally the nature of the archaeological operation mounted. All photographs of archaeological detail will feature an appropriately-sized scale. Laser or inkjet prints of digital images, while acceptable for inclusion in the report, are not an acceptable medium for archives. Digital images taken during the course of the fieldwork will form part of the digital archive to be submitted and curated by the ADS – see archive section below. The drawn and written record must be on an appropriately archival medium.

3.3.15 The excavated trench limits will be accurately located using electronic survey equipment and fixed in relation to the Ordnance Survey grid.

3.3.16 All non-modern artefacts will be retained. If appropriate all ‘small’ finds will be recorded three dimensionally. If artefact scatters are encountered these should be also recorded three dimensionally. Bulk finds will be collected by context. Finds will be stored in controlled conditions where appropriate. All artefacts will be retained, cleaned, labelled and stored as detailed in the guidelines of the UKIC.
3.4 Building Recording

Aims

3.4.1 The aims of the building recording are to record and analyse features and fabric of archaeological or historic interest and to disseminate these findings in the form of a report and ordered archive. This will provide a record of those structures to be affected by the development and provide a thorough understanding and baseline on which to develop a strategy for the future repair, use, management, enhancement and landscaping strategy.

3.4.2 It was identified that the harbour light at the end of the east pier (308200) would be lost. The light (SS 667 915) was believed to be the one that was established in 1909, a structure 7.0m (23ft) high with wooden framework tower supporting a small lantern. A level 2 building recording exercise was proposed in order to mitigate the loss of the structure. It was also recommended that the structure be retained intact, if possible and practical, with a view to relocating at a later date. However, it is has now been agreed on site with Cadw and GGAT that the light at the end of the pier is a later replacement consistent with the rebuilding with the Eastern Breakwater in 1969 and is therefore of no historic value. This is therefore no longer considered in this WSI and this scope of works.

Objectives

3.3.1 The principal objective of the work is to produce an illustrated written document which details the fabric, appearance and form of those surviving WWII structures; to identify a typology of the pillboxes (if one exists), to identify the gun that was placed in the gun emplacement and to place the structures within a wider dockland and national context.

3.3.2 The specific objectives of the Building Recording are:

- To provide a photographic record of the structures that will be affected by the development (both from the landward side of the Port sea wall and, if safe, from the seaward side), noting any details such as method of construction, evidence of shuttering and how the pillboxes have been incorporated into the existing Port sea wall;

- To provide a photographic record of any historic graffiti on the inside of the pillboxes or gun emplacement (lighting should be at an oblique angle to ensure that the photography is most successful);

- To provide a photographic record of the location of the collapsed pill box to the easternmost end including debris, noting any diagnostic features that may give an indication about the original form of the pill box;

- To provide a photographic record of the area of Port sea wall repaired at the westernmost end of the Port sea wall believed to be the location of the demolished pill box;

- To provide a photographic record of the structures within the dock context;

- To analysis the location of the tank traps to establish the original location of the two that have been moved;

- Use historic survey drawings, maps, photographs and documents for comparable investigation into the form and function of the structures in particular who manned them, shift patterns, the associated facilities available to them, the weaponry used, specifically the naval gun that was placed at the gun emplacement, and the length of use;
• To create a statement of significance for each of the structures either by typology or individual assets;

• To develop and discuss options for either the retention in situ or the relocation of the tank traps, identifying the feasibility of each option with the client and consultation with Cadw and GGAT to establish a consensus (if possible);

3.3.3 The specific structures to be covered by this WSI are detailed in Figure 1.

Methodology

3.3.1 The photographic record will consist primarily of contemporary and historical photographs of the site, complemented with a report including a written description of the historic structures and analysis of construction. The field data will be analysed in the context of a review and examination of cartographic, documentary and other historic sources. Historic photographs and plans will be reproduced within the report for illustrative purposes. The results of the fieldwork will be incorporated into the Interpretation and Enhancement Plan of the site which will explain how the structures can be successfully incorporated into the new development.

3.3.2 This Building Recording will be carried out in accordance with Cadw Conservation Principles for the sustainable management of the historic environment in Wales (Cadw, 2011) and Understanding Historic Buildings: A Guide to Good Recording Practice (English Heritage, 2011), the Standard and Guidance for the archaeological investigation and recording of standing buildings and structures (CIFA, 2014); the CIFA Code of Conduct (CIFA, 2014); it will also have regard for Cadw's publication 'Caring for military sites of the Twentieth Century' (Cadw, 2009).

Specific Works

3.3.3 A detailed photographic survey will be undertaken to record the structures in their current condition.

3.3.4 The photographic coverage will encompass as a minimum:

• the structures' external appearance;

• the structures' internal appearance;

• detailed images of the collapsed easternmost pill box;

• detailed images of the location of the former westernmost pill box;

• any detail that is relevant to the structures' design, construction, development and use, and that does not show adequately on general photographs and which is visible or accessible with particular attention being paid to any historic graffiti; and

• Selected views that place the structure within its wider context.

3.3.5 The record will comprise digital colour images with a resolution of at least 10 mega pixels. These will be reproduced on archive quality photographic paper for submission to the GGAT.

3.3.6 A selection of medium format black and white photographs will be taken where appropriate. These will provide high resolution images showing the general external appearance of the dock and selected views of the structure within its wider context.
3.3.7 A register of photographs will be maintained to relate the record to the written description. Viewpoint directions will also be located on a plan of the site alongside frame numbers. All photographs will include an appropriate scale, where possible. When employed, the scale will be positioned so as not to be intrusive.

3.3.8 As the construction method for the cable trench and installation of cables may involve either:

- An open trench being excavated with a trench box inserted at approximately 0.5-1m depth, to retain the trench due to unstable nature of the sandy ground and to minimize the working width within a Site of Special Scientific Interest (SSSI); or
- A ploughed method whereby the cable and associated tiles are laid and then immediately covered;

3.3.9 A plan will be produced of each structure at a scale of 1:20.

3.3.10 The remaining Port sea wall will be examined to establish the extent of surviving historic fabric. Photographs will also be taken for illustrative purposes that will not constitute a formal record.

**Documentary Research**

3.3.1 This will comprise an examination and review of documentary, pictorial and cartographic evidence, including the results of previous investigations. The sources consulted will include as a minimum:

- information held by the West Glamorgan Archive Service;
- collections held by Associated British Ports;
- information held by Royal Commission on the Ancient and Historical Monuments of Wales;
- information held by Archives Wales;
- Council for British Archaeology: Defence of Britain Project;
- Glamorgan County History Trust archives, Pevsner and other County surveys;
- engineering drawings, where available; and
- historic maps.

3.3.2 These documents are to be critically examined, catalogued, collated and reproduced where possible. The data retrieved from these records will be integrated into the overall site interpretation and understanding.
4. REQUIREMENT 17

4.1 Aims

4.1.1 The aim of the written scope of works is to identify those heritage assets that will be retained and those that may be relocated as part of the development. This scope of works will build on the results and findings of Requirement 16 particularly the historic building recording. This will provide a record of those structures to be affected by the development and provide a thorough understanding and baseline on which to develop a strategy for the future repair, potential relocation, use, enhancement and landscaping strategy.

4.1.2 It was identified that the harbour light at the end of the east pier (308200) would be lost. The light (SS 667 915) was believed to be the one that was established in 1909, a structure 7.0m (23ft) high with wooden framework tower supporting a small lantern. A level 2 building recording exercise was proposed in order to mitigate the loss of the structure. It was also recommended that the structure be retained intact, if possible and practical, with a view to relocating at a later date. However, it is has now been agreed on site with Cadw and GGAT that the light at the end of the pier is a later replacement consistent with the rebuilding with the Eastern Breakwater in 1969 and is therefore of no historic value. This is therefore no longer considered in this WSI and this scope of works.

4.2 Objectives

4.2.1 The principal objective of the work is to establish which historic structures will be retained and which will be subject to further investigation regarding a new location. This will be accompanied by consideration of the current condition of the structures, identification of sympathetic repairs, and identification of a suitable location for the possible relocation of the tanks traps, enhancement and a suitable landscaping treatment.

4.2.2 The specific objectives are:

(a) To analyse the location of the tank traps to establish the original location of the two that have already been moved;

(b) To set out how the retained structures will be incorporated into the new development;

(c) To develop and discuss options for either the retention in situ or the relocation of the tank traps, identifying the feasibility of each option with the client and consultation with Cadw and GGAT to establish a consensus (if possible);

(d) To establish the structural stability, the condition and any sympathetic repairs required to the standing pillboxes and gun emplacement;

(e) To establish a suitable landscaping scheme; and,

(f) To set out the enhancement of the structures once repaired and any interpretation works.

4.3 Methodology

4.3.1 Options to relocate the tank traps will consider the significance of the structures based on the results of the fieldwork, the relevance of the historic location and the integrity of the tank traps in their current location. The result of this analysis will establish options for the potential new location of the tank traps and any additional measures that will enhance their significance.
4.3.2 The standing pillboxes and gun placement will remain *in situ*, protected by a buffer zone of 5m to either side, and the methodology for the removal of the adjacent Port sea wall will be reviewed by the Retained Archaeologist, to ensure that the structures are protected during construction. This will also ensure that they are successfully incorporated into the resultant scheme through a suitable landscaping treatment and are enhanced by their sensitive repair and interpretation including assessing options for allowing public access to one or all.

4.3.3 Comments on the condition of the standing fabric and any repairs will be informed by separately commissioned structural survey of the structures (specifically the three standing pillboxes and the gun emplacement).

4.3.4 These works will be carried out in accordance with Cadw *Conservation Principles for the sustainable management of the historic environment in Wales* (Cadw, 2011), the *Standard and Guidance for the archaeological investigation and recording of standing buildings and structures* (CIFA, 2014); the *CIFA Code of Conduct* (CIFA, 2014); it will also have regard for Cadw’s publication ‘*Caring for military sites of the Twentieth Century*’ (Cadw, 2009).

4.4 **Specific works – Tank Traps**

4.4.1 A variety of options will be established for the potential retention or relocation of the tanks traps (note, the tank traps were referred to as tank cubes within the TLSB ES, but have been changed to tank traps to maintain consistency with the DCO). This will, as a minimum:

(a) Establish where the two moved tank traps were previously situated through detailed historic map regression;

(b) Consider the significance of the structures in their present location and whether the moving of two of the tanks traps has affected the integrity;

(c) Establish the feasibility of the tank traps being able to stay in their current location with the Client;

(d) Establish other potential locations for the tank traps that will enhance or better reveal their significance with the Client;

(e) Discuss the resultant options with Cadw and GGAT and seek a consensus.

(f) Once a consensus has been reached as to a potential location of the tank traps discuss appropriate means to best interpret and where possible enhance them.

4.5 **Specific works – Retained historic assets**

4.5.1 The standing pillboxes and the gun emplacement will be retained in situ with the addition of a buffer zone of approximately 5m either side. To ensure that the structures and the resultant buffer zone are successfully incorporated into the approved development and are fully compliant with the criteria of Requirement 17 the following will be undertaken as a minimum:

(a) A separate Structural Survey will be commissioned to establish the structural stability of the structures and their condition to identify a schedule of works for any repair or conservation works necessary (this should be undertaken by a suitably qualified conservation accredited professional that is familiar with undertaking repairs to WWII defensive structures and/or concrete repairs);

(b) Protect and monitor of the structures during the demolition of the remaining Port sea wall to
ensure that the structures do not suffer adverse effects as a result of the demolition;

(c) Establish how the structures will be incorporated into the approved development and a suitable landscaping treatment in consultation with Cadw and GGAT;

(d) Enhancement by establishing a strategy for interpretation, highlighting key elements of the site history to be revealed. This will include exploring different options for the presentation of the material, including the potential for integration into public realm works or the strategic location of interpretation boards; and

(e) Establish a means of interpreting the structures including assessing the options for public access to one or all of the structures.

Points c-e are all measures required by Requirement 17 of the DCO.

4.6 Reporting

4.6.1 Upon completion of discussions with the Client, Cadw and GGAT and in finding and agreeing a suitable location for the tank traps a report/statement will be prepared outlining the discussions of the various options discussed and how the proposed new location had been agreed along with the details of any landscaping scheme or interpretation/enhancement plan to be implemented. This will then be submitted to the Retained Archaeologist or the Client as a record of the discussions along with a plan detailing the new location.

4.6.2 As discussed in paragraphs 4.3.3 and 4.5.1, a structural survey will be commissioned. This will establish the structural stability and condition of the structures and will identify a schedule of works; any protection and monitoring required during the demolition of the other elements of the Port sea wall beyond the buffer zone of 5m either side. This is to be undertaken by a suitably qualified conservation accredited professional that is familiar with undertaking repairs to WWII defensive structures and/or concrete repairs. A method statement will be requested to outline how the contractor will undertake the works and what reporting mechanism they will use. Reporting will be in strict adherence to this.

4.6.3 Once it is established as to how the structures will be incorporated into the resultant development through ongoing discussion with the client engineering and landscape teams, Cadw and GGAT, plans, elevations, sections and rendered drawings will be produced to demonstrate an appropriate landscaping treatment.

4.6.4 In addition the Project will also include archaeological interpretation materials and information together as part of the overall enhancement of the structures. The interpretation element will also be discussed with the relevant consultees to ensure that the proposed method and location of the interpretation material is suitable and enhances the structures and the history of the site appropriately. Drafts of the interpretation boards or other forms of interpretation material will be produced along with plans, elevations and rendered drawings to demonstrate appropriate interpretation and enhancement measures once the detailed design of the Project is finalised. In this way the proposals can be appropriately targeted and integrated within the construction works. The enhancement proposals will be provided to the relevant consultees prior to the commencement of construction.
APPENDIX 1: GENERAL PROVISIONS FOR FIELDWORK

Human Remains and Treasure Trove

Should human remains be discovered during the course of the excavations the remains will be covered and protected and left in situ in the first instance. The removal of human remains will only take place in accordance with the appropriate Home office and Environmental Health regulations and the Burial Act 1857. In such an event the contractor will notify the Retained Archaeologist and TLSB Environmental Manager immediately.

Should any finds identified as treasure or potential treasure, including precious metals, groups of coins or prehistoric metalwork, be exposed, these will be removed to a safe place and reported to the local coroner according to the procedures relating to the Treasure Act 1996 (2nd Revision England and Wales). Where removal cannot be effected on the same working day as the discovery suitable security measures will be taken to protect the finds from theft.

Monitoring

The Retained Archaeologist will liaise with Cadw and GGAT, to provide them with two weeks’ notice of the commencement of each stage of fieldwork (unless a shorter period is agreed with Cadw and GGAT), and to offer them the opportunity to visit and monitor the work in progress. Details will be agreed of any monitoring points where decisions on options within the programme are to be made. A further meeting may be required to agree any requirement for further work (mitigation).

The programme of archaeological works will be monitored by Cadw and GGAT (in compliance with this WSI). Written or verbal progress reports will be provided to the Retained Archaeologist or TLSB Environmental Manager by the contractor. The Retained Archaeologist and TLSB Environmental Manager will agree monitoring arrangements with Cadw and GGAT and give notice of commencement of each stage of the fieldwork. The Retained Archaeologist or TLSB Environmental Manager will notify Cadw and GGAT upon completion of each fieldwork stage of work.

Reporting

Verbal progress reports will be provided to the Retained Archaeologist or TLSB Environmental Manager by the contractor on request and upon completion of the archaeological works an interim statement will be prepared and submitted to the Retained Archaeologist or TLSB Environmental Manager by the contractor. It will include:

(a) a brief summary of the results to tie in with any research undertaken as part of the built heritage recording of the gun emplacement;

(b) a draft or sketch plan of each trench; and;

(c) a quantification of the primary archive including finds and samples; and,

Immediately after completion of the fieldwork the finds and samples will be processed (cleaned and marked) as appropriate. Each category of find or environmental/industrial material will be examined by a suitably qualified archaeologist or specialist and their results incorporated into the report.

On completion of each stage of fieldwork, the contractor shall prepare a full illustrated report at the end of each stage. The report will set out the results of the archaeological work undertaken, including the results of any specialist assessment or analysis undertaken. The report must be produced within one month of completion of the fieldwork. If a substantial delay is anticipated (for
example, by the provision of specialist reports, radiocarbon dating results etc.) then Cadw and GGAT must be informed of this and an interim report must be produced within three months of the completion of the fieldwork. A revised date for the production of the full report will be agreed between Cadw and GGAT and the contractor. The report will include the following:

(a) a non-technical summary;

(b) site location;

(c) Archaeological and historical background of the site (see ES, 2014);

(d) methodology;

(e) aims and objectives;

(f) results (to include full description, assessment of condition, quality and significance of the remains);

(g) Interpretation of results in wider context;

(h) publication proposals if warranted;

(i) summary of archive, storage and curation;

(j) general and detailed plans showing the location of the works accurately positioned on an OS base map (to a known scale);

(k) A plan indicating the position where the photographs were taken and photograph frame numbers;

(l) A portfolio of photographs taken;

(m) detailed plans and sections as appropriate (to a known scale) with OD heights – NB not applicable to building record;

(n) a complete matrix for the area of investigation - NB not applicable to building record;

(o) summary table;

(p) a cross-referenced index of the project archive; and

(q) specialist assessment or analysis reports, where applicable.

One copy of the complete report will be submitted to the TLSB Environmental Manager and Retained Archaeologist as a draft. In finalising the report the comments of the TLSB Environmental Manager and Retained Archaeologist will be taken into account.

One bound and one digital version of the report and illustrations will be produced within one week of the receipt of the TLSB Environmental Manager and Retained Archaeologist’s comments on the draft report (Digital text to be in Microsoft Word format and illustrations in AutoCAD and/or PDF format).

On completion of the final report, in addition to copies required by the Client, hard copies of the reports shall be supplied to Cadw and GGAT on the understanding that one of these copies will be deposited for public reference in the HER. In addition to the hard copies of the reports, one copy shall be provided to the County Historic Environment Team in digital format - in a format to be
agreed in advance with Cadw and GGAT - on the understanding that it may in future be made available to researchers via a web-based version of the Historic Environment Record.

The Retained Archaeologist shall complete an online OASIS (Online Access to the Index of archaeological investigations) form in respect of the archaeological work. This will include a digital version of the report. The report will also include the OASIS ID number.

**Publication**

Should significant archaeological, finds and/or deposits be encountered, wider publication in line with government planning guidance (paragraph 6.5.3 of Planning Policy Wales Chapter 6 Conserving the Historic Environment) is likely to be required.

The requirement to publish the full results of any evaluation works will be agreed with the approval of Cadw and GGAT. Where agreed, the archaeological report will be published within one year of completion of the fieldwork. The requirement for non-journal publication of the results will also be agreed with Cadw and GGAT.

**Post-Evacuation Assessment, Analysis and Project Designs for Further Work**

Where excavations reveal archaeological, artefactual or palaeoenvironmental deposits that have potential for yielding important information about the site or its environs, through specialist assessment and analysis, this assessment work will be undertaken and reported on in a separate formal Post-Evacuation Assessment. This document may also fulfill the role of an interim report if a substantial publication delay is expected.

This document will be produced by the contractor within three months of completion of the fieldwork - specialist input allowing - and agreed with Cadw and GGAT. It will include:

(a) A summary of the project and its background;

(b) A plan showing the location of the site and plans of the site showing the location of archaeological features, artefactual or palaeoenvironmental deposits exposed;

(c) Research aims and objectives;

(d) Method statements setting out how these aims and objectives are to be achieved;

(e) Details of the tasks to be undertaken; and,

(f) The results of any specialist assessment work undertaken as part of the production of the formal Assessment and Project Design.

**Proposed Project Timetable**

Overall timetable for undertaking the tasks as well as setting out monitoring points with Cadw and GGAT. This report will be published within one year of completion of fieldwork.

Details of the journal in which the material is to be published, including assessment of non-journal publication options

Following completion of the final post-evacuation assessment report a covering letter will be provided setting out the itemised costing for the recommended further works. The assessment will be completed within 12 weeks after the completion of the fieldwork. In finalising the post-evacuation assessment report the comments of the TLSB Environmental Manager and Retained Archaeologist
will be taken into account.

Six bound copies, one unbound master-copy and a digital version of the post-extraction assessment and illustrations will be produced and sent to the TLSB Environmental Manager and Retained Archaeologist for distribution within one week of the receipt of comments on the draft report (Digital text to be in Microsoft Word format and illustrations in AutoCAD and PDF format).

Post excavation assessment will take place following completion of all phases of archaeological work.

The final publication report will include full stratigraphic and phased accounts of the excavation results, and the results of analysis by specialists outlined in each post-extraction assessment report.

The post-extraction analysis and preparation of final reports will be undertaken in accordance with MAP2, the Post-extraction Assessment Report and Updated Archaeological Design and the relevant archaeological standards and national guidelines (Appendix 2).

**Copyright**

The contractor shall assign copyright in all reports and documentation/images produced as part of this project to the TLSB Environmental Manager and Retained Archaeologist. The contractor retains the right to be identified as the author/originator of the material. This applies to all aspects of the project. It is the responsibility of the contractor to obtain such rights from sub-contracted specialists.

The contractor may apply in writing to use/disseminate any of the project archive or documentation (including images). Such permission will not be unreasonably withheld.

The results of the archaeological work will be submitted to the TLSB Environmental Manager and Retained Archaeologist by the contractor, and to GGAT and Cadw by the Retained Archaeologist.

**Archive Preparation and Deposition**

Each stage of the project will be completed with the deposition of an ordered and integrated project archive by the contractor in accordance with this WSI. The archive must also be transferred for long-term curation to a recognised, accredited or trusted repository. An archive is defined as “all records and materials recovered during an archaeological project and identified for long term preservation, including artefacts, ecofacts and other environmental remains, waste products, scientific samples and also written and visual documentation in paper, film and digital form” (ARCHES forthcoming).

The archive will consist of two elements, the artefactual and digital - the latter comprising all born-digital data and digital copies made of the primary site records and images.

The deposition of the site archive will be completed within one year of completion of the fieldwork element of the project. Should the development of the site proceed in a staged manner then the archive for each stage must be deposited within one year of completion of that stage of fieldwork.

**Deposition of the Archive**

As part of the production of the method statement for each stage of archaeological work the Retained Archaeologist or contractor shall contact the relevant collecting museum (Swansea) to obtain a reference number with regard to potential future deposition of any material archive generated by the archaeological works. The museum’s reference number will be quoted in the method statement and within the fieldwork report and overarching report or the short entry to the Historic Environment Record.
The collecting museum (Swansea) require that the digital archive (consisting of born-digital and digital copies of relevant written and drawn data produced during fieldwork) must be transferred into the care of a Trusted Digital Repository instead of with the museum (see ‘Deposition of the digital archive’ – below) and generally not with the museum. The contractor will therefore need to make appropriate digital copies of all hardcopy elements of the site record.

There is no requirement for the contractor to prepare an archive for fieldwork projects that do not expose deposits of archaeological interest and yield little or no artefactual material. The results of the fieldwork will be held by the HER in the form of the report submitted by the contractor and the creation of an OASIS entry and uploading of the report. Written confirmation that the contractor will not be producing an archive must be obtained from CADW and GGAT. The condition in these cases will be considered as discharged upon receipt of the report and completion of the OASIS entry.

**The Material (Finds) Archive**

Items in the material archive must be cleaned (or otherwise treated) ordered, recorded, packed and boxed in accordance with the deposition standards of the relevant museum. It is advised that early consultation with the museum will facilitate transfer of the material archive.

Archaeological finds resulting from the investigation (which are the property of the landowner), should be deposited with the appropriate museum - in a manner to be agreed with the museum - and within a timetable to be agreed with Cadw and GGAT. The composition of the archive shall conform to the collecting museum's accession guidelines for depositing archaeological material. The acceptance of an archive by the museum will be in accordance with the museum’s accession/collection policies and early consultation with the relevant collecting museum is advised.

The Retained Archaeologist or contractor must, on behalf of the museum, obtain a written agreement from the landowner to transfer title to all items in the material archive to the receiving museum. It is preferable for this agreement to be made at the earliest possible stage following assessment after data-collection. It is not advisable to wait until the archive has been compiled before obtaining transfer of title.

If ownership of all or any of the finds is to remain with the landowner, provision and agreement must be made for the time-limited retention of the material and its full analysis and recording, by appropriate specialists.

**Deposition of the Digital Archive**

The digital archive will consist of:

(a) all born-digital data (images, survey data, digital correspondence, site data collected digitally etc.); and

(b) digital copies made of all other relevant written and drawn data produced and/or collected during fieldwork - i.e. the primary record comprising context records and indices, sample sheets and indices, finds records and indices, site drawings - earthwork surveys, sections and plans, as well as relevant sketches or notes that aid the interpretation and understanding of the site and its recording, any relevant information undertaken as part of the post-excavation assessment or analysis, etc.

The digital archive must be deposited with a Trusted Digital Repository and thus made publicly accessible. It is understood that the only suitable repository for digital archaeological archive is the Archaeology Data Service (ADS) - contact details are given at the end of this brief. Digital archive
must be compiled in accordance with the standards and requirements of the ADS, which may be accessed through the ADS website:

(c) http://archaeologydataservice.ac.uk/advice/guidelinesForDepositors

Guidance on selection for the archive is also provided at:

(d) http://archaeologydataservice.ac.uk/advice/selectionGuidance

It is expected that a licence to copyright for documentary material, in both physical and digital forms, will be given to the receiving repository. This must be stated within the Written Scheme of Investigation, which should also identify the recipients of each element of the documentary archive.

**Disposal of the Primary Hardcopy Records**

The collecting museum may wish to retain the hardcopy archive to accompany the artefactual material. (For example: where the programme of archaeological works involves the investigation and analysis of regionally/nationally significant archaeological and/or artefactual deposits). In all cases the contractor must first offer the primary paper record archive to the museum prior to its disposal.

Once the digital archive has been transferred to the appropriate Trusted Digital Repository (usually the ADS), and the museum has confirmed that this has occurred satisfactorily and that they do not require the hardcopy archive, the contractor may retain, disperse or dispose of the primary hardcopy items as they see fit. Items may be retained for curation by the contractor, developer or applicant, or offered to a third party organisation for public use or as a teaching resource. The method statement for each stage of fieldwork should state how primary hardcopy items will be treated.

Where the collecting museum does not require the hardcopy element disposal may mean physical destruction of the primary record. The method statement should state the proposed disposal method to be employed.

The contractor must notify Cadw and GGAT upon the completion of:

(a) deposition of the digital archive with the ADS, and

(b) deposition of the material (finds) archive with the museum.

The condition placed upon this development will not be regarded as discharged until all reports have been produced and submitted to Cadw and GGAT and the local planning authority, the site archive deposited and the OASIS form completed. The contractor will, prior to the start of the final phase of archaeological work and the production of the overarching report, contact the recipient museum to obtain agreement in principle to accept the artefactual, documentary, digital and photographic archive for long-term storage and curation. The contractor will be responsible for identifying any specific requirements or policies of the museum in respect of the archive, and for adhering to those requirements.

The contractor will store the archive in a suitable secure location until it is deposited in the agreed museum following the final phase of work.

**Personnel**

The contractor will be a Registered Archaeological Organisation.

All archaeological personnel involved in the project should be suitably qualified and experienced
professionals. The contractor will provide the Retained Archaeologist and TLSB Environmental Manager with staff details including CVs of the Project Manager, Site Supervisor, Site Assistants, all report authors and editors and all specialists.

All personnel involved in the historic building recording will be qualified and experienced professionals with regard to historic building recording work.

All personnel involved in undertaking the structural survey, assessment of condition, schedule of works for the repair and any protection measures and monitoring should be suitably qualified Structural Engineer that is accredited in Conservation and is familiar with undertaking repairs to WWII defensive structure and/or concrete repairs.

The works shall be managed, directed and staffed by appropriately qualified and experienced personnel.

The contractors Project Manager/Representative shall be a Member of the Chartered Institute of Field Archaeologists (MIFA) level or equivalent.

Specialist staff associated with the works, including any post-exavcation assessment or analysis of whatever kind, including the writing of reports, shall be suitably qualified and shall be supervised by personnel with relevant experience in their field.

Specialists shall be available, normally at 48 hours’ notice, for the duration of the works to provide advice on any specialist tasks to be undertaken.

Access and Security

The TLSB Environmental Manager or Retained Archaeologist will arrange access for the contractor. Access to the site is restricted to authorised personnel only. The contractor will provide all welfare facilities.

Confidentiality and Publicity

Information regarding the development is in the public domain and the archaeological works may attract interest.

All communication regarding the archaeological works is to be directed through the TLSB Environmental Manager and Retained Archaeologist and the contractor is to give no unauthorised comments or statements.

The contractor will not disseminate information or images associated with the project for publicity or information purposes without the prior written consent of the TLSB Environmental Manager and Retained Archaeologist.

Insurances and Health and Safety

The contractor will provide the TLSB Environmental Manager and Retained Archaeologist with details of public and professional indemnity insurance.

The contractor will have their own Health and Safety policies compiled using national guidelines and which conform to all relevant Health and Safety legislation. A copy of the Health and Safety policy shall be submitted to the TLSB Environmental Manager and Retained Archaeologist in advance of fieldwork.

The contractor will undertake a risk assessment detailing project specific Health and Safety
requirements. The risk assessment shall be submitted to the TLSB Environmental Manager and Retained Archaeologist in advance of commencement of site work. Health and Safety will take priority over archaeological issues.

The TLSB Environmental Manager and Retained Archaeologist will provide information regarding the approximate location of known services within the area of investigation. The contractor shall, however, be responsible for identifying any buried or overhead services and taking the necessary precautions to avoid damage to such services, prior to excavation.

The contractor will ensure that all those visiting the site wear appropriate safety gear. The contractor is permitted to prevent those without the correct PPE from visiting the site. All visitors must sign a record of attendance which will be administered by the contractor.

A competent person must inspect excavations:

(a) at the start of each working day prior to work commencing;

(b) after any event likely to have affected the strength or stability of the excavation; and

(c) after any accidental fall of earth or other material.

All archaeological personnel will have valid CSCS cards to be allowed to work within the site.

The contractor will leave the site tidy and in a workmanlike condition and remove all materials brought onto the site.

All staff will be fully briefed as to the site hazards before any work is commenced.

First aid boxes and fire extinguishers will be made available throughout the duration of the works. The site will also have at least one resident trained First Aider whose identity will be made known to all site personnel prior to works commencing.

When Plant or Machinery is operating all staff must be a safe distance away from activity, and only start work once the machinery has ceased or is at a safe distance from the area requiring investigation.

HSE has published Construction Information Sheet No.8 (rev 1) on Safety in Excavations which is on the HSE website at: http://www.hse.gov.uk/pubns/cis08.pdf


**Conflict with Other Conditions and Statutorily Protected Species**

It is the responsibility of the contractor - in consultation with the TLSB Environmental Manager and Retained Archaeologist - to ensure that the undertaking of the required archaeological works does not conflict with any other conditions that have been imposed upon the consent granted and should also consider any biodiversity issues as covered by the NERC Act 2006. In particular, such conflicts may arise where archaeological investigations/excavations have the potential to have an impact upon protected species and/or natural habitats e.g. SSSIs, National Nature Reserves, Special Protection Areas, Special Areas of Conservation, Ramsar sites, County Wildlife Sites etc.
APPENDIX 2: STANDARDS AND GUIDANCE

(Compiled August 2015)

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and
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CIfA, 2014, Standard and Guidance for Archaeological Investigation and Recording of Standing Buildings or Structures. Institute for Archaeologists (Reading)
CIfA, 2014, Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials. Institute for Archaeologists (Reading)
CIfA, 2014, Draft Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives. Institute for Archaeologists (Reading)
CIfA, 2014, Standard and Guidance for Historic Environment Desk-based Assessment. Institute for Archaeologists (Reading)
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Figure 21.1 Terrestrial Archaeological assets within detailed study area

No dimensions are to be scaled from this drawing. All dimensions are to be checked on site.

Area measurements for indicative purposes only.

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