MVV Umwelt
Energy from Waste Combined Heat and Power Facility
North Yard, Devonport

EIA Scoping Report

June 2010

Prepared for

Revision Schedule

Rev	Date	Details	Prepared by	Reviewed by	Approved by
0	16 June 2010	Final	**Alexis Huggins** Assistant Environmental Consultant	**Ian Roach** Principal Environmental Consultant	**Ian Roach** Principal Environmental Consultant

Scott Wilson
Mayflower House
Armada Way
Plymouth
Devon
PL1 1LD

Tel: 01752 676700
Fax: 08702 386023

www.scottwilson.com

Table of Contents

1 Introduction

1.1.1 MVV Umwelt (MVV) is bidding for the South West Devon Waste Partnership's (SWDWP) residual waste treatment contract. The SWDWP is a collaboration that has been established between Plymouth City Council, Torbay Council and Devon County Council to provide a long term solution to deal with the waste from the southwest Devon area that cannot be recycled, reused or composted.

1.1.2 The stage of the procurement process that has just been completed is known as the Invitation to Submit Detailed Solutions (ISDS). MVV's proposal is to construct and operate an Energy from Waste facility, incorporating Combined Heat and Power technology, on land in the north east of Her Majesty's Naval Base (HMNB) Devonport, Plymouth. The facility, referred to in this report as the EfW CHP Facility, will have capacity to process under certain conditions up to 265,000 tonnes per annum of waste although it is expected that actual tonnages will be lower as waste composition changes or recycling activity increases over time. Under current expectations the tonnages could be in the order of 235,000 tonnes per annum. The waste will be combusted and the heat will be used to generate steam. Some of this steam will drive a steam turbine and generate renewable electricity for use at the site and for export to the national grid. Some of the steam will feed into the existing HMNB steam network and used for heating.

1.1.3 Prior to the planning application being made for the EfW CHP Facility an environmental impact assessment (EIA) will be undertaken. The EIA procedure requires the developer to undertake certain studies and compile an Environmental Statement (ES) describing the likely significant effects of the proposed development on the environment and proposed measures to mitigate these effects. The EIA will be undertaken by Scott Wilson Limited on behalf of MVV.

1.1.4 The purposes of this EIA Scoping Report are to:

- Describe the site and surroundings (Chapter 2).
- Describe the proposed development (Chapter 3).
- Identify potential environmental issues associated with the proposed development (Chapters 4 to 7).
- Define what methods will be used to assess the environmental effects of the proposed development during the EIA (Chapters 4 to 7).
- Provide a basis for consultation, where appropriate, with statutory and non-statutory consultees and the public on the relevant environmental issues.
- Seek a Scoping Opinion of the Waste Planning Authority, Plymouth City Council (PCC), in order to formalise the EIA scope.

1.1.5 This EIA Scoping Report has been informed by site visits, initial consultation with statutory consultees and work undertaken by Scott Wilson to support MVV's bid thus far.

2 The Site and Surrounding Area

2.1 Introduction

2.1.1 In order to identify the scope of issues that will need to be addressed by the EIA, it is necessary to understand the characteristics of the site and the surrounding area that may be affected by the proposed development. The following section describes the location of the proposed development and summarises the existing environmental features / conditions of the site and the surrounding area.

2.2 Location and Setting

2.2.1 This section should be read in conjunction with Figures 1 and 2.

2.2.2 The site covers an area of approximately 7 hectares in the northern section of HMNB, Devonport dockyard, Plymouth.

2.2.3 The southern part of the proposed site is raised and is currently used as a storage compound for a variety of containers and skips. The northern part of the site is used by a firm called 'Ashcroft' to process demolition rubble created from different construction projects throughout the dockyard. An access road currently runs through the middle of the site.

2.2.4 To the west of the site is a car park, and to the south lies Weston Mill Lake, beyond which the majority of the dockyard facilities are located. To the south east is the existing Devonport Distribution Facility (DDF) which stands approximately 8m high and is bordered to the north and south by large areas of tarmac used as loading bays and service yards.

2.2.5 To the north and north-west of the site lies the residential area of Barne Barton. This area of housing is at a higher elevation than the proposed development site and would therefore partly overlook the proposed facility; the existing view from this area is already industrial in nature. There are further residential properties to the east, north east and south east of the site at Weston Mill, St. Budeaux, King's Tamerton, Camel's Head, North Prospect and Keyham, as well as further afield in Saltash to the north-west, Wilcove to the west and Torpoint to the south-west.

2.2.6 The Weston Mill Viaduct is close to the eastern boundary of the site; the viaduct forms a bridge carrying the railway line over the nearby entrance to HMNB Devonport and provides some screening from residential areas to the east.

2.2.7 The site is located at the western end of Weston Mill Drive. Weston Mill Drive is a Principal Road and provides the highway link between the dockyard and the trunk road network (A38). The A38 is situated approximately 1.5km to the northeast of the site.

2.2.8 The site is approximately 500m from the Plymouth Sound and Estuaries Special Area of Conservation (SAC) at its closest point. The Tamar Estuaries Complex Special Protection Area (SPA) and Tamar-Tavy estuary Site of Special Scientific Interest (SSSI) are located approximately 2km to the north-west of the site.

2.2.9 A Biodiversity Network Feature and Local Greenscape area, locally known as 'Blackies Wood', covers part of the north west of the site.

2.2.10 The eastern edge of the Tamar Valley Area of Outstanding Natural Beauty (AONB) lies approximately 1.3km from the western boundary of the site, across the River Tamar.

2.2.11 The Grade II Listed Mixing House is located approximately 300m to the west of the site. A Scheduled Ancient Monument (SAM) is located at Bull Point, 1km to the northwest of the site. There are a number of Grade II Listed Buildings within the HMS Drake complex to the south, on the southern side of Weston Mill Lake.

2.2.12 There are three designated Air Quality Management Areas (AQMAs) in Plymouth. These are all located close to or within the city centre, approximately 4km to the southeast of the site.

2.3 Planning Policy Status

2.3.1 The site of the proposed development is not one of the five sites allocated in Plymouth City Council's (PCC) Waste Development Plan Document (DPD)[1] as being suitable for a range of strategic waste management facilities. However, Policy W7 of the Waste DPD states that such facilities at unallocated sites can still achieve planning permission assuming a series of criteria are met. Table 2.1 below provides a preliminary examination of the proposed development against these criteria.

Table 2.1 Response to Plymouth's Waste DPD Policy W7

Criteria	MVV Response
1. They are consistent with relevant waste planning policies and objectives, are compatible with the objective of moving the management of waste up the waste hierarchy, and do not compromise the achievement of recovery targets.	The proposed development at this site is consistent with planning and waste management policy. The principle of energy recovery is established in The Waste Strategy for England, provided it is part of a wider system of reduction, re-use and recycling and composting measures, which are already in place. The location of the site within HMNB Devonport will allow export of heat as well as electricity, a significant sustainability benefit.
2. Priority will be given to the use of previously developed land. However, loss of Greenfield land may be acceptable if it does not result in significant adverse impact on greenscape character or functions, and that the impacts of the development can be adequately mitigated and the development proposal otherwise performs well in relation to the other criteria of this policy.	The site is previously developed land.
3. They are compatible with their environmental setting and will not result in unacceptable impacts on important environmental, historic or cultural assets.	The proposed development would not be out of context in what is an area with an existing 'industrial' character at the northern end of the dockyard area. The site is close to the River Tamar and Plymouth Sound, which are designated for their nature conservation importance, although environmental impacts can be avoided or mitigated (as set out later in this report). Any landtake from Blackies Wood would be mitigated accordingly.

[1] Plymouth City Council, April 2008. Plymouth's Waste DPD.

4. They will not result in unacceptable direct or indirect impacts on the residential amenity of existing or proposed communities, or unacceptable impacts on the amenity of other neighbouring uses that would be sensitive to waste management development.	There are residential properties in the vicinity, notably to the north on Furse Park and Kelly Close, which would overlook the proposed development. MVV is committed to a very high standard of architectural design, minimising amenity and local impacts.
5. They have good access to the principal road network which should have adequate capacity, or potential to have adequate capacity, to accommodate the transport movements associated with the proposal. Where practicable, they should have access to a choice of transport modes other than road.	The site is accessible from Wolseley Road (A3064) and Weston Mill Drive (A3064) which avoids use of residential roads. From Weston Mill Drive there is easy access to the A38.
6. The proposal does not have a significant conflict with other spatial planning objectives set out in the LDF, particularly in relation to urban regeneration, economic development, environmental improvement, and significant growth priorities.	The proposed development does not conflict with other spatial planning objectives for the site.

2.3.2 The planning application will present a full analysis of the site selection process and rationale for the choice of the site. It is also a requirement that the ES include an outline of the main alternatives (including alternative sites) studied by the applicant and an indication of the main reasons for his choice, taking into account the environmental effects. As stated in Table 6.2 below, Chapter 5 of the ES will report the alternatives considered.

3 The Proposed Development

3.1 Overview

3.1.1 MVV proposes to construct and operate an EfW CHP Facility at the site which will have capacity to process under certain conditions up to 265,000 tonnes per annum of waste although it is expected that actual tonnages will be lower as waste composition changes or recycling activity increases over time. Under current expectations the tonnages could be in the order of 235,000 tonnes per annum.

3.1.2 The waste will be combusted and the heat will be used to generate steam. Some of this steam will drive a steam turbine and generate renewable electricity for use at the site and for export to the national grid. Some of the steam will feed into the existing HMNB steam network and used for heating. The EfW CHP Facility will therefore incorporate Combined Heat and Power (CHP) technology.

3.1.3 Solid residues would be left in the form of bottom ash, which will be recycled, and flue gas cleaning residue, which will require disposal off site at a licensed hazardous waste landfill.

3.1.4 The facility will primarily deal with Municipal Solid Waste (MSW) provided by the SWDWP Authorities under the SWDWP contract. This 'Contract Waste' is estimated to amount to 168,428 tpa in 2014/15, increasing to 203,265 tpa in 2038/39, and will come from the following Waste Collection Authority areas:

- Plymouth City Council.
- West Devon Borough Council.
- South Hams District Council.
- Teignbridge District Council.
- Torbay Council.

3.1.5 The remaining processing capacity of up to 96,572 tpa in 2014/15, reducing to up to 61,735 tpa in 2038/39, will be used to process 'Non-Contract Waste' in the form of combustible Commercial and Industrial (C&I) waste from local markets.

3.1.6 The facility is at an early stage in its design so a drawing is not presently available, but the facility will comprise the following principal components:

- Tipping Hall;
- Waste Bunker Hall;
- Bale Store;
- Turbine / Boiler House;
- Flue Gas Cleaning System and Stack;
- Air Cooled Condensers;
- Administration Block; and
- Bottom Ash Treatment.

3.1.7 The principal components are described in further detail in the sections below.

3.1.8 In addition to these principal components, there will also be access roads and trafficked areas for operational purposes, hard and soft landscaping, and an ecological mitigation area.

3.1.9 The layout will be designed so that the waste deliveries and storage will occur at the rear (south) of the building and thus will be screened from the nearby properties in Barne Barton.

3.2 Main Building

3.2.1 The combustion of waste will take place within the Main Building. The height of this building will be approximately 45m.

Tipping Hall

3.2.2 The Tipping Hall will be situated within the Main Building. The Tipping Hall provides a reception area for incoming vehicles delivering waste to the facility. Within the Tipping Hall delivery vehicles would transfer waste directly into the Waste Bunker.

Waste Bunker Hall

3.2.3 The Waste Bunker will be situated within the Main Building. Prior to being loaded into the furnaces, waste would be stored and mixed within the Waste Bunker to maximise waste homogeneity and hence obtain a consistent calorific value.

Bale Store

3.2.4 The design will take into account the infrastructure needed to manage the receiving, storing, transferring and / or diversion of 'Contract Waste' and 'Non-Contract Waste' when the facility is not available for any reason, for example during planned maintenance, through the provision of a Bale Store.

3.2.5 In the event of the Bale Store being required, waste will be compressed into bales measuring approximately 1.5m^3, wrapped in plastic film and stored in this area until the plant is back in operation. Storing waste in this way avoids the need for waste to be diverted to landfill.

Turbine / Boiler House

3.2.6 The Turbine / Boiler House will be the largest area of the Main Building. The Turbine / Boiler House is where the main incineration process will take place and will contain the furnaces and associated boilers. A steam turbine will generate electricity from the superheated steam produced.

Flue Gas Treatment

3.2.7 There will be a Flue Gas Treatment system. Flue gases which have passed through the boilers will enter the flue gas treatment area, where the gases will be cleaned using a dry reagent injection system before they are released into the atmosphere via the approximately 85m tall stack. Continuous emissions monitoring equipment will be installed. The system includes an additional economiser unit downstream of the flue gas cleaning system to maximise the recovery of heat from the process.

Air Cooled Condensers

3.2.8 Air-cooled Condensers will be required to condense the exhaust steam from the steam turbine.

Administration Block and Community Area

3.2.9 An Administration Block will be provided containing offices and other facilities required for the management and operation of the facility.

3.2.10 A Community Area will be provided. The Community Area will be able to accommodate groups, including disabled visitors.

3.3 Bottom Ash Treatment

3.3.1 Bottom ash from the incineration process will be stored on site prior to processing for use as a secondary aggregate and for the recovery of metals. The nature of the process is such that the ash is moist. The bottom ash treatment area will be enclosed within walls. The bottom ash will be stored in the open air prior to processing. Separation of metals and grading of the bottom ash will take place within a building and the final product will be stored externally.

3.4 Weighbridges and Gatehouse

3.4.1 Weighbridges and a Gate House will be located on the internal access road.

3.5 Access and Parking

3.5.1 Access to the site will be via Weston Mill Drive. Incoming vehicles would travel 180˚ around the existing roundabout adjacent to the Camel's Head security gates of HMNB Devonport. A new access to the site would be formed in the vicinity of the existing coach bay and enter the existing car park.

3.5.2 A new road will be formed through the existing car park. Sufficient off road queuing areas will be provided to meet the peak delivery periods; queuing on the public highway will not be permitted. Preference in any queue will be given to 'Contract Waste' vehicles.

3.5.3 At the western end of the car park, the new road will pass underneath the Weston Mill Viaduct and join an existing road, prior to the weighbridge.

3.5.4 At present there are two existing road crossings of Weston Mill Creek, neither of which is wide enough for two way traffic:

- The structure that forms the northern crossing has a weight limit of 1.5 tonnes and is therefore unsuitable for vehicles larger than light cars/vans. It was the first of the two crossings and carried the access road that leads to the MOD storage/works facilities towards Bull Point. Immediately on the southern side of the crossing is a number of what appear to be electrical, and possibly communication, services that are in piped conduits adjacent to the bridge deck.
- The southern crossing was installed as part of the 'D154' project and takes the form of a buried pipe construction. Four large diameter pipes were installed and covered with

approximately 2.5m – 3m of fill, possibly using reinforced earth construction. This crossing is robust enough to take heavy goods vehicles, but only in one direction at a time.

3.5.5 It is therefore proposed to demolish both existing crossings and replace them with a new clear-span bridge sufficient to take traffic in both directions at once.

3.5.6 The internal road and pedestrian area layout will be designed to allow the safe movement of vehicles and pedestrians and with regard to relevant health and safety legislation and good industry practice.

3.5.7 The facility will be designed such that vehicles can achieve a turnaround time, from arriving at the entrance weighbridge to leaving the exit weighbridge, of fifteen minutes maximum per vehicle. This time will include entering the site, being weighed, being monitored, discharging the waste, being re-weighed and leaving the site.

3.5.8 Car parking for staff and visitors, including disabled allocation, will be provided.

3.6 Traffic

3.6.1 Preliminary calculations have been made of the vehicle movements expected to be generated by the EfW CHP Facility and are shown overleaf in Table 3.1. These are based on the following data and assumptions:

- Projections for MSW contract waste volumes and expected origin / destination locations provided by the SWDWP to MVV. Paragraph 3.1.4 details the tonnages.
- Vehicle types used within the SWDWP area, and recorded loads, also provided by SWDWP to MVV.
- Reasonable assumptions by MVV and Scott Wilson on C&I waste projections and ash despatch, origin / destination locations, and expected vehicles to be used. Paragraph 3.1.5 details the tonnages.
- 9 tonne average load capacity for Refuse Collection Vehicles (RCV), 9 tonne average load capacity for Hooker loader vehicles, and 15 tonne average load capacity for Tractor and Ejector Trailer Units.
- It is expected that staff will travel to site using various modes of transport, however, to assess the worst case scenario it is be assumed that all staff arrive individually by private car.
- Visitors to site associated with the EfW plant operation are expected to arrive by individual vehicle to carry their necessary equipment. Alternative methods of transport are not considered feasible.

Table 3.1 Trip Generation

Source	Generator	2014		2039	
		Annual Trip Generation	Average Hourly Trip Generation	Annual Trip Generation	Average Hourly Trip Generation
Staff	Various	3120	10*	3120	10*
Contract waste	1. Plymouth City Council	8893	2.6	11243	3.2
	2. South Hams District Council	451	0.1	575	0.2
	3. Torbay Council	1935	0.6	2145	0.6
	4. West Devon Borough Council	952	0.3	992	0.3
	5. Teignbridge District Council	1519	0.4	1765	0.5
Commercial and industrial waste	Various from local markets	10730	3.1	6871	2.0
Ash	Generated on site; destination currently not known	8244	2.4	8244	2.4
Total		**35844**	**9.5**	**34955**	**9.2**

Notes: * peak hour – not included in total. The site staff am arrivals (10) and pm departures (10) are expected to occur prior to and after the site operation activities, and hence separately to the operation traffic trip generation.

Note also that these trips are all one-way. There would also be return trips, which would double the number of vehicle movements.

3.6.2 Note that although the plant capacity of up to 265,000 tpa would remain constant, Table 3.1 shows a trip generation difference between 2014 and 2039. This is because the proportion of contract waste to C&I waste would change over that period, and the characteristics of the associated vehicles (and hence trips) also changes.

3.7 Drainage and Connections to Infrastructure

3.7.1 Connections to infrastructure such as electricity, gas, water and sewer will be made as appropriate.

3.7.2 A surface water drainage strategy is in the process of being developed. Initial ground investigations have shown that the majority of the site is located on made ground which is potentially contaminated. Soakaways and infiltration systems are therefore unlikely to be suitable for the site due to the potential for mobilising contaminants. Taking this and the tidal

nature of the site into account, the most suitable method for dealing with surface water runoff is to construct a positive discharge into the River Tamar. The invert level at the outfall from the drainage system will be set at minimum level of 4.47 mAOD. This level is based on the 1 in 200 year tidal still water level and allows for climate change impacts on sea level (up to 2070) (see Section 5.6 for more details on flood risk). The 4.47 mAOD figure also allows for a 300 mm freeboard to account for the uncertainty inherent in predicting the impacts of climate change. Setting the discharge at this level will address potential concerns over tidal locking at the discharge point. Preliminary consultation with the Environment Agency confirms that a flood defence consent and discharge consent will not be required, based on the provision of oil interceptors to ensure a clean discharge.

3.7.3 Provision will be made for export of electricity from the site via a direct connection into the HMNB electrical distribution network. All electricity generated in excess of the facility's and the HMNB's own requirements will be exported to the national grid. A connection will also be made to the existing HMNB steam network. The facility will achieve much higher useful heat recovery than typically seen on EfW facilities in the UK due to a high efficiency design concept. It will also meet the efficiency standards and requirements of the Waste Framework Directive Annex II R 1 Energy Recovery.

3.8 Landscaping

3.8.1 A landscaping scheme for the site is in the process of being developed.

3.9 Ecological Mitigation Area

3.9.1 An ecological mitigation area is proposed in the northern part of the site. This covers the majority of the existing 'Blackies Wood' which is identified as a Biodiversity Network Feature and Local Greenscape Area in PCC's Local Development Framework, although there would need to be some land take from this area to accommodate the Main Building and car parking areas. The proposed development will include some ecological enhancement and provision of access.

3.10 Hours of Operation and Site Controls

3.10.1 The EfW CHP Facility will operate on a 24-hour basis.

3.10.2 Waste will be capable of being accepted during the following hours:

Monday to Friday	08:00 – 19:00
Saturdays	08:00 – 18:00
Sundays	08:00 – 16:00
Bank Holidays (except Christmas Day and Boxing Day)	08:00 – 18:00
Christmas Day	Closed
Boxing Day	08:00 – 16:00

3.10.3 All storage, processing and treatment of waste will take place within the confines of a building with appropriate environmental controls provided.

3.10.4 All waste, residues, products and other materials will be stored in designated on-site storage areas, bunkers or containers.

3.10.5 The facility will include suitable covered reception and storage facilities for 'Contract Waste' with a minimum storage capacity of four days, based on final year tonnage volumes.

3.10.6 The facility will include equipment capable of receiving, recording and electronically weighing each load and vehicle delivering, transferring or removing 'Contract Waste', 'Non-Contract Waste', reagents, treatment residues, by-products and recylates on and off the site.

3.10.7 The facility will include all necessary storage and material handling equipment to facilitate the safe and efficient management of all 'Contract Waste', 'Non-Contract Waste', treatment residues, by-products, and recyclates whilst on the site.

3.10.8 A colour capable Closed-Circuit Television (CCTV) monitoring system will be provided to cover and record key areas including the weighbridge, queuing area, access routes, pedestrian routes, un-loading and loading areas. The system will also cover unauthorised access to the site and be operational during hours of darkness or poor lighting. Space will be provided for storing the recorded material and information for 90 days.

3.10.9 Quality and Environmental Management Systems, compliant with ISO 9001 and ISO 14001, will be implemented. As part of the Quality and Environment Management System, an Environmental Impact Control Method Statement will be developed, maintained and updated on a monthly basis. The Method Statement will include the procedures and actions required to:

- Minimise the environmental impacts of transporting, receiving, treating and disposing of Contract and Non-Contract Waste.
- Meet environmental conditions and applicable legislation.
- Minimise amenity impacts on the local population.
- Maintain the grounds and visual integrity of the building, cladding, external boundaries and fencing.
- Operate a web site on which the environmental monitoring results will be published.

3.10.10 Policies and procedures for the prevention and control of spillages that may cause harm to human health and the environment will be developed, maintained and implemented.

3.10.11 The site will be kept in a clean and tidy manner both internally and externally. Litter and detritus will be cleared up on a daily basis with particular emphasis on public areas. Any litter escaping the site or deposited by site users will be cleared up to a 50m distance from the site boundaries.

3.11 Environmental Permit

3.11.1 MVV would be required to obtain an Environmental Permit from the Environment Agency and operate the EfW in accordance with it. Much of the EIA work will form the basis for the Environmental Permit application. It is intended that the Planning Application (including the ES) and Environmental Permit application be made at the same time.

3.12 Construction

3.12.1 The main construction will take approximately 27 months. Following this there would be a period of start-up and testing (known as 'commissioning') which will take approximately 6 months. Construction is expected to occur between early 2012 and late 2014.

3.12.2 A construction compound will be established within the confines of the site boundary.

.

4 Environmental Impact Assessment

4.1 EIA Legislation

The EIA Directive

4.1.1 The legislative framework for EIA is set by European Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 97/11/EC and Directive 2003/35/EC. Collectively, this is known as 'the EIA Directive'. The EIA Directive is concerned with ensuring that the likely environmental effects of proposed major development projects are considered thoroughly in order to inform the decision makers in the 'development consent' process.

The EIA Regulations

4.1.2 Since the UK has a number of different 'development consent' regimes for different types of projects, the EIA Directive has been implemented into UK law through a number of Statutory Instruments. In the case of the proposed Devonport EfW CHP Facility, development consent will be sought through a planning application to PCC as Waste Planning Authority. The Statutory Instrument implementing the EIA Directive for the purposes of planning applications, and under which this ES is submitted, is the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (SI No. 293) (as amended). For brevity these Regulations are referred to in this report as the 'EIA Regulations'.

4.2 Determining the Need (or Otherwise) for EIA: 'Screening'

4.2.1 The process of determining whether or not an EIA is required for a given development project is known as 'screening'. The EIA Regulations include two lists of different types of development projects. The first list is Schedule 1, which identifies all types of projects for which EIA is mandatory. The second list is Schedule 2, which identifies the types of projects for which EIA may be required if the project in question is considered likely to give rise to significant environmental effects.

4.2.2 The proposed development falls under Schedule 1 of the EIA Regulations, as it will incinerate more than 100 tonnes of waste per day, and EIA is therefore mandatory. On this basis, no formal Screening Opinion has been sought from the Waste Planning Authority.

4.3 Scoping

4.3.1 Scoping is the process of identifying the issues to be addressed in the EIA. It aims to focus the EIA on the likely environmental impacts that require further attention, whilst determining the impacts that are unlikely to require additional study. The Department for Environment, Transport and the Regions' (DETR) Circular 2/99[2] acknowledges that the role of EIA is to examine *"the main or significant effects to which a development is likely to give rise"*. The scoping of an EIA by which these main or significant effects are identified is, therefore, an important preliminary procedure that sets the context for the study. Indeed, guidance produced by the Environment Agency (2002) states:

[2] Paragraph 82.

"Scoping is a critical stage early in the EIA process. It provides an opportunity for developers and their consultants to identify and assess the key environmental impacts and issues of concern, facilitated by thorough consultation with, amongst others, planners, statutory and non-statutory consultees, non-governmental organisations (NGOs) and the public."

4.3.2 The proposed EIA scope set out in this report has been formulated by a team of environmental consultants from Scott Wilson, based on desk- and field-based knowledge of the site, prior experience of other waste management EIAs, initial consultation with statutory consultees and work undertaken by Scott Wilson to support MVV's bid thus far. The proposed EIA scope was also informed and agreed by MVV Umwelt.

4.3.3 Although there is no formal requirement in the EIA Regulations to produce a Scoping Report prior to an ES, current draft Government guidance[3] acknowledges that: *"It is good practice for the developer to submit a Scoping Report with the scoping request."* In addition, research[4] suggests that most planning authorities welcome the way in which Scoping Reports provide a detailed and structured presentation of information and find them useful in preparing their Scoping Opinions.

4.3.4 As noted in paragraph 1.1.4, the purposes of this Scoping Report are to:

- Describe the site and surroundings.
- Describe the proposed development.
- Identify potential environmental issues associated with the proposed development.
- Define what methods will be used to assess the environmental effects of the proposed development during the EIA.
- Provide a basis for consultation, where appropriate, with statutory and non-statutory consultees and the public on the relevant environmental issues.
- Seek a Scoping Opinion of the Waste Planning Authority, Plymouth City Council (PCC), in order to formalise the EIA scope.

4.4 General EIA Methodology

Government Guidance Documents

4.4.1 The Devonport EfW CHP Facility EIA will be undertaken having regard to the following Government guidance documents on EIA:

- DETR (1999) Circular 2/99: Environmental Impact Assessment.
- DETR and the National Assembly for Wales (2000) Environmental Impact Assessment: A Guide To Procedures.

4.4.2 Between June and September 2006 the UK Government consulted on draft updated versions of the above documents. These are being updated to reflect, *inter alia*, the lessons derived from the large amount of EIA case law that has arisen in the preceding decade, and also the

[3] Department for Communities and Local Government (2006) *Amended Circular on Environmental Impact Assessment. A Consultation Paper.* Paragraph 98.
[4] EIA Centre, University of Manchester, and Land Use Consultants (2006) *Evidence Review of Scoping in Environmental Impact Assessment.* London: Department of Communities and Local Government.

ongoing development of EIA as a professional discipline. Although it is acknowledged that they are in still draft form, the following documents have nevertheless been reviewed and lessons drawn where appropriate:

- Department for Communities and Local Government (2006) Amended Circular on Environmental Impact Assessment. A Consultation Paper.
- Department for Communities and Local Government (2006) Environmental Impact Assessment: A guide to good practice and procedures. A Consultation Paper.

Other Guidance Documents and Standards

4.4.3 Each ES chapter examining the key environmental issues will draw on a number of topic specific guidance documents and / or standards, and references to these will be cited within the individual chapters.

4.5 Approach to Assessment

Introduction

4.5.1 The purpose of EIA is fourfold:

- To define the baseline and future baseline (in the absence of the development) scenarios.
- To predict positive and negative environmental effects of the development and their likely significance.
- To identify means of reducing effects (i.e. improving the design and / or the inclusion of mitigation).
- To describe the residual effects after mitigation.

Baseline and Future Baseline Scenarios

4.5.2 The approach to the assessment will be to evaluate the environmental effects of the proposed development at the key stages in construction and operation of the project. These are, where appropriate, then compared to the situation prevailing before the project is commenced (i.e. the current baseline), and to the situation that would prevail in the future without the scheme (i.e. the projected future baseline).

4.5.3 The current baseline year will be taken as 2010 since this is the period in which the majority of baseline work for the EIA will be undertaken. In some cases other current baseline years may be used and this would be explained (e.g. were a particular baseline survey to occur in 2009 or 2011).

4.5.4 The future baseline is the theoretical situation that would exist in the absence of the development. It is typically based upon extrapolating the current baseline forward using technical knowledge of changes to predict this (e.g. habitat change over time, traffic and waste growth over time, etc.). It will likely cover the year of opening in 2014.

Identification of Environmental Impacts and Effects

4.5.5 EIA identifies environmental effects on resources and receptors, which are defined as follows:

- Resources are defined as bio-physical features or items of 'environmental capital'; examples include species and their habitats, aquifers, access routes, and community facilities.
- Receptors comprise human beings, either individually or collectively, and the socio-economic systems on which they depend; for example, residents, employees, communities and economies.

4.5.6 An environmental 'effect' results from an 'impact' (or change) influencing a resource or receptor. The precise nature of the effect and its 'significance' will depend on the *interaction* between the *magnitude of impact* (for example its extent, duration or permanence) and the *sensitivity, value or number of the resources or receptors* in each case. This is discussed in more detail below.

4.5.7 Effects can be positive or negative.

4.5.8 Effects can also be direct or indirect, as follows:

- A direct effect results from activities that are an integral part of the proposed development (e.g. felling of a tree to make way for a new building); and
- An indirect effect may result from changes induced by the proposed development (e.g. changes in traffic noise levels).

4.5.9 Effects can also be temporary or permanent.

4.5.10 The duration of an effect is one of the considerations in determining its significance. The EIA will distinguish between temporary and permanent effects on the following basis:

- Temporary effects are those which persist for a limited period only (e.g. during the course of a particular construction activity) or which may disappear due to natural recovery of the environment or their assimilation into it over a reasonably short time, i.e. months to years.
- Permanent effects are those that are likely to be irreversible or which will persist for a substantial period of time i.e. decades or longer.

4.5.11 Within the EIA, effects will be considered for both the construction and operational phases of the development and can be defined as follows:

- Temporary construction effects.
- Permanent construction effects.
- Permanent operational effects.

4.5.12 Effects from the proposed development can also combine to act collectively on a resource or receptor, or can combine with effects from other developments in the vicinity. Such effects are known as cumulative effects (discussed further below).

Determining the Significance of Effects

4.5.13 A significant effect may be very broadly defined as one that should be brought to the attention of those involved in the decision-making process. This definition is prescribed to varying degree by statute, planning policy, and published guidelines and standards, and is also influenced by the precedents established in previous EIAs. It is broadly accepted, however, that significance reflects the relationship between two factors:

- The magnitude (for example its extent, duration or permanence); and
- The sensitivity, value or number of the resources or receptors.

4.5.14 The magnitude of an impact is often quantifiable in terms of, for example, extent of land take, or predicted change in noise levels. The sensitivity or value of the resource or receptor is normally derived from:

- Its designated status within the land use planning system.
- The number of individual receptors such as residents;
- An empirical assessment on the basis of characteristics such as rarity or condition.
- Its ability to absorb change without impact.

4.5.15 Significant effects occur where valuable or sensitive resources, or numerous receptors, are subject to impacts of considerable magnitude. Effects are unlikely to be significant where low value or non-sensitive resources, or a small number of receptors, are subject to minor impacts. Allocation of significant effects in intermediate situations will be a matter for the assessment methodology in question and also professional judgement in each topic area. Where an effect is considered to be significant, this significance will generally be classified as High, Moderate, Low or Negligible (with these descriptions again being based on precedent or current guidance).

4.5.16 Within the ES, the following generic matrix (Table 4.1) will be used to define the level of significance of effects. In some cases analogous matrices for the various specialist topics will be used. This system is an aide to the assessment process, not definitive. Judgement will be used in cases where there are two possible categories within one cell.

Table 4.1 Significance Matrix

Sensitivity of Resource or Receptor	Magnitude of Impact		
	High	Medium	Low
High (e.g. of National importance)	High	High / Moderate	Moderate
Medium (e.g. of Regional or County importance)	High / Moderate	Moderate	Moderate / Low
Low (e.g. of District importance)	Moderate	Moderate / Low	Low / Negligible

4.5.17 The four levels of significance defined by the generic matrix are therefore:

- High – an effect which in isolation could have an influence on the decision making process.
- Moderate – an effect that on its own could have some influence on decision making, particularly when combined with other similar effects.
- Low – an effect which on its own is likely to have a negligible influence on decision making but when combined with other effects could have more influence.
- Negligible.

Assessment Years

4.5.18 The construction is expected to occur between early 2012 and 2014. Construction effects would be assessed during this period.

4.5.19 In order to assess the operational effects of the proposed development it will be necessary to look at a period in the future. The proposed development is programmed to be operational in 2014 and so this will represent the 'with development' scenario.

4.5.20 For the purpose of the landscape and visual impact assessment, it is usual practice to look at a further assessment period some point in the future when any required planting has fully taken effect, usually fifteen years from date of opening. This will be 2029.

Iterative Design and Mitigation

4.5.21 The EIA process provides the opportunity for likely significant environmental effects to be determined at an early stage in the formulation of development proposals, for the design to be developed to reduce or eliminate undesirable environmental effects, and where elimination is not possible for mitigation measures to be incorporated to reduce undesirable environmental effects. Mitigation measures can be applied through the consideration of alternatives, physical design, provision of specific control equipment, project management or operation and other means. This process has already begun as part of the SWDWP bidding process and will continue as the EIA progresses.

Residual Effects

4.5.22 The fundamental aim of mitigation is to reduce the significance of the environmental effects. Where mitigation fails to eliminate entirely any (negative) environmental effect, the remaining component of the effect is known as the residual effect.

Cumulative Effects

4.5.23 The EIA Regulations require that, if relevant, cumulative effects of development be considered within an ES. Draft good practice guidance on EIA[5] states that:

" 'Cumulative' is not defined in the EIA Directive or Regulations – the dictionary definition is 'increasing by one addition after another'…In the context of EIA, cumulative effects could refer to the combined effects of different development activities within the vicinity or those of different aspects of a single development on a particular receptor." (paragraphs 121 and 122)

[5] Department for Communities and Local Government (DCLG) 'Environmental Impact Assessment: A guide to good practice and procedures: A consultation paper' (June 2006).

4.5.24 For the proposed development, cumulative effects will be addressed as follows:

- Combined effects of individual impacts, for example noise, dust and visual impacts, on a particular receptor; and
- Effects from other permitted developments in close proximity, which individually might be insignificant, but when considered together could result in a significant cumulative effect.

4.5.25 It is generally accepted that if there are several significant effects in one topic area then the overall evaluation of severity should be at least that of the highest scoring effect. However, there is no clear guidance on how these effects should be aggregated. Within the EIA, professional judgement will be used to determine the severity of cumulative effects, with rationale presented as required. Due to their close proximity to the site, it is possible that cumulative effects could occur at the residential properties on Talbot Gardens, so particular attention would be paid here.

4.5.26 Other developments to be built during the same period and within a reasonable proximity of the proposed development will be identified through the scoping process. There is potential for cumulative air quality effects of the proposed EfW CHP Facility with the Langage power station (and possibly also the EfW proposed by Viridor).

5 Environmental Topics to be Assessed

5.1.1 As indicated in Section 4.3 above, the proposed EIA scope has been formulated by a team of environmental consultants from Scott Wilson, based on desk- and field-based knowledge of the site, prior experience of other waste management EIAs, initial consultation with statutory consultees and work undertaken by Scott Wilson to support MVV's bid thus far. The proposed EIA scope was also informed and agreed by MVV Umwelt.

5.1.2 For a range of environmental topics this chapter of the EIA Scoping Report describes:

- Baseline environmental conditions;
- Possible environmental effects;
- Possible mitigation; and
- Assessment methodology proposed, based on the above.

5.1.3 In due course the full impact assessments will be made and mitigation measures developed.

5.2 Ecology

Baseline Environmental Conditions

5.2.1 There are three statutory designated sites within 2 km of the site:

- Plymouth Sound and Estuaries SAC, approximately 500m to the west;
- Tamar Estuaries Complex SPA, approximately 2km to the north-west; and
- Tamar-Tavy estuary SSSI, approximately 2km to the north-west.

5.2.2 The South Dartmoor Woods SAC is located 10.4 km to the north-east.

5.2.3 A Biodiversity Network Feature and Local Greenscape area, locally known as 'Blackies Wood', covers part of the north west of the site.

5.2.4 An extended Phase I Habitat Survey was undertaken by Scott Wilson on 8 September 2009. The temperature was 15°C and weather conditions were light rain and cloud. The Phase 1 Habitat Survey Map is shown in Figure 3.

5.2.5 The target notes from the Phase I Habitat Survey, labelled on Figure 3, are:

1. Rubble area with ephemeral/short perennial growth and patches of tall ruderal vegetation. Dominant species include birds foot trefoil (*Lotus corniculatus*), buddleia (*Buddleja davidii*) and white melilot.
2. Stand of Japanese Knotweed (*Fallopia japonica*) noted, just outside of the site boundary.
3. Area of dense continuous scrub. Dominated by buddleia.
4. Dense continuous scrub surrounding the ephemeral/short perennial habitat, with a well trodden path access of semi improved grassland continuing around the scrub. Field layer dominated with ribwort plantain (*Plantago lanceolata*), perennial rye (*Lolium perenne*) and ivy (*Hedera helix*).
5. Area of Himalayan honeysuckle located just outside of the site boundary.
6. Slow worm (*Anguis fragilis*) found under artificial refuge.
7. Second area of ephemeral/short perennial growth. A spoil heap located in this area has been mapped.
8. Areas of semi improved neutral grassland that have been managed so they do not over grow. Dominated with perennial rye, Yorkshire fog (*Holcus lanatus*), and false oat grass (*Arrhenatherum elatius*).
9. Hard standing concrete access road.

5.2.6 The dominant habitats on site consist of bare ground, continuous scrub, rank semi-improved neutral grassland, ephemeral/short perennial, tall ruderal, hard standing and aggregate spoil. The continuous scrub has been left fairly unmanaged with occasional semi-mature trees. This habitat is of moderate value to breeding/roosting birds.

5.2.7 The rank semi-improved neutral grassland, ephemeral/short perennial, and tall ruderal habitats are of medium value to reptiles, such as slow-worm (encountered during the survey) and

common lizard. The open, undisturbed, well-drained nature of the site, natural and artificial refugia, provides suitable resting, basking and hibernation sites for reptiles.

5.2.8 A stand of Japanese knotweed was identified within 7m of the southern boundary of the site next to Weston Mill Lake.

5.2.9 The site is considered to be of low to negligible value for amphibians, bats and water voles. There were no signs of badger activity/setts or hazel dormice.

Possible Environmental Effects

5.2.10 The development will not directly impact on the designated sites of nature conservation importance, as all works will be confined within the site boundary. However, due to the site's proximity to the adjacent surface waters, the quality of these waters could potentially be negatively affected by contaminants, either presently within the ground or brought on to the site during construction or operation.

5.2.11 There is some potential for deposition of air pollutants from the stack and from road traffic to affect nearby habitats. Specifically, there is potential for dry and wet deposition of nitrogen dioxide to provide (unwanted) nutrient enrichment.

5.2.12 The proposed development would remove some areas of vegetation from the site during construction. In particular there would be some landtake from the edge of Blackies Wood to accommodate the EfW Main Building and car parking. Once operational, the site would predominantly comprise hardstanding.

Possible Mitigation

5.2.13 Potential mitigation relating to potential impacts on water quality are dealt with in paragraph 5.5.12 onwards.

5.2.14 The stand of Japanese Knotweed identified during the Phase 1 Habitat Survey would be treated.

5.2.15 The EfW CHP Facility will be required to have extensive emissions abatement equipment, conforming to the requirements of Best Available Techniques, as judged by the EA. Emissions will need to be monitored continuously and results reported to the EA under the requirements of an Environmental Permit. The potential for stack emissions to impact upon designated habitats will be assessed as part of the air quality assessment (see paragraph 5.8.39).

5.2.16 An ecological mitigation area is proposed in the north of the site, covering the area of Blackies Wood. Details of these proposals will be worked-up during the coming months.

5.2.17 Where possible, new landscaping will incorporate native tree and shrubs species to further increase habitat diversity.

Assessment Methodology

5.2.18 A Phase 1 Habitat Survey was undertaken in September 2009 in accordance with the appropriate guidance published by the Joint Nature Conservation Committee[6]. The scope of the survey was extended according to the methodology described by the Institute of

[6] Joint Nature Conservation Committee (2007) *Handbook for Phase 1 Habitat Survey: A technique for environmental audit*. 2nd edition.

Environmental Assessment (now the Institute of Environmental Management and Assessment) 1995 to include targeted searches for signs of protected and/or notable species. As noted on Figure 3, the site area has been increased since the survey in September 2009 to include part of Blackies Wood. It is therefore necessary to update the Phase 1 Habitat Survey in 2010 to include this area.

5.2.19 A number of additional surveys have been identified as being required and will be undertaken for the EIA. The scope of the surveys is as follows:

Table 5.1 Ecological Surveys Required

Survey type	Survey details
Reptile survey	This will consist of 8 visits between May and September 2010. The first visit will consist of laying artificial refugia (pieces of tin or roofing felt) within areas of suitable habitat at a minimum rate of 10/ha. This will be followed by a 10 day period of "settling in", which will in turn be followed by a further seven visits during either morning or early evening on each of which the refugia will be lifted and the species, number, age and sex of any reptiles found recorded.
Breeding bird survey	This will take place May to July 2010. It will consist of 5 visits approximately 4 weeks apart. The survey would follow the method developed by the British Trust for Ornithology (BTO), the Royal Society for the Protection of Birds (RSPB) and the Joint Nature Conservancy Council (JNCC) and described by Gilbert *et al.* 1998[7].

5.2.20 The ES will include the results of all of these surveys, along with a detailed desk study, and draw on them to assess the significance of the impacts from the construction and operation of the proposed development. The appropriate impact assessment methodology[8] would be used. Detailed mitigation measures will be identified. The potential for emissions form the stack to affect nearby habitats will be assessed (see paragraph 5.8.39).

5.2.21 MVV and Scott Wilson held an introductory meeting with Natural England on 8 September 2009 to discuss the proposed development, the ecological studies that had already taken place and those studies required in due course. Similarly, MVV and Scott Wilson also met with the Environment Agency on 18 September 2009. During the meetings, Natural England and the Environment Agency both indicated that opportunities should be explored to improve the environment of the adjacent creek. Further, a screening exercise should be undertaken to determine the need for, and if so the scope of, an Appropriate Assessment (AA).

5.2.22 It is considered likely that an AA will be required to consider the potential impact of the stack emissions on acid and nitrogen deposition at designated nature conservation sites (see section 7.2). Modelling of deposition at these sites would be undertaken as part of the air quality assessment providing sufficient information for the Competent Authority – the Environment Agency – to carry out an AA.

[7] Gilbert G, Gibbons DW and Evans J (1998) Bird Monitoring Methods. RSPB.

[8] Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment.*

5.3 Landscape and Visual

Baseline Environmental Conditions

5.3.1 The site is in an industrial setting, with the operations of HMNB Devonport and other dockyard activities having been located on this part of the Tamar Estuary for many centuries.

5.3.2 The eastern edge of the Tamar Valley AONB lies approximately 1.3km from the western boundary of the site, across the River Tamar. The Tamar Valley is designated as an AONB since it is :

- a rare valley and water landscape;
- a landscape of high visual quality;
- a unique wildlife resource;
- a remarkable heritage; and
- a landscape of artistic and public appeal.

5.3.3 A Local Greenscape Area, locally known as 'Blackies Wood', covers part of the north west of the site.

5.3.4 At a national landscape planning policy level the site lies within the South Devon Character Area. The Greenscape Assessment for Plymouth, undertaken in 2000[9] and updated in 2004[10], shows the site to be split between the 'Area 17 - Dockyards' and 'Area 18 - Barne Barton and Saltash' local character areas (see Figure 4).

5.3.5 It is considered that the description of Area 17 is of most relevance for the site. Area 17 is described as:

- having limited provision of all types of green space (where these are provided they are of district importance).
- being distinctive in its land use, cultural and architectural heritage and including a SAM. The heritage of the area is considered to be of regional importance.
- having little relationship with the waterfront largely because of the dockyards. Corridors allowing access to the water's edge are therefore of district wide importance.

5.3.6 To the north and north-west of the site lies the residential area of Barne Barton. Although the existing view from this area is already industrial in nature, properties, particularly those on Talbot Gardens but also on Kelly Close, Furse Park, Savage Road, Wilkinson Road and Poole Park Road, directly overlook the site. There are also residential properties further north, north-east, east and south east of the site, and across the estuary in Wilcove.

5.3.7 The southern part of the site is raised and is currently used as a storage compound for a variety of containers and skips. The northern part of the site is used by 'Ashcroft' and contains portakabins and stockpiles of material. An access road currently runs through the middle of the site.

[9] Land Use Consultants (2000). Greenscape Assessment for the City of Plymouth.
[10] Land Use Consultants (2004). Greenscape Strategy Update for the City of Plymouth.

5.3.8 A number of representative viewpoints have been selected to aid an initial assessment of the likely visual impact of the development and inform the design of the facility. The viewpoint locations and associated photographs are shown in Figures 5 and 6.

Possible Environmental Effects

5.3.9 The development would have a visual impact on local residents in Barne Barton, with the closest residential properties being those on Talbot Gardens (approximately 30m from the site boundary). In addition, there would be views of the EfW CHP Facility more widely. Transient impacts on visual value have also been identified for members of the public using the River Tamar recreationally. As well as being visible during the day, the facility would need to be lit for operational and safety reasons so would likely also be visible at night.

5.3.10 The proposed EfW CHP Facility would also influence the character of the existing landscape.

Possible Mitigation

5.3.11 Although there could be no disguising its scale, the design and landscaping of the facility will be completed to a very high standard, creating an iconic/landmark building.

5.3.12 A landscaping scheme is in the process of being developed.

5.3.13 The layout has been designed so that the waste deliveries and storage would occur at the rear (south) of the building and thus would be screened from the properties on Talbot Gardens.

5.3.14 A suitable lighting design will be developed to minimise glare and slight spill whilst maintaining a safe facility.

Assessment Methodology

5.3.15 The landscape and visual impact assessment will include the following:

- Detailed desk study assessment of the existing landscape and visual resource of the study area in terms of its character, quality and sensitivity, from maps and reports.
- Further field survey to verify landscape character types, gain appreciation of the relationship between the proposed development and receiving landscape, and compile a full list of representative assessment viewpoints.
- Definition of Zone of Visual Influence (ZVI).
- Photographs will be taken in 'winter' conditions (i.e. no leaf cover) from a large range of assessment viewpoints.
- A selection of these viewpoints from which the potential impacts are considered greatest will also be photographed by a professional photographer, from which 'verifiable' photomontages of the proposed development will be produced. The exact locations of these photographs, and selected points in the field of view towards the site, will be accurately laser surveyed. The 3D computer model in which the photomontages are subsequently produced, and therefore the final photomontages, will therefore be highly accurate.
- Amendment to the landscaping design if required.

- Assessment of landscape and visual impacts (construction, operation and proposed landscaping).
- Recommendations for further mitigation, where required.

5.3.16 The assessment will be undertaken in accordance with the recognised guidance published by the Landscape Institute and the Institute of Environmental Management and Assessment[11].

[11] The Landscape Institute and the Institute of Environmental Management and Assessment (2002) *Guidelines for Landscape and Visual Assessment* (second edition).

5.4 Cultural Heritage

Baseline Environmental Conditions

5.4.1 A search of the Plymouth Sites and Monuments Record (SMR) and English Heritage's Listed Building (LB) website[12] revealed nine sites of archaeological or historical interest within the vicinity of the site, including the Grade II Listed Mixing House. Two further sites (a saltings and 'Barne Quay') have been identified within the site boundary from historic Ordnance Survey mapping. A list of these sites of archaeological/historical interest can be found in Table 5.2 overleaf with their locations shown on Figure 7.

5.4.2 A Scheduled Ancient Monument was identified at Bull Point, 1km to the northwest of the site although the monument is not visible from the site and therefore will not be impacted upon by the proposed EfW CHP Facility.

5.4.3 No sites and findspots have been identified from the prehistoric period; however, a map of the fortifications in and around Plymouth surveyed in 1660 shows Weston Mill as a small settlement at the mouth of the tidal inlet indicating that there was activity in the area in the medieval period.

5.4.4 English Heritage provided the following preliminary comments in December 2009 with regard to the development of an EfW CHP Facility at the site: *"Although there is a significant (and coherent) cluster of listed buildings at HMS Drake, there are no significant designated assets in the immediate vicinity of the proposed site to the north-east of North Yard. Clearly the massing and design of any proposed development on this site would require careful consideration."*

[12] http://lbonline.english-heritage.org.uk/

Table 5.2: Sites of Archaeological / Historical Interest

Number	SMR/LB No.	Grid Reference	Brief Description	Type	Grade
1	SMR No. 74648 LB No. 500716	n/a	Gunpowder mixing house (building 124) built in 1804 as part of the St Budeaux Powder Mills works at Bull Point. It is now in use as an office. The only surviving aspect of the early powder mills.		Grade II Listed Building
2	SMR No. SX45NW/546/001	SX4435,5748	Barrack wall at Barne Barton, only partially surviving. A rough limestone wall containing rifle loops. Possibly the boundary of a naval establishment and may have been constructed in the early 19th century.	Structure	
3	-	n/a	Saltings noted on 1864 Ordnance Survey map.	Sub-surface deposit	
4	-	n/a	Barne Quay noted on 1864 Ordnance Survey map.	Demolished Structure	
5	SMR No. SX45NE/230	SX4508,5747	Surface air raid shelter shown at Harbour Avenue, Weston Mill.	Structure	
6	SMR No. SX45NE/241	SX4512,5748	ARP post, shown at a works in Weston Mill.	Structure	
7	SMR No. SX45NW/523	SX4491,5775	Underground air raid shelter, opposite station on Wolseley Road.	Subterranean Structure	
8	LB No. 473757	SX44863,56914	HMS Drake, Exmouth Block. Large barrack, one of three similar blocks. 1907.		Grade II Listed Building
9	LB No. 473758	SX 44828,56881	HMS Drake, Grenville Block. Large barrack, one of 3 similar blocks. 1901.		Grade II Listed Building
10	LB No. 473759	SX 44799,56845	HMS Drake, Raleigh Block. Large barrack, one of 3 similar blocks. 1901.		Grade II Listed Building
11	LB No. 473760	SX44905,56849	HMS Drake St Andrews Church. Barrack master's house and canteen, converted to theatre and associated recreation and service rooms, now partly a church. 1879-86, extended 1892-1912.		Grade II Listed Building

Possible Environmental Effects

5.4.5 There is potential for the setting of the Grade II Listed Mixing House to be affected by the construction and operation of the proposed facility.

5.4.6 Below-ground deposits of the saltings and Barne Quay have the potential to survive within the proposed development area.

5.4.7 Although no sites or findspots have been identified from the prehistoric period, the location of the site at a tidal inlet indicates that there is the potential for the buried historic land surfaces beneath the proposed development site.

Possible Mitigation

5.4.8 Landscaping proposals will reduce the setting impacts of the facility on the Grade II Listed Mixing House.

Assessment Methodology

5.4.9 A desk-based study will form the basis of the assessment, expanding on the information presented above in respect of known or potential archaeology and built heritage resources. It will assess the significance of the known and potential features, undertake an impact assessment and recommend mitigation (if required).

5.4.10 This work would be undertaken according to the Institute of Field Archaeologists Standards and Guidance for the production of Archaeological Desk-Based Assessments (1999).

5.4.11 The methodology and any proposed mitigation would be discussed and agreed with the English Heritage Coastal Strategy Officer and the Plymouth City Archaeologist and Conservation Officer.

5.5 Contamination – Land and Water Quality

Baseline Environmental Conditions

5.5.1 A site visit was undertaken by Scott Wilson in September 2009 and a report by ESG 2006[13] has been reviewed. The ESG report was informed by an Envirocheck report which has also be reviewed.

5.5.2 BGS mapping indicates that the bedrock beneath the site comprises Upper Devonian Shales of the Saltash Formation[14]. This bedrock is overlain by inter-tidal alluvial sediments. Made ground fill material is present above this. The Groundwater Vulnerability Map indicates that the Upper Devonian Slates are classed as a Minor Aquifer and the soils may have a high leaching potential with little ability to attenuate diffuse source pollutants.

5.5.3 The tidally influenced Weston Mill Creek flows around the eastern boundary of the site, before discharging to Weston Mill Lake. Weston Mill Lake is connected to the Tamar Estuary, a designated Special Area of Conservation (SAC).

5.5.4 The Envirocheck report identifies a number of water abstractions and discharges within 2km of the site.

5.5.5 From historical site information it is known that the site comprises reclaimed ground where waste was used as the fill material. The nature of the made ground / fill used across the site is not known with certainty at this stage and may present a source of contamination. Contaminants in made ground / fill material typically comprise polyaromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs) and metals, although the potential exists for other contaminants to be present.

5.5.6 The following is a summary of information from ground investigations carried out in the vicinity of the site (from ESG report).

Table 5.3 Ground Conditions

Report	Date	Location	Scope	Ground Conditions / Comments
DCES (FGE/2063)	September 1984	Approx 100m south	8 No. boreholes	7m of made ground (rubble, brick and slate) over 22m of soft grey silt over shale bedrock.
DCES (FGE/2062 Pt 3)	February 1985	On site and 100m south	Not given	Borehole on site encountered 6m of made ground (mainly shale, concrete and building rubble) over 4m of silt over shale bedrock.
DCES (G/0509)	January 1991	Adjacent to east	10 No. boreholes	Made ground up to 10m thick. Alluvium and soft silt up to 6m in thickness. Fill placed from 1972 to 1987 comprised demolition rubble. The fill behind the dockside at Weston Mill is engineered granular fill placed in the mid 1980s. Most of the alluvium was dredged and removed prior to the placement of the engineered fill.

[13] Environmental Science Group (ESG), (2006). Phase 1 Land Quality Assessment: HM Naval Base Devonport Weston Mill.

[14] The Saltash Formation typically comprises of mudstone, siltstone and fine sandstone.

Report	Date	Location	Scope	Ground Conditions / Comments
Aspinwall and co. (N3 05760)	July 1995	Adjacent to east	33 No. trial pits 5 No. boreholes	Up to 9.8m of made ground (slate fragments in a clay matrix and occasional cobbles and boulders of brick, concrete, metal, wood and granite). Soft silt up to 25m depth over shale bedrock. Copper (Cu) and Zinc (Zn) were significantly elevated (above Interdepartmental Committee on the Redevelopment of Contaminated Land guidelines). Also Lead (Pb) and Mercury (Hg) were, to a lesser extent, elevated. Asbestos also encountered. Surface waters elevated in sulphate and chloride only.

5.5.7 On the raised made ground in the southern part of the site, a membrane has been installed to prevent contaminants directly entering the nearby sensitive waters (Dave Jarvis, MoD, pers. comm.). It is understood that the membrane has been designed to direct surface water away from sensitive waters, to a series of swales, to allow the removal of contaminants before flowing back into the Weston Mill Creek.

Possible Environmental Effects

5.5.8 The following environmental impacts are considered possible:

Site Users

- Volatilisation of potential contaminants from impacted soils (i.e. made ground) and groundwater.
- Exposure to contaminants in soils through dermal contact, ingestion and dust inhalation.
- Exposure to ground gas from made ground and natural strata.

Construction Workers and Adjacent Human Receptors

- Temporary exposure of workers to contaminated soils, dusts and vapours due to ground disturbance during construction.
- Adjacent human receptors may be temporarily impacted by the migration of soil dusts during construction.
- Given the naval history of the surrounding area there is the possibility that unexploded ordnance is present.

Groundwater

- Potential for contaminants from on-site made ground to migrate vertically and laterally to groundwater beneath the site.
- Potential for fuels and lubricants, brought on to the site during construction and operation, to pollute groundwater.

Surface Water

- Potential for made ground present on site to contain contaminants that may impact on the controlled waters such as the River Tamar.
- Potential for fuels and lubricants to pollute surface water.

Buildings and Buried Services

- Potential for concrete (e.g. foundations) to be subject to attack from sulphates in ground or groundwater.
- Potential for hydrocarbons or solvents within the ground to permeate through plastic pipe work, therefore tainting mains (potable) water supplies.

Vegetation

- Potential for on-site vegetation to be adversely impacted through both uptake of contaminants from soils and groundwater (e.g. through the root system), or deposition of contaminated construction dusts (e.g. on leaves).

Possible Mitigation

5.5.9 A ground investigation will be undertaken. Work undertaken will include:

- Determination of the extent (lateral and vertical) and nature of the made ground/fill;
- Chemical/contamination testing of soils;
- Testing of groundwater samples; and
- Monitoring for ground gases.

5.5.10 Depending on the levels of contamination encountered, it may be necessary for remediation to be carried out before commencing any construction work, e.g. piling.

5.5.11 It is likely that risks of exposure to contaminated soils and dusts during construction would be controlled by the following means:

- Use of appropriate Personal Protective Equipment (PPE) for construction workers including gloves and dust masks, use of ground gas monitoring equipment and hygiene facilities.
- Use of appropriate site control measures to minimise the migration of contaminated dusts and soils from the site to adjacent sensitive areas.

5.5.12 To mitigate against water pollution risks during the construction phase all site contractors would be required to ensure that their construction activities are undertaken in accordance with the pollution prevention guidelines (PPG) published by the Environment Agency, particularly PPG5 (works in, near or liable to affect watercourses).

5.5.13 An Environmental Impact Control Method Statement will be prepared to detail the measures to be followed and complied with to minimise nuisance and environmental impact during construction. This Method Statement will include measures to minimise impacts associated with water pollution risks.

5.5.14 The proposed development is not expected to impact on groundwater quality, provided any imported fill material required as part of the site development is adequately characterised as suitable for use with respect to contaminants.

5.5.15 Water pollution risks from the site can be avoided through the implementation of a suitably designed drainage system.

5.5.16 In the unlikely event of a spillage during construction or operation, chemicals would be cleaned up in an appropriate fashion and would be unlikely to penetrate the new hardstanding and enter the ground / groundwater. To prevent exposure of the public and operational staff health and safety procedures will be put in place throughout the site.

5.5.17 Sulphate testing will be undertaken (during detailed engineering design, post planning) to establish the appropriate concrete specification to be used on site.

5.5.18 Depending on the concentrations of any contaminants identified, consideration should be given to any planting to ensure that if necessary species with greater resistant to phytotoxic contaminants are used.

5.5.19 Given the naval history of the surrounding area there is the possibility that unexploded ordnance is present and as such specialist advice would be sort prior to any intrusive ground investigation.

Assessment Methodology

5.5.20 As specified above, a ground investigation will take place and, if required, remediation measures will be specified.

5.5.21 Based on this work, the contamination assessment would be undertaken using the recognised Source-Pathway-Receptor methodology.

5.5.22 The assessment would include the following desk-based work:

- Review of environmental data, including site sensitivity mapping and British Geological Society borehole data;
- Review of historical data and mapping;
- Review of ground investigation data to characterise the nature of soils and waters underlying the site;
- Site walkover and possibly holding interviews with people that have knowledge of the site; and
- Development of a conceptual site model, detailing potential sources of contamination, pathways and sensitive receptors.

5.5.23 The assessment will consider contamination risks resulting from construction activities, for example piling / excavation, and operation of the site.

5.6 Hydrology, Hydrogeology and Flood Risk

Baseline Environmental Conditions

5.6.1 BGS mapping indicates that beneath the made ground the site is underlain by salt marsh/alluvium deposits over Upper Devonian Slates comprising of the Saltash Formation[15]. The Groundwater Vulnerability Map indicates that the Upper Devonian Slates are classed as a Minor Aquifer. It should be noted that the groundwater regime at the site is likely to be artificially altered due to the made ground present on site.

5.6.2 The tidally influenced Weston Mill Creek flows around the eastern boundary of the site, before discharging to Weston Mill Lake. Weston Mill Lake is connected to the Tamar estuary, a designated SAC.

5.6.3 Surface water generated on the low lying land to the north of the existing access road crossing the site is thought to infiltrate into the subsoil and eventually drain to the Weston Mill Creek.

5.6.4 On the raised made ground in the southern part of the site, a membrane has been installed to prevent contaminants directly entering the nearby sensitive waters (Dave Jarvis, MoD, pers. comm.). It is understood that the membrane has been designed to direct surface water away from sensitive waters, to a series of swales, to allow the removal of contaminants before flowing back into the Weston Mill Creek. During a site walkover (4 September 2009) surface water ponding was observed within this area of the site.

5.6.5 The Environment Agency flood map is shown below. The majority of the site is located within Flood Zone 1. The majority of the site is therefore not at significant risk of coastal or fluvial (river) flooding. However, it is possible that the lower ground around the proposed bridge is located within Flood Zone 2/3. Therefore, there is potential for flood risk at the access due to its level.

Environment Agency Flood Map

[15] The Saltash Formation typically comprises of mudstone, siltstone and fine sandstone.

5.6.6 The existing crossings of Weston Mill Creek lie at between 5m AOD and 6m AOD (a topographic survey has been undertaken and detailed data are available). The raised made ground in the southern part of the site lies at 11m AOD to 12m AOD. The land to the north of the access road lies at approximately 7m AOD to 8m AOD. Tidal still water levels during the 1 in 200 year event for Devonport have been sourced from the South West Region Extreme Tide Level Report[16]. A comparison of ground levels across the site with the 1 in 200 year tidal still water level (3.68 m AOD) indicates that the site is currently above this flood level.

5.6.7 The anticipated effects of climate change on sea level rise (up to 2070), as stated within PPS25, indicate that the future 1 in 200 year tidal still water level is expected to increase to 4.17 m AOD for the Devonport area. Due to the uncertainty inherent with climate change predictions the EA usually requires a 300 mm freeboard above the 1 in 200 year level, including climate change tidal still water level. Therefore taking this freeboard allowance into account a preliminary estimate for minimum finished floor levels would be 4.47 m AOD.

5.6.8 MVV and Scott Wilson met with the EA to introduce the project on 18 September 2009. The EA recommended that early consideration should be given to designing an integrated site drainage and landscaping scheme. It was observed that due to the proximity to River Tamar (albeit that the site is within Flood Zone 1), the finished floor levels would require detailed consideration. Any upgraded or new bridge crossing the creek should be outside the flood plain; Land Drainage Consent would be required for such works. The Environment Agency would encourage infiltration as a means of managing surface water, but this would be subject to ground conditions and tidal water levels.

5.6.9 A further meeting was held between the EA and Scott Wilson on 14 January 2010 to discuss the crossing of Weston Mill Creek, specifically in respect of flood risk (and ecological) issues.

Possible Environmental Effects

5.6.10 Although the site is located entirely within Flood Zone 1, which is identified as having little or no risk of flooding, due to the area of the proposed development (greater than 1ha) the site may present a flood risk off site from surface water run-off generated on site. It is possible that tidal flooding may also present a risk to the development.

5.6.11 The groundwater regime could be affected by sub-surface development such as the waste reception bunker and foundations.

Possible Mitigation

5.6.12 Flood risks from the operational site can be avoided through the implementation of a suitably designed drainage system. A surface water drainage strategy is in the process of being developed. Initial ground investigations have shown that the majority of the site is located on made ground which is potentially contaminated. Soakaways and infiltration systems are therefore unlikely to be suitable for the site due to the potential for mobilising contaminants. Taking this and the tidal nature of the site into account, the most suitable method for dealing with surface water runoff is to construct a positive discharge into the River Tamar.

5.6.13 As noted above, the minimum finished floor level proposed will be 4.47m AOD.

[16] Environment Agency (2003) South West Region Extreme Tide Level Report– Information on predicted tide levels for extreme events.

Assessment Methodology

5.6.14 The assessment will consider the hydrological, hydrogeological and flood risk impacts of the development during construction and once it is operational. (Water quality impacts will be assessed in the Contamination – Land and Water Quality assessment.)

5.6.15 The determination of impacts will be undertaken using the recognised Source-Pathway-Receptor model. An assessment of significance will be undertaken using the methodology provided in the Web-based Transport Analysis Guidance (WebTAG, 2003); specifically the Water Environment Sub-Objective WebTAG Unit 3.3.11[17]. Although this method was designed for transport projects it is applicable to and widely used for other development types.

5.6.16 Specifically the ES chapter will include:

- Assessment of baseline aquatic environment conditions including up to date baseline information on licensed abstractions and discharges, groundwater levels and gradients, surface water flows and water supply at the site and surrounding area;
- Assessment of the potential effects of buildings, infrastructure and (probably) piled foundations on both surface water and groundwater;
- Assessment of the other potential construction effects;
- Assessment of the effects of effluent discharge;
- Assessment of the flood risk to and from the site; and
- Proposed mitigation and monitoring.

5.6.17 A Flood Risk Assessment (FRA), in accordance with PPS25 and in consultation with the EA, would be undertaken to assess the flood risk from surface water and drainage aspects of the development as well as confirm extreme tidal flood levels and to obtain guidance on climate change allowances over the development's lifetime. The FRA would be submitted as an appendix, with the ES chapter providing a synopsis of its findings.

[17] The methodology set out in this TAG Unit provides an appraisal framework for taking the outputs of the environmental impact assessment process and analysing the key information of relevance to the water environment. The guidance provides a method by which the significance of the identified potential impacts can be appraised consistently by decision makers. It is based on guidance prepared by the Environment Agency and builds on the water assessment methodology in Design Manual for Roads and Bridges (DMRB) 11:3:10.

5.7 Traffic and Transport

Baseline Environmental Conditions

5.7.1 The site is located at the western end of Weston Mill Drive. Weston Mill Drive is a Principal Road and provides the highway link between the dockyard and the trunk road network (A38). It links to the city's primary road network at the Wolesley Road signal junction. Weston Mill Drive is a two-way single lane highway with a 30mph posted speed limit.

5.7.2 Traffic accessing the proposed EfW CHP Facility will use the Camel's Head junction, navigate the roundabout immediately before the security gates of HMNB Devonport. A new access to the site would be formed in the vicinity of the existing coach bay and enter the existing car park. The access to the EfW CHP Facility will be separate from the HMNB Devonport compound for security reasons, and hence the site access will be entirely self contained and managed.

5.7.3 Based on a site visit by a Traffic Engineer and the fact that HGVs already use these routes, it is expected that the existing highway geometry on Weston Mill Drive at the Camel's Head junction, and at the HMNB Devonport roundabout near the site access, are suitable to accommodate the vehicles that are expected to access the EfW CHP Facility.

5.7.4 An initial consultation meeting was undertaken on 8 September 2009 with PCC in its role as Local Highways Authority. A meeting with the Highways Agency (HA) and its consultants AECOM took place on 18 September 2009. A summary of the key points raised during the consultations is outlined below:

- The existing highway infrastructure is considered suitable in terms of structural integrity to accommodate HGV traffic required to access the site.
- The impact on highway capacity at the Weston Mill Drive / Wolseley Road junction (Camel's Head) and A38 / Weston Mill Drive junction during the highway network peak periods is an area requiring detailed consideration, especially the morning peak period.
- The HA informed MVV that AECOM managed on its behalf a computer model of the A38 / Weston Mill Drive junction. The model could be made available to MVV if/when required for the Transport Assessment (TA).
- The TA should identify any seasonal fluxes in vehicle movements, for example arising due to peaks in tourist visitors and associated waste arisings.
- HMNB Devonport operates a Travel Plan. Potential should be explored to co-ordinate with that.

Possible Environmental Effects

5.7.5 Construction and operational traffic will increase the number of vehicles accessing the site, particularly HGVs. A large proportion of vehicle movements associated with the EfW CHP Facility are expected to require the use of the A38 and the A3064 Weston Mill junction.

5.7.6 Table 3.1 of this report shows an estimate of the likely vehicle trip generation.

5.7.7 It is important to remember that MSW and C&I waste is already being collected and transported throughout the SWDWP area to a network of disposal sites. The proposed EfW

CHP Facility would not significantly alter the overall quantum of waste movements in the area, but it would relocate the geographical focus of those movements.

5.7.8 The additional operational traffic may result in further environmental impacts, particularly to air quality and noise; these will be considered within the respective impact assessments (see sections 5.8 and 5.9 of this report).

Possible Mitigation

5.7.9 A TA will be undertaken which will identify any improvement works required to junctions and the access, as well as related traffic management measures for both the access route and within the site itself.

5.7.10 The following aspects will be considered to minimise the impact of the EfW CHP Facility on the highway network:

- Management of staff starting and finishing times in relation to the existing peak periods;
- Contractual agreements to control delivery times;
- Storage capacity of delivered waste and processed ash to control the flexibility in timing of deliveries required;
- Internal transfer of ash by a method other than vehicular transport; and,
- Modes of transport used.

5.7.11 Measures to be followed and complied with to minimise nuisance and environmental impact during construction will be developed, including measures to minimise impacts associated with traffic.

5.7.12 Traffic management arrangements (including signs) to, from and on the site, and including transport routes, will also be developed.

5.7.13 All vehicles leaving the site will be adequately cleaned to prevent the deposit of waste material and debris on the highway and any adjoining property. Should material or debris be deposited on the highway/adjoining property, either during construction or once the site is operational, measures will be taken to remedy the situation to the satisfaction of the owners or occupiers.

Assessment Methodology

5.7.14 A TA will be produced to assess the baseline conditions and junction capacities, and assess the impacts of the proposed EfW CHP Facility in traffic and transport terms. The TA will be a separate document to the ES (see section 8.1 below), to be produced in accordance with the Department for Transport's published *Guidance for Transport Assessment* (2007), and scoped in consultation with PCC (as Local Highways Authority (LHA)) and the Highways Agency (HA).

5.7.15 The comments raised by the LHA and the HA during meetings in September 2009 will be taken into account and consultation with these bodies will continue throughout the assessment.

5.7.16 Traffic data and models from the LHA and HA would be obtained as appropriate. Additional traffic surveys will also be undertaken to supplement these data. The scope of study is expected to be as follows:

5.7.17 A38:

- Obtain traffic data from the HA.
- Commission movement and queue length count for all arms (1 day).
- Obtain traffic model from HA for AM and PM peak periods and run model. Assessments would be made for the opening year and a future year, base flows and base + development flows for that period.

5.7.18 Ferndale Road / Weston Mill Drive Signal Junction and Wolseley Road / Western Mill Drive Signal Junctions:

- Commission count and queue survey for both junctions (1 day).
- Obtain signal junction timing data from LHA.
- Run Linsig model to assess the two signal junctions.

5.7.19 Roundabout junction:

- Obtain data from LHA.
- Model junction.

5.7.20 Work required to inform all the modelling to be undertaken:

- Trip generation and distribution assessment for junction modelling.
- Report detailing data, model outputs and impact assessments.

5.7.21 Account will need to be taken of other 'committed' developments in the area, i.e. those with planning permission which are not yet built and occupied / operational, which may influence 'future baseline' traffic levels.

5.7.22 The localised transport movements will be separated into HGV and car movements and the effects assessed accordingly.

5.7.23 As noted above in paragraph 5.7.7, MSW and C&I waste is already being collected and transported throughout the SWDWP area – the proposed EfW CHP Facility would not significantly alter the overall quantum of waste movements, but it would relocate the geographical focus of those movements. The assessment will attempt to quantify the differences between the existing and proposed situations.

5.7.24 Calculations will be made to convert the traffic movement data generated for the TA to a format suitable for the air quality and noise assessments of the EIA (see sections 5.8 and 5.9 of this report respectively).

5.7.25 Separate to the TA, a Travel Plan will be produced to accompany the planning application. The Travel Plan will analyse the sustainability of the EfW in transport terms. The Travel Plan would also consider employees' travel to the EfW, including parking facilities and the potential for car sharing or cycling.

5.7.26 Drawing on the TA and Travel Plan, a separate ES chapter would also be prepared to focus on the environmental aspects of traffic and transport. The ES chapter would be prepared drawing on guidance published by the Institute of Environmental Management and Assessment as well

as the Design Manual for Roads and Bridges, Volume 11, published by the Department for Transport, both of which are applicable to the environmental impacts of traffic and transport.

5.8 Air Quality

Baseline Environmental Conditions

5.8.1 There are three designated AQMAs in Plymouth. These are all located close to or within the city centre, approximately 4 km to the southeast of the site. There is no evidence that local pollutant concentrations in the immediate vicinity of the site are currently exceeding, or at significant risk of exceeding, relevant EU Limit Values and UK Air Quality Objectives.

5.8.2 There is little existing monitoring data representative of baseline air quality in the vicinity of the site itself. The nearest continuous monitoring station is situated within the urban centre of the city, 4 km to the south east. Diffusion tubes in close proximity to major roads elsewhere in the city indicate that there is the potential for the nitrogen dioxide (NO_2) annual mean objective to be exceeded in such locations.

5.8.3 The site is situated in proximity to residential properties to the north west, north, north east and east. Further afield are Saltash to the north west, Wilcove to the west, Torpoint to the south west and the city of Plymouth in general.

5.8.4 There are two designated European sites within 10km of the proposed development, namely:

- Plymouth Sound and Estuaries SAC approximately 500m west; and
- Tamar Estuaries Complex SPA approximately 2km north-west.

5.8.5 The South Dartmoor Woods SAC is located 10.4 km north-east.

5.8.6 There are existing boiler houses within HMNB Devonport generating steam, which will generate emissions to air.

5.8.7 The gas-fired power station at Langage is at the time of writing completing its 'hot commissioning'. The normal operating emissions are therefore not part of the current air quality baseline, but will be.

5.8.8 In January 2010 Viridor submitted a planning application for a 275,000 tpa EfW facility at New England Quarry, Lee Mill, near Ivybridge. Emissions from this project may in future, if consents are obtained, become part of the air quality baseline.

Possible Environmental Effects

5.8.9 The development has the potential to give rise to air quality impacts during its construction, operational and decommissioning phases in the following ways.

Fugitive Dust and Particulate Matter

5.8.10 There would be the potential for emissions of fugitive dust and particulate matter (PM_{10}) to generate impacts at sensitive receptors in close proximity to the site boundary, during both the construction and eventual decommissioning phases. Activities likely to produce particulate emissions include site clearance, landscaping, vehicle movements and construction activities.

5.8.11 The management of fugitive particulate emissions during the operation of the installation would also be an important consideration, as waste handling activities inherently include the treatment and disposal of numerous dusty materials.

Vehicle Emissions

5.8.12 The proposed development would generate additional road traffic movements in the area. Impacts on local air quality could therefore occur at all stages of the programme. However, it is likely to be during the operational phase when waste is transported to site via the local road network that the greatest potential impact on sensitive receptors would be expected, both in terms of the volume of traffic and the timescales involved.

Stack Emissions

5.8.13 The principal emissions to atmosphere from the EfW stack will be water vapour and carbon dioxide (CO_2), with trace amounts of substances regulated by the Waste Incineration Directive (WID). These comprise:

- Oxides of nitrogen (NO_X);
- Carbon monoxide (CO);
- Particulate matter;
- Organic compounds;
- Hydrogen chloride (HCl) and hydrogen fluoride (HF);
- Sulphur dioxide (SO_2);
- Various metals;
- Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans, including dioxin-like polychlorinated biphenyls (PCBs).

5.8.14 Dry deposition of NO_2 is considered to be the predominant mechanism by which nutrient enrichment of ecological sites and habitats could be affected by emissions from the proposed EfW CHP Facility. NO_2 is sparingly soluble in water and will be washed out of the atmosphere by rainfall, so wet deposition is also possible.

5.8.15 Based on prior experience of similar facilities, it is anticipated that the predicted maximum process contribution to ground-level pollutant concentrations would result in predicted environmental concentrations that are well within Air Quality Objectives. It is also anticipated that the impact of plant emissions on nitrogen deposition rates at designated nature conservation sites would not be significant. Nevertheless, detailed modelling and assessment is required – see below.

5.8.16 There is potential for cumulative effects of the proposed EfW CHP Facility with the Langage power station (and possibly also the EfW facility proposed by Viridor).

5.8.17 There indirect effects of the existing boiler houses within HMNB Devonport being taken out of use as a result of the proposed EfW CHP Facility would be considered.

Fugitive Emissions (Including Odour)

5.8.18 During the operational phase, fugitive emissions of odour, bioaerosol and particulate matter may be released from activities on site.

Greenhouse Gas Emissions

5.8.19 The EfW CHP Facility would result in emissions of greenhouse gases (GHG), principally CO_2, during both construction and operation. During construction there would be GHG emissions from construction traffic and, indirectly, through embedded energy in construction materials. During operation there would again be GHG emissions from road traffic and from the EfW stack.

5.8.20 The EfW CHP Facility would generate renewable electricity, resulting in a reduced need to generate electricity in fossil fuel power stations elsewhere. By diverting biodegradable waste from landfill, the EfW would also offset GHG emissions from landfill elsewhere. There is expected to be a net reduction in GHG emissions.

Possible Mitigation

5.8.21 An Environmental Impact Control Method Statement will be prepared to detail the measures to be followed and complied with to minimise nuisance and environmental impact during construction. This Method Statement will include measures to minimise impacts associated with dust, emissions and odour. Possible mitigation is likely to include provision of measures to reduce fugitive dust deposits on site and local roads (e.g. water bowsers), the use of well maintained vehicles and the provision of personal protective equipment to construction workers.

5.8.22 The EfW CHP Facility will be required to have extensive emissions abatement equipment, conforming to the requirements of Best Available Techniques (BAT), as judged by the Environment Agency (EA). Emissions will need to be monitored continuously and results reported to the EA under the requirements of an Environmental Permit. Flue gases which have passed through the boilers will enter the flue gas treatment area, where the gases will be cleaned using a dry reagent injection system before they are released into the atmosphere via the 85m tall stack. The system includes an additional economiser unit downstream of the flue gas cleaning system to maximise the recovery of heat from the process.

5.8.23 It is important to note that the bottom ash leaves the process moist, so its potential to create dust is low.

5.8.24 A Carbon Management Plan will be produced to ensure the minimisation of GHG emissions

Assessment Methodology

Baseline Air Quality Review

5.8.25 A review of baseline air quality for the pollutants associated with waste handling and EfW installations would be undertaken. The review would make use of all relevant existing sources of information, such as National Air Quality Information Archive background values, local authority monitoring data and baseline survey data from the site.

Baseline Air Quality Monitoring Survey

5.8.26 The following baseline air quality monitoring survey is proposed:

- a scheme for undertaking a diffusion tube monitoring survey of NO_2 and SO_2 concentrations, over a period of nine months, at a number of locations across the city and elsewhere;

- a scheme for undertaking monitoring of PM_{10}, NO_2 and SO_2 concentrations using automatic samplers, over a period of nine months, at a representative location in the vicinity of the site; and
- a scheme for undertaking monitoring of ambient concentrations of industrial metals, PCBs, polycyclic aromatic hydrocarbons (PAH) and dioxins and furans, over a period of nine months, in conjunction with the PM_{10}, NO_2 and SO_2 survey.

NO_2

5.8.27 The main source of NO_2 in most parts of Plymouth is likely to be road traffic, and therefore concentrations of this pollutant will vary widely depending on proximity to major roads. For this reason, diffusion tube monitoring of NO_2 at a number of locations will be undertaken to understand the variation in concentrations. The monitoring survey will include:

- urban background locations where the maximum ground-level impact of emissions from the main stack are likely to occur;
- areas where there is the potential for persistently high concentrations to occur, such as near to major road junctions and main roads;
- along the designated access route to the site, where additional HGV movements would occur during the operational phase;
- locations with the potential to be significantly affected by nitrogen deposition, such as the South Dartmoor Woods SAC; and
- a co-location study with automatic monitoring equipment operated by Plymouth City Council, in order for the results to be evaluated for survey bias.

5.8.28 The diffusion tube baseline monitoring programme will take place over a period of one year, in order to adequately assess seasonal changes in baseline concentrations and periods of adverse meteorological conditions.

5.8.29 It is proposed that diffusion tube monitoring should take place at approximately eighteen sites, as follows. The position of each tube would be confirmed through a site visit to evaluate the suitability of monitoring locations:

- 2 rural background locations in Dartmoor National Park;
- 2 locations close to the A38 / A3064 junction and along the designated access route to the site;
- 10 locations in residential areas around the site;
- 2 locations in Saltash;
- 1 location in Torpoint;
- a co-location study at the Plymouth Centre automatic monitoring station (2 tubes); and
- any further locations identified at the site evaluation stage.

5.8.30 It is also proposed to monitor NO_2 using the automatic sampling equipment required for measurement of PM_{10} – see below for details – and this would take place over a nine month period.

SO_2

5.8.31 Concentrations of SO_2 were measured at the Plymouth Centre station for a number of years. PCC has not declared any AQMAs for SO_2, and monitoring ceased in 2007. Due to the high sulphur content of some marine fuels, however, there is the potential for higher than average SO_2 concentrations to occur in close proximity to the Devonport area. For this reason, it is proposed to undertake monitoring of SO_2 in the vicinity of the Devonport site. Two options are available:

- a diffusion tube screening survey of SO_2 at two sites near to the Devonport site, in conjunction with the NO_2 survey; or
- automatic monitoring of SO_2 at the Devonport site, at the PM_{10} and industrial metals / PCBs / PAH / dioxin and furan survey site.

5.8.32 If the diffusion tube only option is selected, the results of the diffusion tube survey would not be able to be corrected for bias as there is no existing automatic monitoring station measuring SO_2 in the Plymouth area. The results would therefore be indicative only and could be used to confirm that SO_2 concentrations are low and do not give cause for concern.

5.8.33 It is recommended that the SO_2 monitoring programme includes both options, to enable diffusion tube results to be corrected for survey bias. The monitoring would be undertaken over a period of nine months.

PM_{10}

5.8.34 It is proposed to undertake PM_{10} monitoring using automatic sampling equipment.

5.8.35 The monitoring exercise would utilise a PM_{10} Beta Attenuation Monitor (BAM) at each site. The BAM monitor is internationally approved and is capable of being calibrated against the EU Gravimetric Standard. The PM_{10} monitoring would last for a period of nine months.

Industrial Metals, PCBs, PAHs, Dioxins and Furans

5.8.36 It is proposed to carry out monitoring for industrial metals, PCBs, PAH, dioxins and furans using two high volume samplers at the site.

5.8.37 The monitoring exercise would utilise a pair of Partisol high volume samplers. One sampler would be fitted with a PUF filter and standard filter in series to collect vapour phase and particulate phase substances respectively. These samples will be analysed for dioxins, furans, PCBs and PAHs. A second sampler will collect samples for heavy metals analysis, as listed in WID. The monitoring programme would be undertaken over a period of nine months.

Other Pollutants

5.8.38 Monitoring of $PM_{2.5}$ by PCC commenced at the Plymouth Centre monitoring site in October 2009. Although at a very early stage, the results to date indicate that the annual mean air quality objective for this pollutant, of 25 $\mu g/m^3$ to be achieved by 2020, would not be at risk of exceedence at this location. It is therefore proposed that the monitoring of particulate matter focuses on obtaining representative monitoring data for concentrations of PM_{10} in the vicinity of the Devonport site. Information on baseline $PM_{2.5}$ concentrations from the Plymouth Centre site will be re-evaluated once more data become available.

Dispersion Modelling of Stack Emissions

5.8.39 A dispersion modelling assessment, using final design data, would be necessary in order to predict the magnitude of the impact of the proposed plant's stack emissions on total pollutant loadings. The substances investigated would focus on those specified within the WID. The input data to the model would be based on both expected worst-case emissions parameters and WID emissions limit values.

5.8.40 The assessment would be undertaken using the latest version of the dispersion modelling software package ADMS 4, developed by CERC. The model has an extensive validation history and has been widely used in the UK for assessing the dispersion of pollutant emissions from industrial processes. It is also accepted as an appropriate tool for air quality impact assessments by the Environment Agency.

5.8.41 In accordance with Environment Agency guidance, the assessment would use five years of representative hourly sequential meteorological data in the prediction of impacts. The effect of local terrain on dispersion would also be taken into account.

5.8.42 The investigation would incorporate information from the baseline air quality review, and would include an assessment of the cumulative impact of other large sources of emissions within a 10 km radius of the site, where necessary. The scope of the study would include a consideration of abnormal operating conditions and plume visibility and would incorporate modelling of acid and nitrogen deposition at designated sensitive habitat sites for comparison with critical load values.

5.8.43 The dispersion modelling assessment would also be used to confirm the preferred stack height as appropriate, based on the principles of BAT.

5.8.44 The modelling results would be compared to relevant health-based air quality guideline values set out within the Department for Environment, Food and Rural Affairs' (Defra) 2007 Air Quality Strategy and the EA's Environmental Permitting Regulations (EPR) Horizontal Guidance Note H1.

5.8.45 The modelling and assessment will need to consider potential for cumulative effects of the proposed EfW CHP Facility with the Langage power station (and possibly also the EfW facility proposed by Viridor).

Fugitive Dust, Bioaerosol and Odour

5.8.46 A qualitative risk assessment of fugitive emissions of dust, bioaerosol and odour from the proposed facility would be required to be undertaken using standard EA risk assessment techniques. The risk assessment would establish the location and sensitivity of nearby receptors to emissions, and evaluate the effectiveness of proposed management and mitigation measures to control emissions to an acceptable level.

5.8.47 Should the final design of the facility include a waste pre-treatment process and / or odour abatement equipment, such as a biofilter, the impact of odour emissions from the abatement plant would need to be assessed on a quantitative basis. Emissions from the abatement plant, and the consequent impact on odour concentrations at sensitive receptors in the immediate vicinity of the site, would be investigated using an appropriate dispersion model.

Construction and Demolition Dust

5.8.48 A qualitative assessment would be undertaken to identify activities with the potential to generate dust and then to identify appropriate mitigation measures.

Road Traffic Emissions Assessment

5.8.49 A quantitative assessment of the impact of additional road traffic emissions during the operational phase would be undertaken. The method would be based on the Screening Assessment methodology set out in the Design Manual for Roads and Bridges (DMRB) guidance document HA207/07. Data from the Transport Assessment (see section 5.7) will be processed to provide traffic data in the required format.

5.8.50 The assessment would seek to establish that the proposed development would not cause a significant change in pollutant concentrations at existing air quality sensitive receptors on the access route to the site. As there is no indication that Air Quality Objectives for CO, benzene and 1,3-butadiene are at risk of exceedence, the assessment would be restricted to an evaluation of the impact of emissions of NO_2 and PM_{10} on existing air quality. The significance of the predicted change in pollutant concentrations would be determined in the context of national and local plans, policies and strategies for the management of local air quality.

Greenhouse Gas Emission Assessment

5.8.51 An assessment of GHG emissions would be undertaken. This would be based on Waste and Resources Assessment Tool for the Environment (WRATE) modelling.

Health Impact Assessment

5.8.52 A human health impact assessment, aiming to quantify potential increases in the incidence of cancers, hospital admissions, cardio-pulmonary symptoms and life-hours lost over a lifetime, is often submitted as part of an assessment of impacts for EfW facilities. The Health Protection Agency (HPA) has, however, recently completed an extensive review of research into the impact on health of emissions to air from municipal waste incinerators[18]. The report concluded that:

"While it is not possible to rule out adverse health effects from modern, well regulated municipal waste incinerators with complete certainty, any potential damage to the health of those living close-by is likely to be very small, if detectable. This view is based on detailed assessments of the effects of air pollutants on health and on the fact that modern and well managed municipal waste incinerators make only a very small contribution to local concentrations of air pollutants. The Committee on Carcinogenicity of Chemicals in Food, Consumer Products and the Environment has reviewed recent data and has concluded that there is no need to change its previous advice, namely that any potential risk of cancer due to residency near to municipal waste incinerators is exceedingly low and probably not measurable by the most modern techniques. Since any possible health effects are likely to be very small, if detectable, studies of public health around modern, well managed municipal waste incinerators are not recommended."

5.8.53 As the EfW installation would be of a modern design and would operate within the limits set out within the WID, the impact of plant emissions on human health would be likely to be very

[18] Health Protection Agency (2009) The Impact on Health of Emissions to Air from Municipal Waste Incinerators.

small, in accordance with the conclusions of the HPA review. A detailed human health impact assessment is therefore not proposed.

5.8.54 It is worth re-iterating the point made in paragraph 5.8.42 above that the modelling results would in the air quality assessment be compared to relevant *health-based* (not environmental protection-based) air quality guideline values set out within Defra's Air Quality Strategy and the EA's EPR Horizontal Guidance Note H1.

5.9 Noise and Vibration

Baseline Environmental Conditions

5.9.1 The dominant noise source is currently considered to be the existing HMNB Devonport and the railway to the east; some minor contribution would also be made from the adjacent roads.

5.9.2 The closest residential properties are in Barne Barton. Additional properties are located to the northeast, east and south-east of the site. Other human receptors include people working within HMNB Devonport.

5.9.3 The Tamar estuary located to the west of the site is a designated Special Area of Conservation supporting numerous bird species.

Possible Environmental Effects

5.9.4 EfW plant items, in particular the air cooled condensers, as well as site traffic, will be audible. The potential exists for noise effects at nearby residential properties.

5.9.5 The construction and operation of the EfW CHP Facility will also have an impact on traffic flows on existing surrounding roads. Therefore, existing traffic noise levels at receptors located along surrounding affected roads may be altered.

Possible Mitigation

5.9.6 Construction management procedures will be used to minimise noise associated with construction activity. This is likely to include the application of best practice techniques in accordance with BS 5228: 2009 (Code of practice for noise and vibration control on construction and open sites). Such measures may include:

- Use of mufflers or silencers on tools and plant;
- Shut down (or throttle down) of machines in intermittent use in periods between work;
- Use of acoustic enclosures where required; and
- Restricted construction hours.

5.9.7 An Environmental Impact Control Method Statement will be prepared to detail the measures to be followed and complied with to minimise nuisance and environmental impact during construction. This Method Statement will include measures to minimise impacts associated with noise and vibration.

5.9.8 The EfW CHP Facility, in particular the Main Building, will be designed to minimise noise break-out. This would include specification of suitable acoustic shielding of plant and building fabric where necessary. Low-noise air cooled condensers with low speed fans will be specified.

5.9.9 If found to be required, systems such as quick-opening/closing doors at the facility (in order to minimise the time doors are open) and the use of 'smart alarms' on reversing vehicles (directional and only operational when a hazard is detected) could be employed.

Assessment Methodology

5.9.10 Baseline noise measurements will be taken at a number of locations surrounding the site in order to assess the existing background noise climate in the area. The monitoring procedures will conform to BS 7445: 1991 'Description and Measurement of Environmental Noise'. It is proposed to undertake medium-term baseline monitoring at positions representative of the closest sensitive receptors to the site. The monitoring will include weekend and weekday periods. Ideally, and subject to adequate security, a minimum seven day unmanned monitoring period is preferred at each location. However, if the locations are not secure, this may not be possible and a shortened, manned monitoring regime may be appropriate. The locations for noise measurements will be discussed and agreed with the PCC Environmental Health Officer. Preliminary locations for noise monitoring stations, based on an examination of local mapping are:

- Talbot Gardens to north west of site.
- Hamoaze Avenue to east of site.
- Wyvern Centre to south of site.

5.9.11 Construction noise and vibration levels will be predicted using information on the activities and plant likely to be required to complete the works, following the methodology in BS 5228: 2009. The significance of the impact of construction noise will take account of a range of national guidance, existing noise levels, the duration of the works and any local guidelines specified by PCC. The significance of any construction vibration impacts will be considered in terms of both building damage and nuisance, with regard to BS 7385: 1993 (Evaluation and measurement for vibration in buildings) and BS 6472: 2008 (Guide to evaluation of human exposure to vibration in buildings).

5.9.12 Noise levels within the EfW CHP Facility will be calculated based on the equipment to be specified by MVV. The operational EfW noise predictions will be carried out using the latest version of the SoundPLAN noise modelling software, which incorporates the noise propagation standard ISO 9613:1996 (Attenuation of sound during propagation outdoors). The assessment of the significance of the impact will be based on the guidance in BS 4142: 1997 and any local guidelines specified by PCC.

5.9.13 The operational EfW would not contain any potentially significant sources of vibration; therefore vibration impacts during the operation of the site have been scoped out of the assessment.

5.9.14 Operational traffic noise impacts at receptors on surrounding affected roads will be predicted using the Calculation of Road Traffic Noise (CRTN) methodology. Data from the Transport Assessment (see section 5.7) will be processed to provide traffic data in the required format.

5.10 Construction Waste

Baseline Environmental Conditions

5.10.1 From historical site information it is known that the site comprises reclaimed ground where waste was used as the fill material. The fill material is likely to be variable in composition and therefore is likely to have variable chemical properties and contaminant levels.

5.10.2 In addition, a stand of Japanese knotweed was identified within 7m of the southern boundary of the site next to Weston Mill Lake.

Possible Environmental Effects

5.10.3 The construction phase of the development will entail excavation and construction wastes being produced. Any contamination identified through ground investigations may need to be removed from the site as waste.

Possible Mitigation

5.10.4 The mitigation for the impacts would look to demonstrate that each waste stream would be dealt with at the highest possible level of the waste hierarchy.

5.10.5 An outline Site Waste Management Plan (SWMP) would be prepared for the planning application in accordance with the Site Waste Management Plan Regulations 2008. The appointed contractor would develop the SWMP further; it is acknowledged that the SWDWP expect that at least 80% of construction and demolition materials should be recovered and that at least 15% of the total material value should be derived from reused and recycled content in the new build.

5.10.6 Hazardous wastes would be removed by a licensed contractor and disposed of at a suitable facility.

Assessment Methodology

5.10.7 The ES chapter will calculate and document the expected arisings of excavation and construction wastes. This will set the context for the assessment stage, whereby waste streams are then tested in the context of the waste hierarchy.

5.10.8 There are no widely-recognised criteria for assessing, to use EIA parlance, the 'significance' of effects in respect of the management of waste arising from a proposed development. The significance of the effects of the proposed EfW CHP Facility will be determined by applying professional judgement, incorporating the following considerations:

- Type of waste;
- Volume of waste;
- Relevant legislative and policy background; and
- Type, location and general capacity of local/regional waste management facilities to handle the expected waste arisings.

5.10.9 It is important to note that an assessment of the likely effects that arise during waste transit and then at the waste management facilities is outside the scope of this assessment. It reasonably assumed that waste carriers and waste management disposal companies employed by the construction contractor will be competent and adhere to conditions imposed upon them as a result of planning and/or environmental regulations.

6 Content and Proposed Structure of the Environmental Statement

6.1.1 The EIA Regulations define[19] an 'Environmental Statement' as a statement:

(a) *"That includes such of the information referred to in Part I of Schedule 4 as is reasonably required to assess the environmental effects of the development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile, but*

(b) *"That includes at least the information referred to in Part II of Schedule 4;"*

6.1.2 Table 6.1 below identifies the requirements of Schedule 4, Parts I and II.

6.1.3 Table 6.2 identifies the proposed structure of the ES.

6.1.4 A Non-Technical Summary of the ES will be provided separately.

[19] Regulation 2(1).

Table 6.1 Requirements of the EIA Regulations 1999 as to the Content of an ES

EIA Regulations 1999: Schedule 4, Part I
1. Description of the development, including in particular – (a) a description of the physical characteristics of the whole development and the land-use requirements during the construction and operational phases; (b) a description of the main characteristics of the production processes, for instance, nature and quality of the materials used; and (c) an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.
2. An outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects.
3. A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.
4. A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from – (a) the existence of the development; (b) the use of natural resources; (c) the emission of pollutants, the creation of nuisances and the elimination of waste, and the description by the applicant of the forecasting methods used to assess the effects on the environment.
5. A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.
6. A non-technical summary of the information provided under paragraphs 1 to 5 of this Part.
7. An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.
EIA Regulations 1999: Schedule 4, Part II
1. A description of the development comprising information on the site, design and size of the development.
2. A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.
3. The data required to identify and assess the main effects which the development is likely to have on the environment.
4. An outline of the main alternatives studied by the applicant and an indication of the main reasons for his choice, taking into account the environmental effects.
5. A non-technical summary of the information provided under paragraphs 1 to 4 of this Part.

Table 6.2 Proposed Structure of the ES

Part A: context
1. Introduction
2. EIA legislation and general methodology
3. The need for the proposed development
4. Land use: the site and surrounding area
5. Alternatives[20] to the proposed development
6. Description of the proposed development
Part B: assessment
7. Ecology assessment
8. Landscape and visual assessment
9. Cultural heritage assessment
10. Contamination – land and water quality assessment
11. Hydrology, hydrogeology and flood risk assessment
12. Traffic and transport assessment
13. Air quality assessment
14. Noise and vibration assessment
15. Construction waste assessment
Part C: conclusions
16. Inter-relationships and cumulative effects
17. Summary of environmental effects, mitigation and monitoring

[20] This will include various 'alternatives' considered including alternative sites, technologies, site layouts and designs.

7 Appropriate Assessment

7.1 Legislation

The Habitats Directive

7.1.1 The legislative framework for Appropriate Assessment (AA) is set by Council Directive 92/43/EEC, as amended, on the conservation of natural habitats and of wild fauna and flora; commonly known as the 'Habitats Directive'.

7.1.2 The main aim of the Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species at a favourable conservation status, introducing robust protection for those habitats and species of European importance.

7.1.3 The provisions of the Directive require Member States to introduce a range of measures including the protection of habitats and species listed in the Annexes. The Directive has also led to the setting up of a network of SACs, which together with the existing SPAs, classified under the 'Birds Directive'[21], form a network of protected sites known as Natura 2000.

7.1.4 The Habitats Directive introduces the precautionary principle whereby projects can only be permitted having ascertained no adverse effect on the integrity of protected sites. Projects may still be permitted if there are no alternatives, and there are imperative reasons of overriding public interest. In such cases compensation measures will be necessary to ensure the overall integrity of the network of protected sites.

The Conservation (Natural Habitats, &c.) Regulations

7.1.5 The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) transpose the Habitats Directive (92/43/EEC) into national law. The Regulations provide for the designation and protection of European sites and the protection of European species.

7.1.6 Under the Regulations, the Competent Authority – the EA – must undertake an AA for any plan or project which:

- is likely to have a significant effect on a European Site (either alone or in combination with other plans or projects); and
- is not directly connected with or necessary to the management of the site.

7.1.7 AAs should consider the implications of the proposed plan / project on the site in view of that site's conservation objectives. The person applying for the consent must provide sufficient information for the Competent Authority to carry out the assessment.

[21] Council Directive 79/409/EEC on the conservation of wild birds

7.2 Determining the Need for and Scope of an Appropriate Assessment

7.2.1 The process of determining whether or not an AA is required for a given development project is colloquially known as 'screening' or the 'likely significant effect' test.

7.2.2 MVV and Scott Wilson held an introductory meeting with Natural England on 8 September 2009 to discuss the proposed development. Similarly, MVV and Scott Wilson also met with the EA on 18 September 2009. During these meetings Natural England and the EA indicated that a screening exercise should be undertaken to determine the need for, and if so the scope of, an AA.

7.2.3 The screening process essentially involves asking the following question:

"is there sufficient evidence to conclude without undertaking further detailed studies that significant adverse impacts on a designated European site are unlikely?"

7.2.4 If the answer to this question is 'no' then an AA is required. If the answer is yes then this evidence must be provided to the Competent Authority in order for the assessment to be made.

7.2.5 There are two designated European sites within 10km of the proposed development, namely:

- Plymouth Sound and Estuaries SAC approximately 500m west; and
- Tamar Estuaries Complex SPA approximately 2km north-west.

7.2.6 The South Dartmoor Woods SAC is located 10.4 km north-east.

7.2.7 The reasons for their designations are shown in Table 7.1 below.

Table 7.1: Reason for Designation of European Sites

Name of site	Reason for designation
Plymouth Sound and Estuaries SAC	Sandbanks which are slightly covered by seawater all of the time. Estuaries. Atlantic Salt Meadows. Mudflats and sandflats not covered by seawater at low tide. Large shallow inlets and bays. Reefs. Shore dock. Allis shad.
Tamar Estuaries Complex SPA	Internationally important populations of Avocet and Little Egret.
South Dartmoor Woods SAC	Old sessile oak woodlands Ilex and Blechnum in the British Isles. European dry heath.

7.2.8 The features for which these sites have been designated could theoretically be adversely affected by the following impacts:

- Potential for accidental deposition of dust and particulate matter to affect the Plymouth Sound and Estuaries SAC and Tamar Estuaries SPA during the construction and decommissioning phases through the smothering of important habitats.
- Potential for construction noise to disturb birds within the Plymouth Sound and Estuaries SAC and Tamar Estuaries Complex SPA.
- Potential for water quality within the Plymouth Sound and Estuaries SAC and Tamar Estuaries Complex SPA to be negatively affected by contaminants within the ground and / or introduced to the site during the construction, operation and decommissioning phases.
- Increased acid and nitrogen deposition arising from the stack emissions, leading to an exceedance of either critical level[22] or critical load[23] values (or both).

7.2.9 Any theoretical impacts relating to the deposition of fugitive dust and particulate matter will be successfully mitigated through the use of best practice techniques (such as water bowsers – see also paragraph 5.8.21 onwards) such that adverse impacts on the Plymouth Sound and Estuaries SAC and the Tamar Estuaries Complex SPA unlikely, even when considered in combination with other projects and plans. The South Dartmoor Woods SAC is at sufficient distance from the site that it will not be affected by emissions of fugitive dust or particulate matter.

7.2.10 Construction noise impacts could also be mitigated through best practice techniques (see paragraph 5.9.6 onwards) so that adverse impacts on birds within the Plymouth Sound and Estuaries SAC and Tamar Estuaries Complex SPA are unlikely even when considered in combination with other projects and plans. The South Dartmoor Woods SAC is at sufficient distance from the site that it will not be affected by noise from the site.

7.2.11 Similarly, it is expected that the provision of a suitably designed and contained drainage system (see paragraph 3.7.2 onwards) will ensure that water quality within the River Tamar is not negatively affected and adverse impacts on the designated Plymouth Sound and Estuaries SAC and Tamar Estuaries Complex SPA are therefore considered unlikely, even when considered in combination with other projects and plans. The South Dartmoor Woods SAC is at sufficient distance from the site that it will not be affected by run-off from the site.

7.2.12 Based on prior experience of similar facilities, it is anticipated that the impact of plant emissions on nitrogen deposition rates at designated nature conservation sites would not be significant. Nevertheless, detailed modelling and assessment is required.

7.2.13 At this stage of the project, therefore, it is not possible to categorically state whether acid and nitrogen deposition from the stack emissions will lead to an exceedance of critical levels or critical loads within the local European sites. For this reason an AA is considered likely to be required.

[22] The critical level is the concentration of a pollutant in the atmosphere, below which vegetation is unlikely to be damaged according to present knowledge.

[23] The critical load is the amount of pollutant deposited below which significant harmful effects on specified elements of the environment do not occur, according to current knowledge.

7.2.14 Monitoring and modelling of acid and nitrogen deposition at these sites would be undertaken and reported as part of the EIA (see paragraph 5.8.39) thus providing sufficient information for the Competent Authority to carry out an AA.

8 Other Planning Application Documents

8.1 National and Local Validation Lists

8.1.1 On 6 April 2008 the Government introduced a mandatory Standard Application Form (1APP) accompanied by changes to the procedures involved in the validation of planning applications. There are two elements to the validation requirements:

- A national list of mandatory information that must be submitted with every planning application; and
- A local list of additional information that will be required when making an application to PCC.

8.1.2 At the time of writing, PCC had recently closed a period of consultation on its draft local list. It is expected that this local list will be adopted by the time MVV makes a planning application for the EfW CHP Facility. The final documentation requirements will therefore be determined in due course, in consultation with PCC, but it is expected that the application will include at least the documents listed below.

- Application form
- Ownership certificate
- Agricultural holdings certificate
- Site location plan
- Drawings (including plans, elevations and sections)
- Correct fee
- Environmental statement (as described in this report)
- Design and access statement
- Planning statement (including demonstration of the need for the development and the rationale behind the choice of site)
- Transport assessment
- Travel plan
- Community involvement statement
- Sustainability statement (including energy statement)
- Planning obligations draft heads of terms

8.2 Sustainability Statement

8.2.1 In 2009, PCC adopted the Design Supplementary Planning Document (SPD), *Sustainable Design in Plymouth*. This document is designed to guide the design of Plymouth's buildings and spaces.

8.2.2 A Sustainability Statement would be written to accompany the planning application, based on the topic headings in the SPD where they are relevant to the proposed development.

8.2.3 In addition, it is acknowledged that the SWDWP require the EfW CHP Facility to achieve a BREEAM[24] 'Excellent' rating. A BREEAM pre-assessment would undertaken and be appended to the Sustainability Statement to demonstrate that the facility would be able to meet this rating.

8.2.4 The reason for specifically mentioning this here is that, although it is considered by some as an 'environmental' subject, it is not considered that an ES chapter on sustainability is required – emerging Government policy[25] on this subject is that sustainability appraisals of proposed developments should be separate documents to ESs.

[24] Building Research Establishment Environmental Assessment Method.
[25] Department of Communities and Local Government (2006) *Environmental Impact Assessment: A Guide To Good Practice and Procedures.* Consultation Draft.

9 Invitation to Comment

9.1.1 On behalf of MVV Umwelt, Scott Wilson is now seeking the views of the Waste Planning Authority – Plymouth City Council – and other consultees on the proposed scope of the EIA.

9.1.2 To formalise this process a request for an EIA Scoping Opinion has been made of Plymouth City Council under the relevant UK EIA legislation[26]. Prior to giving the Scoping Opinion the Waste Planning Authority is obligated to consult various parties in order to inform the Scoping Opinion. The organisations expected to be consulted include:

- Environmental Protection Team, Plymouth City Council
- Local Highways Authority, Plymouth City Council
- Environment Agency
- Natural England
- English Heritage
- Highways Agency
- Dartmoor National Park Authority

9.1.3 In order to expedite this consultation process and allow Scott Wilson to incorporate the views of a wide range of consultees into the EIA at the earliest opportunity, we request that consultees provide written comments to both of the following parties at the same time:

Ray Williams
Area Planning Manager West
Plymouth City Council
Plymouth
PL1 2AA

ray.williams@plymouth.gov.uk

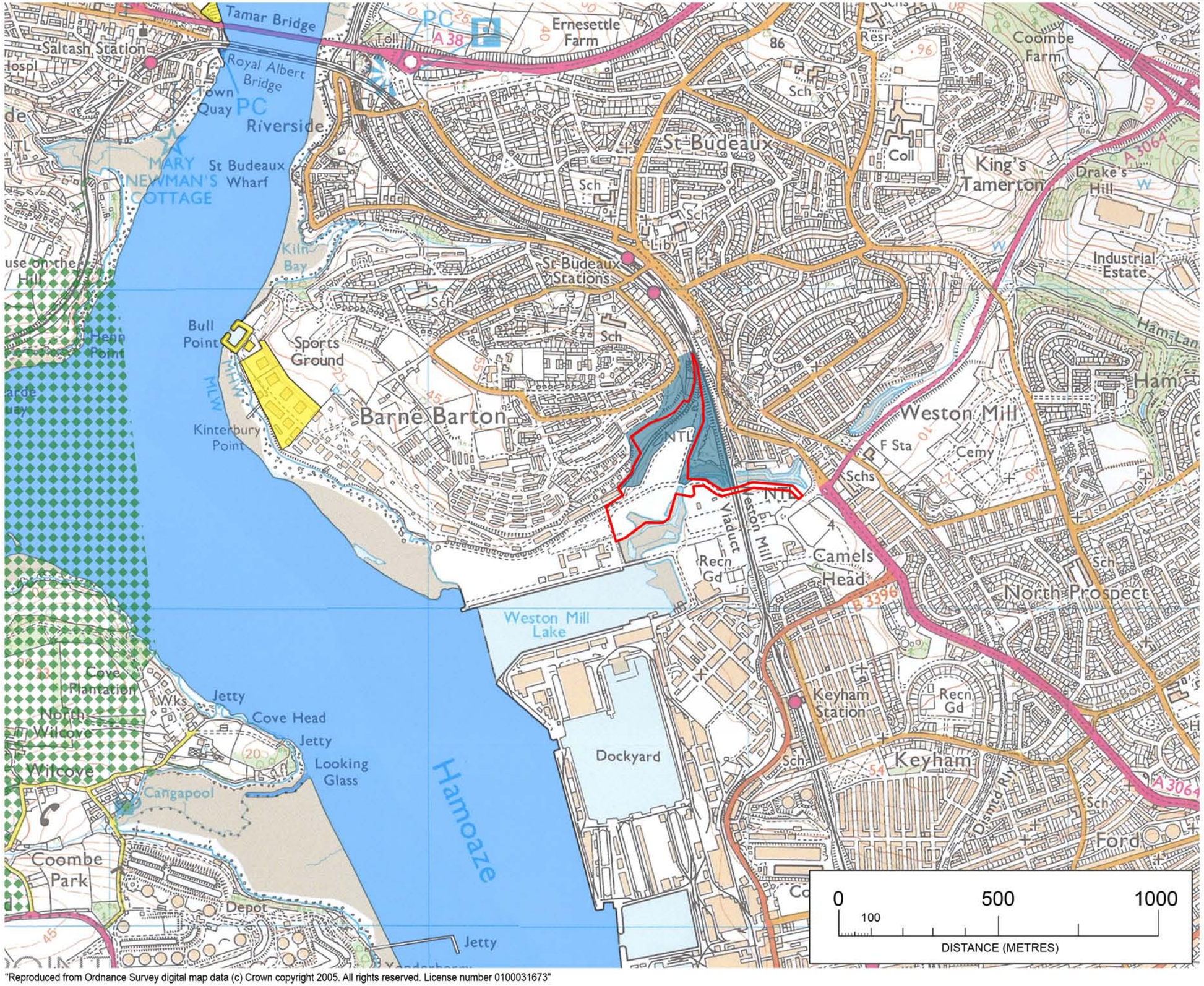
AND

Ian Roach
Scott Wilson Ltd
Mayflower House
Armada Way
Plymouth
Devon
PL1 1LD

ian.roach@scottwilson.com

[26] Regulation 10 of The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

Figures



NOTES

- SITE BOUNDARY
- SCHEDULED ANCIENT MONUMENT
- AREA OF OUTSTANDING NATURAL BEAUTY (AONB)
- SPECIAL AREA OF CONSERVATION
- BIODIVERSITY NETWORK FEATURE

Revision Details	By / Check	Date	Suffix
Revised job and drawing titles	ARR / IR	16.06.2010	C
Changed page layout	ARR / IR	06.05.2010	B
Change to site boundary	ARR / IR	01.03.2010	A

Drawing Status: SCOPING

Job Title: MVV Umwelt — EfW CHP FACILITY

Drawing Title: SITE LOCATION & LAND DESIGNATIONS

Scale at A3: AS SHOWN

Drawn	Approved
ARR	IR

Stage 1 check	Stage 2 check	Originated	Date
AH		PLYM-ENR	15.12.2009

Scott Wilson
Mayflower House
Armada Way
Plymouth
PL1 1LD
England
Tel: +44 01752 676700
Fax: +44 01752 676701
www.scottwilson.com

Drawing Number: FIGURE 01 — Rev: C

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

NOTES

SITE BOUNDARY

LOCATION POINTS:

1 - KELLY CLOSE
2 - FURSE PARK
3 - WILKINSON ROAD
4 - TALBOT GARDENS
5 - POOLE PARK ROAD
6 - SAVAGE ROAD
7 - WESTON MILL CREEK
8 - DEVONPORT DISTRIBUTION FACILITY
9 - WESTON MILL VIADUCT
10 - HMNB SECURITY
11 - CAMEL'S HEAD JUNCTION

Revision Details	By / Check	Date	Suffix
Revised job and drawing titles	ARR / IR	16.06.2010	C
Changed page layout	ARR / IR	06.05.2010	B
Change to site boundary	ARR / IR	01.02.2010	A

Drawing Status
SCOPING

Job Title
MVV Umwelt
EfW CHP FACILITY

Drawing Title
AERIAL PHOTOGRAPH

Scale at A3
NOT TO SCALE

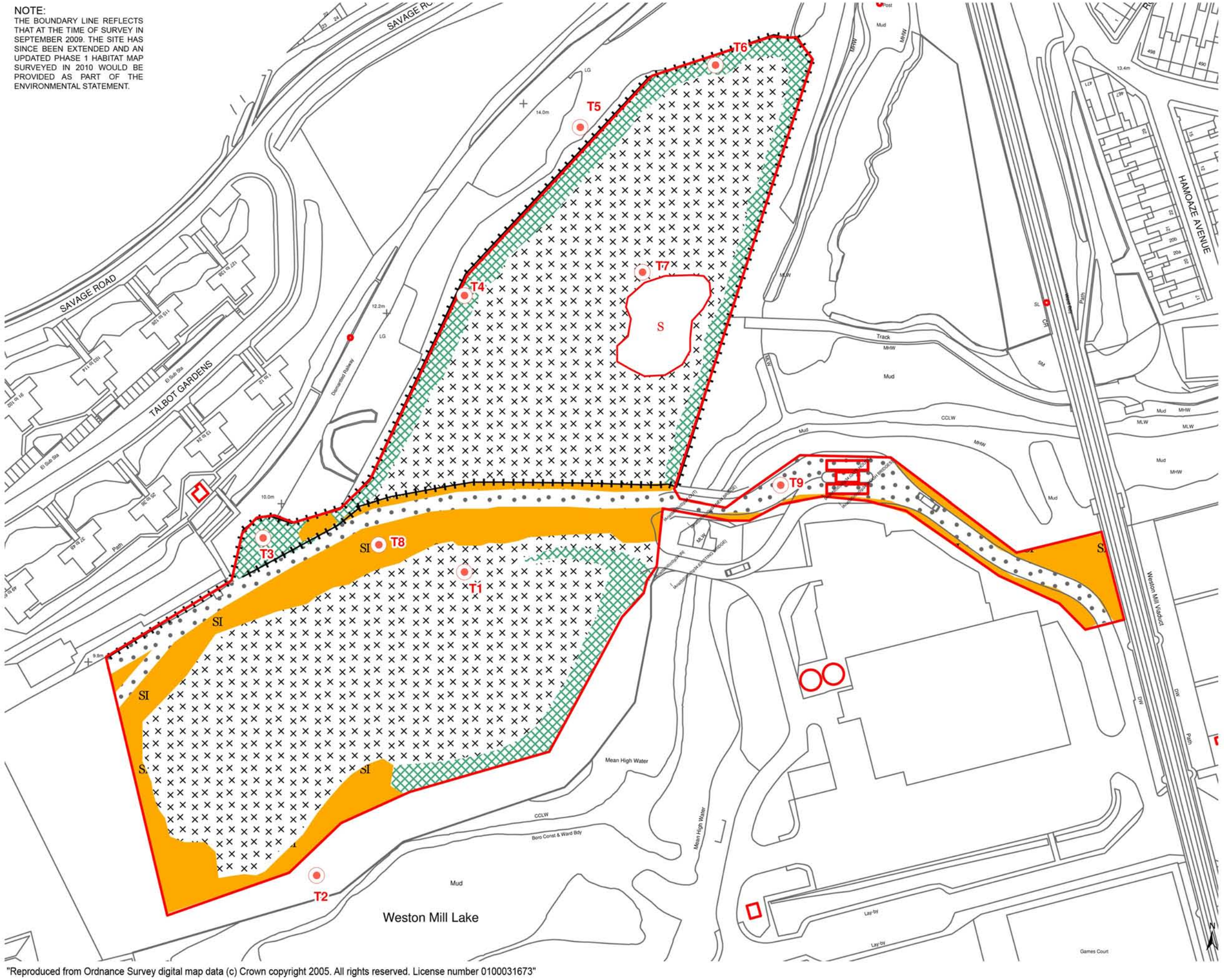
Drawn		Approved	
ARR		IR	
Stage 1 check	Stage 2 check	Originated	Date
AH		PLYM-ENR	26.01.2010

Scott Wilson
Mayflower House
Armada Way
Plymouth
PL1 1LD
England
Tel: +44 01752 676700
Fax: +44 01752 676701
www.scottwilson.com

Scott Wilson

Drawing Number	Rev
FIGURE 02	C

NOTE:
THE BOUNDARY LINE REFLECTS THAT AT THE TIME OF SURVEY IN SEPTEMBER 2009. THE SITE HAS SINCE BEEN EXTENDED AND AN UPDATED PHASE 1 HABITAT MAP SURVEYED IN 2010 WOULD BE PROVIDED AS PART OF THE ENVIRONMENTAL STATEMENT.



"Reproduced from Ordnance Survey digital map data (c) Crown copyright 2005. All rights reserved. License number 0100031673"

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

NOTES

- BOUNDARY LINE
- TARGET NOTE
- FENCE
- S — SPOIL
- EPHEMERAL-SHORT PERENNIAL
- HARD STANDING
- SCRUB
- SI — SEMI IMPROVED GRASSLAND

Revision Details	By / Check	Date	Suffix
Revised job and drawing titles	ARR / IR	16.06.2010	C
Changed figure number from Fig. 7	ARR / IR	02.06.2010	B
Changed page layout	ARR / IR	06.05.2010	A

Drawing Status
SCOPING

Job Title
MVV Umwelt
EfW CHP FACILITY

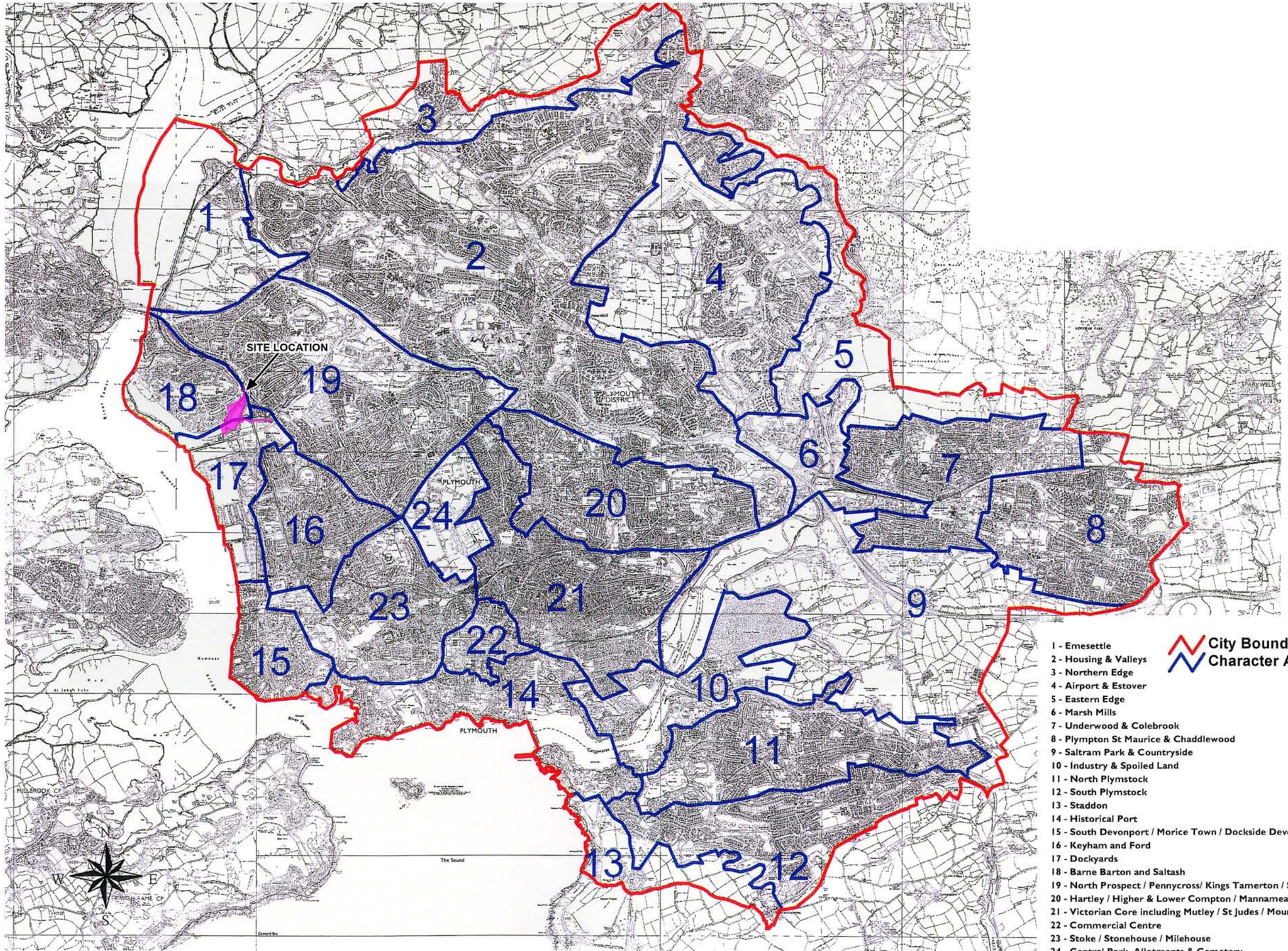
Drawing Title
PHASE 1 HABITAT SURVEY MAP

Scale at A3
NOT TO SCALE

Drawn		Approved	
ARR		IR	
Stage 1 check	Stage 2 check	Originated	Date
AH		PLYM-ENR	19.01.2010

Scott Wilson
Mayflower House
Armada Way
Plymouth
PL1 1LD
England
Tel: +44 01752 676700
Fax: +44 01752 676701
www.scottwilson.com

Drawing Number: FIGURE 03
Rev: C



1 - Emesettle
2 - Housing & Valleys
3 - Northern Edge
4 - Airport & Estover
5 - Eastern Edge
6 - Marsh Mills
7 - Underwood & Colebrook
8 - Plympton St Maurice & Chaddlewood
9 - Saltram Park & Countryside
10 - Industry & Spoiled Land
11 - North Plymstock
12 - South Plymstock
13 - Staddon
14 - Historical Port
15 - South Devonport / Morice Town / Dockside Development
16 - Keyham and Ford
17 - Dockyards
18 - Barne Barton and Saltash
19 - North Prospect / Pennycross/ Kings Tamerton / St Budeaux
20 - Hartley / Higher & Lower Compton / Mannamead / Efford
21 - Victorian Core including Mutley / St Judes / Mount Gould
22 - Commercial Centre
23 - Stoke / Stonehouse / Milehouse
24 - Central Park, Allotments & Cemetery

City Boundary
Character Areas

Source: Plymouth Greenscape Assessment 2000

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

NOTES

Revision Details	By / Check	Date	Suffix
Revised job and drawing titles	ARR / IR	16.06.2010	D
Changed figure number from Fig. 8	ARR / IR	02.06.2010	C
Changed page layout	ARR / IR	06.05.2010	B
Change to site boundary	ARR / IR	01.03.2010	A

Drawing Status
SCOPING

Job Title
MVV Umwelt
EfW CHP FACILITY

Drawing Title
PLYMOUTH
CHARACTER AREAS

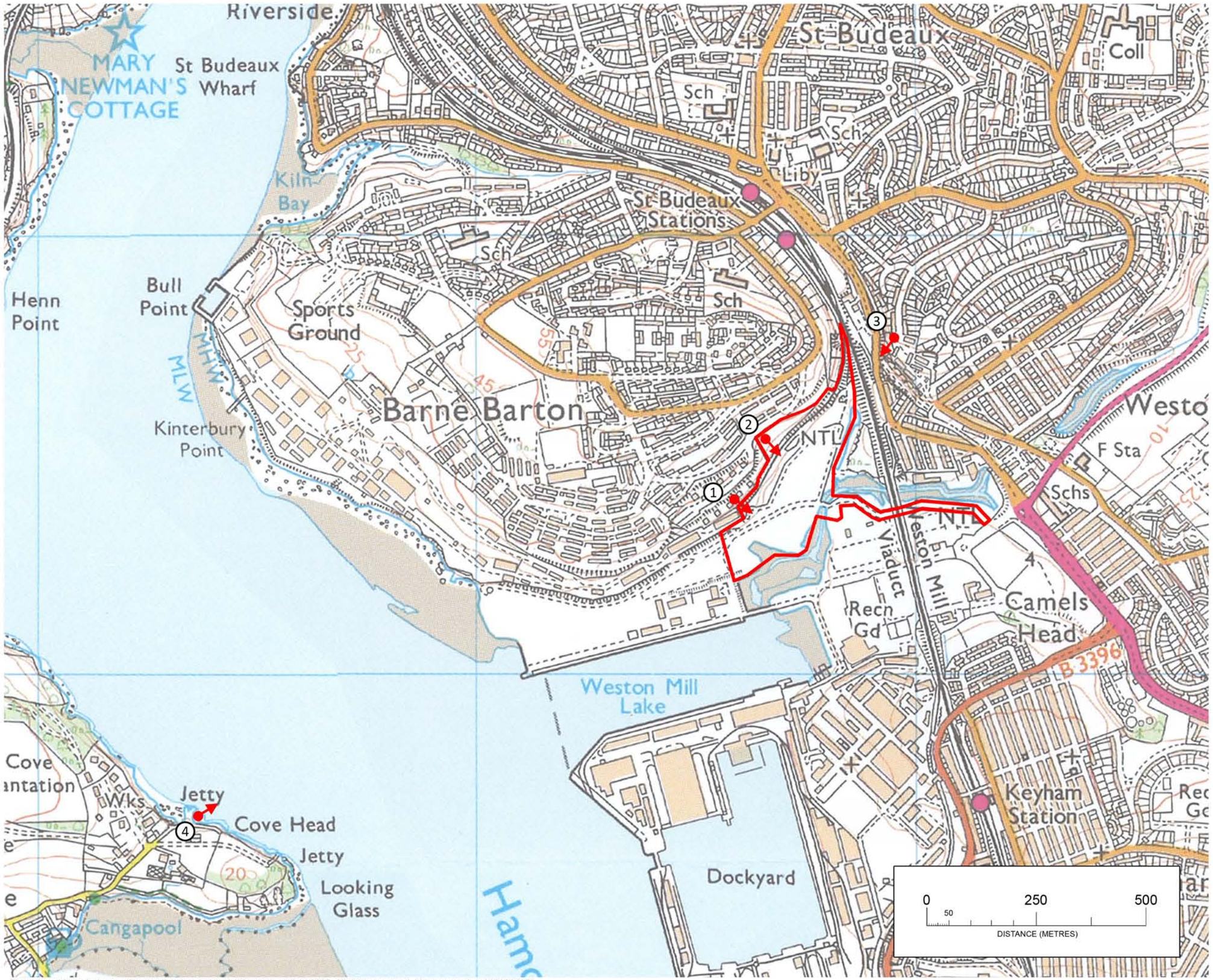
Scale at A3
NOT TO SCALE

Drawn	Approved
ARR	IR

Stage 1 check	Stage 2 check	Originated	Date
AH		PLYM-ENR	20.01.2010

Scott Wilson
Mayflower House
Armada Way
Plymouth
PL1 1LD
England
Tel: +44 01752 676700
Fax: +44 01752 676701
www.scottwilson.com

Drawing Number: FIGURE 04
Rev: D



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

NOTES

SITE BOUNDARY

PHOTOGRAPHIC VIEWPOINT LOCATION (SEE FIG. 6)

Revision Details	By / Check	Date	Suffix
Revised job and drawing titles	ARR / IR	16.06.2010	D
Changed figure number from Fig. 9	ARR / IR	02.06.2010	C
Changed page layout	ARR / IR	06.05.2010	B
Change to site boundary	ARR / IR	01.03.2010	A

Drawing Status: SCOPING

Job Title: MVV Umwelt
EfW CHP FACILITY

Drawing Title: PRELIMINARY PHOTOGRAPHIC VIEWPOINT LOCATIONS FOR ILLUSTRATIVE PURPOSES

Scale at A3: AS SHOWN

Drawn	Approved		
ARR	IR		
Stage 1 check	Stage 2 check	Originated	Date
AH		PLYM-ENR	15.12.2009

Scott Wilson
Mayflower House
Armada Way
Plymouth
PL1 1LD
England
Tel: +44 01752 676700
Fax: +44 01752 676701
www.scottwilson.com

Drawing Number: FIGURE 05
Rev: D

VIEWPOINT 1

VIEWPOINT 2

VIEWPOINT 3

VIEWPOINT 4

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

NOTES

Revision Details	By / Check	Date	Suffix
Revised job and drawing titles	ARR / IR	16.06.2010	C
Changed figure number from Fig. 10	ARR / IR	02.06.2010	B
Changed page layout	ARR / IR	06.05.2010	A

Drawing Status
SCOPING

Job Title
MVV Umwelt
EfW CHP FACILITY

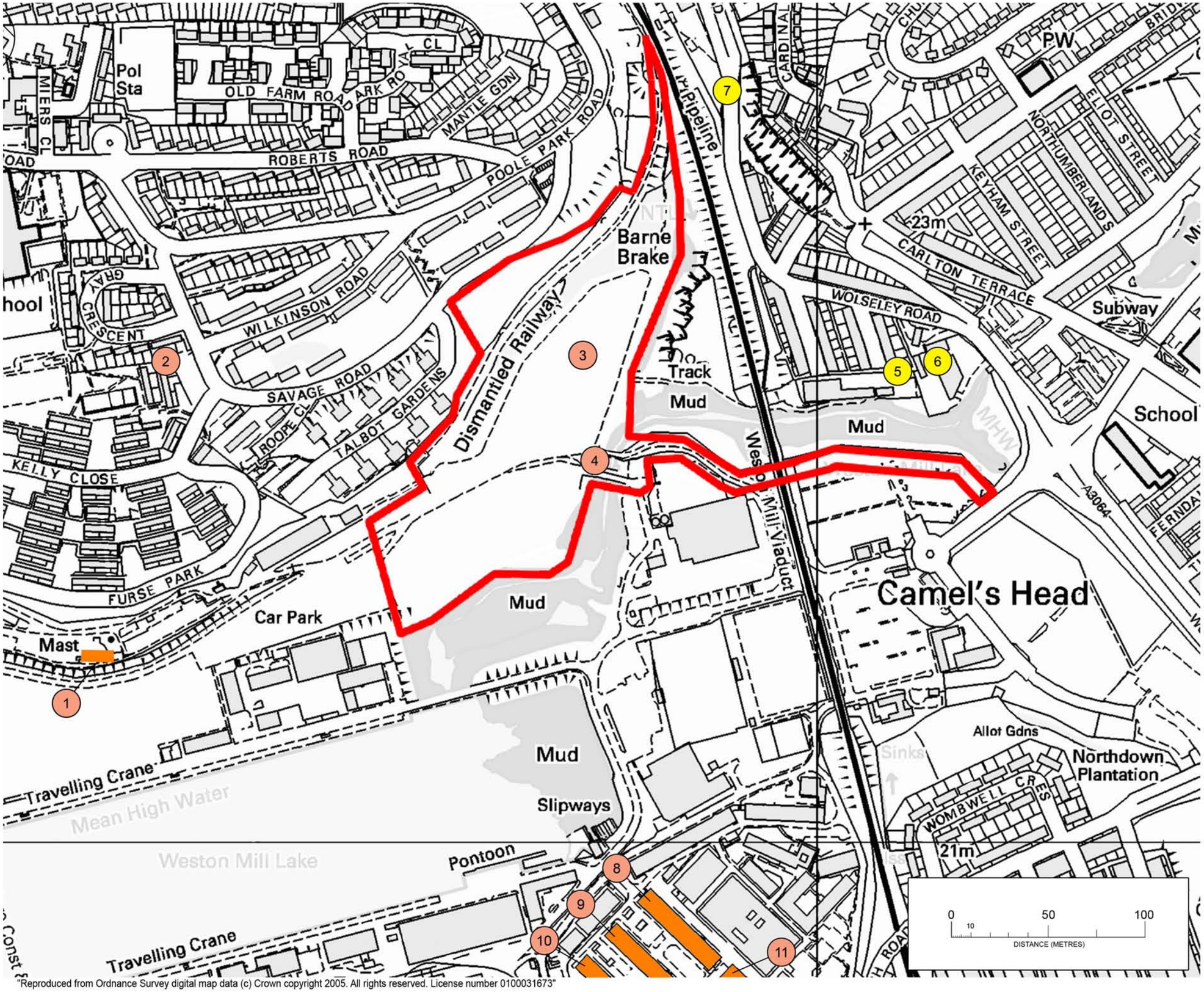
Drawing Title
PHOTOGRAPHIC VIEWPOINTS

Scale at A3
N/A

Drawn		Approved	
ARR		IR	
Stage 1 check	Stage 2 check	Originated	Date
AH		PLYM-ENR	15.12.2009

Scott Wilson
Mayflower House
Armada Way
Plymouth
PL1 1LD
England
Tel: +44 01752 676700
Fax: +44 01752 676701
www.scottwilson.com

Drawing Number: FIGURE 06
Rev: C



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

NOTES

- BOUNDARY LINE
- LISTED BUILDING
- EARLY MODERN
- MODERN

N.B. - FOR A DESCRIPTION OF EACH SITE NUMBER SEE TABLE 5.2

Revision Details	By / Check	Date	Suffix
Revised job and drawing titles	ARR / IR	16.06.2010	D
Changed figure number from Fig. 11	ARR / IR	02.06.2010	C
Changed page layout & Figure number	ARR / IR	06.05.2010	B
Change to site boundary	ARR / IR	01.03.2010	A

Drawing Status: SCOPING

Job Title: MVV Umwelt — EfW CHP FACILITY

Drawing Title: SITES OF ARCHAEOLOGICAL / HISTORICAL INTEREST IN THE VICINITY OF THE SITE

Scale at A3: AS SHOWN

Drawn	Approved		
ARR	IR		
Stage 1 check	Stage 2 check	Originated	Date
AH		PLYM-ENR	19.01.2010

Scott Wilson
Mayflower House
Armada Way
Plymouth
PL1 1LD
England
Tel: +44 01752 676700
Fax: +44 01752 676701
www.scottwilson.com

Drawing Number: FIGURE 07 — Rev: D