URS

The Bay Science and Innovation Campus, Swansea University

Environmental Statement

Non - Technical Summary

Swansea University
Prifysgol Abertawe

bp

March 2010

1. Introduction

1.1 Overview

Swansea University (hereafter referred to as 'the Applicant') is seeking outline planning permission for the development of a Science and Innovation Campus on part of a former petroleum and chemical storage facility (hereafter referred to as 'the Proposed Development').

The Proposed Development is located within the administrative area of Neath Port Talbot County Borough Council (NPT CBC) as shown in Figure 1. The application boundary of the Site is shown in Figure 2.

The 27.9 hectare (ha) Site is situated approximately 3.5 kilometres (km) east of Swansea city centre, and 4km southwest of Neath.

1.2 The Site

The Site is bound to the north by the A483 - Fabian Way trunk road, to the east by the Crymlyn Burrows Site of Special Scientific Interest (SSSI), to the south by the mean high water mark (beyond which is mudflats, beach and sea), and to the west by the administrative boundary of NPT CBC and the City and County of Swansea (CCS), beyond which is the remainder of the former storage facility and nearby Queen's Dock (approximately 1km to west).

The Site comprises an open expanse of bare ground, devoid of any notable features, measuring approximately 800m in length and 250-300m in width.

1.3 The EIA Process

URS Corporation Ltd (URS) has been commissioned by the Applicant to undertake an Environmental Impact Assessment (EIA) in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended) and the Town and Country Planning EIA (Wales) Regulations 2008. The results of this process are presented in the Environmental Statement (ES) and accompanying technical appendices.

Figure 1: Site Location Plan

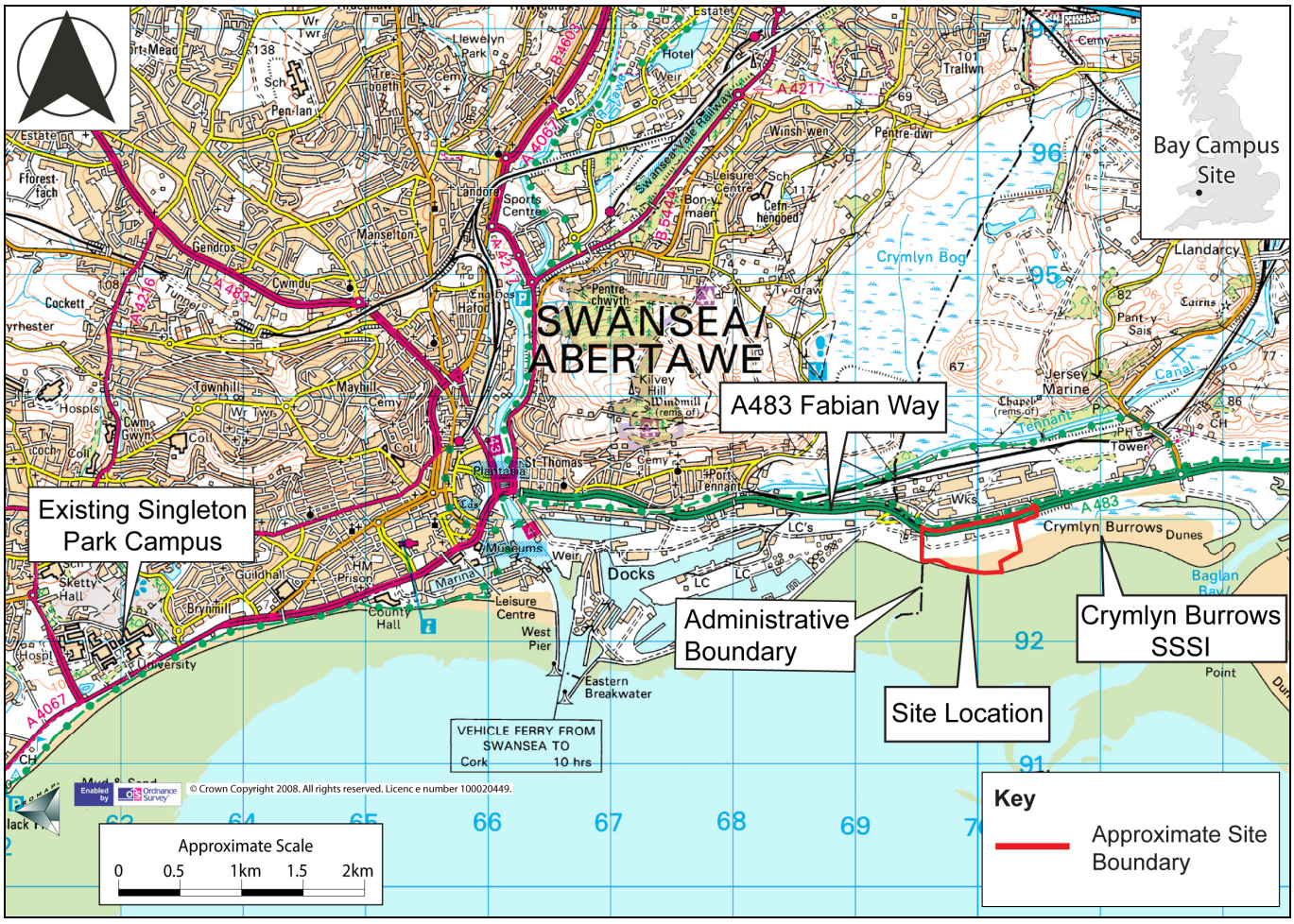
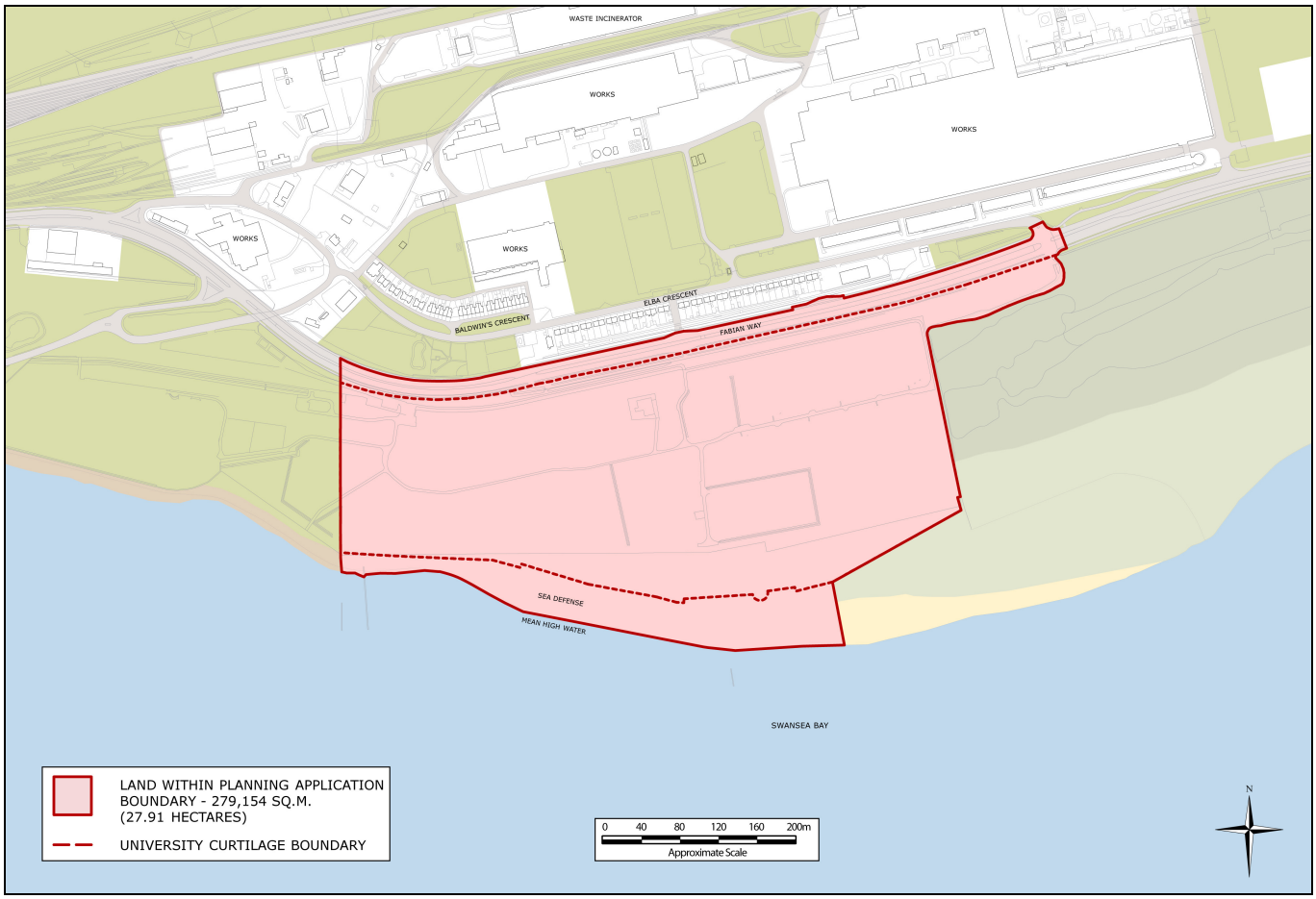


Figure 2: Indicative Planning Application Boundary



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This document, known as the ES Non-Technical Summary (NTS), provides an overview of the findings of the EIA. This NTS has been prepared for a general audience including parties potentially affected by the Proposed Development.

The ES has considered the likely impact of the Proposed Development on its neighbours, local environment, local and regional economy, and the wider project area. Beneficial and adverse, short and long-term impacts have all been considered. Mitigation measures to either eliminate or reduce adverse impacts have been incorporated into the project design wherever required.

The ES has highlighted the remaining, or 'residual' impacts, which remain following the incorporation of any identified mitigation measures. The significance of residual impacts has been evaluated with reference to definitive standards, accepted criteria and legislation where available. Where it has not been possible to quantify impacts, qualitative assessments have been carried out based on professional experience and judgement. Impacts have been classified as being adverse, negligible or beneficial in significance and either minor, moderate or major in magnitude. Where possible, impacts have also been assigned a geographic scale; for example, local, district, regional, national or international in accordance with the potential extent of any impacts identified.

1.4 The ES Documents

ES Volume I: This document forms the main body of the ES detailing the results of environmental investigations, impacts arising, and proposed mitigation measures. The ES also includes details of opportunities for social benefit and environmental enhancement.

ES Volumes II and III Technical Appendices: The Technical Appendices provide detail on the assessments undertaken and information used to inform the main ES.

ES Non-Technical Summary: This document provides an overview of the findings of the ES.

1.5 Scoping and Consultation

The EIA has included a programme of ongoing consultation, which is critical to the development of a balanced ES. Views of statutory and non-statutory consultees serve to focus the studies and identify those issues that require further investigation. Consultation also enables mitigation measures to be introduced during the project design process.

Key consultees through the EIA process included:

- NPT CBC;
- CCS;
- Environment Agency Wales (EAW);
- Countryside Council for Wales (CCW);
- Welsh Water (Dwr Cymru);
- Welsh Assembly Government (WAG); and
- Glamorgan Gwent Archaeological Trust (GGAT).

2. Alternatives and Design Evolution

The layout and design of the Proposed Development are the result of a detailed process in which an extensive analysis of the Site and surrounding area was undertaken. In the first instance the masterplan established a series of factors and considerations for the architectural design and planning teams to consider in the overall fabric of the Proposed Development. These include:

- The location of the Site within a 'Green Wedge', as designated in the NPT CBC Unitary Development Plan (UDP);
- The reclassification and remediation of an area of Brownfield land into a high quality academic / industrial research and development environment;
- The adjacent Crymlyn Burrows SSSI;
- The need to exploit and enhance the aesthetic value of the Site's coastal location, including provision of an attractive and high quality public realm with a clear hierarchy and sense of place;
- The current flood risk classification of the majority of the Site due to its broad, flat and relatively low-lying nature;
- The proximity of the A483 - Fabian Way, both as an opportunity (forming part of the wider strategic development of the Fabian Way Corridor), and a constraint to the development (environmental factors such as air quality, noise and road safety issues due to the current designation of Fabian Way as a high speed dual carriageway);
- The desire for principles of sustainable design and operation to emanate from the Proposed Development; and
- A series of other environmental considerations, including impacts and interrelationships between hydrological processes and the SSSI, socio-economic impacts, and visual impact considerations across the wider Swansea Bay area, among others.

The EIA has considered the 'No Development Option', the use of 'Alternative Sites', and a number of 'Alternative Designs' in response to consultee concerns. The 'No Development Option' refers to leaving the Site in its current state. This option has been ruled out as it is considered that the Site would remain barren, contaminated and unused, the demand for additional academic space and student accommodation would not be met, and the positive socio-economic impacts (particularly the provision of jobs and increased local spending) would not be realised. Doing nothing was therefore not considered further.

A number of alternative sites were considered within NPT CBC and CCS. These were assessed against a range of criteria, including image and presence, access and connection, leisure and recreation, deliverability, and sustainability. The Proposed Development Site was considered as the preferred location based on those criteria and additional financial incentives.

In terms of 'Alternative Designs', the design underwent a number of iterations and evolved alongside the EIA process throughout a 12-month period.

3. The Proposed Development

The Proposed Development comprises a Science and Innovation Campus for Swansea University, with associated facilities for academic and university residential uses and industrial/research and development (R&D) space. It will include capacity to accommodate up to 4,000 full time student residents, with academic facilities for a total of up to 5,100 students.

University staff numbers on site will comprise up to 900, consisting of an estimated 400 academic staff and 500 administrative staff respectively. Furthermore, an estimated total of 150-200 additional staff will be involved in the industrial / R&D component of the Proposed Development.

In general, the Proposed Development comprises:

- Clearance of the Site, including removal / remedial treatment of ground contamination;
- Land raising of the Site, by between 0.5 and 1 metres (m) to achieve a minimum finished site level of approximately 7.0m above ordnance datum (AOD);
- Removal of approximately 3.3ha of sand dunes in the southern area of the Site, and subsequent upgrading of coastal defences (including vertical extension of the existing rock revetment along the southern boundary to a total minimum height (including any sea wall constructed) of 8.4mAOD); and
- Provision of:
  - High-tech research facilities and academic space;
  - A multi-purpose auditorium/theatre;
  - Student residential accommodation and associated facilities;
  - Industrial / Research and Development (R&D) uses for private companies wishing to utilise linkages with the University;
  - Amenity space; and
  - Up to 1,270 car parking spaces within a combination of surface parking and multi-storey car parking areas (block M).

The Development will also include two new vehicle access/egress points linking the Site to the A483 - Fabian Way to serve as a primary access points for the Proposed Development.

Figure 3 presents the masterplan for the Proposed Development, which comprises a maximum gross External Floor Area (GEA) of up to 235,000 square metres (m^2). This is distributed across a number of land uses, as follows:

- University Academic (D1 use class) – up to 70,000m^2;
- University Residential (Sui Generis use class) – up to 115,000m^2;
- Light Industrial / R&D (B1 use class) – up to 20,000m^2; and
- Student Retail, Services and Leisure (A1, A2, A3, A4, D1 & D2 use classes) – up to 5,000m^2.

The academic buildings are generally situated in the eastern half of the Site, whilst the student residential buildings are located in the western half. The light industrial / R&D uses are situated in the northeast and southwest of the Site.

The building heights of the Proposed Development will range in height from single storey to 8 storeys. The broad design concept is such that building heights generally decrease with distance from the northern to the southern site boundary, i.e. away from the A483 - Fabian Way, thus serving to provide some degree of acoustic screening, as well as 'framing' the Proposed Development Site to the north and maximising the view of the coastal location from within the Site.

The maximum height of any building within the Proposed Development Site will be 40.35m above finished floor level, namely a small section of block J in the eastern extent of this 4-8 storey block of residential accommodation. Generally however, block J will be built to a maximum height of 30.85m above finished floor level (3-6 storeys).

The Proposed Development's southernmost buildings (blocks D, E and L) are predominantly 2-3 storeys in height leading to a maximum of 18.85m above the finished floor level.

The Proposed Development's indicative cross sectional profile is shown in Figure 4.

The Proposed Development incorporates a number of open spaces, ranging in size from 200m^2 to 5,000m^2, and distributed throughout the Proposed Development. The main square (2,800m^2) is located directly north of the Legacy Building, a multi-purpose academic block (block C), and provides direct access to the building via its lobby, serving as an important focal point of the Campus. It is envisaged that this landscaped area will support large events / functions that are held in the Legacy Building (for example graduation ceremonies and conferences).

Landscaped earth bunds, up to 2m in height above the finished level of the Site, will be located between the northernmost facades of the buildings adjacent to Fabian Way and the dual carriageway road itself. The landscaped bunds will be intersected by the areas of surface parking, and will provide some degree of visual and acoustic screening from Fabian Way.

3.1 Site Preparation and Construction

It is anticipated that the Proposed Development will be phased so as to initially provide a materials testing and research facility (the 'Company Building') within block A2, A3 or A4 (as indicated in Figure 3), as well as a multi-use hall building (the 'Legacy Building', block C), which may be used for lectures, conferences, performing arts and other functions. This first phase ('Phase I') of the Development is anticipated to be complete during 2011, along with a maximum of up to 10% of the estimated vehicle trip generation associated with the Proposed Development).

Figure 3: Masterplan for the Proposed Development

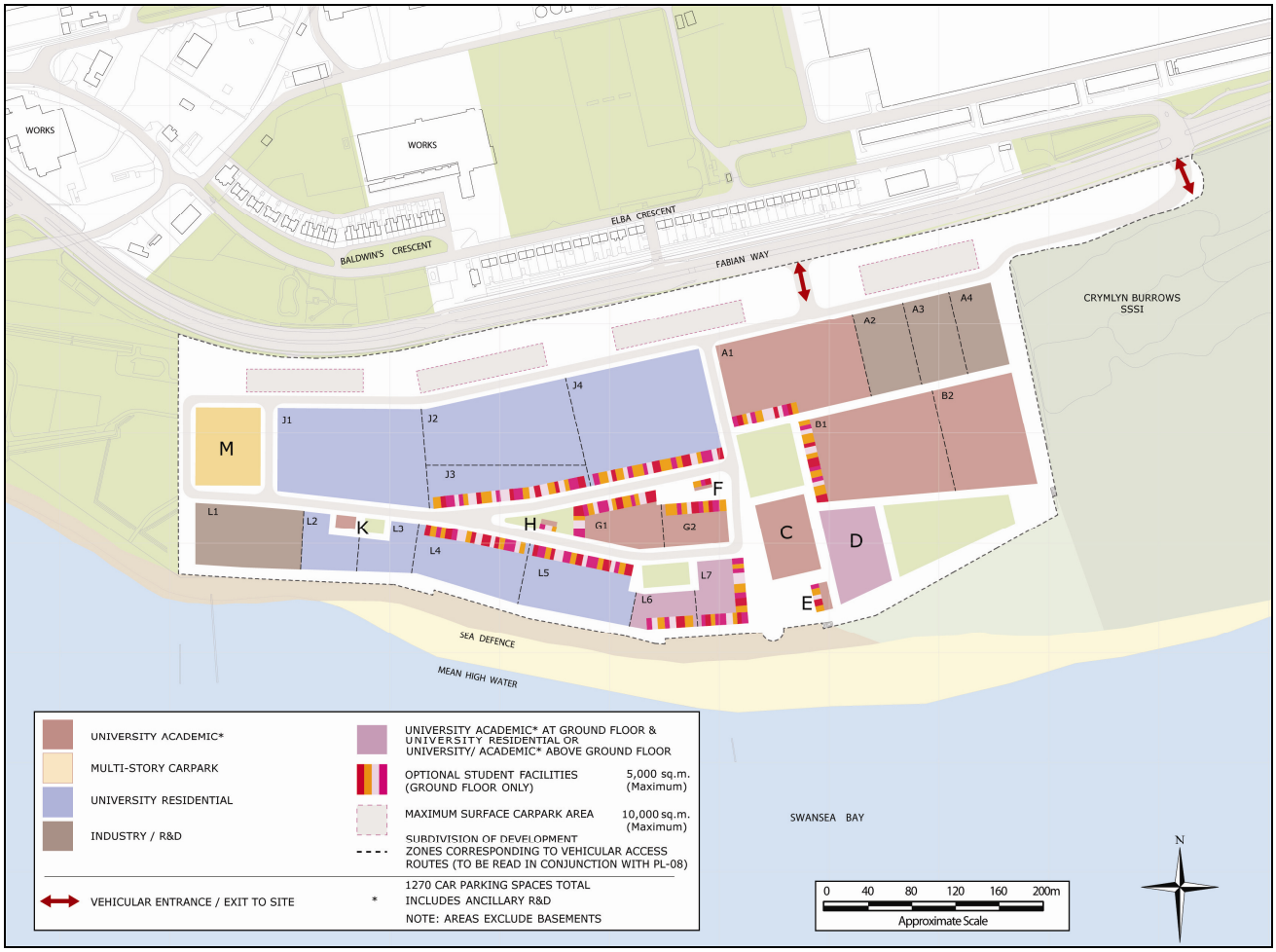
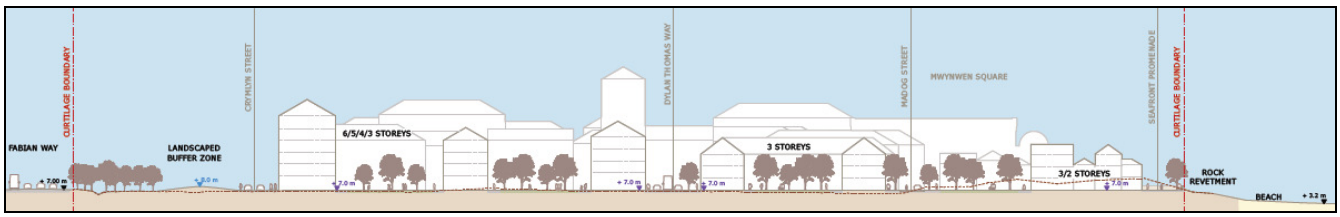


Figure 4: Indicative Cross Section of the Proposed Development (from west to east)



The subsequent 'Phase II' includes the remaining student accommodation, teaching facilities, amenity facilities, industrial and R&D, and open space, which will be built out in proportion with the final floor spaces for these land uses. It is anticipated that the Proposed Development will be complete and fully operational before September 2012 in readiness for the 2012/13 academic year.

It is anticipated that the Site's developer will be appointed to prepare a Site wide Environmental Management Plan (EMP), setting out the management, monitoring, auditing and training procedures that will be in place to ensure compliance with the applicable regulations. The EMP will also set out the specific roles and responsibilities of the development team personnel in managing, monitoring and controlling all contractors and sub-contractors, who will have to demonstrate how they will achieve the provisions of the EMP, how targets will be met and how the potential impacts will be offset, reduced or minimised.

The Developer will also be responsible for the development and implementation of a Construction Method Statement (CMS) in consultation with EAW, CCW and other key stakeholders.

3.2 Planning Policy Context

The Proposed Development has been assessed against relevant National, Regional and Local planning policies. Planning policy has been considered in each of the technical Chapters of the ES as appropriate for the consideration of environmental effects. The statutory development plan that covers the Proposed Development Site comprises:

- The Wales Spatial Plan (November 2004);
- Planning Policy Wales (March 2002); and
- NPT CBC Unitary Development Plan (UDP) (March 2008).

4. Environmental Impacts

4.1 Waste Management

The Proposed Development will aim to be a sustainable campus with high standards of environmental performance. As such, due consideration will be given to the waste generated by the buildings during site preparation, construction, and operation.

The Site's developer will produce a Site Waste Management Plan (SWMP) prior to commencement of site preparation and construction, which will identify the types and quantities of waste expected to be generated by the Proposed Development.

It is predicted that, when operational, approximately 24% of the waste generated by the Proposed Development is likely to be recyclable paper/cardboard, with a further 39% from other recyclable materials. In order to maximise the practice of recycling, the waste will be segregated into a number of different streams, leaving clean materials and wet/food waste to be recycled separately. The non-contaminated waste streams will be taken off-site to specific recycling plants.

Depending on the industrial activities onsite, some waste maybe combined for ease of storage, where all dry recyclables could be mixed. In this instance the mixed dry recyclables will be transported to an offsite Materials Recycling Facility (MRF) where the sorting system takes the waste material through a series of screens and filters that segregates the recyclables by size, weight, or density. The wet food waste stream will be separately collected and taken, potentially for energy recovery through incineration, or where feasible separated for composting (or a combination of the two). This will be dependant on the negotiation of waste management contracts and the availability of the required facilities.

Additional space will be provided to allow for commercial waste sorting and any unique/hazardous waste to be safely stored and collected by a dedicated waste contractor.

Where possible, general waste and paper will be compacted to minimise the space required for storage and reduce the number of vehicle movements required for waste collection. Waste will be transported by road to suitable waste transfer and recycling stations.

4.2 Sustainability

The Proposed Development has been assessed against a suite of sustainability criteria, targets and standards set out within National, Regional and Local planning policy. Key sustainability criteria, as defined by national planning policy, include:

- Ensuring a strong, healthy and just society;
- Social progress that recognises the needs of everyone;
- Effective protection of the environment;
- Prudent use of natural resources; and
- Maintenance of high, stable levels of economic growth and employment.

The key findings of the assessment incorporate many of the impacts and mitigation methods identified by the EIA. The key beneficial impacts of the scheme in relation to sustainability can be summarised as follows:

- Redevelopment of a previously under developed site and its replacement with a high density mixed use development, in an area with good access to public transport;
- Direct employment creation in the area, leading to stimulus of further job creation in the local area;
- Provision of Sustainable Urban Drainage Systems (SUDS);
- Good practice environmental design, including good daylight, ventilation and acoustics;
- An 10.9% improvement in carbon emissions over the building regulations compliant target emission rate (TER);
- Use of sustainable, energy efficient building techniques and renewable energy technology (i.e. Combined Heat and Power (CHP), biomass boilers, ground source heat pumps (GSHP) and photovoltaic panels (PVs));
- Internal and external low energy lighting and controls;

- Re-use of grey water and provision of water efficient WCs, including sanitary supply shut-off and pulsed water metering;
- The incorporation of water pollution prevention measures, such as the use of oil separators/interceptors during the construction phase;
- Provision of a Site that is accessible to all, including the disabled and promotes pedestrian and bicycle access;
- Incorporation of 'Secured by Design' principles in the design process;
- Provision of safe, weatherproof bicycle storage space (and potentially cycle hire); and
- Implementation of a Travel Plan.

The Proposed Development will achieve Building Research Establishment Environmental Assessment Methodology (BREEAM) rating of 'Very Good', with an aspiration to achieve an 'Excellent' rating, which could be achieved during the detailed design stage. A Code for Sustainable Homes (CSH) Level 3 will be achieved for any applicable residential elements (should these be included in the detailed design).

4.3 Landscape and Visual Impact Assessment

The ES provides the Landscape and Visual Assessment for the Proposed Development. The assessment comprises a detailed discussion of the landscape and visual impacts of the Proposed Development and is supported by visual material (i.e. visually verified photomontages), an example of which is provided in Figure 5.

The assessment considered the history of development on the Site and the effect the Proposed Development may have on surrounding landscape context.

The construction works and/or movement of construction traffic will affect views from Crymlyn Beach, Crymlyn Burrows, Witford Point and public footpaths at Port Tennant. These effects will, however, be temporary for the duration of the construction period and furthermore, construction activities will to a great extent be absorbed into the existing industrial context.

Although views for users of the beach, users of the marine environment, and users of Fabian Way will be affected to some extent by the completed Proposed Development, mitigation measures undertaken in the form of planting on the development boundaries and the creation of the proposed earth bund are anticipated to lead to only a minor long term effect on landscape character, which is not judged to be significant.

The Proposed Development will provide a new landmark to the existing mosaic of industrial, residential and open space along the Swansea Bay coastline. The intermediate and long distance views have a background of the surrounding industrial zone, which will mask the impact of the new buildings. When considered over the longer-term, the proposed landscape scheme for the Site together with existing surrounding vegetation will establish a framework of native green planting in which the new buildings will sit, and will serve to reduce the potential visual impacts.

The long-term, permanent landscape and visual effects are judged to be moderate/minor, and therefore also not significant. The Site lies within an existing urban fringe/industrial infrastructure surrounded by industrial activity in the vicinity, which will absorb the Proposed Development into the existing built up nature of the area.

Figure 5: Photomontage of the proposed view from St Stephen's Churchyard

The Proposed Development is also considered to have a positive impact on the landscape and visual appearance of the Site compared with its previous use as a hydrocarbon tank farm, which will have been unsightly to surrounding receptor groups.

4.4 Traffic, Transportation and Access

Fabian Way forms the northern boundary of the Site. It is an arterial road forming part of the A483, which connects Swansea city centre with junction 42 of the M4 motorway.

During the Site preparation and construction phase, traffic along Fabian Way is predicted to increase (in overall peak hour traffic) by up to 1.3%, with a maximum increase in heavy goods vehicles (HGVs) of 23%.

The Proposed Development includes the construction of a new link to the Site from the existing Fabian Way / Elba Crescent junction, and an additional, new junction on Fabian Way between Elba Crescent and Baldwin's Bridge, approximately 350m west of the Elba Crescent junction, as shown in Figure 3.

Construction of these two new access points will therefore require works on, and adjacent to, the existing carriageway. As such, a traffic management programme will temporarily be required in order to undertake these works and will require lane closures, temporary reductions in speed limit, etc. and will cause additional delays to drivers on Fabian Way and Elba Crescent (albeit a temporary impact only for the duration of the construction phase). Construction traffic is expected to have a minor adverse impact, and is therefore not judged to be significant.

There are also potential effects on the bus network caused by additional patronage during the Site preparation and construction phase, which could include the potential for crowding on buses, and congestion at bus stops and footpaths on routes to bus stops, which, following assessment is considered also to be of minor adverse significance (and therefore not significant).

Once the Proposed Development is operational, the new signalised junction on Fabian Way will provide access to the Site. Although analysis of the new junction indicates that it will operate within capacity, it will introduce some additional delay to vehicles travelling on Fabian Way. There will also be some additional delay caused at other junctions due to the increase in traffic flows. Therefore, the impact of operational traffic is anticipated to be minor adverse, but not significant.

The existing bus services running in the vicinity of the Site provide a capacity of approximately 550 passengers per hour in each direction. The main flow of trips related to the Proposed Development is likely to be out of Swansea in the morning and back to Swansea in the evening, which would be opposite to the general flow of commuters in the city. There is therefore potentially some spare capacity available. However it is unlikely to be sufficient to accommodate the additional demand, and therefore in order to minimise the potential impacts of the Proposed Development a number of mitigation measures have been proposed. These include the provision of a shuttle bus service between the Proposed Development and the existing Singleton Park Campus, with a stop in the City Centre (and upgrades to the public transportation network, such as bus stops), and promotion of cycling and walking through provision of additional facilities among other strategies. The residual impact of the Proposed Development on public transport is therefore considered to be minor adverse, and not significant.

4.5 Ecology

Statutory sites of ecological designation located within 2km of the Proposed Development Site include:

- Crymlyn Bog (Special Area of Conservation (SAC), Ramsar, Site of Special Scientific Importance (SSSI)), approximately 550m north of the Site;
- Pant-y-Sais (SSSI and Local Nature Reserve (LNR)), approximately 1.2km north of the Site;
- Crymlyn Burrows (SSSI). This is immediately adjacent to the east edge of the Site;
- Earlswood Road Cutting and Ferryboat Inn Quarries (SSSI), approximately 1.9km to the north of the Site; and
- Crymlyn Bog and Pant-y-Sais (National Nature Reserve (NNR)), approximately 800m to the north of the Site.

There are no non-statutory sites of importance for nature conservation (SINCs) designated within 2km of the Proposed Development Site. However, approximately 5ha of the road verge along the A483 - Fabian Way is designated as a 'Conservation Verge' based on the diversity of plant species recorded. Roadside verges with species rich vegetation are a priority habitat in the NPT CBC Biodiversity Action Plan (BAP).

A Phase 1 ecological survey was undertaken to assess the impacts of the Proposed Development upon the Site and the surrounding area. Following this, a Phase 2 National Vegetation Classification (NVC) survey was undertaken to categorise the dune vegetation present within the Site and adjacent dunes within the Crymlyn Burrows SSSI.

Figure 6a: Sand dunes within the Proposed Development Site boundary

Figure 6b: Sand dunes of the Crymlyn Burrows SSSI, adjacent to the Proposed Development Site

In addition to this, fauna surveys were undertaken, including those for birds, bats, badgers, amphibians, reptiles and invertebrates.

The potential for direct impacts during construction would be limited in extent. These are not considered to be significant to the integrity of the features within the adjacent SSSI and thus any that do occur are assessed to be of negligible significance. However, the boundary will be clearly defined and signed so that there is no accidental incursion of site vehicles into the SSSI.

There is the potential for indirect impacts during construction on the geomorphological processes of the sand dunes within the SSSI (as shown in Figure 6) due to the loss of approximately 3.3ha of sand dunes within the Site, which may have otherwise provided sediment transport to the adjacent SSSI. The impact of removal of these dunes is considered moderate adverse, however there is scope to reduce this impact through an off-site funding scheme (to be agreed with NPT CBC to recreate and/or restore an equivalent or larger area of sand dune habitat than is lost by the proposals) or identification and improvement of nearby 3rd party land. Such an agreement could significantly reduce the impacts on sand dunes and some of the associated species.

There is also the potential for indirect impacts once the Proposed Development is operational due to an increase in recreational use of the dune habitat. Currently, the illegal use of the SSSI by the public is considered by CCW to be sustainable and non-damaging to the habitats present. Indeed CCW make the point in its document 'Your Special Site and its Future' that the current use of the SSSI is probably beneficial to maintenance of the habitats in the absence of grazing. There has been localised damage to the SSSI in the past through illegal motor biking but CCW acknowledge that the police and landowner are controlling such activity.

These potential impacts will be dealt with through production of a comprehensive SSSI management plan to be provided to NPT CBC and CCW prior to commencement of site preparation works, and it will ensure that, primarily, the conservation status of the SSSI is maintained, but will also look for potential opportunities for enhancement. Aspects to be included in the management plan would encompass guided walking routes and provision of a warden (through a separate legal agreement) to regulate misuse of the SSSI, for example.

4.6 Coastal Geomorphology

Approximately 70%, or 600m, of the Site's southern boundary is protected by an existing rock revetment. The revetment ceases approximately 250m from the Site's eastern boundary, and is replaced by unprotected sand dunes that eventually merge into the adjacent Crymlyn Burrows SSSI.

Beach profiles were obtained from NPT CBC in order to understand the baseline conditions, based on ten years of monitoring data, between 1999 and 2008, and along four fixed transects that represent the beach across the study area.

In addition to this, eight years of wind and wave data was acquired from the Met Office's 2nd generation Spectral

Wave Model, along with a series of historical maps and aerial photography of the Site and its adjacent environs.

This data was used in the initial stages of the coastal geomorphological assessment to identify long-term changes in the form of the coastline and specifically the impact of anthropogenic development.

The Proposed Development does not require that any structures or features be constructed directly onto the beach. Some temporary activity may however be required to upgrade the existing rock revetment. The movement of plant machinery on the beach is likely to create track or wheel ruts causing compaction of the sand, although this is predicted to be of negligible significance, given the temporary and reversible nature of the impact.

Figure 7: Existing Rock Revetment within the Proposed Development Site Boundary

Although approximately 3.3ha of undesignated sand dunes will be lost to the Development along the southern boundary of the Site, approximately 2ha of this is situated behind the existing rock revetment (shown in Figure 7). The remaining 1.3ha is located at the eastern end of the Site, where there are no current coastal defences.

Approximately 1ha of sand dunes will be retained to the southeast of Proposed Development, with the intention of preserving the current form of the coastline and retaining the sediment supply to the adjacent SSSI and beach.

The impacts associated with the loss of these sand dunes are anticipated to be minor adverse (and therefore not significant), given the in-situ retention of the current beach / rock revetment and beach / dune interface. This area of loss is relatively small when compared to the 243ha area of the adjacent SSSI, and furthermore, the dune area is expected to contribute very little sediment to the adjacent SSSI and beach, assuming current baseline conditions along the shoreline are maintained.

The Proposed Development will also incorporate three separate sets of steps (or wheelchair access) over the existing rock revetment to allow pedestrian access to the beach. This will result in a potential for small scale and localised trapping of sediment, although this is considered to be of negligible significance.

4.7 Water Resources and Flood Risk

Swansea Bay and Bristol Channel lie immediately to the south of the Site, with the mouths of the River Neath and River Tawe approximately 1.5km east and 2.8km west of the Site respectively. The nearest point of the Tennant Canal is situated approximately 700m to the north of the Site.

Following the raising of the Site to 7.0m AOD and finished floor levels of buildings and roads to 7.4m AOD, the development will be protected against tidal flood events from a 1 in 200 year event (including 100 years of sea level rise). Flood risk is therefore classed as being of negligible significance.

The Proposed Development is likely to also see a substantial increase in the demand for potable water, as the Site is currently unused. An increase in water supply demand may result in a small magnitude of impact on mains water resources in the area, considered of minor adverse significance, and therefore not significant.

Rainwater from roofs and other hard surfaces will be harvested and stored onsite and used for irrigation of landscaped areas. This will reduce the volume of water required from the public water supply network. The installation of water meters and water-efficient appliances and fittings will also reduce water usage.

Surface water will drain through a permeable paving system, infiltrate into the ground and eventually to the sea. This will also reduce the potential risk of erosion to the beach from surface water runoff generated at the development site. Therefore, no surface water generated

at the Site will be discharged to the Welsh Water sewer network. Foul drainage and trade effluent will be drained to a public connection.

In addition to tidal flood risk, a shallow water table means that groundwater flooding would present a risk to any subsurface elements of the Proposed Development, without mitigation.

Damp-proof membranes will be used for the construction of foundations. As a result, a minimal impact is likely with effects of negligible significance on shallow groundwater quality expected.

Potential sources of pollution from the Proposed Development will be oil leaks and petrol spillages from parking facilities, which may cause polluted runoff from the Site. However, with mitigation measures in place, the normal operational impact of the Site in terms of pollution to the water environment is assessed as being negligible.

4.8 Ground Conditions and Hydrogeology

The impact of the Proposed Development on existing ground conditions has been assessed via review and collation of readily available information pertaining to the current condition of the soils and groundwater beneath the Site. An extensive history of previous site investigation works and other existing information regarding the contaminative status of the Site was used to infer baseline conditions from which the evaluation of impacts associated with the Proposed Development (including controlled waters and human health risk assessments) were made. The risk assessments identified potential areas of concern based on the envisaged end use of the Proposed Development. These areas are focused in residential accommodation within block L to the south of the Site (see Figure 3), where there is a history of hydrocarbon spillage. Similarly, the majority of the Site is considered fit for the proposed end uses of the Site against the various risk assessment criteria for academic, industrial and residential uses.

The remediation works will be designed as necessary such that the proposed end use of the areas of concern will be acceptable against the risk assessment undertaken. In addition, the Site drainage strategy has been designed such that the risk of groundwater exposure to areas of contamination is minimal.

In summary, the residual impact of the Proposed Development on ground conditions is considered to be negligible. Should remediation to clean up contaminated soils or groundwater be required, this will result in a moderate beneficial residual impact in acknowledgement of the reduced risks posed to the wider environment.

4.9 Noise and Vibration

The nearest receptors to the Site that are sensitive to noise and vibration include the residential properties along Elba Crescent, approximately 15m north of Fabian Way, or 90m from the northernmost building façade of the Proposed Development at the closest point.

During site preparation and construction, the introduction of a CMS will address excessive noise and vibration levels. The outcome is such that the residual impact is predicted to range between negligible to moderate adverse significance, albeit temporary in duration.

Once operational, building servicing plant will be designed and installed to have a negligible impact on surrounding receptors. Noise from restaurants, bars and cafes will be controlled according to tenant conditions, and therefore negligible impacts are expected from this noise source.

The existing traffic moving along Fabian Way generates significant amounts of ambient noise. Therefore, suitable façade insulation measures including glazing and ventilation noise control will be provided to meet the applicable internal noise criteria, particularly in the northernmost building facades of block J, which is designated for residential occupation (see Figure 3), and must meet stringent internal noise standards. The additional land uses are less sensitive to ambient noise levels, and the additional residential areas of the Proposed Development (block L) are shielded from the dominant source (i.e. Fabian Way) by the other buildings of the Proposed Development itself.

The implementation of appropriate glazing and ventilation strategies mean that impacts associated with ambient noises levels across the Proposed Development are predicted to be negligible.

4.10 Air Quality

The Site does not lie within an Air Quality Management Area (AQMA), indicating compliance with Air Quality Strategy objectives.

The main source of pollution onsite is expected to be the adjacent Fabian Way, although an industrial area is also located approximately 100m north of the Site.

An Atmospheric Dispersion Modelling System (ADMS Roads) was used to demonstrate that NO_2 and PM_{10} concentrations would easily comply with the air quality objective in 2012 across the Site and surrounding area. This is the case both with and without the Proposed Development, and is a function of the low pollutant concentrations in the study area's background air quality.

The only species of potential concern are oxides of nitrogen (NO_X) within the vicinity of Fabian Way, which is of relevance to the protection of sensitive habitats and ecosystems. Mean annual NO_X concentrations are predicted to exceed this objective in 2012 within the northernmost edge of the Crymlyn Burrows SSSI (approximately 5m from Fabian Way), with or without the Proposed Development.

Any impacts arising from site preparation and construction dust are predicted to be negligible to minor adverse at the Site boundary (and therefore not significant), lasting only for the duration of the construction phase, and a number of mitigation measures have been recommended to minimise these effects. The significance of impacts associated with construction plant emissions and construction road traffic are predicted to be minor adverse following mitigation, respectively.

The potential impacts arising from road traffic associated with the completed Development are anticipated to have a minor adverse impact (and therefore not significant), due to the increase in mean annual NO_X concentrations within the Crymlyn Burrows SSSI. It is important to note however that this is due to the northernmost 20m of the SSSI comprising previously disturbed land and vegetation of lower ecological value than the remainder of the SSSI. The predicted concentrations in the SSSI in 2012 with the Proposed Development will also be less than the modelled present-day concentrations, therefore showing an improvement over current baseline conditions (due to forecast improvements in vehicle emissions over time).

The heating and power plant associated with the completed Development is predicted to have a minor adverse (not significant) impact on the local air quality at the adjacent Crymlyn Burrows SSSI and a negligible impact at nearby residential properties.

4.11 Cultural Heritage and Archaeology

It is considered highly unlikely that deeply buried archaeological and palaeoenvironmental remains are present within the Proposed Development Site area. This is due to the absence of deposits where archaeological remains could have been preserved, and the fact that the site has been previously developed.

A low potential for remains of all other periods is identified, derived from the marginal situation of the Site, which lay within the intertidal zone of the estuary within these periods, thus making it unfavourable for settlement.

In terms of cultural heritage, there are no Scheduled Ancient Monuments (SAMs) or Listed Buildings within or surrounding the Site and it does not lie within, or adjacent to a Registered Historic Landscape or Conservation Area. Therefore this resource is not considered to be of historical importance.

In the absence of any archaeological or cultural heritage receptors or deposits with the potential for such receptors within or in close proximity to the Site, the Proposed Development is judged to have a negligible impact on archaeological resources and cultural heritage features, and no mitigation measures are therefore considered necessary.

4.12 Socio-Economics

Employment creation during construction is anticipated to result in 5,010-person year's worth of direct employment jobs, 4,409 of which are likely to come from NPT CBC and CCS. This is considered to be a major beneficial short-term impact.

Once operational, employment created by the Proposed Development will result in a total of at least 900 gross full time new jobs. This comprises an estimated 400 academic staff and 500 administration staff. There will be additional industrial employment, estimated to be 100-200 staff. This also represents a major beneficial long-term impact

A major beneficial long-term impact is expected to occur through additional local expenditure caused by the Proposed Development. This will amount to an estimated £37,756,000, comprising student spend of £27,986,000 and additional local staff spend of £8,154,000 in the area, per annum.

In terms of Higher Education and the Knowledge Economy, the provision of 5,100 higher education places and teaching and research activities will be closely linked to businesses. This will result in a moderate beneficial long-term impact for the area.

There are also predicted to be significant beneficial impacts associated with the close ties to business and research institutions that the university will promote. This will lead to direct employment creation, and it is also predicted that further, indirect employment creation will occur.

In terms of Open Space, the Proposed Development will provide 9.3ha of Open Space plus additional space within the university residential courtyards. This exceeds the 8ha that is required for the Proposed Development under NPT CBC guidance.

Facilities for leisure activities exist in Swansea city centre, and it is envisaged that the Proposed Development will also be supported by the sporting and leisure facilities that exist at the current Swansea University Singleton Park Campus. This is anticipated to correspond with a minor

adverse or negligible impact on retail and leisure facilities in the area, which is not significant.

5. Residual Impact Assessment and Conclusions

The site preparation and construction is anticipated to lead to a number of short-term (temporary) potentially adverse impacts. These impacts will be minimised by adhering to the Council's Code of Construction Practice and appointing a Principal Contractor to develop and implement a Construction Method Statement (CMS) and Environmental Management Plan (EMP) in consultation with EAW, CCW and NPT CBC.

During the operational phase of the Proposed Development, there are anticipated to be some long-term effects on the visual landscape of the area, as well as traffic and potentially ecology (as mentioned above). For the latter there is scope to negate the impact through an off-site funding scheme, to recreate and/or restore an equivalent or larger area of sand dune habitat than is lost by the proposals. A shuttle bus services will also be introduced between the Proposed Development Site and existing Singleton Park Campus to reduce the impact on traffic and transport.

Significant beneficial impacts are anticipated to be associated with the remediation of any contaminated soils and groundwater, as well as the substantial economic benefits that the Proposed Development will generate. The development is expected to provide a positive step towards meeting demand for a high quality university campus, whilst being expected to generate large amounts of spending in the South Wales region and encouraging a number of large multinational companies to relocate to the region.

6. Contacts and Availability of ES

This Non-Technical Summary (NTS) provides an overview of the findings of the EIA. A full assessment of all the environmental impacts associated with the Proposed Development is presented within the main ES.

The ES is available for viewing during normal office hours at the Planning Department of the NPT CBC. Comments on the planning application should be forwarded to the NPT CBC at the following address:

Neath Port Talbot County Borough Council

Planning Department

The Quays

Brunel Way

Baglan Energy Park

Neath, SA11 2GG

Additional copies of this document and CDs comprising the full ES are available free of charge from Swansea University, at:

Swansea University

Planning and Strategic Project Unit

Singleton Park

Swansea, SA2 8PP

Hard copies of the full ES can also be purchased from Swansea University for a fee of £150.