



3.0 Description of Proposed Development

3.1 Introduction

3.1.1 This chapter outlines the main characteristics of the proposed development that have been assessed as part of the EIA, covering both the construction, operational and decommissioning phases of the development and to set the proposals in context begins with a description of the existing Site within its local geographical and spatial context.

3.2 The Site and Local Context

3.2.1 The Site forms part of an existing waste management and transport depot operated by Biffa Waste Services Ltd situated circa 5km to the north-east of Swansea City Centre and with access to the A48, M4 and A4067. The Site is located at the eastern edge of Swansea Enterprise Park which is situated on flat land in the bottom of the Tawe Valley between central Swansea and the M4 to the north. The Enterprise Park consists of large industrial units which are separated by bands of mature trees.

3.2.2 The existing depot comprises site offices, maintenance building, an unused storage building and on-site parking for the company's fleet of waste collection vehicles. The storage building is not used as part of the depot operations and thus currently surplus to requirements. The extent of the depot is shown outlined in blue on Figure 1.

3.2.3 The Site of the proposed resource recovery facility is rectangular in shape, flat and consists of hard standing and a surplus storage building located in the eastern portion of the existing depot. There is an existing boundary planting located along the eastern and southern boundaries of the Site with the northern and western boundaries undefined. The existing boundary planting will be retained.

3.2.4 The closest residential properties are located 165m to the east of the Site and situated on the western edge of Llansamlet. The residential properties are located on higher ground which rises in a small hill, topped by St. Samlet's Church, a prominent landmark in the surrounding area. The nearest school is located approximately 420m to the east of the Site. The River Tawe is located approximately 750m to the south-west of the Site.

3.2.5 The depot is accessed from Clarion Close to the south and bounded to the north and west by existing industrial units. The eastern boundary is defined by the Nant y Fendrod, a tributary of the River Tawe, with further industrial units beyond. Nant y Fendrod forms part of the Fendrod Lake and Nant y Fendrod site of interest for nature conservation (SINC).

3.2.6 The Site is located within C1 Flood Zone, i.e. land within the floodplain [$>0.1\%$ annual probability of flooding], on the Natural Resource Wales Development Advice Map but is not the subject of any ecological designations or heritage assets.

3.3 Development Proposals

3.3.1 For the purposes of the ES, the development proposal section identifies both the construction and operational design features which effect the environment or contribute to the overall environmental impact of the scheme.

3.3.2 The application proposes a:

"development of small scale energy recovery facility together with external plant and associated structures on land at Biffa Depot, Clarion Close, Swansea".

3.3.3 The proposed facility will manage 21,000 tonnes per annum of commercial and industrial waste (C&I), currently collected by the Applicant, for recovery and use the residual material as a fuel to generate electricity and heat. The proposals will complement the existing operations at the depot by treating the collected waste which is currently transferred to landfill, in a more sustainable and beneficial manner.

Process Building

3.3.4 The proposals comprise the development of a small-scale incineration facility within the extant surplus storage building located on the eastern part of the existing depot site. The existing storage building is 38m by 30m and has a footprint of 945sq.m. The height of the building, to ridge, is circa 10m.

3.3.5 In order to accommodate the proposed waste reception, drying and treatment operations within the process building it will be necessary to extend the building northwards by 6m in order to create an additional floor area of 180 sq.m. The building footprint will therefore be increased from 945sqm to 1,125sqm onto an area of existing hardstanding. There will be no increase in the height of the building.

External Equipment

3.3.6 The external plant associated with the operation will be limited to the air filtration system, enclosed storage tanks and an emission stack. All external plant, including the stack, will be located on the southern side of the process building. The emission stack will be 25m high.

3.3.7 A new weighbridge will be installed on the Site for the sole purpose of the proposed energy recovery facility. The weighbridge will be located on the northern side of the process building.

Access

3.3.8 Employee and visitor access to the facility will continue to utilise the existing depot entrance point on Clarion Close. Car parking will remain to the northern and southern side of the existing office block located on the wider depot Site. Motorcycle spaces and bicycles parking is also available. Pedestrians will be able to access the process building from the car parking areas via a pathway.

HGV Movements

3.3.9 The facility will be for the sole use of Biffa Waste Services Ltd and will utilise the company's existing fleet of collection vehicles which are already based at the Clarion Close depot. Consequently, the facility will not significantly increase HGV movements associated with the existing depot. Moreover, the facility will reduce the daily HGV movements between the Swansea Council Bailing Plant, located approximately 700m to the south west of the Site, and the Trecatti Landfill at Merthyr Tydfil where the waste is currently exported for disposal without treatment.

3.3.10 The existing depot has a fleet of twenty HGV's which leave the depot each morning and return at the end of the shift. The proposals do not result in an increase in the fleet of HGV's and it is proposed that the current movement of twenty in and twenty out will remain the same during the operational stage of the development.

3.3.11 The only slight increase will be as a result of a small number of HGV movements to landfill in respect of the disposal of ash but this is estimated to be an average of 1-2HGV movements per week.

3.4 Building Elevations/Landscaping

3.4.1 The process building has been designed to accommodate all the materials recovery and fuel preparation activities together with the power plant, boilers, flue gas treatment and ash storage area.

3.4.2 The design for the proposed extension to the building accords with the existing building design. The extension will be of steel construction in a colour to match the existing building façade. No new door openings will be created by this development but in order to provide sufficient air circulation within the building, four new air inlet vents will be created on the eastern elevation of the existing building.

3.4.3 The proposed building elevations and site layouts are shown on Figures 3.1, 3.2 and 3.3.

3.4.4 The proposals will retain all the existing landscape planting situated on the southern and eastern boundaries of the Site.



3.5 Operational Phase

- 3.5.1 The proposed facility will operate on a 24 hour basis, although deliveries to the facility will be limited to the following times:
- Monday to Saturday: 0600 – 1700
- 3.5.2 No deliveries will be undertaken on Sunday and Bank Holidays except with respect to any emergency collection requirements.
- 3.5.3 In the first instance, waste will be delivered to the facility having been collected by the Applicant's own fleet of vehicles, as is currently the case, within the Swansea area. Upon arrival at the facility, the delivered material will be weighed and recorded. After passing over the weighbridge the material will be delivered to the process building where it will be put into a waste reception bunker in the north of the building.
- 3.5.4 The imported material will then pass through a shredder to reduce the waste to a uniform size and then stored in a separate bunker as a fuel feedstock awaiting treatment. Undesirable materials not required in the thermal treatment process will also be removed, providing a quality control on the feedstock going to thermal treatment.
- 3.5.5 The fuel feedstock will be loaded into a hopper using a loading shovel where it will travel along a conveyor at which point any small pieces of scrap metal will be removed via magnet. The feedstock will then be loaded into a drying chamber. The drying chamber will operate at approximately 120°C thus reducing the moisture content of the feedstock to 30%. The separated recyclable materials will be stored within the building prior to export for re-use at suitable recycling facilities.
- 3.5.6 The fuel feedstock will be fed into a 'boiler' within the building where it will be heated to temperatures of between 800°C and 1,050°C up to 1,600°C. The resulting steam will then be fed into a condensing turbo-generator to produce approximately 0.4MW of electricity. The electricity will be exported into the National Grid.
- 3.5.7 The process will produce residues in the form of bottom ash, slag and boiler ash, which can be used as a substitute to low grade aggregates, and air pollution control residue (APCr) which will be collected and removed from the Site for disposal by landfill.
- 3.5.8 The process will use proprietary technology which will be subjected to an Environmental Permit issued by Swansea Council and meet the requirements of the Incineration Directive and Industrial Emissions Directive.
- 3.5.9 The treatment process has been the subject of an initial review in respect of the requirements of the European Waste Framework Directive to confirm that the proposed facility can be considered as a 'recovery' operation rather than a 'disposal' operation. This initial review, based on an R1 calculation, is presented in the Environmental Statement. The calculation confirms that the proposed process is a 'recovery' operation.

3.6 Grid Connection

- 3.6.1 A key benefit of the proposed development is the generation of up to 0.4MW of electricity which will be exported to the National Grid. An agreement has been reached with the statutory undertaker (the Distribution Network Operator) to connect the proposed facility to the existing substation on Clarion Close. The substation is located adjacent to the southern boundary of the Site.
- 3.6.2 The connection lines between the site and the substation will be laid underground and within the highway. The connections will be installed by statutory undertakers under Town and Country Planning (General Permitted Development) (Wales) Order 2015.

3.7 Combined Heat and Power (CHP)

- 3.7.1 The utilisation of heat from the electricity generation process, through combined heat and power (CHP) generation, can increase the overall energy efficiency of the proposed energy recovery facility significantly and represents a major environmental benefit. The proposed development has been designed to deliver a combination of electricity into the National Grid and district heating or power should a viable and deliverable solution be forthcoming.
- 3.7.2 The Applicant is committed to maximising the overall energy efficiency of the proposed energy recovery facility and has designed the facility to maximize efficiency above that found in other energy from waste plants of this size and type in the UK.
- 3.7.3 The Applicant has undertaken an assessment of the potential heat users in close proximity to the Site and identified a number of potential non-residential heat users within 1km of the Site.
- 3.7.4 Given the cost and disturbance associated with the installation of the infrastructure it is acknowledged that the scheme will need to be wholly supported by the local authority and the community. However, the Applicant believes that the local area offers potential to support the development of a viable CHP facility and thus supports the choice the Clarion Close Site.
- 3.7.5 The Applicant is confident that surplus heat from the proposed development can be exported to local companies and users in the vicinity of the Site and that CHP is a viable option on this Site once the facility is established.
- 3.7.6 In general terms the proposed development adheres to the principles of sustainability in terms of the waste management hierarchy and energy management and emissions control and as such can be considered as sustainable development.

3.8 Decommissioning

- 3.8.1 The proposed facility has a design lifespan of 25 years at which point the energy recovery facility will be decommissioned and the plant and equipment will be removed from the Site. The building on site will be retained for alternative uses.



Figure 3.1 Building Elevations (east and west)

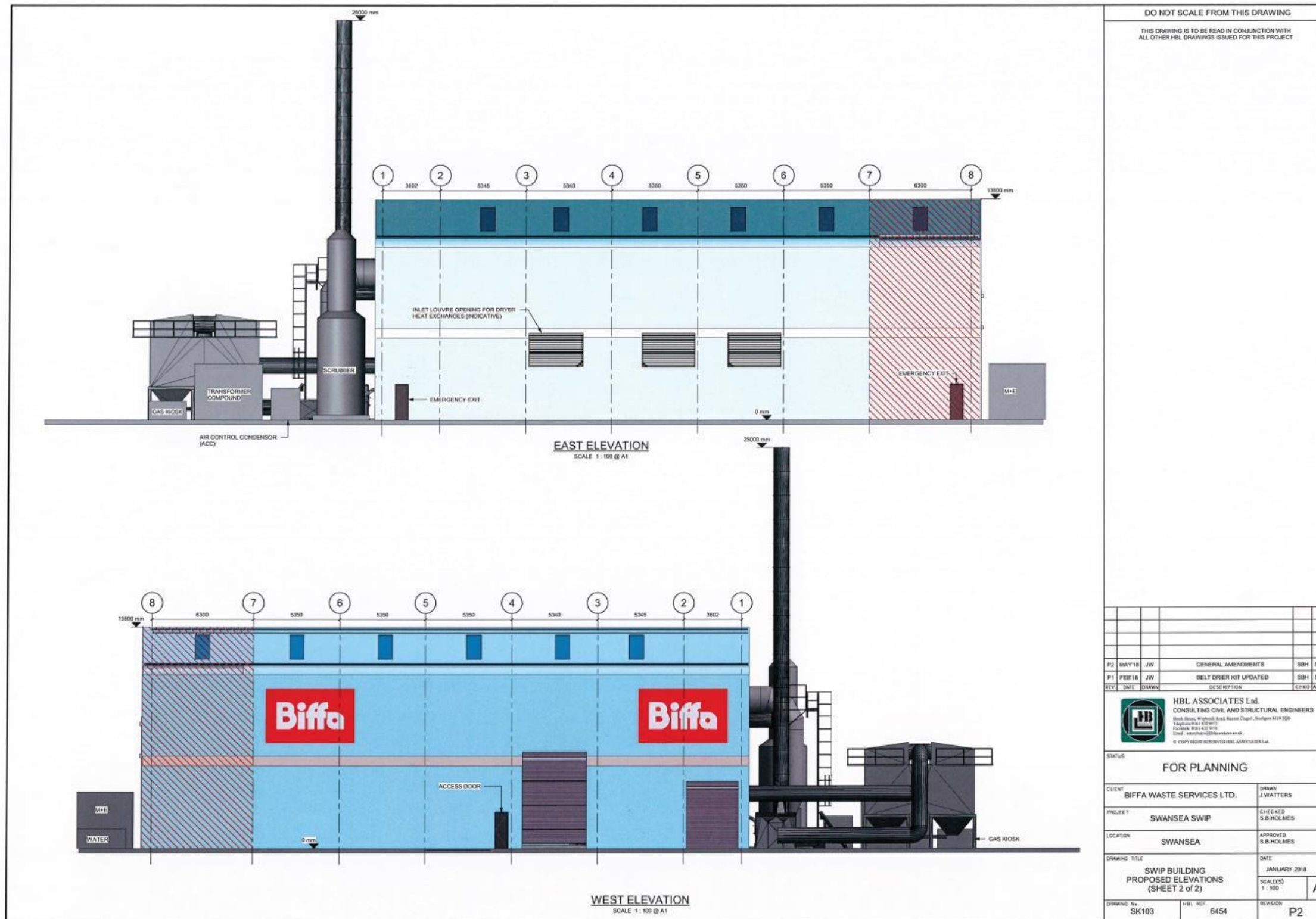




Figure 3.2 Building Elevations (north and south)

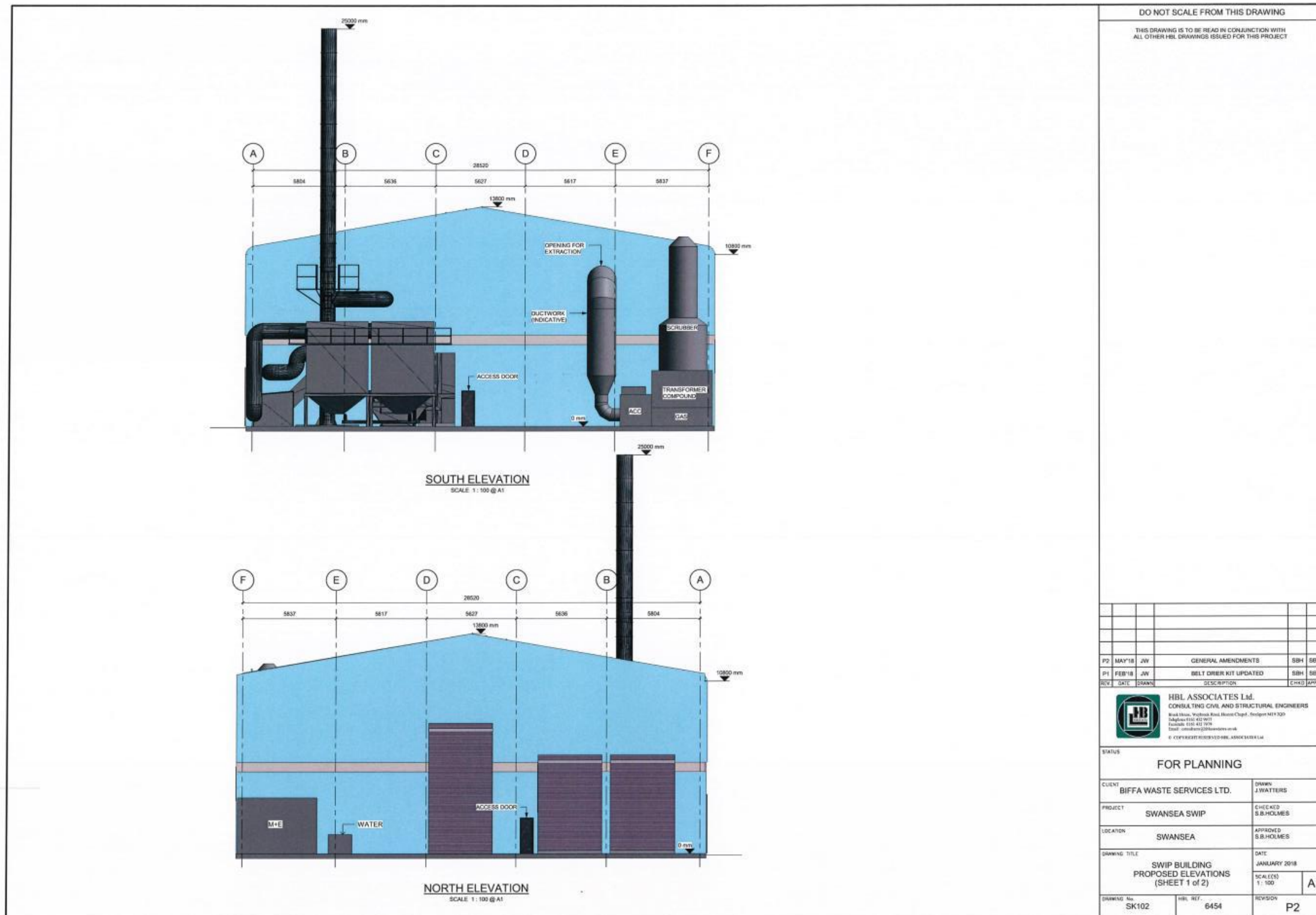
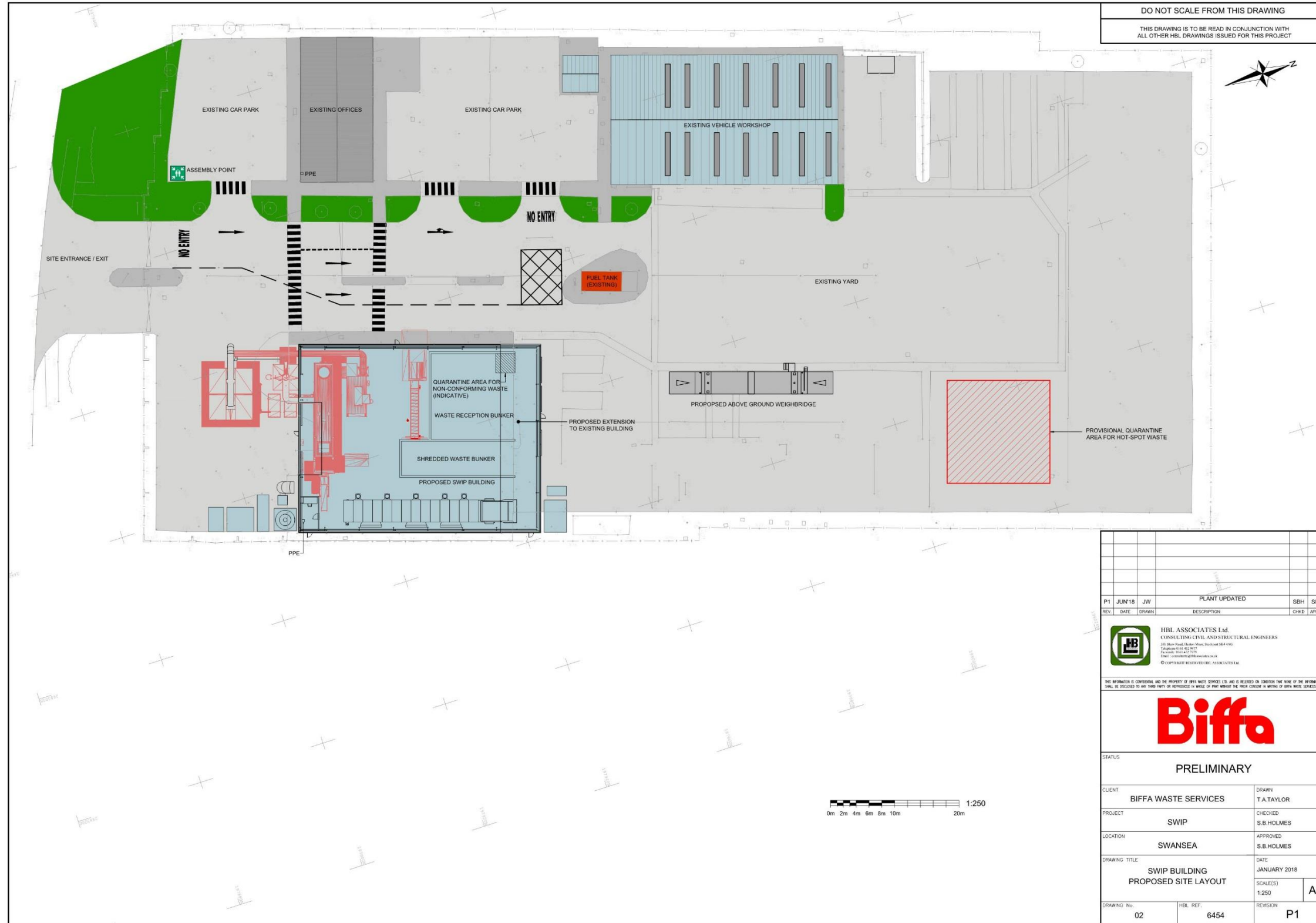




Figure 3.3 Proposed Site Layout



DO NOT SCALE FROM THIS DRAWING
 THIS DRAWING IS TO BE READ IN CONJUNCTION WITH
 ALL OTHER HBL DRAWINGS ISSUED FOR THIS PROJECT

P1	JUN'18	JW	PLANT UPDATED	SBH	SBH
REV	DATE	DRAWN	DESCRIPTION	CHKD	APPRD
<p>HBL ASSOCIATES Ltd CONSULTING CIVIL AND STRUCTURAL ENGINEERS 215 Oldway Road, Swansea, Swansea SA4 4AG Telephone: 01792 421700 Fax: 01792 421701 Email: info@hblassociates.co.uk © COPYRIGHT RESERVED BY HBL ASSOCIATES LTD</p>					
<p>THE INFORMATION IS CONFIDENTIAL AND THE PROPERTY OF BIFFA WASTE SERVICES LTD. AND IS RELEASED ON CONDITION THAT NONE OF THE INFORMATION SHALL BE DISCLOSED TO ANY THIRD PARTY OR REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF BIFFA WASTE SERVICES LTD.</p>					
<p>STATUS PRELIMINARY</p>					
CLIENT			DRAWN		
BIFFA WASTE SERVICES			T.A.TAYLOR		
PROJECT			CHECKED		
SWIP			S.B.HOLMES		
LOCATION			APPROVED		
SWANSEA			S.B.HOLMES		
DRAWING TITLE			DATE		
SWIP BUILDING PROPOSED SITE LAYOUT			JANUARY 2018		
			SCALE(S)		A1
			1:250		
DRAWING No:		HBL REF:	REVISION:		
02		6454	P1		



3.9 Sustainability in Location and Design

3.9.1 The location of the proposed development provides a sustainable options, as it utilises an existing depot and buildings which reduces the carbon footprint of construction. Additionally, the proposals utilise existing HGV movements to transfer waste to the site, and will reduce the daily HGV movements (and consequently contribute towards CO2 savings) between the Council's transfer station (Ferryboat Close) and the Trecatti Landfill at Merthyr Tydfil where the waste is currently exported.

3.10 Mitigation within the Submitted Design

3.10.1 The following sections outline the proposed mitigation which has been embedded within the overall design in order to prevent, reduce or offset any significant effects.

Ecology

- 3.10.2 Existing vegetation will be retained along the southern and eastern boundary of the Site, therefore providing the current levels of screening to the construction and operational phase of the development.
- 3.10.3 A construction environmental management plan (CEMP) will be produced for the construction phase detailing all construction standards and techniques. In addition, no additional lighting above current levels is proposed with no night time construction.
- 3.10.4 Water quality will be maintained as part of the proposed development as the development has been designed as a 'closed water system'; see Chapter 10. The current site surface water is connected to the local sewer network in Clarion Close and the proposed development will also utilise the same connection.
- 3.10.5 No evidence of breeding birds was recorded on the site during the baseline surveys. However, the building (B1) onsite offers potential features for nest building. If the building extension is to be completed during the bird breeding season (considered to be March to August inclusive) a pre-construction breeding bird check will be completed to ensure no nests have become established in the intervening period which could be affected by the proposed works. This will form part of the CEMP requirements for the scheme.

Noise and Vibration

3.10.6 No specific mitigation is recommended in relation to noise at the operational stage, however, a CEMP will be implemented at the construction stage which will provide methods for limiting and reducing noise at the construction stage.

Air quality

- 3.10.7 A CEMP will be implemented to limit the potential effects to air quality from dust and emissions throughout the construction phase.
- 3.10.8 Potential odour emissions from the building will be controlled by keeping the building under negative pressure through a building ventilation system.
- 3.10.9 Odorous air from the building will be going into the combustion process and all of the air from the dryer will be going into a chemical scrubber which will then clean the air and discharge to atmosphere. It is believed that the combusting the extracted air from the building is the best available technology for the control of odour.
- 3.10.10 The site will be operated and monitored in accordance with a Part B Environmental Permit requirements which is regulated by Swansea Council Environmental Health (EHO), in line with EU Directive 2010/75/EU.

Ground Conditions

3.10.11 A standard Construction Drainage Design Plan will be implemented during the external extension works to prevent water quality being significantly impacted. This is regarded as industry standard practice and will

also includes mandatory legal requirements in terms of protecting soil quality, surface water and groundwater from pollution.

- 3.10.12 The existing hardstanding will remain as it currently is onsite, as it is unbroken, there is not considered to be a risk of pollution events entering the groundwater.
- 3.10.13 The following points list key mandatory requirements that would be in place:
- The developer and principal contractor will ensure that all consents and licences are in place before works commence.
 - Prior to the commencement of construction an adequately developed Principal Contractor's 'Construction Phase Plan' will be prepared a Construction Environmental Management Plan (CEMP).
 - The construction works will be monitored by an Employers Agent, who will also liaise with the various environmental and other advisers who will have input into the project.
- 3.10.14 At the operational stage a surface water design will be developed to mitigate the pollution of soils and groundwater underlying the site.
- 3.10.15 The site will be operated and monitored in accordance with the necessary permit requirements which is regulated by Natural Resources Wales (NRW), in line with EU Directive 2010/75/EU.

Water Resources and Flood Risk

- 3.10.16 All waste will be stored within the building in bunkers constructed of reinforced concrete on three sides. In normal operation these bunkers are open on the fourth side to allow waste to be deposited and collected. It is proposed that the concrete walls will be slotted to receive stop logs up to 1m high. The stop logs can be fitted in the event of a severe flood warning to contain waste and prevent any contamination of flood water.
- 3.10.17 A Flood Evacuation Protocol has been produced for residents and businesses within the Swansea Vale Enterprise Park. The FCA sets out flood management procedures for the developed site based on the recommendations of the Swansea Council Evacuation Protocol.
- 3.10.18 The recommended procedures require that throughout operation of the site, flood warnings will be monitored. The site flood management plan sets out actions to be taken for the different levels of flood warning. Most significantly, in the event of a severe flood warning the operation of the site will be shut down; stop logs will be installed on waste bunkers; staff will be evacuated via a pre arranged route and deliveries will be diverted.
- 3.10.19 The site will be operated and monitored in accordance with a Part B Environmental Permit requirements which is regulated by Swansea Council Environmental Health (EHO), in line with EU Directive 2010/75/EU.

3.11 Construction Proposals

Construction

- 3.11.1 No main contractor has yet been appointed and therefore fully detailed construction processes have not been developed at this stage. Where no detail currently exists regarding the construction process assumptions have been made, based on expert judgement and experience on similar projects from within the project team.
- 3.11.2 The selected main contractor will be required to prepare a detailed construction and procurement programme identifying key tasks and milestones to ensure that enhancement of the project is properly resourced and sequenced in accordance with the overall project duration
- 3.11.3 The main contractor will be encouraged to use local labour, sub-contractors and suppliers during the construction process; however, specialist work portions may have to be sourced from wherever the appropriate skill base resides.



Predicted traffic movements during construction

3.11.4 The main deliveries and Site traffic will be related to the following:

- Daily site staff and labour;
- Deliveries of building components and services equipment;
- Periodic inspections, visitors and inspectors; and,
- Disposal of waste material.

3.11.5 The principle points of access to the Site during construction would be from the same points of access proposed to serve the proposed development.

3.11.6 The main contractor will be required to develop a Travel Plan to ensure that staff travel to and from the Site does not result in adverse traffic impacts during the construction phases of development.

Working practices

3.11.7 Prior to the commencement of construction, an adequately developed principal contractor's 'Construction Phase Plan' will be prepared including:

- Pre-construction Health and Safety Information as required by the CDM Regulations 2015; of the proposals. This is a requirement of the EIA Regulations which in Schedule 4, Paragraph 4 require a description of the aspects of the environment likely to be significantly affected by the development (HMSO, 2017);
- Pre-construction Site Waste Management Plan and Site Waste Management Plan (SWMP); and,
- Construction Environmental Management Plan (CEMP).

3.11.8 In addition, the following document will be prepared/ revised as necessary by the CDM Co-ordinator: Construction Phase CDM Health and Safety Plan as required by the CDM Regulations 2015.

3.11.9 The construction works will be monitored by an Employers Agent, who will also liaise with the various environmental and other advisers who will have input into the project.

3.11.10 The base environmental effects assessment reported within this ES assumes the project will be constructed in accordance with industry standard techniques and mandatory minimum standards, and assumes suitably experienced contractors will be appointed to design, construct and commission the development. A non-exhaustive list of key standard working techniques/practices taken into account in the base assessment is provided in the following sub-sections.

Construction works times

3.11.11 Construction activities on the Site will normally be carried out between 07.00 hours to 19.00 hours Monday to Friday and 08.00 hours to 13.00 hours on Saturdays, with no such activities on a Sunday or a Public or Bank Holiday. Any works required to take place outside of these periods will be agreed in advance with CCSC.

Construction Materials

3.11.12 No materials will be used in the Proposed Development that by their nature or application or use contravene any British Standard or Code of Practice, or which contravenes the recommendations of Good Practice in the Selection of Construction Materials (Ove Arup and Partners, 1997).

Construction Water Supply and Use

3.11.13 Water usage during construction will be used for the purposes listed below and will utilise where possible, local grid connections. If this is not possible, water will be supplied by bowser.

3.11.14 Water is expected to be used during construction in the following activities:

- Dust suppression;
- Cleaning of ready mix concrete wagons;
- High pressure cleaning (of machinery and constructed surfaces);
- Wheel wash (expected to be required – additional mitigation to control deposition of mud on local roads);
- Water use in welfare facilities; and,
- Commissioning / testing of operational water supply structures and services.

Construction compound

3.11.15 A contractors working area will be made available, and the location will be clearly delineated on the Site and agreed with CCSC to ensure that no unnecessary disturbance is caused to any sensitive areas. The erection of site hoardings, vehicular plant activity and subsequent vehicle movements would be evident during construction although minimised in comparison to the size of the site.

Safe Storage of Fuel/Oil

3.11.16 Particular attention will be given to the storage and use of fuels for the plant on Site. Drainage within the temporary, secure, Site compound, where construction vehicles will park and where any diesel fuel will be stored, will be directed to an oil interceptor to prevent pollution if any spillage occurs. Diesel storage and refuelling will be within a designated area or self-bunded tank in accordance with the Environment Agency's Pollution Prevention Guidelines (PPG), as listed below:

- PPG 2 Above Ground Oil Storage Tanks; and,
- PPG 8 Safe Storage and Disposal of Used Oils.

3.11.17 This is regarded by WYG as industry standard practice and also includes mandatory legal requirements which are considered as integral to the development being assessed in this ES.

Construction Drainage

3.11.18 Any potential pollution events will be managed by the principal contractor through the adoption of a Construction Drainage Management Plan, to be approved by the Environment Agency. This may include monitoring of identified watercourses and installation of containment features.

Construction Waste

3.11.19 The Proposed Development will actively seek to reduce the amount of waste sent to landfill during the construction phase through sustainable design and procurement together with the reuse or recycling of materials, wherever possible.

3.11.20 Waste will be managed in accordance with the Waste Hierarchy, and as such waste minimisation will be given the highest priority. The reuse and recovery of waste will be encouraged by proactively identifying opportunities for the on-site reuse of materials and by appointing a waste contractor who can demonstrate high levels of recycling. Energy recovery will be the preferred option for managing residual waste from construction works and only residual waste which has no potential for energy recovery will be sent for landfill disposal. All reasonable measures will be taken to ensure that levels of residual waste sent to landfill are kept to a minimum.

3.11.21 It is an ambition to use resources which have been sourced locally, where these are available, and also to use sustainable means of transport, where possible. Construction materials will be procured which have a high proportion of recycled material, where this is practicable and does not adversely affect the integrity and durability of the materials.



- 3.11.22 Modern methods of design and construction using pre-fabricated units will help keep waste arisings to a minimum. The frames and envelopes will be pre-fabricated with formwork remaining on site. All construction waste produced during the site preparation works that cannot be re-used on site will be segregated and recycled. Efficient building forms and services will be used that will minimise the volumes and numbers of on-site manufactured components required to reduce the potential for waste generation. Scaffolding, hoarding and shuttering will be disassembled and used on other phases of the project and then removed from site for use on subsequent construction projects.
- 3.11.23 Construction sites will be laid out to ensure that there is sufficient space for waste from the construction phase to be segregated into separate containers and stored prior to removal and off-site management. However, the regular removal of waste and recycling will minimise the amount of external space required for waste storage both in the construction and operational phases of the developments.
- 3.11.24 Under the Duty of Care Regulations producers of waste have a legal obligation to ensure wastes are handled responsibly and in line with relevant legislation and guidance. The strict management of waste during the construction phase of each development by site operatives Training sessions for relevant construction staff.

Construction Noise and Vibration

- 3.11.25 The main contractor will refer to the guidance provided within BS5228:2009+A1:2014 in order to minimise disruption during construction. Additionally, the principal form of noise control will comprise site working hours according to any conditions within the planning consent and avoiding unsocial working hours where possible. If there is the requirement to undertake 'noisy' work outside of the agreed hours, further consultation would be undertaken with CCSC to obtain prior agreement that the proposed works would be acceptable.
- 3.11.26 CCSC is provided with powers under the Control of Pollution Act 1974 to control noise and vibration from construction sites including, if necessary, serving notices under the Section 60 to specify working practices.
- 3.11.27 Further details regarding the likely noise and vibration effects of the proposed development are contained within Chapter 6 of this ES. This includes examples of noise control measures during the construction phase that should, as a minimum, form part of the CEMP.

Construction Air Quality and Dust

- 3.11.28 Particular care will be taken regarding dust emissions so that they are kept to a practicable minimum, especially when working in the vicinity of residential or commercial properties in the vicinity of the Site. Suppression and mitigation will be required during dry conditions with the following dust reduction measures being employed:
- Sheeting of vehicles transporting materials to and from Site;
 - Limiting the speed of general vehicles within the Site;
 - Provision of wheel washing facilities at access points onto local roads; and,
 - Drop heights minimised and all skips enclosed where possible.
- 3.11.29 The main contractor will comply with the BRE Code of Practice to control dust from construction activities, unless agreed otherwise with the LPA. The requirements of the code will apply to all work at the Site, access roads and adjacent roads.
- 3.11.30 Further details regarding the likely air quality effects of the proposed development are contained within Chapter 7 of this ES. This includes examples of control measures during the construction phase that should, as a minimum, form part of the CEMP.

Construction landscape and visual impact

- 3.11.31 Construction works in the vicinity of retained trees within the Site and on adjacent land shall be carried out in accordance with recommendations in 'BS5837:2012 Trees in relation to design, demolition and construction' and approved Arboricultural Method Statement to safeguard trees and hedges.
- 3.11.32 All boundaries of the Site will be secured by means of temporary fencing and / or hoarding for safety and security reasons and to reduce the visual impact of the Site during the construction period.
- 3.11.33 Working hours are intended to be standard site working hours as set out above. There will be a requirement for temporary lighting to be provided to illuminate temporary car parking areas, site roads and the contractor's storage compound; and working areas for the late afternoons during the winter months only. The temporary lighting will be specific to the areas that require illumination during the night-time period to ensure both on site safety and security. All lighting for construction activities will be directed downwards and away from any residential areas to avoid light pollution as well as to reduce the detrimental effects on ecological receptors, any security lighting will be located in agreement with specialist ecological advice.
- 3.11.34 Further details of the landscape and visual impacts during the construction phase of the development are provided in Chapter 10 of this ES.

Construction Ecological Mitigation

- 3.11.35 Ecological tool box talks will be given to all construction staff prior to any works being undertaken on the site. These may initially take the form of an overview of the site and the potential ecological constraints that may be encountered during the construction operation. This will also provide the protocol in the event that a protected species is found, i.e. stop works, report incident and seek advice from an ecologist. Subsequently there may be specific tool box talks for specific operations such as works on or adjacent to water bodies.

Health and Safety

- 3.11.36 All work will be undertaken to relevant Health and Safety legislation. The project will be supervised in accordance with the revised Construction Design and Management Regulations 2015 (CDM). Risk Assessment will be undertaken for each work package prior to activities taking place. A CDM Health and Safety File will be prepared and, after completion of the construction works, will be handed over to the applicant.

Securing Environmental Management - The Environmental Management Plan after Operation

- 3.11.37 The applicant has identified environmental management practices through the iterative EIA process. It is expected that the environmental management practices identified in this ES will be secured via a planning condition should the application be approved. An Environmental Management Plan (EMP) would be prepared from the mitigation information provided within the topic chapters which form the preliminary EMP.
- 3.11.38 The following are expected to apply to ensure that the scheme is implemented throughout construction and operation.

Construction

- 3.11.39 The contract between the applicant and the company contracted to construct the development will specify the measures to be taken to reduce or mitigate the environmental effect of the construction process, to be agreed with the regulators within a CEMP. These measures will consist of three main types:
- Conditions to be adhered to under the planning permission;
 - Any requirements of the Environmental Agency or any other regulatory organisation; and,



- And other relevant mitigation measures identified in this ES.

3.11.40 The CEMP file will be prepared and, after completion of the construction works, handed over to the applicant.

Operation

3.11.41 The site will be operated and monitored in accordance with a Part B Environmental Permit requirements which is regulated by Swansea Council Environmental Health (EHO), in line with EU Directive 2010/75/EU.

3.11.42 The site will be managed by Employer's Agent whose duties will include compliance with statutory environmental requirements.

3.11.43 Effective communication underpins the whole system of environmental management, ensuring appropriate information passes between the applicant, the contracted developer staff and the consultants and contractors whom they engage. This ensures that environmental considerations are fully integrated into the management of the development throughout construction, and during the operation phase.