Client:	Owner's Engineer:	Local Designer:	Environm. Consultant:

PROJECT: **124054 WEPA VESTA UK BRIDGEND**

CLIENT: **WEPA UK**

PHASE: **PLANNING APPLICATION**

DOCUMENT: **ENVIRONMENTAL STATEMENT**

ID: **59200-0052**

List of Contents

1.0 Introduction

1.1 The Developer

1.1.1 WEPA UK Limited is the UK subsidiary of the WEPA Group headquartered in Germany. The WEPA Group is an independent, family-owned company, founded in 1948. Since that time the company has grown considerably, and it now operates 22 paper machines at 13 locations across Europe. It employs some 3,900 people. Bridgend Paper Mill itself was built in 1950, over the following decades the site passed through several owners. From 2016 it has been invested in new modern lines and technical equipment ensuring Bridgend remains at the global forefront of the paper industry. WEPA UK is managed by the family-owned company.

1.1.2 In 2019 WEPA built a second paper machine called “Neptune”. The development included a new pulp storage for bales (virgin fibre), a bale handling area, a new sludge press building, a paper machine building for a second production line (including the stock preparation). Construction was completed in 2022, although some of the development permitted under that planning permission has not been constructed. Within the next few months, WEPA will replace the existing CHP plant with a new boiler house, which will house two boilers and ancillary equipment (Planning application P/24/406/FUL).

1.1.3 WEPA UK is committed to bringing further inward investment to the Bridgend area through the development of a new paper machine (called Vesta) in an environmentally acceptable and sustainable manner. The new development will replace the existing paper machine “Jupiter” which was built in the 1970s. The machine has a high energy demand and water consumption that is not sustainable anymore. The produced paper does not add value to the final products currently required by the market. In order to enhance the production capacity, produce higher paper quality and reduce the power and water consumptions, WEPA is planning to replace the old Jupiter machine with a new machine, named Vesta.

1.1.4 The office and contact address for the proposed development is:

WEPA UK Ltd.

Bridgend Paper Mills

Juan Moreno

Llangynwyd Bridgend

Mid Glamorgan CF34 9RS

To contact the project team by e-mail use:

juan.moreno@wepa.co.uk

1.2 Rationale of the Project

1.2.1 WEPA is currently the third largest supplier of toilet paper, napkins, kitchen rolls, etc. in Europe. WEPA UK is a growing consumer business selling high quality hygiene paper products in the UK retail sector. WEPA UK Limited now proposes to construct a new tissue paper machine (called “Vesta”) at its Bridgend site. The new plant will produce tissue paper and it will replace the existing paper machine “Jupiter”. Before commissioning the new “Vesta” machine, the old machine “Jupiter” will be shut down and dismantled. The Jupiter building will be re-used as Jumbo reel Storage.

1.2.2 The maximum daily capacity of the Vesta paper machine will be 227 tonnes/ day.

1.2.3 The new machine will provide the following project benefits:

- the new machine is optimised to produce lower g/m² and high-quality toilet paper,
- it allows the use of higher content of recycled fiber,
- there is a possibility to further reduce water consumption achieving 100 % to a closed water loop in the future,
- reuse of waste heat energy,
- reducing the environmental footprint of tissue production by saving energy, water and CO_2,
- overall higher efficiency due to reduction of paper waste and improvement of machinery performance, including reduction of waste at the converting lines.

1.2.4 WEPA UK, therefore, intend to submit a Planning Application to construct the new paper machine and associated development at the site in Bridgend.

1.2.5 The developer considers design to be a key constituent of the project. At a concept and design level, the Project must achieve a high quality and inclusive design that respects the receiving environment. The architectural input has been fundamental to the evolution of the design.

1.3 Regulatory Context and Legislative Regime

1.3.1 Environmental Impact Assessments (EIA) have been required for certain major developments since the implementation in the UK of the European Council Directive on Environmental Assessment (EC Directive 85/337/EEC). The Directive, which was implemented in the UK in 1988, has subsequently been amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC and a codified Directive 2011/92/EU was adopted in 2011. The Directive is implemented principally by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The EIA of the proposed development will be undertaken in accordance with these EIA Regulations.

Requirement for an Environmental Statement

1.3.2 The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2017 (S.I. 2017 No. 571) require that, for certain types of development an Environmental Impact Assessment (EIA) be undertaken before planning permission can be granted. In accordance with the list of developments in Schedule 1 (No. 18b) of the EIA regulations the proposed development is described as an *"industrial plant for the production of paper and board with a production capacity exceeding 200 tonnes per day*".

Schedule 1 Descriptions of development

18. *Industrial plants for—*

(a)……

(b) the production of paper and board with a production capacity exceeding 200 tonnes per day.

1.3.3 As the capacity of the proposed development (227 tonnes per day) exceeds this threshold, an Environmental Statement (ES) is required in every case. This ES has been prepared for the purposes of describing the likely significant environmental effects of the proposed development based on the environmental data which has been collated since the Scoping Report was submitted in 2024 under Article 14 of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017.

Environmental Permit Regulations

1.3.4 The installation requires authorisation under Section 6.1 A(1)(b) in Schedule 1 of the Environmental Permitting (England and Wales) Regulations 2017. These regulations have been made under the Pollution Prevention and Control (PPC) Act 1999 and implement the EC Directive 96/61/EC.

1.3.5 A variation of the existing Environmental Permit for the facility (Ref. No. EPR/EP3738NG) will be required to operate the new development. The application for a variation of the Environmental Permit would be made parallel to the application for development consent and it will be necessary for the operator to demonstrate that the design and choice of technology is the Best Available Technology (or BAT) which minimises impacts to the environment.

1.3.6 The pre-application discussions with Natural Resources Wales (NRW) will commence as soon as the details of the plant's design have been finalised. These discussions will focus on the Best Available Techniques (BAT) cases that need to be agreed in respect of the technology choices and emission parameters.

Water Abstraction Licence

1.3.7 Under the Water Resources Act 1991, a licence is required from NRW for the abstraction of water from any sources of supply. WEPA UK has an existing licence to abstract freshwater from the nearby Llynfi River. This was granted in 2013 (Licence Serial No. 21/58/41/0015) under the Water Resources Act 1991 (as amended). The maximum quantity of water to be

abstracted for the purpose of non-evaporative cooling is limited to 5,760 m³/day and 2,102,400 m³/year.

1.3.8 All water required for the proposed development will be included in the existing abstraction licence.

Discharge Consent

1.3.9 Under sections 85 and 88 of the Water Resources Act 1991 (as amended), it is an offence to cause or knowingly permit the discharge of any poisonous, noxious or polluting matter or any solid waste matter to enter controlled waters except in accordance with a discharge consent or an Environmental Permit (or certain other types of authorisation which are not relevant in this case).

1.3.10 The Environmental Permit covers discharges from the paper mill's operations, but this would not extend to surface water drainage and dewatering discharges during construction.

1.3.11 Separate discharge consents to cover any such discharge would be applied for in time for the consents to be available when required early in the construction period.

Control of Major Accident Hazards (COMAH) and Hazardous Substances Consent (HSC)

1.3.12 Given that there would be no storage of natural gas on the site, the quantity of gas present at any one time would be below the minimum quantity for which hazardous substances consent would be required.

1.3.13 Materials used and the quantities stored will not trigger COMAH requirements.

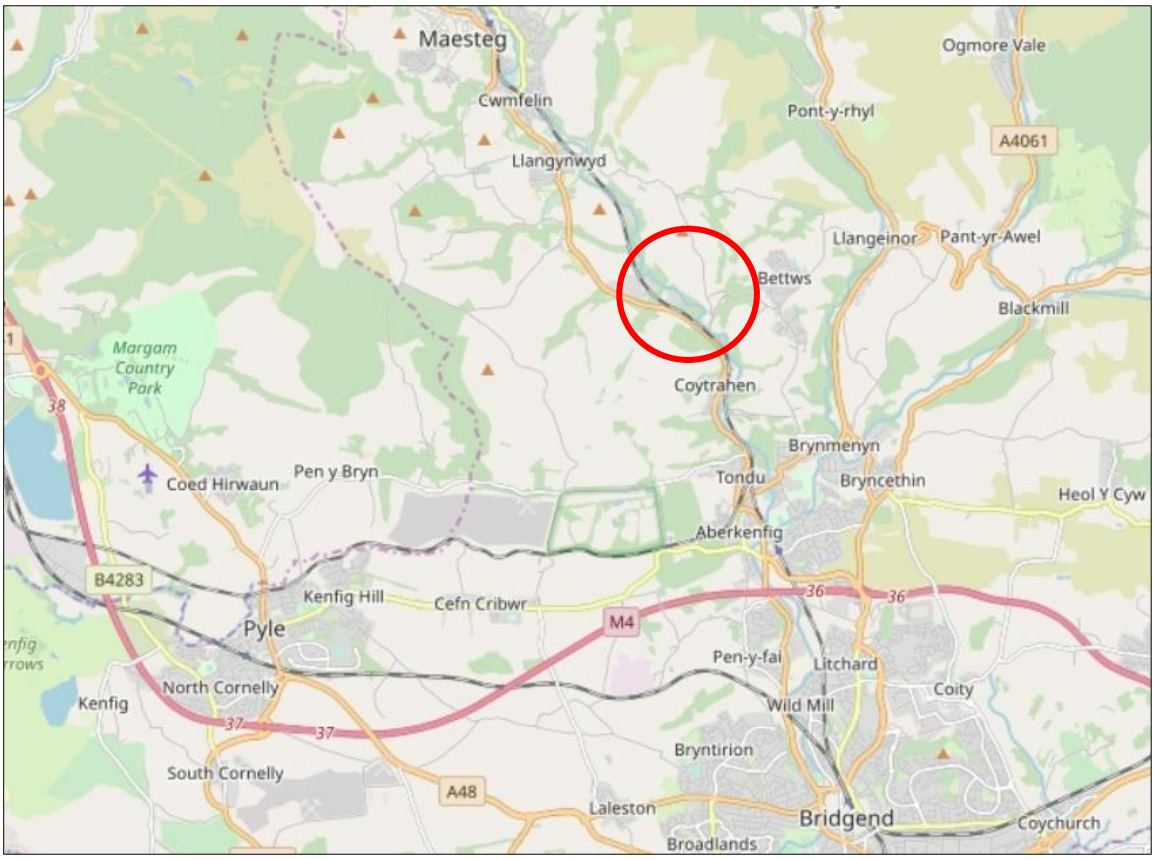
2.0 Description of the Development Site and its Surroundings

2.1 Site Location

2.1.1 The proposed development site is located on the site of the existing Bridgend mill site approximately 5 km to the north of Bridgend town centre, in an area bound to the south and to the west by the A4063, to the east by the River Llynfi, and to the north by open farmland. The site is orientated along its long axis in an approximate west to east direction and it is accessed via the A 4063 (Bridgend Road) between Maesteg and Coytrahen, with traffic generally proceeding south towards the M 4.

2.1.2 The Bridgend site covers a total area of around 25 hectares of which buildings and other hardstanding areas extend to approximately 16 ha. The new paper machine is centred on approximate National Grid Reference X: 288005, Y: 187080, as shown on Figure 2.1-1. The location of the proposed paper machine is within the existing WEPA UK site, situated adjacent the existing machine 'Jupiter'.

Figure 2.1-1: Site Location



Source: Open Street Maps

2.2 Site History

2.2.1 The history of the site and surroundings has been established from historical Ordnance Survey (OS) plans dated between 1877 and 1987 (www.old-maps.co.uk). Prior to development of the mill site most of the land in the area was undeveloped farmland with woodland in the bottom of the Nant Gwyn Valley. The two farmsteads of Brynllywarch-fach and Brynllywarch-fawr, were established by 1877, as was the Bridgend to Maesteg railway.

2.2.2 Signs of industrial activity, in the surrounding of the present day mill site, were two “old levels” and two quarries on the 1921 OS Map. Other signs of mining activity in the general area were an old tramway, air shaft and levels in the Nant Gwyn Valley.

2.2.3 Evidence from the Catalogue of Plans of Abandoned Mines held by the National Assembly for Wales shows two mine plans relating to workings beneath the western end of the mill site and extending into the expansion area around Brynllwarch-fach. All coal workings in the vicinity had been abandoned by 1944.

2.2.4 Aerial photographs indicate that earthworks were in progress at the mill site by 1947 and Wiggins Teape started production there in 1950 using water from the Afon Llynfi and power and steam from the adjacent Llynfi Power Station. By 1960 the mill was producing 20,000 tons per annum from four paper machines. Expansion took place in the early 1960s with a new machine and converting plant. By this time the Nant Gwyn had been culverted, the filtration plant and sludge ponds had been extended and further settling tanks constructed. It was at this time that the three bungalows on the site were constructed. The current “Jupiter” paper machine was installed in 1969.

2.2.5 The mill has continued to expand since the 1960s. Electricity and steam generation has been raised on the site. Parts of the mill site have been used for the tipping of ash from the power station and unsuitable wastes from construction have been deposited to the east of the railway line. The historical map of 1962 displays a (settling) pond between the waste water treatment plant and the A 4063. Land in the vicinity of the development site has remained undeveloped with only a few buildings being constructed at the surrounding farmsteads.

2.2.6 In 2019, a second paper machine called “Neptune” was built. The development included a new pulp storage for bales (virgin fibre), a bale handling area, a new sludge press building, a paper machine building for a second production line (including the stock preparation). Construction was completed in 2022, although some of the development (i.e. the high bay warehouse) permitted under that planning permission has not been constructed. Within the next few months, WEPA will replace the existing CHP plant with a new boiler house, which will house two boilers and ancillary equipment (Planning application P/24/406/FUL).

2.3 Physical Setting and Baseline Conditions

Land use

2.3.1 Figure 2.3-1 illustrates that the WEPA mill site is bordered to the south and west by the A4063. The River Llynfi runs to the east of the site. To the north of the site, there are open fields and farmland. In the immediate surrounding of the site, sheep farming is the predominant land use. Woodland cover in the area is generally sparse, mainly confined to lining roads, around villages and along the River Llynfi.

Figure 2.3-1: Development site and surrounding

Geology and Soils

2.3.2 The site has had an array of ground investigation carried out both recently and historically.

2.3.3 Reference to British Geological Survey records for the area indicates that the site is underlain by Alluvium and Diamicton Till overlying the Brithdir Member, part of the Pennant Sandstone Formation (Coal Measures). It is also known from recent investigations that much of the site is underlain by Made Ground to depths of up to 8m below ground level.

2.3.4 The superficial deposits comprise of alluvium where the valley was historically located (now culverted watercourse) and glacial till surrounding this to the North and South.

2.3.5 Groundwater has been recorded at varying depths across the site along with seepages at shallow depth. To the West Golder Associates recorded ground water at depths of 7-9m Bgl,

Ove Arup recorded ground water at 4m Bgl in the same area. To the East Ove Arup have recorded ground water from approx. 3m Bgl which did rise in two of the boreholes.

2.3.6 It has been noted by Quorum Engineers Ltd. that during foundation installation for some of the existing buildings ground water was struck 1m down from surface level.

2.3.7 The bedrock is classified as a Secondary 'A' aquifer and the overlying superficial soils are classified as either a Secondary A or a Secondary – undifferentiated aquifer. The site is not underlain by a principal aquifer and is not located within a source protection zone.

Protected Sites & Sites of Conservation Importance

Statutory Sites (SACs or SSSIs) Designated for Bats within 10km of Site

2.3.8 No SACs or SSSIs specially designated for bats lie within 10km of the site.

SACS and SSSIs within 2km of Site

2.3.9 There are no SACs or SSSIs within 2km of the proposed development site.

NNRs, LNRs and other protected sites

2.3.10 No NNRs, LNRs, or other protected sites are present within 2km of the site.

Non-Statutory Nature Conservation Designated Sites

SINCs

2.3.11 Multiple SINCs were recorded within 1km of the study area. These were:

• Bettws West	• Gelliheblyg	• Nant Mwrth
• Coed Coytrahen	• Lletty Brongu	• North Bettws Woodland
• Coed Pentwyn	• Llety Woods	• Rifle Range Wood
• Coed Tondu	• Llywn-y-Brian	• Tylacoch North
• Cwm Cefnydfa	• Moelgilau-fawr	• Tylacoch South
• Cwm Nant Gwyn	• Nant Bryncynan Woods	• Ty'n-y-Waun; and
• Drysity'n-y-waun	• Nant Cwm-bach	• Waun-y-Gilfach woods

Ancient Woodland

2.3.12 There are 57 areas of ASNW located within 2km of the proposed development site, the nearest of which lies approximately 50m to the south-west of the site, just beyond the A4063 (Figure 2.3-2). In addition, 10 RAWS and two Ancient Woodland Sites of Unknown Category are present within the same search radius. Considering the scale and location of the works, none of these woodlands are anticipated to be affected by works. Although an area of Unknown Category Ancient Woodland lies only 20m from the south-eastern corner of the site, it is separated from the proposed development site by the A4063.

Statutory Sites within 10km of the Site

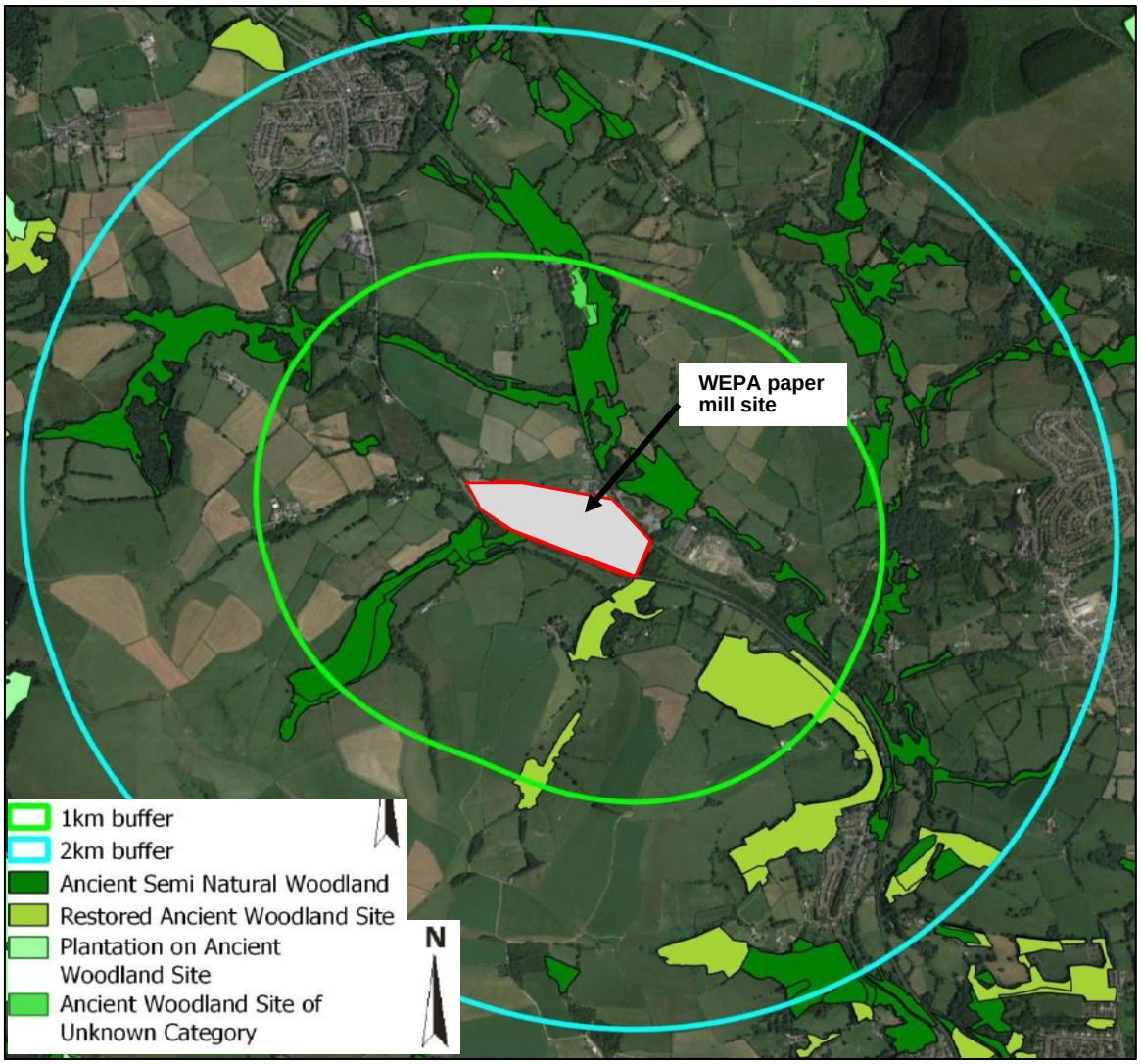
2.3.13 These sites are located beyond the 2 km zone of influence for air quality impacts to SACs and SSSIs, and due to the distances and their locations are not considered to be at risk of any other significant effects.

2.3.14 There are 15 statutory sites within a 10km radius of the Application Site of which 7 are internationally designated sites.

Table 2.3-1: Designated sites of ecological importance within 10km of the site

	Designation	Name	Distance from site
1	SSSI	MYNYDD TY-ISAF, RHONDDA	9.1km
2	SSSI	CWM DU WOODLANDS	1.9km
3	SSSI	CWM CYFFOG	4.9km
4	SSSI;	DAREN Y DIMBATH	7.5km
5	SSSI; SAC	BLACKMILL WOODLANDS	4.2km
6	SSSI	CWM RISCA MEADOW	2.4km
7	SSSI, SAC	BRYN - BACH, CEFN CRIBWR	3.7km
8	SSSI, SAC	CAEAU CEFN CRIBWR	4.0km
9	SSSI	WAUN CIMLA	4.6km
10	SSSI, SAC	WAUN-FAWR, CEFN CRIBWR	5.4km
11	SSSI, SAC	PENYCASTELL, CEFN CRIBWR	5.8km
12	SSSI; NNR, SAC	MERTHYR MAWR	9.0km
13	SSSI, NNR, SAC	CYNFFIG/ KENFIG	7.7km
14	SSSI	EGLWYS NUNYDD RESERVOIR	7.8km
15	SSSI	MARGAM MOORS	9.0km

Figure 2.3-2: Protected sites near the development site and in the surrounding



Existing Vegetation and Habitats on Site

2.3.15 The development site, approximately 1.88 hectares in size, consists of the eastern portion of a large industrial compound used as a paper mill. It is set within an industrial landscape and is boarded by hardstanding, buildings, bare ground, and a woodland edge. The Nant Gwyn is located at the east of the site, the Llynfi River is located 126m to the north-east, and the Nant Cefnydfa is located 256m to the south-east of the site boundary.

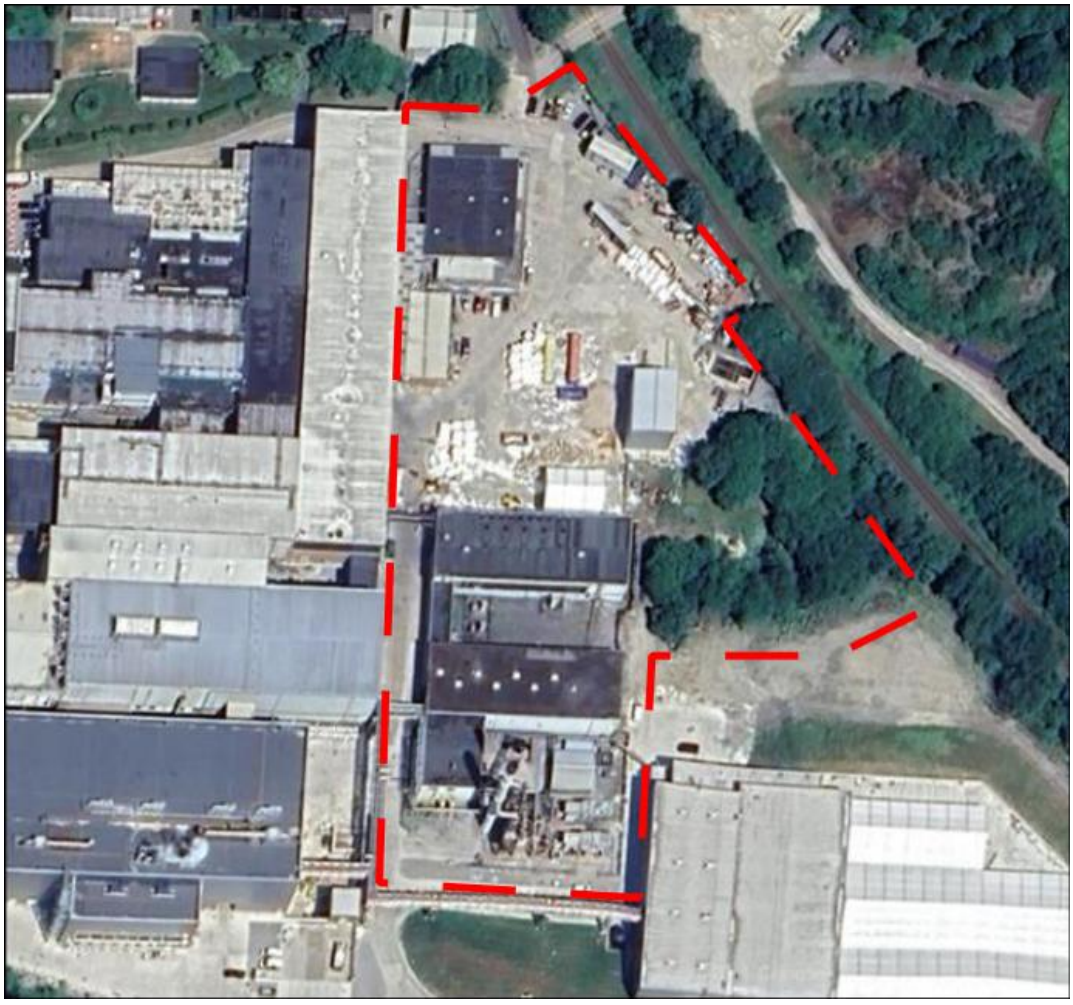
2.3.16 The proposed development will require vegetation clearance, including removing part of the woodland located at the east of the site. Furthermore, the proposed development is to be constructed over a section of the Nant Gwyn, which is located at the east of the site and diverted underground before being re-emerging approximately 350m to the south-west. Therefore, the proposed development will likely require an additional length of the Nant Gwyn to be diverted beneath the industrial compound.

2.3.17 A Phase 1 Habitat Survey was conducted by a suitably qualified ecologist on 10/09/2024, using the methodology outlined in the Handbook for Phase 1 habitat survey (JNCC, 2010). Additionally, the habitats present on site were assessed for their potential to support

protected species, and visual surveys were used to search for signs that such species are using the site. No plant species, which individually are considered to be of either of national, regional or local significance were recorded on the site.

2.3.18 The presence of any invasive non-native plant species listed under Schedule 9, Section 14 of the Wildlife and Countryside Act 1981 (as amended) were also noted and mapped during the site survey. These species include Japanese Knotweed (*Fallopia japonica*) and Himalayan Balsam (*Impatiens glandulifera*). Additionally, species which are not listed under Schedule 9, Section 14, but are known to be invasive to ecosystems in the United Kingdom were also noted and mapped during the site survey, including Butterfly Bush (*Buddleja davidii*) and Ground Elder (*Aegopodium podagraria*).

Figure 2.3-4: Aerial image with application boundary

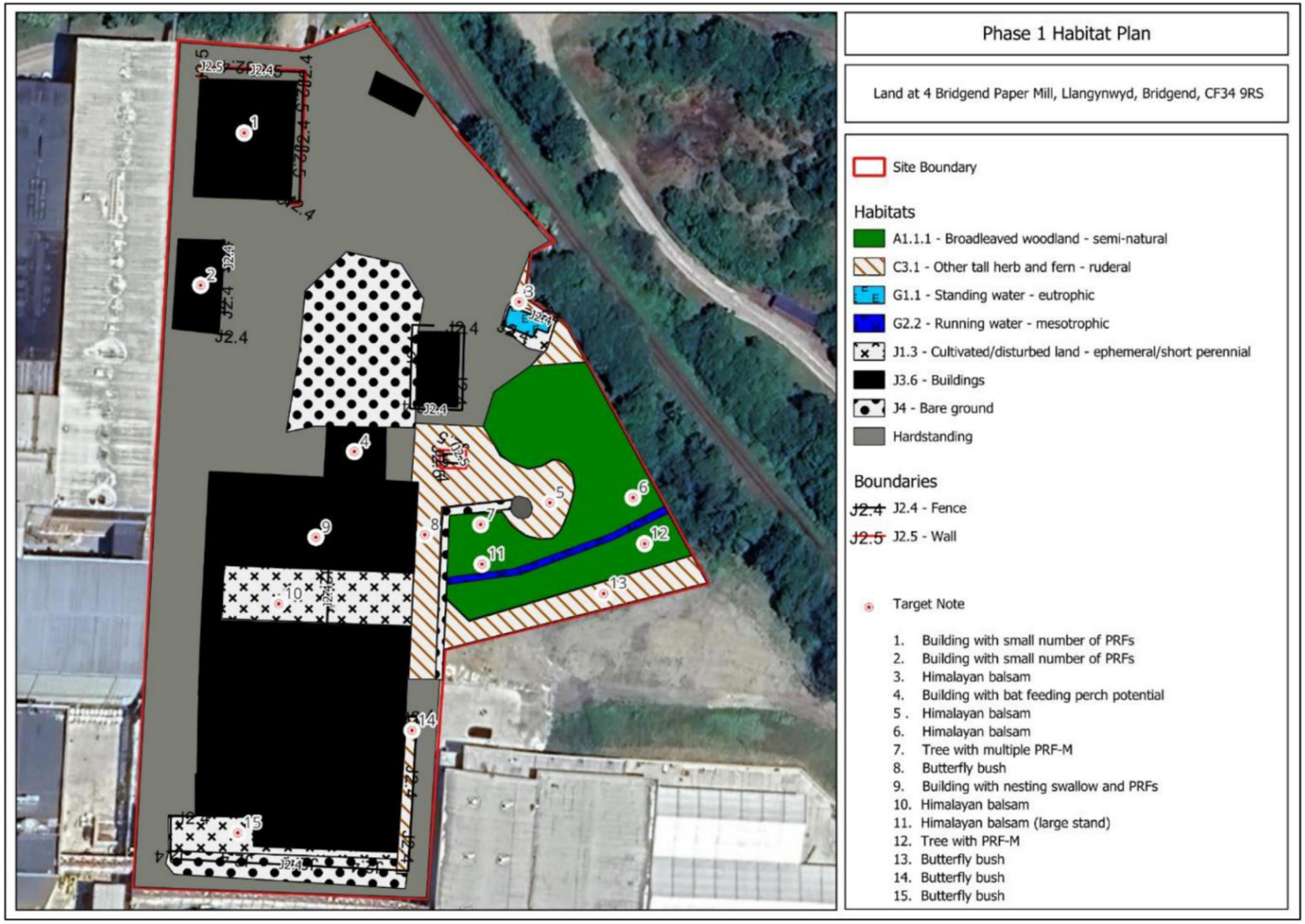


From I&G 2024

2.3.19 The following Phase 1 habitat types were present at the site:

- **A1.1.1** Semi-natural broadleaved woodland
- **C3.1** Tall ruderal
- **G1.1** Standing water (eutrophic)
- **G2** Running water
- **J1.3** Ephemeral
- **J2.4** Fence
- **J2.5** Wall
- **J3.6** Buildings
- **J4** Bare ground

Figure 2.3-5: Extended Phase I Habitat Plan



From I & G 2024

Landscape

2.3.20 The proposed development is located entirely on the WEPA UK premises which is heavily industrial and developed land. The new development will be viewed in the context of the existing paper mill. The paper mill site occupies a less elevated position (80–90m AOD) at the mouth of the Nant Gwyn valley. Currently the paper mill is relatively well hidden due to tree screening along the A4063 and as a result of a dip in the topography; the principal markers approaching from the south are a vent stack and steam plumes. It is, however, highly visible from the road and from elevated vantage points around.

2.3.21 The landscape and visual impact assessment takes into account the LANDMAP assessment for the area. This classifies the development site as part of Landscape Character Area 2 ("Llynfi Valley Floor and Lower Slopes") which is described as an attractive rural area containing a network of irregular and small-scale pasture fields on land that gently rolls towards the River Llynfi with valley sides dissected by frequent tributaries creating a landform of rounded spurs between incised valleys.

2.3.22 It is largely a landscape of farmed valley sides, open topped hills and watercourses flanked by woodland. Hedges are common throughout the area and comprise mainly hawthorn with hedgerow trees. The more elevated areas contain commercial plantations, which often extend up onto the upland plateau.

2.3.23 Urban influences are generally limited. Settlement in the immediate vicinity of the paper mill is characterised by scattered dwellings and farmsteads. The central valley landscape is dominated by the large form of the Bridgend Paper Mills with landmark chimneys, along with pylons and other smaller industrial developments and sewage works dotted along the valley floor. There are extensive, open views across and along the valley and the landscape is of moderate value. Its capacity is moderate as a consequence of its undulating and generally well wooded character, which provides visual enclosure. However, open views across and out of the valley are important in places.

2.3.24 Two dwellings look across to the site. Bryn-y-fro, which lies at a distance of less than 400m to the west, has an open aspect towards the site. The nearest dwelling, Brynllywarch-fawr, has a southerly aspect, with a view directly across the existing mill site, the boundary of which is about 150m away; it is about 250m from the proposed high bay warehouse.

2.3.25 Other prominent features are the pylons of the 400kV overhead power line, which crosses the site east-west.

Water Resources

2.3.26 The WEPA UK Bridgend site is located to the southwest of a watercourse called Llynfi River (or Afon Llynfi) that flows in a generally south-easterly direction past the site. Two small tributaries drain onto the site from the west and combine to form Nant Gwyn. This stream then flows eastward into the river. These tributaries are mostly culverted beneath the site.

2.3.27 The Site's Environmental Permit (EPR/EP3738NG) and a separate abstraction licence (21/58/41/0015) allows for process water from existing operations on the site to be abstracted from the two watercourses. The permit also permits treated effluent from the plant to be discharged back to the river subject to strict water quality and temperature controls.

3.0 Description of the Development

3.1 Overview

3.1.1 The figures below display the established paper mill site as well as the proposed development, i.e. the new paper machine, from different angles.

Figure 3.1-1: South view of established paper mill site

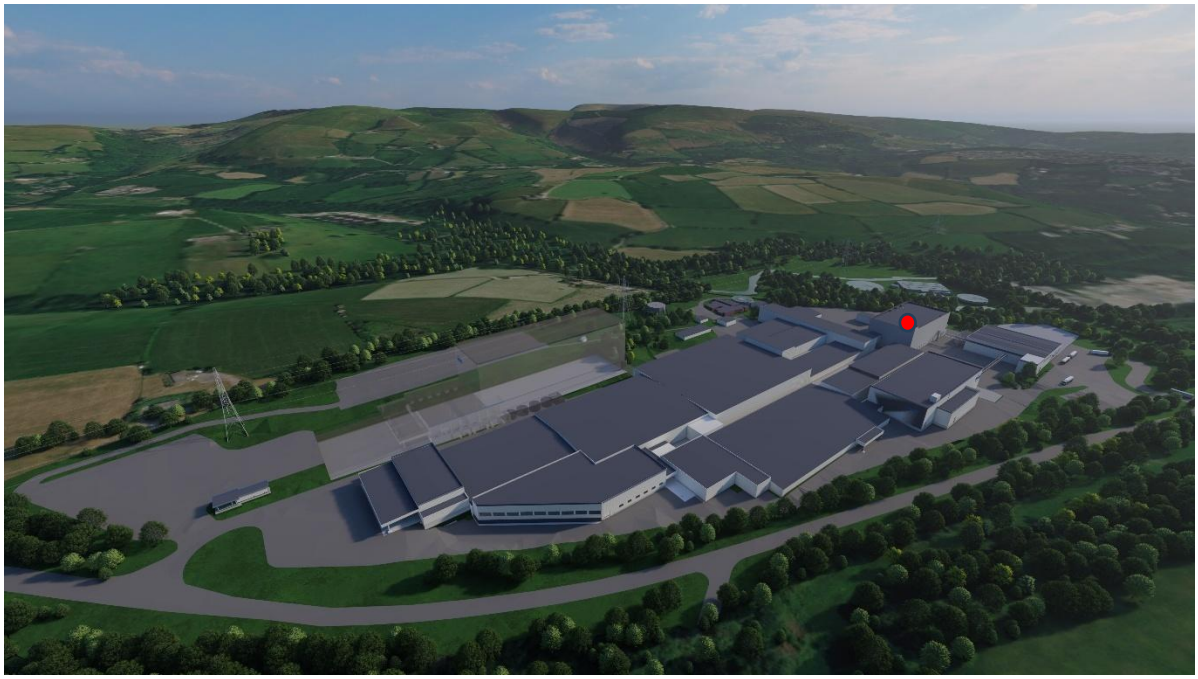
Figure 3.1-2: South view of proposed development

Red dot = new Vesta paper machine hall

Figure 3.1-3: Southeast view of proposed development

Red dot = new Vesta paper machine hall

Figure 3.1-4: Southwest view of proposed development



3.2 Alternatives and Design Evolution

3.2.1 A range of site layouts has been examined before culminating in the final design of the proposed development. Alternative design options for the proposed development are limited due to the existing physical site layout of the WEPA premises, and primarily due to the necessity of having the new paper machine as close as possible to the existing production facilities.

3.2.2 Moreover, the paper making process is linear and requires a large amount of space. Due to the site dimensions, existing equipment locations and site topography, space is very limited here. This means that there is only a limited number of different options to consider when deciding on the layout and design of the facility. With the existing facility design and layout being fixed, a straight forward design evolution took place which focused on ensuring that any impacts which resulted from the development were acceptable within the locality. This involved considering factors such as access, ecology and landscaping.

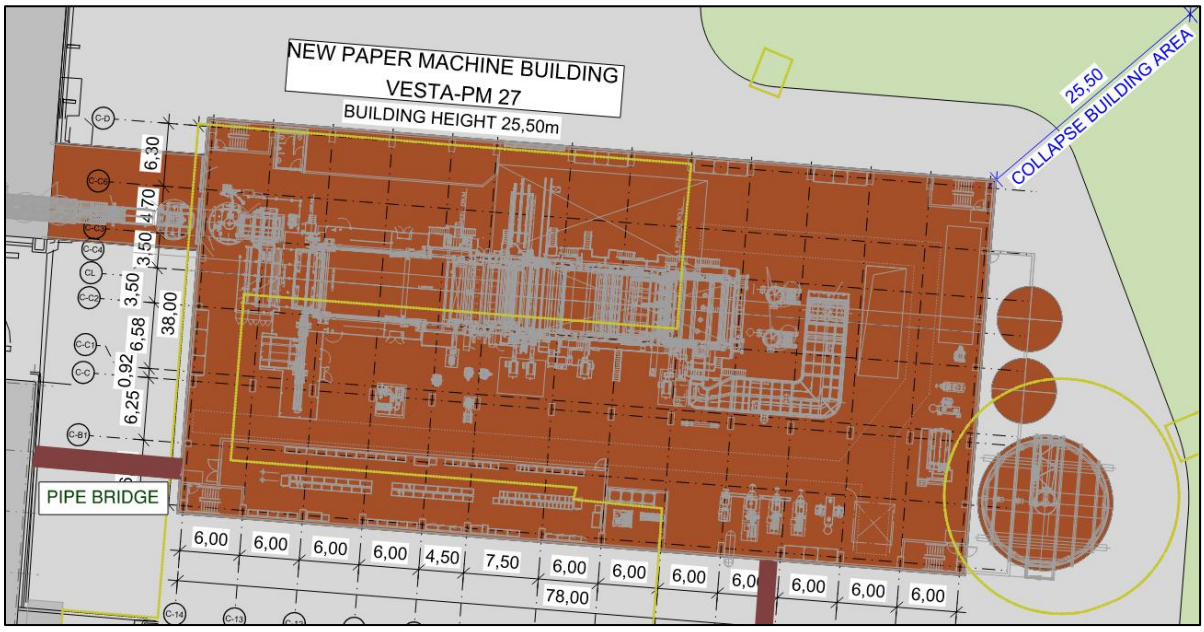
3.3 Detailed Layout and Design

3.3.1 The proposed development will include the following buildings and areas.

Paper Machine "VESTA"

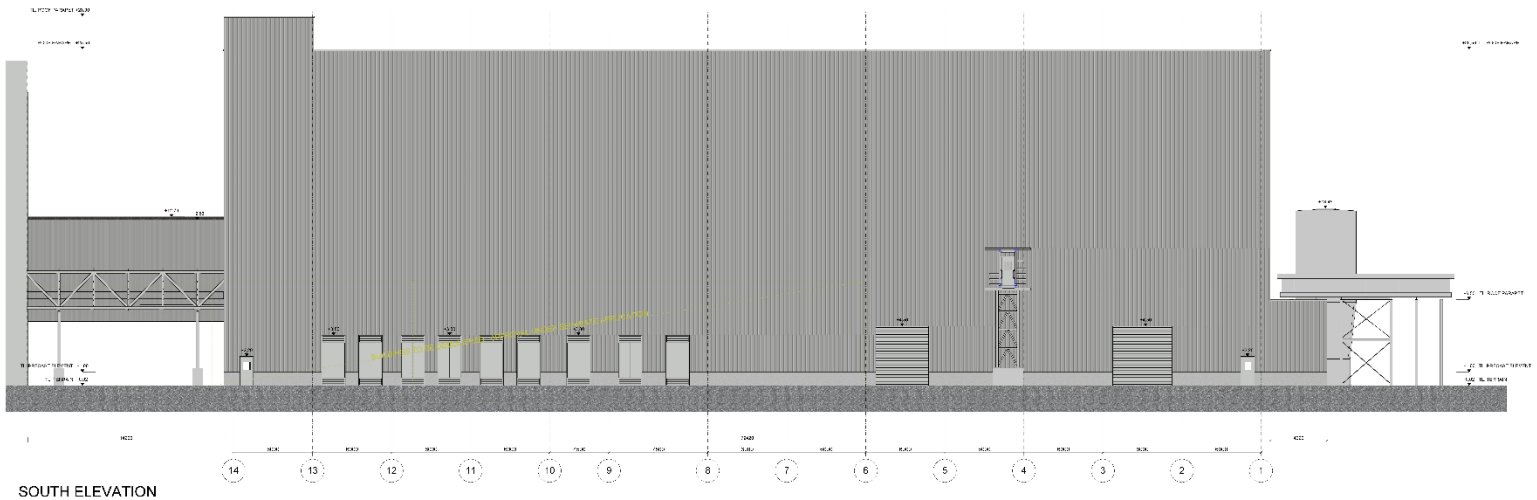
3.3.2 The paper machine building will be located to the north of the existing Department B building and to the east of the existing Jupiter building.

Figure 3.3-1: Location of Paper Machine building

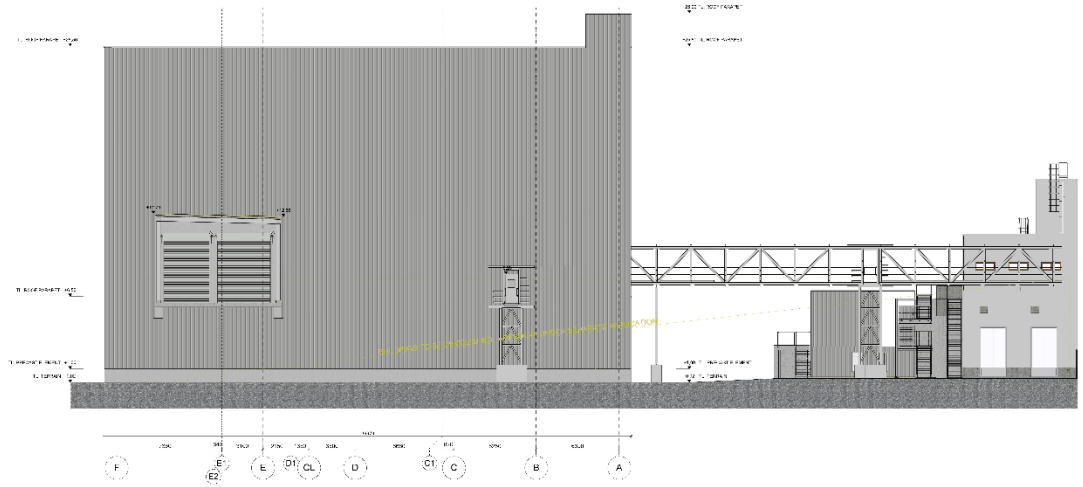


3.3.3 The paper machine building is the most complex of all the proposed structures on the WEPA site. The entire structure is designed using precast and in-situ concrete elements. The entire building is also statically isolated from the rest of the factory buildings. The entire paper machine and all associated process equipment are controlled and monitored from the PM control room. The footprint of this building will be around 3,100 m².

Figure 3.3-2: Elevations of Vesta paper machine building



SOUTH ELEVATION
1:100



WEST ELEVATION
1:100

bhm 2025

3.3.4 Inside the paper machine building, the pulp material is pumped to the heart of the paper production process, the paper machine. A highly diluted paper stock enters the forming and dewatering section to achieve the required quality characteristics for the jumbo reels. The paper machine is based on best available technology (BAT) and designed to produce a high-quality product with low energy consumption and minimal environmental impact.

3.3.5 A combination of fabrics and felts at a speed of up to 2.000 m/ min transfer the sheet from the forming section to the press section and into the drying section, which consists of a big steam heated yankee dryer (around 5,5 m in diameter) with gas fired high-temperature hoods (500°C). At the end of the papermaking process, the sheet will be creped off the Yankee dryer and wound into a reel. The so-called jumbo reels have a diameter of around 3 m and a width of each 2,80 m (2 parallel). The paper machine is normally operated by 2 people per shift.

3.3.6 The entire paper machine and all related process equipment are controlled from a central control room. Each shift has 10 people working in this area at any one time. These people are also responsible for the normal maintenance of the process equipment in the paper machine building. The control room is manned 24 hours a day, 7 days a week.

3.3.7 The maximum daily capacity of the Vesta paper machine will be 227 tonnes/ day.

Pipe Bridge

3.3.8 To keep the production process running, various media have to be supplied, shared or removed. The bridge is mainly occupied by pipelines. Steam pipes, water pipes, cable trays, etc. connect the existing bale handling section B to the new MV substation building and to the new Vesta paper machine building. The Vesta building will be connected to the existing Jupiter building by a second section of the pipe bridge.

Figure 3.3-3: Pipe bridge Dept. B – MV substation

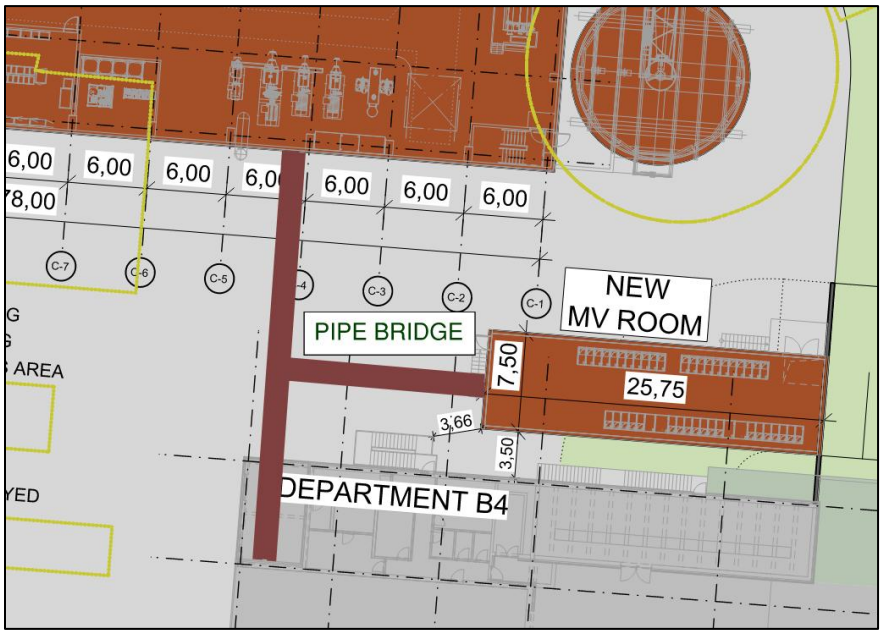
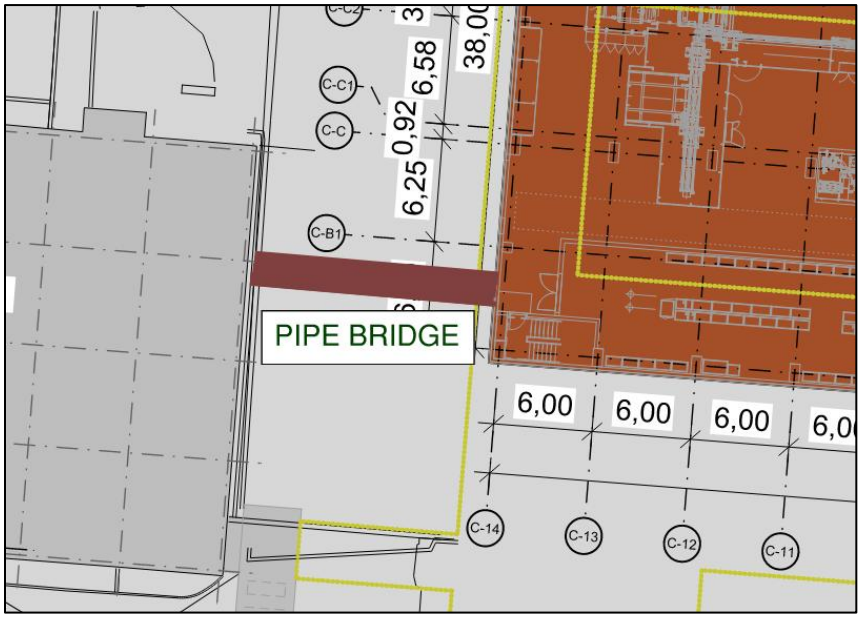


Figure 3.3-4: Pipe bridge Vesta - Jupiter



Utilities and site storm water

3.3.9 The main incoming power supply enters the Wepa site on the east side of the site, with MV cables running under the railway. The new MV substation is needed to house the cabinets that will be connected to the new MV cables that will be installed. The natural gas supply is sufficient for both paper machines and only requires a new connection for the new Vesta building. The existing supply of fresh (process) and potable water (from the River Llynfi under the current licence) is considered sufficient to meet the needs of the new Vesta paper machine, also taking into account that the existing Jupiter machine will be shut down prior to the start-up of the Vesta machine.

3.3.10 Steam will be supplied from the new steam boilers, which are to be constructed on the west side of the Neptune building as part of planning application P/24/406/FUL. The existing CHP plant will be demolished once the new steam boilers are operational.

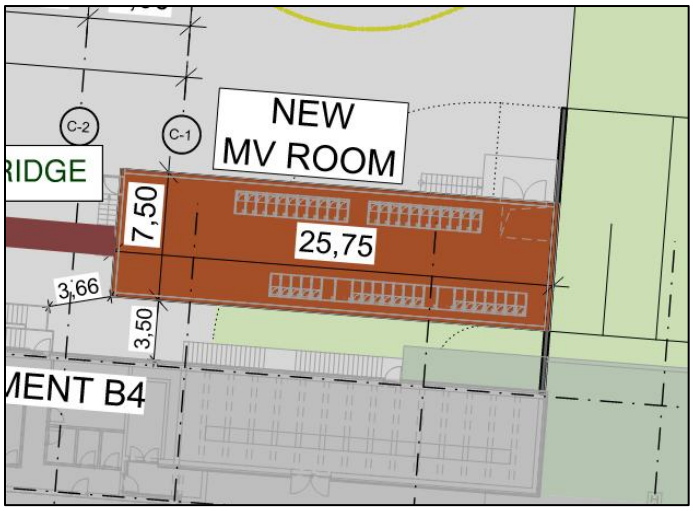
3.3.11 The effluent treatment plant, which is located to the north of the railway line, was originally designed for 4 paper machines and is currently used for the Jupiter and Neptune paper machines. Vesta will not be launched until the Jupiter engine has been shut down. This means that the wastewater treatment plant does not need to be adapted to allow the Vesta machine to operate.

3.3.12 The rainwater collection system will be adjusted in line with new paved areas and new buildings. Rainwater from the roofs of the departments will be discharged directly into the River Llynfi.

MV Substation

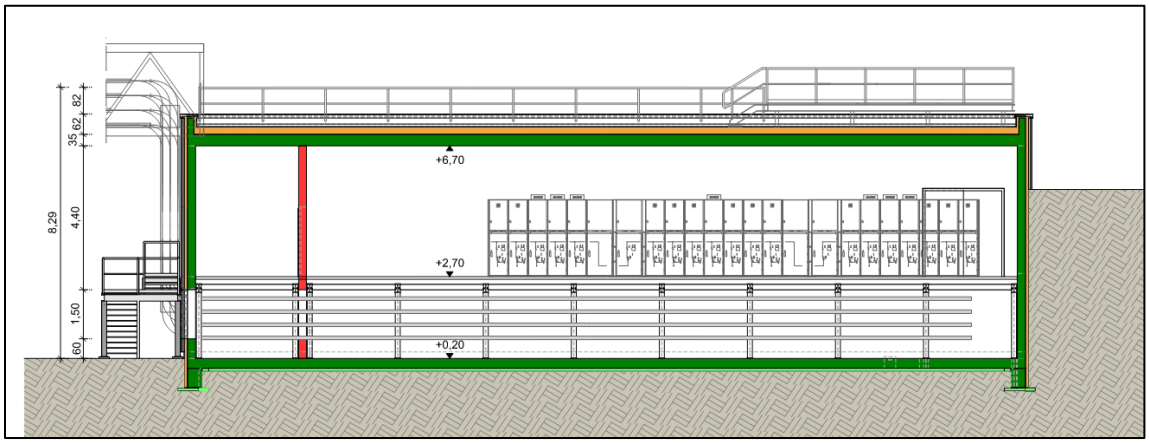
3.3.13 A separate planning application has been submitted for the new MV station. The new MV substation will be located to the north of the existing Bale Handling department. On the east side of the site, underground MV cables enter the Wepa site under the railway. Inside the MV substation, the cables will be laid in a special pit and connected to the electrical cabinets, which will be installed on an elevated steel floor at a height of approximately +2.70m.

Figure 3.3-5: MV substation



3.3.14 The MV substation is a concrete structure consisting of a concrete foundation, concrete walls and concrete roof slab. Inside the building, the support structure for the electrical cabinets is a raised steel floor. The area underneath the cabinets will be cable trays and will be used for the routing of cables between the individual cabinets.

Figure 3.3-6: Section of MV substation

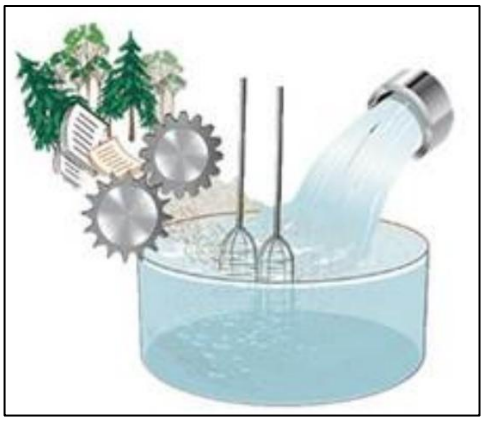


3.4 Description of paper making process

3.4.1 The key steps of the paper making process can be summarised as follows:

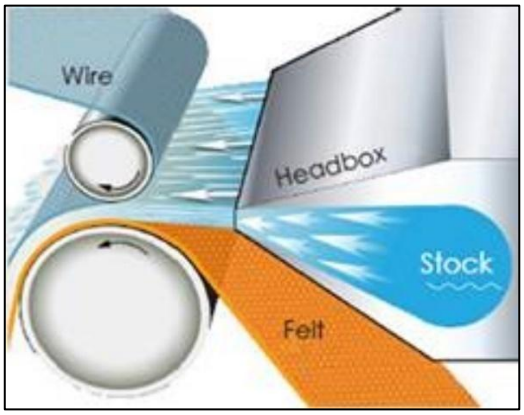
Creation of stock

The pulp is dissolved using water. The fibres in the pulp can be either virgin fibres or fibres derived from recycled paper. The virgin fibres are usually made from wood, but they can also be made from, for example, straw or sugar cane residues. When the pulp enters the machine, it is made up of more than 99 per cent of water and less than one per cent of fibre.



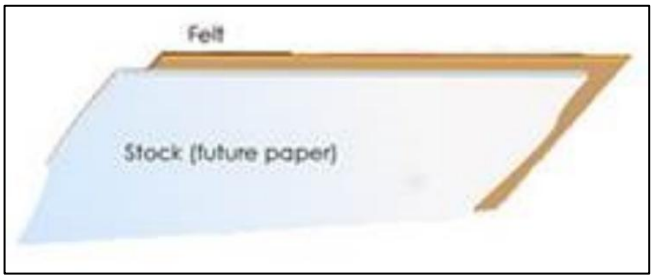
Headbox

In the headbox, stock is sprayed into the machine and spread across the full width of the machine in the gap between two rolls. One roll contains wire (screen fabric) and the other contains felt.



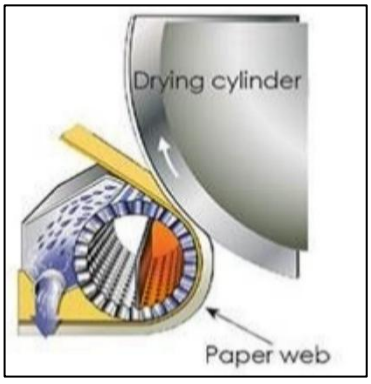
Felt

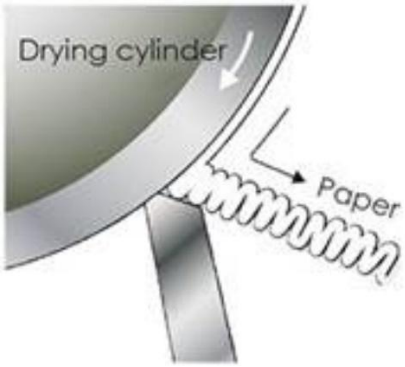
The stock attaches to the felt and follows it on into the machine. The felt is made of a thick textile and absorbs some of the water.



Pressing – press roll / shoe press

In the press roll section, the paper web is pressed between a suction press roll / shoe press and the large Yankee dryer. The suction press roll is perforated and, together with the felt, removes the water from the paper web.



Drying cylinder – Yankee The cylinder is heated with steam under pressure. The paper web sticks to the hot surface of the drying cylinder. Water is evaporated from the paper web. 	**Creping** The creped structure of the tissue paper is achieved by scraping the web from the drying cylinder with a steel blade. 
Rolling up The finished tissue paper is rolled onto large jumbo reels. The paper is now ready to be processed in other machines to make toilet rolls, kitchen rolls, tissues or paper towels.	

3.5 Waste Water Treatment

3.5.1 A large proportion of the total water used in the tissue paper production process is made available through intensive wastewater treatment, significantly reducing the total amount of fresh water taken from the River Llynfi. The treatment technology can be considered as a suitable and proven method.

3.5.2 The plant uses the biological oxygen demand (BOD) process which remains best available technology. For the biological process, the wastewater has to be conditioned, i.e. additional nutrition like nitrogen and phosphor has to be added to the water coming from the production plant. Any excess water will be discharged to the River Llynfi as present.

3.5.3 The current wastewater treatment system, which was installed in 1991, has the capability and capability of serving the new PM as well as the current PM. Taking into account that the new paper machine will use considerably less water, it can be assumed that there will no additional waste water being discharged into the waste water treatment plant.

3.6 Surface Water Drainage System

3.6.1 The surface water drainage system of the new development will be connected to the existing drainage system of the site.

3.7 Operational Releases

Emissions to Air

3.7.1 The new Vesta paper machine consumes significantly less energy than the existing Jupiter machine. This means that no additional air emissions are expected to occur when operating.

3.7.2 None of the air emissions from the proposed plant will give rise to odours beyond the boundary of the sites.

3.7.3 As the development will not generate any additional traffic movements, no additional air emissions are expected to result from the operation of the new development.

Emissions to Water

3.7.4 All aqueous discharge will be discharged to the River Llynfi after treatment in the existing Effluent Treatment Plant complying with the existing Discharge Consent.

Releases to Land

3.7.5 There will be no solid residues or air pollutants formed that will be disposed of to land. All waste would be returned to the original supplier where possible or removed by a licensed contractor.

Noise and vibration

3.7.6 A complete and detailed noise assessment has been carried out for the site and its surrounding and this has been submitted to the Local Authority as part of the Planning Application.

3.8 Construction Phase

3.8.1 As part of the engineering design work, a detailed programme for the development will be determined. Subject to planning permission, construction work is planned to start in 2026. The construction and commissioning phases of the proposed plant are expected to last approximately 15 months. Standard construction techniques for buildings, roads and pavements, lighting, utility services and telecommunications will be adopted. The full details on site construction are currently not available but would be provided as part of the final project design, depending on the equipment of the contractor selected. The construction workforce peak is anticipated to be between 100 and 120 personnel, however average numbers would be of the order of 70 to 90.

3.8.2 Standard construction techniques for buildings, roads and pavements, lighting, utility services and telecommunications will be adopted. The full details on all site construction activities are currently not available but would be provided as part of the final project design, depending on the equipment of the contractor selected.

3.8.3 Typical construction activities include

- Site preparation: Prior to the levelling of the site, topsoil will be stripped and removed from the site. Excavations will be required to construct foundations, trenches, buried services and basement structures, and to create temporary construction facilities and

working areas. On completion of the construction phase the laydown area will be returned to an appropriate state.

- Foundation piling: It will be necessary to undertake piling for the foundations due to the heavy loading and the tight tolerance on settlement.
- Civil engineering works will be required to create further foundations, buildings, services, roads etc.
- Steel erection – of structural steel frameworks.
- Mechanical plant: Plant and equipment will be located on foundations in the main construction areas, using a range of cranes and mobile plant and also includes the on-site assembly of any tanks, pipework and storage vessels.
- Electrical and Control: Electrical equipment, and control and instrumentation systems will be installed once the building enclosure has been completed.

3.8.4 For excavation works, several excavators and dump trucks will be in operation. After the main excavation works boring machines for pile foundations will be on site for a period of approximately 3 months for phase 1 and 3 months for phase 3. During the construction phase, several cranes and mobile cranes will be in operation. Mobile cranes will be mainly used for erection of pre-cast elements and steel structures. Trucks with trailers will transport heavy pre-cast elements to the site.

3.9 Access

3.10 Operational Traffic

3.10.1 The existing WEPA site has two access points. One at the north-western end of the site, which, through the development of the site, was upgraded in 2019. In order to facilitate the development of the Neptune paper machine in 2019, a second vehicle access point has been constructed at the southern end of the site, primarily to allow HGV access to the site.

Figure 3.9-1: Main Site Access

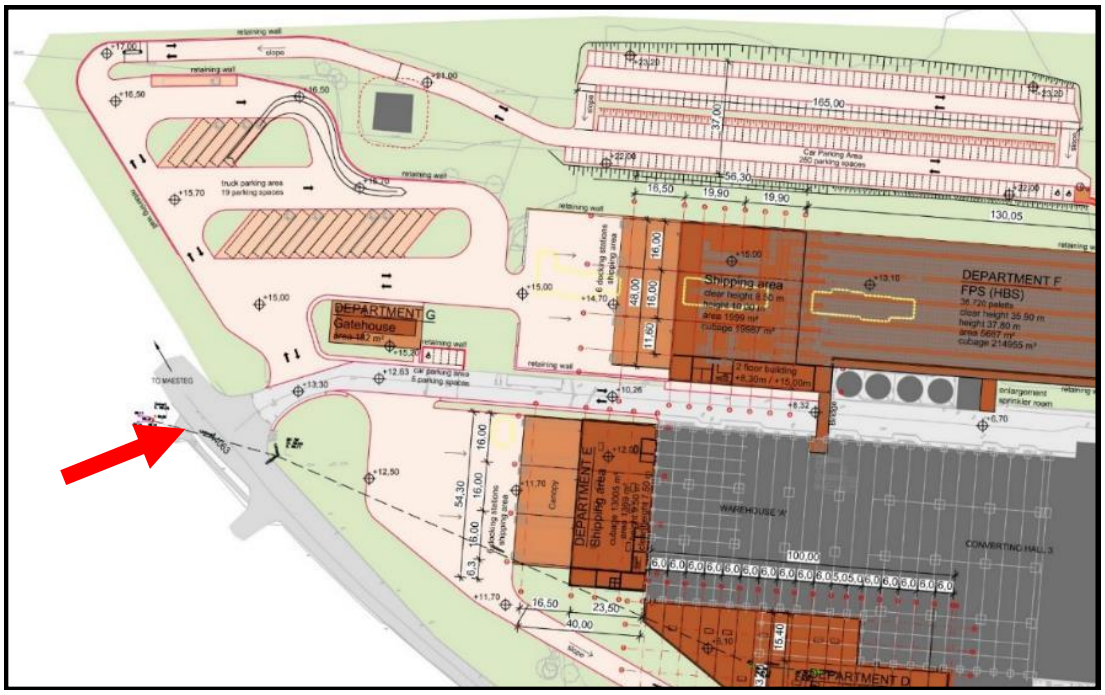
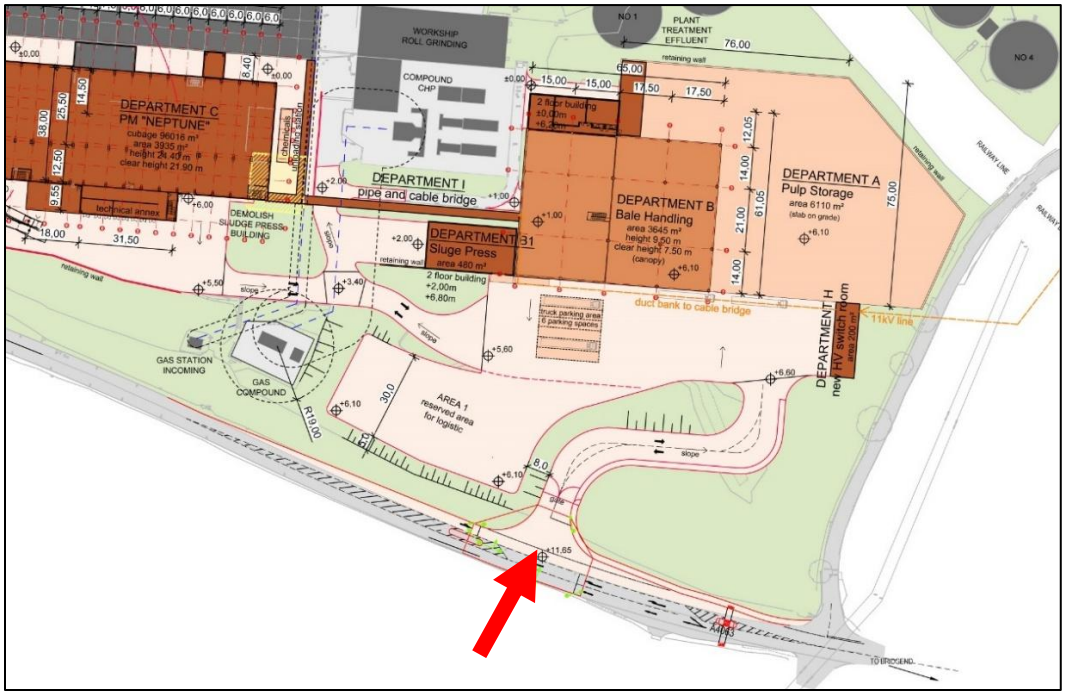


Figure 3.9-2: Secondary Site Access



3.10.2 The A4063 is a suitable route for HGVs and current traffic conditions on this route are considered to be satisfactory. The A4063 provides access to the M4 Junction 36 and Bridgend to the south. Access to Cardiff is provided by the M4, at Junction 32 located approximately 20 miles southeast of the development site.

3.10.3 There will be different sized vehicles servicing the site for

- delivery of raw materials,
- dispatch of goods,
- operational maintenance,

alongside with normal ‘domestic’ vehicular traffic generated by employees.

3.10.4 The maximum anticipated length of vehicles would be 16.5m.

3.10.5 The overall number of vehicles using both the main (primary) entrance and the new secondary access will vary through to project maturity:

3.10.6 In relation to dispatch of goods, all lorry spaces are located remotely from the main access road to the site. Each delivery has a designated window of time within which they will arrive. In the event of trucks arriving too early for shipping or in case of all docking stations being occupied, they have to wait on the truck parking area in front of the Gate House; 19 parking spaces for HGVs will be provided close to the primary access at the western entrance of the Site. In relation to delivery of raw material, stock is stored in open hardstanding areas located remotely from the public highway with abundant space; potential delay to offloading is minimal and manageable.

Pedestrian Access / Walking

3.10.7 The site is in a rural location and is completely fenced, therefore it is not accessible by foot/ cycle. There are no footpaths along the A4063 leading to the WEPA site.

Cycle provisions on-site

3.10.8 There is no cycleway along the A4063 leading to the WEPA site.

3.10.9 The new car park comprises 15 cycle parking stands on site.

3.11 Construction Management

3.11.1 Construction management would be undertaken by an approved and experienced contractor or contractors, in accordance with a Construction Environmental Management Plan (CEMP). The CEMP would be maintained as a 'live' document that would be updated throughout the planning and construction process, taking account of proposed mitigation and other planning commitments as required.

Construction Hours of Working

3.11.2 The following hours of operation are proposed for the construction works unless otherwise agreed in writing by the relevant planning authority:

- Monday to Friday – 07:00 - 19:00 hours; and
- Saturdays – 07:00 – 16:00.

3.11.3 There is likely to be some exceptions to the above where 24-hour construction would be required. This could be for activities taking place within buildings, including installation of plant and equipment, fitting out, and certain activities that may need to be undertaken on a continuous basis for certain purposes, such as continuous concrete pours and piling.

Construction Traffic

3.11.4 The traffic effect of construction of the proposed development is limited to a finite period (approx. 15 months) and will be along the traffic routes employed by haulage vehicles, construction vehicles and employees' vehicles (particularly Bridgend). The principal construction activities with transportation implications are:

- removal of excavated material,
- delivery of materials for new development, and
- movements of heavy plant.

3.11.5 Several abnormal load deliveries will be required to route to the site at some stage of the construction phase to deliver large scale construction kit. It is not yet known what technical kit will be required and therefore it is difficult to determine the number of movements this will generate. Full routing agreement and delivery timeframe details will be sought from the Local Highways Authority once further details on abnormal loads are identified.

3.12 Parking

3.12.1 In the event of trucks arriving too early for shipping or in case of all docking stations being occupied, HGVs would have to wait on the truck parking area in front of the Gatehouse. 19 parking spaces for HGVs will be provided at the main entrance of the Site. The HGV parking spaces are located off the main access road to the site.

3.12.2 Vehicle parking is provided across the Site. Employees working in the production areas (paper machine, converting, storages, etc.) have a separate access from the main car park, accessing the site via a footpath.

3.13 External Lighting

3.13.1 Lighting would be installed throughout the entire Site. Lighting would be restricted to the minimum and would not cause harm to the public or the environment. Lighting installed during both the construction and operational phases would be controlled to prevent undue levels of spill, glare or sky glow.

3.13.2 Current unnecessary flood lighting would be removed. The locations and lighting specification would be agreed in consultation with Bridgend Borough County Council.

4.0 Planning Policy Context

4.1 Introduction

4.1.1 This Chapter of the Environmental Statement (ES) sets out the current planning policy framework relevant to the proposed development. Rather than assessing the development against the policy framework, the intention of this Chapter is to provide a summary of the planning policy framework within which the development should be assessed at the European, national, regional, and local levels.

4.1.2 The planning policy context to the proposed development, and its performance against that context, has been addressed in detail in the standalone Planning Statement which accompanies this application.

4.1.3 This chapter only summarises the policy context to the EIA. For example, it identifies planning policies which help to determine the sensitivity of the environment and receptors. The individual chapters throughout this ES assess the development within the context of the relevant sector policies.

4.1.4 National and regional planning policy is contained within Planning Policy Wales (PPW) which provides an overall strategic framework. Regard is also given to Technical Advice Notes (TANs), which are material considerations in the decision-making process by Bridgend Council.

4.1.5 The local planning policy framework for the determination of this application is provided by the Bridgend Replacement Local Development Plan (RLDP, 2018-2033).

4.2 National Welsh Policies

4.2.1 Planning Policy Wales (PPW) is the Welsh Government's overarching national planning guidance as it identifies land use planning policy guidance for Wales.

4.2.2 Planning Policy Wales (PPW) (Edition 12, February 2024) is the Welsh Government's overarching national planning guidance as it identifies land use planning policy guidance for Wales. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales.

4.2.3 Furthermore, the PPW sets out how the planning system at a national, regional and local level can assist in delivering these requirements through Strategic Development Plans

(SDPs) and Local Development Plans (LDPs). This includes guidance for the appliance of national planning policy in LDPs to ensure that in the drafting stage, relevant policy statements are included. PPW is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars and policy clarification letters which together with the PPW provide the National Planning Policy Framework for Wales (paragraph 1.1).

4.2.4 The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and culture wellbeing of Wales as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation. A well-functioning planning system is fundamental for sustainable development and achieving sustainable places (paragraph 1.2).

4.2.5 Paragraph 1.18 confirms that a planned approach is the most efficient way to secure sustainable development through the planning system and it is essential that plans are adopted and kept under review. Legislation secures a presumption in favour of sustainable development in accordance with the Development Plan unless material considerations indicate otherwise to ensure that social, economic, cultural and environmental issues are balanced and integrated.

4.2.6 Relevant Welsh National Planning Policy is summarised in Table 4.2-1.

Table 4.2-1: Welsh National Planning Policy

Planning Policy Wales	Requirement
Paragraph 2.8	requires that Planning policies, proposals and decisions must seek to promote sustainable development and support the well-being of people and communities across Wales.
Paragraph 3.7	Developments should seek to maximise energy efficiency and the efficient use of other resources (including land), maximise sustainable movement, minimise the use of non-renewable resources, encourage decarbonisation and prevent the generation of waste and pollution
Paragraph 3.36	outlines the utilization of the Sustainable Management of Natural Resources (SMNR) methodology by the planning system, with the following identified as its primary components: • Improving the resilience of ecosystems and ecological networks, • Halting and reserving the loss of biodiversity, • Maintaining and enhancing green infrastructure based on seeking multiple ecosystem benefits. • ensuring resilient locational choices for infrastructure and built development, taking into account water supplies, water quality and reducing, wherever possible, air and noise pollution and environmental risks, such as those posed by flood risk, coastal change, land contamination and instability;

Planning Policy Wales	Requirement
Paragraph 3.55	Previously developed (also referred to as brownfield) land should, wherever possible, be used in preference to greenfield sites where it is suitable for development. In settlements, such land should generally be considered suitable for appropriate development where its re-use will promote sustainability principles, and any constraints can be overcome
Paragraph 5.4.1	For planning purposes, the Welsh Government defines economic development as the development of land and buildings for activities that generate sustainable long-term prosperity, jobs and incomes. The planning system should ensure that the growth of output and employment in Wales is not constrained by a shortage of land for economic uses.
Paragraph 5.4.4	confirms that planning authorities should encourage and support developments which generate economic prosperity and sites identified for employment use should be protected.
Paragraph 6.1.6	The Welsh Government's specific objectives for the historic environment seek to: • protect the Outstanding Universal Value of the World Heritage Sites; • conserve archaeological remains, both for their own sake and for their role in education, leisure and the economy; • safeguard the character of historic buildings and manage change so that their special architectural and historic interest is preserved; • preserve or enhance the character or appearance of conservation areas, whilst the same time helping them remain vibrant and prosperous; • preserve the special interest of sites on the register of historic parks and gardens; and • protect areas on the register of historic landscapes in Wales.
Paragraph 6.2.5	Green Infrastructure Statements should also be submitted with all planning applications.
Paragraph 6.4.5	includes the need for all development to deliver a net benefit for biodiversity (NBB) and ecosystem resilience.
Paragraph 6.2.8	Further fragmentation of habitats is avoided wherever possible, and green networks, corridors, and habitat connections within developed areas are protected and improved.
Paragraph 6.6.25	Development should reduce, and must not increase, flood risk arising from river and/or coastal flooding on and off the development site itself. The priority should be to protect the undeveloped or unobstructed floodplain from development and to prevent the cumulative effects of incremental development

Planning Policy Wales	Requirement
Paragraph 6.6.26	TAN 15: Development and Flood Risk should be referred to for further policy advice on development and flood risk.
Paragraph 6.7.3	Certain sounds, such as those created by trees, birds or water features, can contribute to a sense of tranquillity whilst others can be reassuring as a consequence of their association with the normality of everyday activities. Problematic forms of sound are generally experienced as noise pollution and can affect amenity and be prejudicial to health or a nuisance. Noise action plans drawn up by public bodies aim to prevent and reduce noise levels where necessary and preserve soundscape quality where it is good.
Paragraph 6.7.4	The planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution alongside action to tackle high pollution hotspots. In doing so, it should consider the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and pursue any opportunities to reduce, or at least, minimise population exposure to air and noise pollution, and improve soundscapes, where it is practical and feasible to do so.
Paragraph 6.7.5	In taking forward these broad objectives the key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments. Air Quality and soundscape influence choice of location and distribution of development and it will be important to consider the relationship of proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes. The agent of change principle says that a business or person responsible for introducing a change is responsible for managing that change. In practice, for example, this means a developer would have to ensure that solutions to address air quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable.
Paragraph 6.7.6	In proposing new development, planning authorities and developers must therefore: • address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors. • not create areas of poor air quality or inappropriate soundscape; and • seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.
Section 6 Distinctive Places	The role of landscapes, historic environments, habitats, biodiversity, and the unique characteristics of coastal, rural, or urban environments in

Planning Policy Wales	Requirement
	contributing to natural and distinctive places are recognised, appreciated, protected, and improved.
Section 6 Distinctive and Natural Linkages	The features and characteristics of sites designated for their landscape or nature conservation significance are fully evaluated and safeguarded, while the network of sites is acknowledged as the foundation for improving the resilience of ecosystems. The opportunity to enhance the resilience of ecosystems is seized in all areas by addressing issues such as building on floodplains, diffuse pollution, soil compaction and sealing, ensuring the protection of peat resources, and improving coastal flood defense strategies in urban areas and coastal margins.

4.3 Technical Advice Notes

4.3.1 PPW is supplemented by a series of 19 topic based Technical Advice Notes (TANs) which provide practical guidance relating to various forms of development and the role of the planning system in dealing with the determination of planning applications. Each relevant TAN is covered within its own subsection later in this document.

4.3.2 The following TANs are considered relevant to the determination of a future planning application on the development site:

- TAN 5: Nature Conservation and Planning (2009)
- TAN 6: Planning for Sustainable Rural Communities
- TAN 11: Noise (1997)
- TAN 12: Design (2016)
- TAN 15: Development and Flood Risk
- TAN 18: Transport (2007)
- TAN 23: Economic Development (2014)

Table 4.3-1: Relevant Technical Advice Notes

TAN	Description
TAN 5: Nature Conservation and Planning	TAN 5 provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. It seeks to demonstrate how local planning authorities, developers and key stakeholders in conservation can work together to deliver more sustainable development that does not result in losses from the natural heritage but instead takes every opportunity to enhance it. Paragraph 1.6.1 states that;

TAN	Description
	'*Biodiversity conservation and enhancement is an integral part of planning for sustainable development. The planning system has an important part to play in nature conservation (PPW paragraph 5.2.7). The use and development of land can pose threats to the conservation of natural features and wildlife. Past changes have contributed to the loss of integrity of habitat networks through land-take, fragmentation, severance, disturbance, hydrological changes and other adverse impacts. But development can also present significant opportunities to enhance wildlife habitats and the enjoyment and understanding of the natural heritage*.'
TAN 6: Planning for Sustainable Rural Communities	TAN 6 makes reference to the need to 'protect and enhance the natural and historic environment'.
TAN 11: Noise	TAN 11 provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development. Local planning authorities should consider whether proposals for new noise-sensitive development would be incompatible with existing activities, taking into account the likely level of noise exposure at the time of the application and any increase that may reasonably be expected in the foreseeable future.
TAN 12: Design	The purpose of TAN 12 is to equip those involved in the design of development with advice on how 'Promoting sustainability through good design' and 'Planning for sustainable building' may be facilitated through the planning system. The Welsh Government is strongly committed to achieving the delivery of good design in the built and natural environment which is fit for purpose and delivers environmental sustainability, economic development and social inclusion, at every scale throughout Wales. TAN 12 states that local planning policies and guidance should aim to ensure that: • 'Create places with the needs of people in mind, which are distinctive and respect local character; • Promote layouts and design features which encourage community safety and accessibility; • Focus on the quality of the places and living environments for pedestrians rather than the movement and parking of vehicles; • Avoid inflexible planning standards and encourage layouts which manage vehicle speeds through the geometry of the road and building; • promote environmental sustainability features, such as energy efficiency, and make clear specific commitments to carbon reductions and/or sustainable building standards; • secure the most efficient use of land including appropriate densities; and • consider and balance potential conflicts between these criteria."

TAN	Description
	Paragraph 2.7 of TAN 12 highlights a holistic approach to design and it requires a shift in emphasis away from total reliance on prescriptive standards, which can have the effect of stifling innovation and creativity. Instead, everyone involved in the design process should focus from the outset on meeting a series of objectives of good design (See paragraph 4.3.20).
TAN 15: Development and Flood Risk	The aim of TAN 15 is to direct new development away from those areas which are at high risk of flooding, stating that development should only be justified in higher risk areas if it can be demonstrated that the potential consequences of a flooding event for the particular type of development have been considered, and found to be acceptable. The guidance includes the definition of different flood zones, A, B and C, based on probability of flooding. Zone C is further sub-divided into Zone C1 and Zone C2. Zone C1 refers to areas with flood defences and Zone C2 is areas without any flood defences. All of Zone C refers to areas with an estimated probability of flooding of 0.1% or more (less than 1 in 1000 years return period). Para 6.2 of TAN 15 states that 'new development should be directed away from Zone C land towards suitable land in Zone A, otherwise to Zone B, where river and coastal flooding will be less of an issue'. The guidance recognises that in some cases development may be required in areas at risk of flooding (i.e. Zones B and C). TAN 15 provides further guidance on land uses which are acceptable in the defined flood zones, and utilities infrastructure is classed as 'less vulnerable development'. It is therefore permitted in Zone C2 subject to meeting justification criteria defined in Section 6 of TAN 15 and the provision of a Flood Consequences Assessment (FCA).
TAN 18: Transport	TAN 18 has also been taken into consideration. This TAN sets out Government's aim to increase sustainable transport options, minimise the requirement to travel via private car and improve accessibility, helping to meet objectives for social inclusion in doing so. The TAN notes that planning authorities' development plan strategies should provide more choices of travel than a private car. In relation to rural areas, transport options are substantially restricted in comparison to larger settlements. The car is subsequently an important means of transportation and accessibility. Transportation which is efficient and sustainable is key for 'a modern, prosperous and inclusive society'. For this reason, accessibility is a key focus for reducing rural isolation.
TAN 23: Economic development	TAN 23 provides a framework of how development and its economic benefit should be positively sought, balancing social, economic and environmental considerations in doing so. This particular TAN directly focuses on B-class development. It notes that the PPW defines economic development broadly so that it can include any form of development that generates wealth, jobs and income.

TAN	Description
	Section 3 of the Note discusses 'Economic Development and the Rural Economy'. Paragraph 3.1.1 states that; 'A wide range of economic activities may be sustainably accommodated in rural areas, and this is recognised in PPW and other TANs, in particular TAN 6 Planning for Sustainable Rural Communities.' As part of the High Level Planning Objectives, Paragraph 1.2.1 notes that economic benefit of developments may be geographically widespread which should be captured and that in this instance, planning should be targeted towards communities particularly disadvantaged (Paragraph 1.2.4). Chapter 7 of PPW defines the Welsh Government's objectives for the delivery of economic development through the planning system. Para 7.1.3 states: "*The planning system should support economic and employment growth alongside social and environmental considerations within the context of sustainable development*." The guidance seeks to ensure that economic development is encouraged and advises Local Authorities to support the shift towards a low carbon economy. PPW states that Local Planning Authorities should…"*look favourably on proposals for new on-site low carbon energy generation* (para 7.4.1)*; adopt a positive and constructive approach to applications for economic development (*paragraph 7.6.1*); take account of the likely economic benefits of the development [when determining planning applications] based on robust evidence*" (paragraph 7.6.1).

4.3.3 Section 3 of the Note discusses 'Economic Development and the Rural Economy'. Paragraph 3.1.1 states that; *'A wide range of economic activities may be sustainably accommodated in rural areas, and this is recognised in PPW and other TANs, in particular TAN 6 Planning for Sustainable Rural Communities*.'

4.3.4 As part of the High Level Planning Objectives, Paragraph 1.2.1 notes that economic benefit of developments may be geographically widespread which should be captured and that in this instance, planning should be targeted towards communities particularly disadvantaged (Paragraph 1.2.4).

4.3.5 The guidance seeks to ensure that economic development is encouraged and advises Local Authorities to support the shift towards a low carbon economy.

4.4 Local Planning Policies

4.4.1 This section provides details on the local policy framework that the proposed development falls within. A review of the local policies applicable to the proposed development has been undertaken.

4.4.2 The local planning policy framework for the determination of this application is provided by the Bridgend Replacement Local Development Plan (RLDP, 2018-2033).

Bridgend County Borough Council Local Development Plan (2018-2033)

4.4.3 The relevant planning framework for Bridgend Council is the Bridgend Local Development Plan (LDP), which was adopted in March 2024. It provides development strategy and spatial policy framework for the future development of Bridgend up until 2033. The LDP contains detailed policies which control the form of new development and set out what new development should look like. All planning applications have to be assessed against the Local Plan policies, which include a broad range of planning related matters. The following policies contained within the LDP are considered to be of relevance to the site and to proposed development in general.

Table 4.4-1: Summary of Policies relevant to development

Strategic Policy SP3 – Good Design and Sustainable Place Making
Good design is fundamental to creating sustainable places where people want to live, work and socialise. All development must contribute to creating high quality, attractive, sustainable places which enhance the community in which they are located, whilst having full regard to the natural, historic and built environment by: 1) Demonstrating alignment with the principles of Good Design; and 2) Demonstrating a Sustainable Placemaking approach to their siting, design, construction and operation. Planning applications must be supported through the submission of appropriate design and technical information to demonstrate compliance with the following criteria: a) Have a design of the highest quality possible, whilst respecting and enhancing local distinctiveness and landscape character; b) Be appropriate to its local context in terms of size, scale, height, massing, elevational treatment, materials and detailing, layout, form, mix and density; c) Use land efficiently by being of a density which maximises the development potential of the land whilst respecting that of the surrounding development; g) Avoid or minimise noise, air, and soil and water pollution; h) Incorporate methods to ensure the site is free from contamination (including invasive species); i) Safeguard and enhance biodiversity and integrated multi-functional green infrastructure networks; j) Make sustainable use of natural resources, including land and water, and adopt circular economy principles that: i. prioritise locally sourced construction materials to help reduce transport emissions ii. Demonstrate that consideration has been given to the use of secondary recycled aggregates or materials before using primary materials to help ensure the availability of materials in the long term; k) Ensure that the viability and amenity of neighbouring uses and their users/occupiers will not be adversely affected; l) Incorporate appropriate arrangements for the disposal of foul sewage, waste and water; m) Respond to the climate emergency by:

Strategic Policy SP3 – Good Design and Sustainable Place Making

i. Reducing energy demands and maximising opportunities for renewable or low carbon energy generation, incorporating resource efficient/adaptable buildings and layouts using sustainable design and construction techniques

ii. Protecting and increasing the resilience of both ecosystems and communities to address the inevitable effects of climate change; and

n) Include the provision of high-speed digital infrastructure from the outset; and

o) Appropriately contribute towards local, physical, social and community infrastructure which is affected by the development.

A Landscape Visual Impact Assessment must accompany development proposals on allocated sites with identified likely significant adverse effects (pre-mitigation) in relation to SA Objective 14 (Landscape).

SP4: Mitigating the Impact of Climate Change

All development proposals must make a positive contribution towards tackling the causes of, and adapting to the impacts of Climate Change. Means of achieving this may include:

1) Having a location and layout which reflects sustainable transport and access principles, thereby reducing the overall need to travel (active travel);

2) Having low / zero carbon energy requirements by reducing energy demand, and promoting energy efficiency;

3) Utilising low carbon, local materials and supplies (adopting circular economy principles);

4) Encouraging the development of renewable and low/zero carbon energy generation;

5) Having a design, layout and landscaping which:

(i) helps wildlife and habitats to adapt to the changing climate;

(ii) assists cooling of the urban environment, including the use of passive building techniques where appropriate;

6) Using resources more efficiently, including averting waste generated from demolition and minimising waste water use and pollution;

7) Directing development away from flood risk areas, and avoiding development that increases the risk of flood and coastal erosion, including through the deployment of sustainable urban drainage systems where relevant.

All applications for development proposals must clearly demonstrate how they contribute to climate change mitigation and adaption.

SP5: Sustainable Transport and Accessibility

Development must be located and designed in a way that minimises the need to travel, reduces dependency on the private car and enables sustainable access to employment, education, local services and community facilities. Development must also be supported by appropriate transport measures and infrastructure, and depending on the nature, scale and siting of the proposal will be required to:

1) Accord with the sustainable transport hierarchy for planning (as set out in PPW);

2) Be designed to provide safe and efficient access to the transport network, which includes the active travel, public transport and street networks;

3) Safeguard, enhance and expand the active travel networks identified in the Council's Existing Routes Map and ATNM, including links to those networks as a means of improving connectivity;

4) Prioritise the delivery of the key transport measures and schemes identified in the Bridgend Local Transport Plan, which must be delivered in an efficient and timely manner in accordance with land use development. This includes resolving localised junction capacity issues where they restrain growth;

5) Reduce reliance on private car use by maximising the potential of movement to/ including for the urban area ensuring developments are served by walking routes to public transport networks;

SP5: Sustainable Transport and Accessibility
6) Adopt a placemaking approach in the identification, design and delivery of all transport measures in order to maximise their contribution to sustainable development; 7) Provide new transport infrastructure and improvement measures to mitigate the impact of the development and demonstrate the level and acceptability of impacts on the surrounding road network; 8) Help to reduce transport related airborne pollution by enabling more sustainable travel choices and reducing the demand for travel by car; and 9) Ensure that developments are served by appropriate parking provision, in accordance with the Council's parking guidance, including infrastructure which caters for future technological developments such as electric vehicle charging points, and circulation areas, including adequate road widths to allow access for service vehicles.

PLA6: Development in Transport Corridors
The following transport corridors are identified as the main routes in the County Borough for the movement of people and goods: PLA6(2): Llynfi New development proposals must be located in areas which can be effectively accessed so that the impact of road freight movement on the environment is minimised.

PLA8: Transportation Proposals
The following transportation proposals are allocated and safeguarded from development that would prevent their implementation: PLA8(1): Bus improvements along the Llynfi, Garw, Ogmore, Aberkenfig – Bryncethin, Pyle – Aberkenfig, Pencoed – Pyle and Porthcawl – Cornelly Corridor, including a new bus interchange at Porthcawl PLA8 (10): Improvements to A4063 between Sarn and Maesteg

PLA11: Parking Standards
All development must be served by appropriate levels of parking in accordance with the adopted SPG on parking standards. Consideration must be given to electric and Ultra Low Emission Vehicles.

SP11 Employment Land Strategy
Opportunities for economic growth will be facilitated by directing employment generating development to the most appropriate and sustainable locations, supporting expansion of existing businesses and ensuring strong spatial alignment between housing and employment growth.

ENT2 – Protection of Employment Sites
In order to protect the employment function of existing business and employment sites, development will be permitted at the following sites where: a) it falls within Use Class B1, B2 or B8; b) in appropriate locations, it provides an ancillary facility or service that supports the primary employment use; or c) It is an appropriate waste management facility compatible with existing industrial and commercial activities. 31) Georgia Pacific Uses: B1, B2 & B8

ENT15 – Waste Movement in New Development

All proposals for new built development should include provision for the proper design, location, storage and management of waste generated by the development both during construction and operation of the site.

Development must incorporate, as appropriate, adequate and effective provision for the storage, recycling and other sustainable management of waste, and allow for appropriate access arrangements for recycling and refuse collection vehicles and personnel.

SP17 Conservation and Enhancement of the Natural Environment

Development which will maintain and, wherever possible, enhance the natural environment of the County Borough will be favoured. Development proposals will not be permitted where they will have an adverse impact upon:

- The integrity of the County Borough's countryside;
- The character of its landscape;
- Its biodiversity and habitats; and
- The quality of its natural resources including water, air and soil.

Areas having a high and/or unique environmental quality will be protected and the following strategically important areas within the County Borough will specifically be protected from inappropriate development which directly or indirectly impacts upon them:

- SP17(1) National Site Network Sites (including Special Areas of Conservation (SACs);
- SP17(2) Sites of Special Scientific Interest (SSSIs);
- SP17(3) Kenfig and Merthyr Mawr National Nature Reserves (NNRs);
- SP17(4) The Glamorgan Heritage Coast;
- SP17(5) Mynydd Margam Registered Historic Landscape.

The weight to be afforded to environmental designations in the determination of relevant planning applications will be based on their statutory or non-statutory status and geographical scale of designation.

Proposals likely to have direct or indirect adverse effects on Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Ramsar sites, must be subject to Habitats Regulations Assessment (HRA).

The importance and features of Sites of Importance for Nature Conservation (SINCs) and local wildlife sites must also be considered as appropriate in the determination of relevant planning applications.

DNP1: Development in the Countryside

The site is located outside of any settlement boundary as defined by Policy SF1: Settlement Hierarchy and Urban Management of the Replacement Local Development Plan (RLDP) adopted in 2024 and, therefore, located in the countryside where Policy DNP1: Development in the Countryside of the LDP sets a presumption against development in the countryside, except where it is for:

1) Agriculture and/or forestry purposes;

2) The winning and working of minerals;

3) Appropriate rural enterprises where a countryside location is necessary for the development;

4) The implementation of an appropriate rural enterprise/farm diversification project;

5) The expansion of an existing business (subject to other relevant policies in the plan);

6) Land reclamation purposes;

7) Transportation and/or utilities infrastructure to enable implementation of LDP allocations;

DNP1: Development in the Countryside

8) Renewable energy projects;

9) Affordable housing to meet locally identified need in accordance with COM5;

10) The suitable conversion of, and limited extension to, existing structurally sound rural buildings where the development is modest in scale and clearly subordinate to the original structure;

11) The direct replacement of an existing dwelling;

12) Outdoor recreational and sporting activities;

13) The provision of Gypsy, Traveller and Showperson sites in accordance with COM8; or

14) Education provision where a need has been identified by the Local Education Authority.

Countryside development must be of a sustainable form with prudent management of natural resources and respect for the cultural heritage of the area. Where development is acceptable in principle in the countryside it must, in the first instance and where possible, utilise existing buildings and previously developed land. Where such an opportunity to re-use a rural building does exist, development must be in accord with DNP2 of the RLDP.

DNP4: Special Landscape Area

The following areas are designated as Special Landscape Areas (SLAs):

…….

DNP4(3) Western Uplands

…….

Development in **Special Landscape Areas** (SLAs) will only be permitted where:

1) It retains or enhances the character and distinctiveness of the SLA;
2) The design of the development reflects the building traditions of the locality in its form, materials and details, and/or assimilates itself into the wider landscape; and
3) The proposed development is accompanied by a landscape assessment, which takes into account the impact of the development and sets out proposals to mitigate any adverse effects.

Where development is necessary, and could result in a significant landscape impact, a landscaping scheme will also be required, and appropriate mitigation and enhancement measures must be provided. The settings of SLAs will be protected with consideration of the views from those areas to the settlements of the County Borough. New development within settlements must be designed to provide an attractive transition between the urban area and the countryside.

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2) The design of the development reflects the building traditions of the locality in its form, materials and details, and/or assimilates itself into the wider landscape; and
3) The proposed development is accompanied by a landscape assessment, which takes into account the impact of the development and sets out proposals to mitigate any adverse effects.

Where development is necessary, and could result in a significant landscape impact, a landscaping scheme will also be required and appropriate mitigation and enhancement measures must be provided. The settings of SLAs will be protected with consideration of the views from those areas to the settlements of the County Borough. New development within settlements must be designed to provide an attractive transition between the urban area and the countryside.

DNP6: Biodiversity, Ecological Networks, Habitats and Species

All development proposals must provide a net benefit for biodiversity and improved ecosystem resilience, as demonstrated through planning application submissions. Features and elements of biodiversity or green infrastructure value should be retained on site, and enhanced or created where ever possible, by adopting best practice site design and green infrastructure principles. Development proposals must maintain, protect and enhance biodiversity and ecological networks / services. Particular importance must be given to maintaining and enhancing the connectivity of ecological networks which enable the dispersal and functioning of protected and priority species.

Development proposals that result in an adverse effect on the connectivity of biodiversity and ecological networks and/or have a significant adverse effect on the resilience of protected habitats and species will only be permitted where:

1) The need for development outweighs the nature conservation importance of the site;

2) It can be demonstrated that there is no satisfactory alternative location for the development which avoids damage to biodiversity and ecosystem functioning;

3) A functional connected element of the natural resource is retained as part of the design of the development to maintain and enhance biodiversity and build resilient ecological networks; and

4) Any unavoidable harm is minimised by effective mitigation to ensure that there is no reduction in the overall biodiversity value of the area. Where this is not feasible, compensation measures must be provided to enable habitat creation, or the provision of long-term management arrangements to enhance existing habitats and deliver a net benefit for biodiversity. Compensatory provision must be of comparable or greater ecological value to that lost as a result of the development.

A Project Level Ecological Impact Assessment (EcIA) must accompany development proposals on allocated sites with any identified likely significant adverse effects (pre-mitigation) in relation to SA Objective 9 (Biodiversity, Geodiversity and Soil).

DNP7: Trees, Hedgerows and Development

Development that would adversely affect trees, woodlands and hedgerows of public amenity or natural/cultural heritage value, or that provide important ecosystem services, will not normally be permitted.

Development proposals on sites containing or adjacent to, trees will be required to assess the trees in line with BS 5837:2012 Trees in relation to design, demolition and construction. The assessment must include:

1) a tree survey;

2) an arboriculture impact assessment;

3) an arboriculture method statement;

4) and/or a tree protection plan.

Where trees are to be replaced a scheme for tree replacement must be agreed prior to the commencement of development, including details of planting and aftercare.

If tree works are recommended, the works must comply with BS 2998:2010 Tree Works - Recommendations.

DNP8: Green Infrastructure

Development proposals will be required to integrate, protect and maintain existing green infrastructure assets and to enhance the extent, quality, connectivity and multi-functionality of the green infrastructure network. Where the loss or damage of existing green infrastructure is unavoidable, appropriate mitigation and compensation will be required.

All developments must seek to maximise, as far as practicable, the amount of green infrastructure on the site, as well as the interconnectedness of green infrastructure within and around the site to the wider green infrastructure network. Development must also maximise opportunities to achieve multi-functionality by bringing green infrastructure functions together.

All major developments will be required to submit a Green Infrastructure Assessment.

DNP9: Natural Resource Protection and Public Health

Development proposals will only be permitted where it can be demonstrated that they would not cause a new, or exacerbate an existing, unacceptable risk of harm to health, biodiversity and/or local amenity due to:

1) Air pollution;

2) Noise pollution;

3) Light pollution;

4) Water pollution;

5) Contamination (including invasive species);

6) Land instability;

7) Sustainable development of mineral resources;

8) Sustainable waste management;

9) Any other identified risk to public health or safety.

above will need to demonstrate mitigation measures to reduce the risk of harm to public health, biodiversity and/or local amenity to an acceptable level. The use of construction phase Pollution Prevention Plans are encouraged, where appropriate, to demonstrate how proposals can prevent development water run-off from causing pollution of the water environment. All proposals within HSE consultation zones must also demonstrate the acceptability and need for development.

All development in flood risk areas must be supported by a Flood Consequences/Risk Assessment and incorporate any mitigation measures required to avoid or manage increased flood risk.

5.0 Environmental Impact Assessment

5.1 Overview

5.1.1 This Environmental Statement (ES) has been prepared under the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2017 (S.I. 2017 No. 571), and it will document the findings of the EIA which was undertaken to determine any likely significant environmental impact with regard to the proposed development.

5.1.2 Article 18 (3) of Part 5 of the EIA 2017 Regulations sets out that an ES should include, as a minimum, the following information:

- a description of the proposed development comprising information on the site, design, size and other relevant features of the development;
- a description of the likely significant effects of the proposed development on the environment;
- a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;
- a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;
- a non-technical summary of the information referred to in aforementioned sub-paragraphs; and
- any additional information specified in Schedule 4 of the 2017 Regulations relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.

5.2 Scoping

Scoping Report and Scoping Opinion

5.2.1 Scoping is a non-compulsory preliminary task within the EIA process. A Scoping Report prepared by the applicant provides a mechanism for consulting on, and agreeing the scope and approach to, the EIA as well as the content and structure of the Environmental Statement.

5.2.2 A formal request for a Scoping Opinion from Bridgend County Borough Council (BCBC), along with a Scoping Report, has been made under Regulation 14 (1) of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 for a Scoping Opinion prior to the preparation of this Environmental Statement to accompany an application for permission for the proposed development.

5.2.3 The Scoping Report, which was submitted on 5 December 2024, described the key anticipated environmental issues that would require detailed evaluation as part of the EIA process. A copy of this report can be found in Appendix 5-1 and on the BCBCs website.

5.2.4 The Scoping Opinion including responses from consultees, was received on 29 January 2025. The responses received as part of the statutory consultation process,

along with the Applicant's comments on those responses, are reported upon within the Consultation Report submitted with the Planning Application.

5.2.5 The preparation of this ES was guided by those responses and by on-going consultations with the consultees.

5.3 Pre-Application Consultation

5.3.1 WEPA UK Limited has undertaken Statutory (Pre-Application) Consultation, under Article 4 of Part 1A of The Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2016.

5.3.2 In addition, WEPA conducted a wider local non-statutory consultation exercise which allowed a wide variety of local residents, key community stakeholders and statutory consultees to give their feedback on the proposals.

5.3.3 WEPA provided residents, stakeholders and consultees with a variety of methods to provide feedback including a Freephone information line and a dedicated consultation webpage. This allowed interested parties and consultees to receive further information about the proposals as well as view and download the draft application documents before providing their feedback to the project team. Pre-application consultation also offered early one-to-one meetings with local representatives to discuss the proposals and ask any questions of the project team.

5.3.4 In order to ensure that WEPA engaged in a robust and inclusive manner an information event was also held which over 2,000 local resident and businesses were invited to attend. only five people attended this in-person event.

5.3.5 Overall, the feedback gathered during the consultation was very positive, with more than 90% of respondents expressing their support for WEPA to upgrade its operations at the Bridgend Paper Mill site through the construction of a new tissue paper machine. Nevertheless, WEPA has reflected on the feedback received throughout the consultation process and the concerns of those who were not supportive of the development have been incorporated wherever possible.

5.3.6 The Pre-Application Consultation Report (Document Ref. 59200-0005) records how WEPA undertook Statutory Consultation, the feedback received during this consultation, WEPA's response to this feedback and how its proposal and assessments have had regard to the feedback received pursuant to Article 2F of the aforementioned TCPA Order 2016.

5.4 EIA Assessment Methodology

5.4.1 The methodology described in this section is designed to ensure that the EIA process and the Environmental Statement is a valid and robust assessment of the likely effects of the development proposals on the environment having regard to its nature, size and location.

5.4.2 The methodologies used within each specialist section are made clear within the appropriate technical chapters (Sections 6 to 15) and, therefore, may differ slightly between chapters.

5.4.3 The significance of environmental impacts is formulated as a function of the receptor or resource environmental value (or sensitivity) and the magnitude of project impact (change). The principal stages in assessing the significance of environmental impacts were as follows:

Environmental baseline

5.4.4 The identification of the environmental baseline includes a discussion of the existing conditions, services, and physical environment of the site and its surroundings where appropriate. The aim is to establish the existing and future baseline conditions which may be changed by the development, including an indication of the sensitivity of the receptors where appropriate.

5.4.5 The baseline information obtained is included in each of the respective specialist sections of this ES to describe the aspects of the environment likely to be significantly affected by the proposed development.

Value / sensitivity of receptors

5.4.6 Criteria for the determination of the value of an environmental resource or the sensitivity of a receptor (as ‘high’, ‘medium’, or ‘low’) or of their importance (e.g. ‘international’, ‘national’, ‘regional’ or ‘authority area’) were established based on prescribed guidance, legislation, and statutory designation. Typical descriptors and criteria for the environmental value of an environmental resource or for the sensitivity of a receptor are listed in the table below.

Table 5.4-1: Environmental Value (or Sensitivity) and Typical Descriptors

Value / Sensitivity	Typical descriptors
Very high	Very high importance and rarity, international scale and very limited potential for substitution
High	high importance and rarity, national scale and limited potential for substitution
Medium	high or medium importance and rarity, regional scale and limited potential for substitution
Low	Low or medium importance and rarity, local scale
Negligible	Very low importance and rarity, local scale

Assigning the magnitude of impact

5.4.7 Typical descriptors and criteria which define the magnitude of an impact of a project are listed in Table 5.4-2.

Table 5.4-2: Magnitude of Impact and Typical Descriptors

Magnitude of impact	Typical Criteria Descriptor
Major	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse
	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial)
Moderate	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse).
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Minor	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse).
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse).
	Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Assigning the Significance of Impacts

5.4.8 The approach to assigning significance of impacts relies on reasoned argument, professional judgement and taking into account the advice and views of appropriate organisations. In some specialist chapters, predicted effects are compared with quantitative thresholds and scales in determining significance. However, for the purposes of undertaking this EIA, the significance of any impact, beneficial or adverse, is generally determined as set out in Table 5.4-3.

Table 5.4-3: Descriptors of the Significance of Impact Categories

Significance Category	Typical Descriptors of Effect
Very Large / Severe	Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
Large / Major	These beneficial or adverse effects are considered to be very important considerations at a local or district scale but, if adverse, are potential concerns to the Project. These effects are likely to become key factors in the decision-making process.
Moderate	These beneficial or adverse effects may be important, but are not likely to be key decision-making factors in isolation. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effects on a particular resource or receptor.
Minor / slight	These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project and consideration of mitigation measures.
Negligible / Insignificant	No effects or those that are beneath levels of protection, within normal bounds of variation or within the margin of forecasting error. Such effects should not be afforded weight in the decision-making process.

5.4.9 Impacts assessed to be **moderate** or above are considered to be **significant**.

5.4.10 Assigning each effect to one of the five significance categories enables different topic issues to be placed upon the same scale, in order to assist the decision-making process at whatever stage the project is at within that process.

5.4.11 Throughout the Environmental Statement, consideration of significant environmental impacts of the proposed development will be based on conservative assumptions to assess a worst case scenario.

5.4.12 Applying the formula presented in Table 5.4-4, the greater the environmental sensitivity or value of the receptor or resource, and the greater the magnitude of impact, the more significant the effect. The consequences of a highly valued environmental resource suffering a major detrimental impact would be a very significant adverse effect.

Table 5.5-4: Descriptors of the Significance of Impact Categories

VALUE / SENSITIVITY	**Very High**	Neutral	Slight	Moderate/ Large	Large or very Large	Very Large
	High	Neutral	Slight	Moderate/ Slight	Moderate/ Large	Large / Very Large
	Medium	Neutral	Neutral/ Slight	Slight	Moderate	Moderate/ Large
	Low	Neutral	Neutral/ Slight	Neutral/ Slight	Slight	Slight/ Moderate
	Negligible	Neutral	Neutral	Neutral/ Slight	Neutral/ Slight	Slight
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
		MAGNITUDE OF IMPACT				

Consideration of mitigation measures

5.4.13 Where potentially significant effects have been identified during the assessment of likely significant environmental effects for both construction and operational stages, measures have been proposed to prevent, reduce and where possible offset these. Where complete prevention of environmental impacts was not feasible, mitigation measures have been proposed to reduce impacts. Potential mitigation techniques will be described, as appropriate, in each assessment Section.

Residual Effects

5.4.14 Mitigation measures developed as part of the design and assessment process have been included in each section. An assessment of the significance of any potential residual effect, namely that which remains after the implementation of recommended mitigation measures. A summary of the environmental impacts associated with the development proposals is provided within each specialist chapter and in the Non-technical Summary (NTS).

Cumulative Effects

5.4.15 The EIA Regulations 2017 require the EIA to include an impact assessment to identify, describe and evaluate the effects that are likely to result from the proposed development in combination with other projects and activities (not yet constructed or currently under construction) in the vicinity, acting together to generate elevated levels of impacts.

5.4.16 The site is located in a relatively remote location. Review of Bridgend Council Planning Application search for the area indicates that there are no planning applications within the last five years for any industrial developments that would result in cumulative effects with the proposed development.

Presentation of the Environmental Statement

5.4.17 The following chapters are presented in a grouped format structure with each environmental category being considered under the separate headings. Each of the following specialist impact assessment sections will typically include the following sub-sections, where appropriate:

- Introduction and Scope
- Legislation and Planning Context
- Assessment Methodology
- Baseline Conditions and Receptors;
- Assessment of Effects (construction and operational phase);
- Mitigation Measures;
- Residual Effects
- Summary and conclusion
- The Non-technical summary (Document Ref.: 59200-0053).

6.0 Air Quality and Dust

6.1 Introduction and Scope

6.1.1 The new development will replace the existing paper machine “Jupiter” which was built in the 1970s. The existing paper machine has a high energy demand that is not sustainable anymore. The produced paper does not add value to the final products currently required by the market. In order to enhance the production capacity, produce higher paper quality and reduce the energy consumption, the existing paper machine will be replaced by the more energy efficient Vesta paper machine.

6.1.2 The Vesta machine is based on best available technology (BAT) and designed to produce a high-quality product with low energy consumption and minimal environmental impact. The replacement will reduce the overall environmental footprint of tissue production by saving energy and CO2.

6.1.3 Before commissioning the new “Vesta” machine, the old machine “Jupiter” will be shut down and dismantled. The Jupiter building will be re-used as jumbo reel storage. As energy consumption on site has been reduced considerably in the past, the Applicant will replace the existing CHP plant with a new boiler house, which will house two new gas boilers and ancillary equipment (Planning application P/24/406/FUL).

6.1.4 As the new Vesta paper machine consumes significantly less energy than the existing Jupiter machine, no additional air emissions are expected to occur when operating.

6.1.5 The future traffic conditions will remain unchanged for the “Vesta” project with the machine being a direct upgrade to the previous “Jupiter” machine with no increase in staff number necessary, therefore, the development will not generate any additional traffic movements from staff or deliveries.

6.1.6 Furthermore, even with a larger a storage facility on site there will be no additional HGV movements directly associated to the project.

6.1.7 The existing site access and the servicing access to the east will remain unchanged for the “Vesta” project.

6.1.8 Consequently, no additional traffic related air emissions are expected to result from the operation of the new development.

6.1.9 In view of the above, this chapter only assesses impacts resulting from the construction phase of the development.

6.1.10 It considers potential significant environmental effects the construction phase of the proposed development would have on the baseline environment; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed.

6.2 Assessment Methodology

Legislation

Applicable Public Exposure

6.2.1 In accordance with Department for Environment, Food and Rural Affairs' (DEFRA) technical guidance on Local Air Quality Management (LAQM.TG(16)) which is applied by the Welsh Assembly, the AQOs should be assessed at locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective.

Local Air Quality Management

6.2.2 Section 82 of the Environment Act 1995 (Part IV) requires Local Authorities (LA) to periodically review and assess the quality of air within their administrative area. The reviews have to consider the present and future air quality and whether any AQALs prescribed in regulations are being achieved or are likely to be achieved in the future.

6.2.3 Where any of the prescribed AQALs are not likely to be achieved the authority concerned must designate an Air Quality Management Area (AQMA). For each AQMA the LA has a duty to draw up an Air Quality Action Plan (AQAP) setting out the measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the AQAL. As such, LAs, have formal powers to control air quality through a combination of LAQM and by use of their wider planning policies.

Legislation for the Protection of Nature Conservation Sites

6.2.4 Sites of nature conservation importance at a European, national and local level, are provided environmental protection, including from atmospheric emissions by the legislation as indicated in Table 6.2-1.

Table 6.2-1: Legislation for the Protection of Nature Conservation Sites

Nature Conservation Sites	Legislation
European Sites Special Areas of Conservation (SAC) candidate Special Areas of Conservation (cSAC) Special Protection Areas (SPA) potential Special Protection Areas (pSPA) Ramsar sites Marine Protection Areas.	The Conservation of Habitats and Species Regulations (2010); known as the 'Habitats Regulations'
Sites of Special Scientific Interest (SSSI)	The Countryside and Rights of Way (CRoW) Act 2000
National Nature Reserves (NNR) Local Nature Reserves (LNR) local wildlife sites (LWS) ancient woodland (AW)	The Environment Act 1995; and the Natural Environment and Rural Communities Act (NERC) 2006.

General Nuisance Legislation

6.2.5 Part III of the Environmental Protection Act (EPA) 1990 (as amended) contains the main legislation on Statutory Nuisance and allows local authorities and individuals to take action to prevent a statutory nuisance. Section 79 of the EPA defines, amongst other things, smoke, fumes, dust and smells emitted from industrial, trade or business premises so as to be prejudicial to health or a nuisance, as a potential Statutory Nuisance.

6.2.6 Fractions of dust greater than 10µm (i.e. greater than PM_{10}) in diameter typically relate to nuisance effects as opposed to potential health effects and therefore are not covered within the UK AQS. In legislation there are currently no numerical limits in terms of what level of dust deposition constitutes a nuisance.

Construction Dust Assessment Methodology

Predicting Risk

6.2.7 The assessment of risk is determined by considering the predicted change in conditions as a result of the development. The risk category for potential dust effects arising from site works is defined into 4 No. potential activities:

- demolition;
- earthworks;
- construction; and
- trackout.

6.2.8 The determination of risk categories presented above are based upon the descriptors presented within IAQM: *Guidance on the assessment of dust from demolition and construction*.

Sensitivity of Receptor

6.2.9 To determine the significance of dust effects associated with the construction phase of the development, an evaluation of the sensitivity of the surrounding area is required. Receptors can demonstrate different sensitivities to changes in their environment, and are classified as detailed within 6.2-1.

6.2.10 Quoted distances to the nearest receptor are from the dust emission sources. Where this is not known, receptor distances are determined from the site boundary. The risk category is based upon the distance of site works to the nearest receptor.

Table 6.2-2: Methodology for Defining Sensitivity to Dust Effects

Sensitivity of Area	Examples		
	Human Receptors		Ecological Receptors (A)
	Dust Soiling Effects	Health Effects of PM_{10}	
High	• users can reasonably expect an enjoyment of a high level of amenity; or • the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. • indicative examples include dwellings, museums and other culturally important collections, medium and long term car parks and car showrooms.	• locations where members of the public are exposed over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • Indicative examples include residential properties. Hospitals, schools and residential care homes should also be considered as having equal sensitivity to residential areas for the purposes of this assessment.	• locations with an international or national designation and the designated features may be affected by dust soiling; or • locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain. • indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	• users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or • the appearance, aesthetics or value of their property could be diminished by soiling; or • the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. • indicative examples include parks and places of work.	• locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM10 (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day). • indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM10, as protection is covered by Health • and Safety at Work legislation.	• locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or • locations with a national designation where the features may be affected by dust deposition. • indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.

Sensitivity of Area	Examples		
	Human Receptors		Ecological Receptors (A)
	Dust Soiling Effects	Health Effects of PM_{10}	
Low	• the enjoyment of amenity would not reasonably be expected; or • property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or • there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal • pattern of use of the land. • indicative examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.	• locations where human exposure is transient. • indicative examples include public footpaths, playing fields, parks and shopping streets.	• locations with a local designation where the features may be affected by dust deposition. • indicative example is a local Nature Reserve with dust sensitive features.
(A) Only applicable if ecological habitats are present which may be sensitive to dust effects.			

Assessment of Impact Significance – Dust Effects

6.2.11 Table 6.2-3 to Table 6.2-5 illustrate how the sensitivity of the area may be determined for dust soiling, human health and ecosystem impacts, respectively. The highest level of sensitivity from each table should be recorded.

Table 6.2-3: Sensitivity of Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10 – 100	Medium	Medium	Low	Low
	1 – 10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	<1	Low	Low	Low	Low

Table 6.2-4: Sensitivity of Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32µg/m^3	>100	High	High	High	Medium	Low
		10 – 100	High	High	Medium	Low	Low
		1 – 10	High	Medium	Low	Low	Low
	28 – 32µg/m^3	>100	High	High	Medium	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 – 10	High	Medium	Low	Low	Low
	24 – 28µg/m^3	>100	High	Medium	Low	Low	Low
		10 – 100	High	Medium	Low	Low	Low
		1 – 10	Medium	Low	Low	Low	Low
	<24µg/m^3	>100	Medium	Low	Low	Low	Low
		10 – 100	Low	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
Medium	>32µg/m^3	>10	High	Medium	Low	Low	Low
		1 – 10	Medium	Low	Low	Low	Low
	28 – 32µg/m^3	>10	Medium	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
	24 – 28µg/m^3	>10	Low	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
	<24µg/m^3	>10	Low	Low	Low	Low	Low
		1 – 10	Low	Low	Low	Low	Low
Low	-	1	Low	Low	Low	Low	Low

Table 6.2-5: Sensitivity of Area to Ecological Impacts

Receptor Sensitivity	Distance from Source ((m) (A)	
	< 20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

(A) For trackout, the stand-offs should be measured from the side of the roads used by construction traffic

Defining the Risk of Impact

6.2.12 Table 6.2-6 to Table 6.2-9 illustrate how the dust emission magnitude should be combined with the sensitivity of the area to determine the risk of impacts with no mitigation measures applied.

Table 6.2-6: Risk of Dust Impacts – Demolition

Sensitivity of Area	**Dust Emission Magnitude**		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 6.2-7: Risk of Dust Impacts – Earthworks

Sensitivity of Area	**Dust Emission Magnitude**		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 6.2-8: Risk of Dust Impacts – Construction

Sensitivity of Area	**Dust Emission Magnitude**		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table 6.2-9: Risk of Dust Impacts – Trackout

Sensitivity of Area	**Dust Emission Magnitude**		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

6.3 Baseline Conditions

6.3.1 As there are no additional air emissions associated with the operation of the proposed development, a detailed description of baseline conditions is not required.

Sensitive Receptors

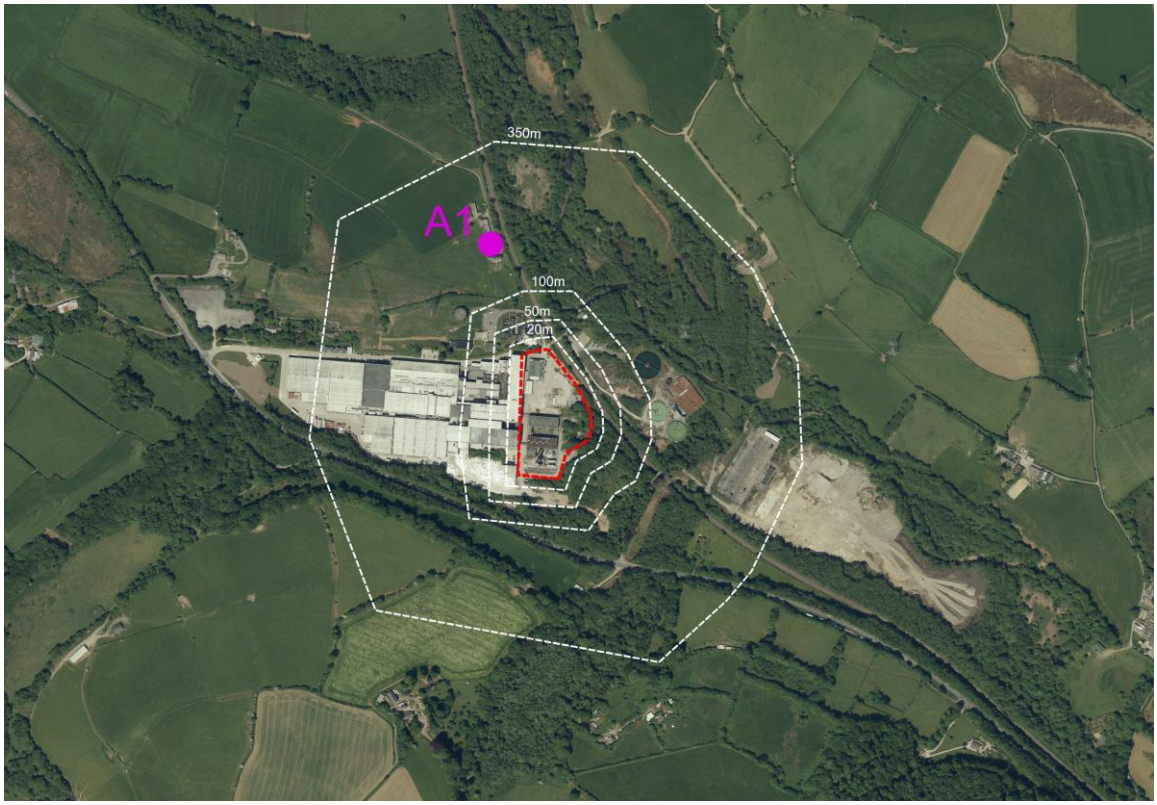
Construction Dust Receptor

6.3.2 In terms of human receptors, the main receptors likely to be affected by the generation of construction dust are those existing receptors within approximately 350m of the development site boundary. Reference should be made to Figure 6.3-1 for an illustration of buffer zones of sensitive receptors with the potential to be impacted upon by construction phase dust in accordance with the stated IAQM assessment methodology.

Table 6.3-1: Sensitive Receptor (Construction dust)

ID	Description	Receptor type	NGR	
A 1	Farmhouse Brynllywarch-Fach	Residential	287469	187416

Figure 6.3-1: Site Setting and Construction Phase Receptor



Red line = Site boundary, white lines = buffers from site boundary (20m, 50m, 100m, 350m)

DEFRA Mapped Background Concentrations

6.3.3 Background pollutant concentration data on a 1km x 1km spatial resolution is provided by DEFRA through the UK Air Information Resource (AIR) website and is routinely used to support LAQM and Air Quality Assessments.

6.3.4 Mapped background concentrations of PM_{10} were downloaded for the grid square containing the Application Site and the relevant human receptor (A1 in Figure 6.3-1). Concentrations are based upon the 2021 base year DEFRA update.

Table 6.3-2: DEFRA mapped background concentration PM_{10}

Grid Square	PM_{10} Background Concentration (µg/m^3)
x288500, y187500	9.70

6.3.5 In relation to the construction phase dust assessment, this included consideration of any ecological designation within 50m of the Application Site boundary, or 50m of any road projected to witness construction phase road traffic movements, that could potentially be affected by dust from the construction phases of the proposed development.

6.3.6 A search within 50m of the development boundary / any road projected to witness construction phase road traffic movements identifies no receptors.

6.3.7 The AERA Guidance Note requires that designated ecological sites should be screened against relevant standards if they are located within the following set distances from the facility:

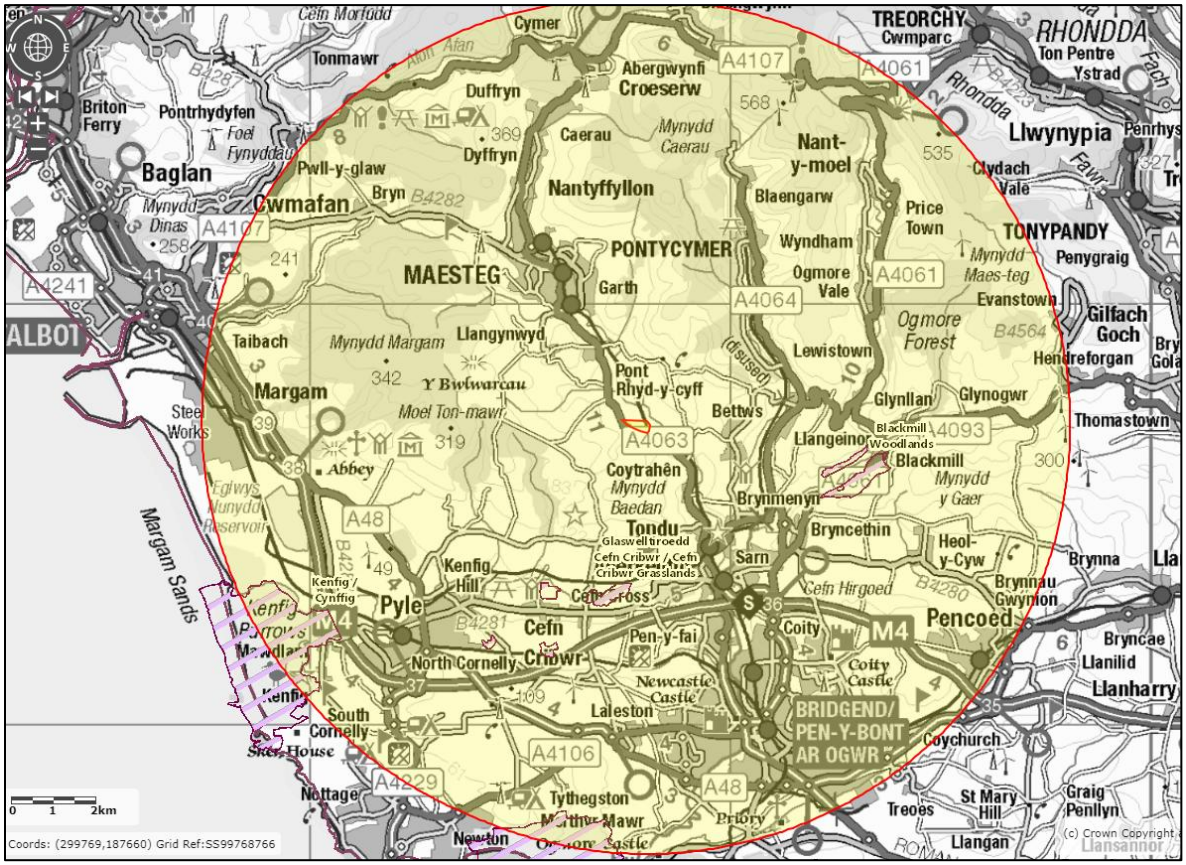
- Special Protection Areas (SPAs), Special Areas of Conservation (SACs) or Ramsar sites within 10km of the installation; and
- Sites of Special Scientific Interest (SSSIs) within 2km of the installation.

6.3.8 Details of the sites within these screening distances are presented in Table 6.3-1 and locations in Figure 6.3-1 based 10km site search radii. It is noted that there are no relevant designated ecological sites within a 2km site search radius.

Table 6.3-3: Designated Ecological Sites

Receptor	Site	Designation	Most sensitive APIS Habitat classification
R1	Kenfig / Cynffig	SAC	Coastal stable dune grasslands - acid type
R2	Glaswelltiroedd Cefn Cribwr / Cefn Cribwr Grasslands	SAC	Non-Mediterranean dry acid and neutral closed grassland
R3	Blackmill Woodlands	SAC	Acidophilous Quercus-dominated woodland

Figure 6.3-2: Ecological Sites – 10km Site Search



6.3.9 The assessment methodology considers three separate dust impacts with account being taken of the sensitivity of the area that may experience these effects:

- annoyance due to dust soiling;
- the risk of health effects due to an increase in exposure to PM_{10}; and
- harm to ecological receptors.

6.3.10 The first stage of the assessment involves a screening to determine if there are sensitive receptors within threshold distances of the site activities associated with the construction phase of the scheme. No further assessment is required if there are no receptors within a certain distance of the works; 350m for human receptors and 50m for designated ecological receptors.

6.3.11 The dust emission class (or magnitude) for each activity is determined on the basis of the guidance, indicative thresholds and expert judgement. The risk of dust effects arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area. The risk of impact is then used to determine the mitigation requirements

6.4 Assessment of Effects

Construction Dust Assessment

6.4.1 Construction activities will include:

- material export and import;
- temporary stockpiling of materials;
- groundwork for foundations and services;
- construction of buildings;
- landscaping works; and
- vehicle movements (with the potential to track-out material from site).

6.4.2 The following subsections provide a consideration of potential construction dust and conclude with a determined emission class and risk category, from each of the categories identified by the IAQM Guidance.

Assessment Screening

6.4.3 As shown in Figure 6.3-1 there is only 1 ‘human receptor’ (the Farmhouse Brynllywarch-Fach) within 350m of the Application Site but no designated habitat sites within 50m of the Application Site boundary or within 50m of the Application Site entrance / 500m of the roads anticipated to witness construction traffic movements.

6.4.4 Therefore, an assessment of construction dust on ecological receptors can be screened out from this assessment but an assessment of construction dust at human receptors is required.

Potential Dust Emissions Magnitude

6.4.5 The most significant potential source of dust emissions during construction would be the earthworks and trackout activities. Dust is potentially generated by the action of heavy vehicles (bulldozer, front-end loader, hydraulic excavator, and dump trucks), as well as by the movement of the vehicles on potentially dusty surfaces. Handling and storage of construction materials (aggregates / hard core), haulage across unsurfaced areas are also potential sources of dust generation.

6.4.6 The potential dust emission magnitude for each activity is described in Table 6.4-1.

Table 6.4-1: Potential Dust Emission Magnitude

Activity	Comments	Dust Emission Magnitude
Demolition	Prior to construction of the new paper machine at the Application Site, some existing buildings and structures are required to be demolished, including a concrete slab and asphalt / concrete areas associated with current roads and hard-standing. Concrete products to be demolished represent a high-potential for dust generation. All material generated during the demolition of these buildings / structures will be exported from site. Demolition activities are required on a total building volume of <10,000m^3. Demolition works are currently projected to occur over a short period (<4-weeks). Demolition works are currently projected to occur in the summer of 2026. Therefore, some demolition activities will occur over 'summer' months, corresponding to lower periods of rainfall and reduced potential for natural dust suppression. Therefore, dust emission magnitude is calculated to be 'small'.	Small
Earthworks	The proposals comprise the development of a new paper machine and associated infrastructure. Site earthworks are required over an area of approximately 5,000m^2 with assumed soil types representing a high-risk potential for suspension when dry due to small particle size. Given the size of the site, between 2-3 heavy earth moving vehicles are considered to be required on Application Site at once. Given the size of the site, it is estimated that construction phase activities will occur over a period of approximately 4 months. Therefore, some earthworks activities may occur over 'summer' months, corresponding to lower periods of rainfall and reduced potential for natural dust suppression. Therefore, dust emission magnitude is calculated to be 'medium'.	Medium
Construction	The total building volume associated with the proposed new paper machine and associated infrastructure is predicted to be between 50,000m^3 and 80,000m^3. Foundations will be as both strip foundations and piling based upon geotechnical specifications. Construction will be as pre-cast reinforced concrete wall panels, steel columns / girders / purlins, sheet steel roofing panels and concrete slabs. The majority of concrete products used on-site will arrive as pre-cast / pre-form. Concrete will additionally arrive on site as Readymix. However, a small portion of concrete may additionally be mixed on-site. Concrete has a high potential for dust generation. It is estimated that construction phase activities will occur over a period of approximately one year. Therefore, dust emission magnitude is calculated to be 'large'.	Large

Activity	Comments	Dust Emission Magnitude
Trackout	Construction vehicles will most likely access the site via the existing highway network from the south (via A4063, ultimately in the direction of the M4). No details are available at the time of assessment on the number of additional HDV movements associated with construction works in each phase, however, given the scale and nature of works required, there is considered to be >20HDV outward movements in any worst-case day. Due to the size of the site the unpaved road length is considered to be >50m. Therefore, dust emission magnitude is calculated to be 'medium'.	Medium

Sensitivity of the Area

6.4.7 The sensitivity of the area takes account of a number of factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM_{10}, the local background concentration; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

6.4.8 The sensitivity of the area and the factors considered are presented in Table 6.4-2.

Table 6.4-2: Sensitivity of the Area

Sensitivity to:	Comments	Sensitivity
Dust Soiling Impacts	The surroundings predominantly comprise rural / agricultural land with sparsely populated associated residential dwellings. The residential dwelling is classified as of high sensitivity to dust soiling. There is 1 high sensitivity receptor within 350m of the Application Site boundary.	Low
Human Health Impacts	The background PM_{10} concentration for the maximum 1km^2 grid square containing the Application Site and surrounding receptors is estimated to be approximately 10.0µg/m^3, based upon 2021 mapped background estimates presented in Table 6.2-3 (i.e. falls into the <24µg/m^3 class) and there are between 1 – 10 high sensitivity receptors within 350m of the Application Site boundary.	Low

Risk of Impacts (Unmitigated)

6.4.9 The outcome of the assessment of the potential 'magnitude of dust emissions', and the 'sensitivity of the area' are combined in the table below to determine the risk of impact which is used to inform the selection of appropriate mitigation.

Table 6.4-3: Risk of Dust Impacts

Potential Impact	Demolition	Earthworks	Construction	Trackout
Dust Soiling Impacts	Negligible Risk	Low Risk	Low Risk	Low Risk
Human Health Impacts	Negligible Risk	Low Risk	Low Risk	Low Risk
Ecological Impacts	n/a	n/a	n/a	n/a

Construction Phase – Vehicular Pollutants

6.4.10 Road traffic emissions associated with vehicle movements, particularly HDV movements, during the construction phase of the development have the potential to result in increased concentrations of combustion related pollutants, including NO_2 and PM_{10} in the vicinity of the development site.

6.4.11 Guidance provided by EPUK and IAQM, states that a detailed assessment of potential air quality impacts should be undertaken if the following criteria are met on any link affected by a proposed development:

- change in 24-hour LDV flows of more than 100 AADT within or adjacent to an AQMA; or
- change in 24-hour HDV flows of more than 25 AADT within or adjacent to an AQMA.

6.4.12 The development quantum is not anticipated to result in a significant increase in movements or be above the EPUK and IAQM criterion. The duration of movements will be short-term in nature and are not considered further within the context of this assessment. Therefore, in accordance with the criterion presented within EPUK and IAQM guidance, additional road vehicle trips during the construction phase of the scheme can be screened out as they *'can be considered to have insignificant effects*' on air quality.

6.5 Mitigation Measures

Construction Phase Dust

6.5.1 An assessment of the significance of impacts associated with construction phase dust has been undertaken in accordance with the IAQM methodology. A summary of the risk category associated with each identified source of construction phase dust is presented within Table 6.5-1, for the purposes of identifying mitigation requirements.

6.5.2 Potential dust effects during the construction phase considered to be temporary in nature. The impacts are determined to be temporary as they will only potentially occur throughout the construction phase and short-term because these will only arise at particular times when certain activities and meteorological conditions for creating the level of magnitude predicted combine.

6.5.3 The risk of dust soiling effects is assessed as 'negligible risk' from demolition, and 'low risk' from earthworks, construction and trackout activities. The risk of human health effects from PM_{10} is assessed as 'negligible risk' from demolition, and 'low risk' from earthworks, construction activities and trackout activities.

6.5.4 In order to control potential impacts, the mitigation measures presented within Table 6.5-1 are proposed for the scheme. These mitigation measures should be secured by planning condition.

Table 6.5-1: Construction Dust Mitigation Measures

Site Application	Mitigation Measures
General Dust Management	Record all dust and air quality complaints and take appropriate measures to reduce emissions
	Record any exceptional; incidents that cause dust off site.
	Undertake daily visual inspection of dust soiling and dust generation and record in site log (available for the local authority if requested)
	Ensure an adequate supply of water is available onsite for effective dust suppression. The site manager will be present during all working hours to manage the activity of dust suppression
	Use enclosed chutes and conveyors and cover skips
	Minimise drop heights from conveyors, loading shovels and other material handling equipment
	Impose a site speed limit of 10mph on unpaved haul roads
	Ensure all vehicles engines are switched off when stationary
	Plan site layout so machinery is located away from receptors as far as possible
	Enclose specific operations where there is a high potential for dust production
	Avoid site runoff of water or mud
	Keep site fencing, barriers and scaffolding clean using wet methods
	Remove material that have the potential to produce dust from the site as soon as possible
	Install construction warning signage either side of the site entrance warning of 'mud on the road'
	Safety, Health & Environmental Briefings (SHEB's) will be provided to site operatives at least monthly and will reflect the actual work being undertaken on site. Records must be maintained of the briefings
	All operatives/visitors on site receive an Induction prior to commencing work on site
	Environmental Incidents and complaints will be recorded in the incident book on site and records forwarded to the divisional office and Group SHE department as required. Complaints will be dealt with locally by the Division and confirmation of action provided on or attached to the incident report form
	A power washing area will be installed behind the main compound alongside the delivery access road so that any vehicles leaving the site that require it can clean their tyres and undercarriage to wash off mud and debris before they exit
	All site managers attend the Site Management Safety Training Scheme (SMSTS) course on site safety. Part of this course covers protection against fugitive dust

Site Application	Mitigation Measures
Demolition	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust)
	Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
	Avoid explosive blasting, using appropriate manual or mechanical alternatives
	Bag and remove any biological debris or damp down such material before demolition.
Earthworks	Re-vegetate earthworks and soil stockpiles to stabilise surfaces as soon as practicable
	Cover stockpiles if not vegetated and only remove in small areas during work
	Avoid Double Handling of material
	Cease operations during high winds in the direction of sensitive receptors
Construction	Avoid scabbling (roughing of concrete surfaces) if possible
	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out
Trackout	Use water assisted dust sweepers on the access and local roads to removed tracked out material is necessary. A road sweeper vehicle will be employed to visit site and clean the site roads each day to prevent a build-up of mud, grit and dirt. This will take place every afternoon prior to the close of site and will also be on call as necessary through each day should there be a need for its services
	Avoid dry sweeping large areas
	Ensure vehicles entering and leaving sire are covered to prevent escape of materials during transport
	A power washing area will be installed on the main site road near the site entrance so that other construction vehicles exiting can also be cleaned down before entering the public highway
	Access gates to be located at least 100m from receptors where possible
	All vehicles will be inspected prior to leaving site to ensure limited mud will be placed on the carriage way

Cumulative Impacts

6.5.5 There is the potential for cumulative construction phase dust impacts to occur, arising during the construction of both the proposed Application Site and any other surrounding developments which occur within a combined 350m site buffer radius.

6.5.6 For a potential cumulative construction phase dust impact to occur, the Application Site and any adjacent developments would need to be demolished / constructed either concurrently or sequentially. However, it is noted that both the Application Site and any adjacent developments to be demolished / constructed would be required to implement construction phase dust mitigation measures as stated within the IAQM guidance and as detailed above in Table 6.5-1. Therefore, the application of the above mitigation measures would produce a negligible effect and be considered to be ‘not significant’. Cumulative effects are therefore considered to be ‘not significant’.

Construction Phase Road Traffic Emissions

6.5.7 Potential air quality impacts associated with construction phase road traffic emissions (principally HDV movements) have been screened out for further assessment with associated impacts on air quality predicted to result in an 'insignificant' effect. Therefore, mitigation measures are not considered to be required.

Construction Phase NRMM Emissions

6.5.8 LAQM.TG(16) guidance states that with the application of suitable control measures and site management, exhaust emissions from on-site NRMM are "*unlikely to make a significant impact on local air quality. In the vast majority of cases they will not need to be quantitatively assessed*".

- The following controls would apply to NRMM (Non Road Mobile Machinery)
- all NRMM should use fuel equivalent to ultralow sulphur diesel;
- all NRMM should comply with either the current or previous EU Directive Staged Emission Standards;
- all NRMM should be fitted with Diesel Particulate Filters (DPF) conforming to defined and demonstrated filtration efficiency (load/duty cycle permitting);
- the on-going conformity of plant retrofitted with DPF, to a defined performance standard; and
- implementation of fuel conservation measures including instructions to throttle down or switch off idle construction equipment; switch off the engines of trucks while they are waiting to access the site and while they are being loaded or unloaded, ensure equipment is properly maintained to ensure efficient fuel consumption.

6.5.9 Successful implementation of the above mitigation measures, which should be secured by planning condition, would ensure that emissions from the construction phase and NRMM used during construction are 'not significant'.

6.6 Residual Effects

Construction Phase Dust

6.6.1 On the basis that the mitigation measures outlined in Table 6.5-1 are implemented, the residual effects from activities generating construction phase dust are predicted to be 'not significant' in accordance with the stated IAQM guidance.

Construction Phase NRMM Emissions

6.6.2 On the basis that the mitigation measures outlined in Section 6.5 are implemented, the residual effects from activities generating construction phase dust are predicted to be 'not significant' in accordance with the stated LAQM.TG(16) guidance.

Construction Phase Road Traffic Emissions

6.6.3 The predicted residual effects of road traffic emissions arising from the construction phase of the scheme on existing sensitive receptors are predicted to be ‘not significant’ without the inclusion of mitigation measures.

6.7 Summary and Conclusion

6.7.1 The assessment has considered the significance of potential effects on the local air quality and amenity as a result of the proposed development of the Application Site. The proposed development incorporates the replacement of an existing paper machine by a new more energy efficient paper machine.

6.7.2 Operational phase emissions have been screened out as the operation of the new paper machine is not associated with additional road traffic. Moreover, the new paper machine will consume less energy resulting in a reduction of air emissions from power generation.

6.7.3 A qualitative assessment of the potential dust impacts during the construction phase of the development has been undertaken. Through good practice and implementation of appropriate mitigation measures, it is expected that the release of dust would be effectively controlled and mitigated, with resulting impacts considered to be ‘not significant’. All dust impacts are considered to be temporary and short-term in nature.

6.7.4 Due to the low additional number of HDV trips anticipated during the construction phase of the development, these are predicted to result in an ‘insignificant’ effect on air quality from road vehicle emissions. Furthermore, emissions from plant / NRMM on-site is predicted to result in a ‘not significant’ impact on air quality.

6.7.5 As such, it is not considered that air quality represents a material constraint to the development proposals, which conform to the principles of Planning Policy Wales, and the Bridgend County Borough Council Local Plan.

7.0 Noise and Vibration

7.1 Introduction and Scope

Noise

7.1.1 This chapter of the Environmental Statement (ES) considers the impact of the proposed development upon the noise environment at identified sensitive receptor locations. This chapter describes the scope, relevant legislation, assessment methodology, and the baseline conditions existing at the site and its surroundings. It considers any potential significant effects the proposed development would have on this baseline environment; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed.

7.1.2 The assessment has considered the noise impact of the operation of the proposed development on the surrounding residential area with reference to BS4142:2014, *Methods for rating and assessing industrial and commercial sound'* in relation to the operation of fixed plant.

7.1.3 Where considered necessary, mitigation measures have been recommended to ensure that identified impacts are kept to a minimum.

7.1.4 Whilst reasonable effort has been made to ensure that this Chapter is easy to understand, it is necessarily technical in nature. To assist the reader, a glossary of terminology is provided in the Noise Assessment (Document Ref.: 59200-0049).

Vibration

7.1.5 Compaction, breaking and piling operations can cause some degree of ground vibration, which can cause annoyance to the residents of affected buildings. High levels of vibration can cause damage to buildings. Vibration arising from construction and operation of the proposed development will be controlled following best practice.

7.2 Assessment Methodology

Planning Policy Wales (PPW)

7.2.1 The Department of the Environment, Food and Rural Affairs (DEFRA), the Department for Communities and Local Government (DCLG) and the Welsh Government (WG) are responsible for all aspects of noise policy in Wales. The aim of noise policy within Wales has been to protect individuals from excessive noise levels both in the workplace and within their homes. It has been recognised that severe annoyance to individuals due to noise can lead to sleep disturbance and adverse health effects.

The Welsh Government Noise and Soundscape Action Plan (2018)

7.2.2 The Noise and Soundscape Action Plan (NASP) outlines the Welsh Government's expectations for management of soundscapes. The NASP identifies that industrial source are regulated by the Environmental Permitting (England and Wales) Regulations 2016 (EPR), with the methodology provided within BS 4142 commonly adopted for the identification of adverse impacts.

7.2.3 Methods for avoiding the potential for adverse impacts are provided within the NASP, which states:

"*These include:*

- *locating new developments, whether noise-generating or noise-sensitive, to avoid noise issues arising in the first instance (in other words, through the planning system);*
- *increasing the distance between the source and receptors;*
- *preventing noise at source by good design and maintenance;*
- *using barriers or enclosures to prevent noise travelling, including through the use of green infrastructure;*
- *minimising or containing noise at source by observing good working and management practices; and*
- *avoiding noisy operations at certain times, such as at night".*

The Welsh Government Technical Advice Note 11 Noise

7.2.4 The Welsh Government has published a series of Technical Advice Notes (TANs), including the October 1997 TAN 11 Noise. TAN 11 sets out the Welsh Government's policies on noise related planning issues, giving guidance to local authorities in Wales on the use of their planning powers to minimise the adverse impacts of noise. Specifically, it:

- outlines the considerations to be taken into account when determining planning applications for both noise-sensitive developments and for those activities which will generate noise;
- sets out noise exposure categories for residential development, encourages their use and recommends appropriate levels for exposure to different sources of noise; and
- advises on the use of planning conditions to minimise the impact of noise.

7.2.5 TAN 11 considers noise from industrial and commercial developments, which is relevant to the Proposed Development. It states in paragraph B17:

7.2.6 "B17. The likelihood of complaints about noise from industrial development can be assessed, where the Standard is appropriate, using guidance in BS 4142: 1990. Tonal or impulsive characteristics of the noise are likely to increase the scope for complaints and this is taken into account by the "rating level" defined in BS 4142. This "rating level" should be used when stipulating the level of noise that can be permitted. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. The Standard states that, 'A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance'. Since background noise levels vary throughout a 24-hour period it will usually be necessary to assess the acceptability of noise levels for separate periods (e.g. day and night) chosen to suit the hours of operation of the proposed development. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week. In addition, general guidance on acceptable noise levels within buildings can be found in BS 8233: 1987."

7.2.7 The 1987 version of BS8233 was superseded in 1999 and the 1997 version of BS4142 was superseded in 2014.

British Standard BS 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

7.2.8 British Standard BS 4142:2014+A1:2019 *Methods for Rating and Assessing Industrial and Commercial Sound* is intended to be used for the assessment of whether sound of industrial and/or commercial nature is likely to give rise to complaints from people residing in nearby dwellings. The Standard, which was updated in 2014, states that such sound can include:

- sound from industrial and manufacturing processes;
- sound from fixed installations which comprise mechanical and electrical plant and equipment;
- sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and,
- sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

7.2.9 The procedure contained in BS 4142 for assessing the likelihood of complaints is to compare the measured or calculated sound level from the source in question, the *'specific sound level'*, at the assessment position with the background sound level. Where sound contains acoustic features, such as tonality, impulsivity or other noticeable characteristics then a correction is added to the specific sound to obtain the '*rating level*' that reflects the contextual setting of the site.

7.2.10 To assess the likelihood of complaints, the measured background sound level is subtracted from the rating level. BS 4142 states:

'Typically, the greater this difference, the greater the magnitude of the impact;

- *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;*
- *A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and,*
- *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.'*

The Institute of Environmental Management & Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment (2014)

7.2.11 The Institute of Environmental Management and Assessment (IEMA) have recently published the '*Guidelines for Environmental Noise Impact Assessment*'. The guidelines are applicable to noise impact assessment for any scale of development proposal, including core principles to achieve effectively integration with the EIA, and provide advice on the issues that need to be considered in a noise impact assessment and whether the appropriate conclusions are being reached. The factors include:

7.2.12 The appropriateness of the noise parameters used for the situation;

- The reference time period used in making the assessment;

- The level, character and frequency content of the noise sources under investigation; and,
- How the predicted noise levels relate to relevant Standards and guidelines.

7.2.13 The guidelines also recommend that the assessor should determine the degree of impact based on evidence derived from the assessment.

The Professional Practice Guidance on Planning and Noise (2017)

7.2.14 The '*Professional Practice Guidance on Planning and Noise'* (ProPG) was produced by a Working Group consisting of representatives of the Association of Noise Consultants (ANC), Institute of Acoustics (IOA) and Chartered Institute of Environmental Health (CIEH) to provide acoustical practitioners with guidance on the management of noise within the planning system in England.

7.2.15 The reparation of the ProPG acknowledges and reflects the Government's overarching NPSE, the NPPF and Planning Practice Guidance (including PPG-Noise), as well as other authoritative sources of guidance. It provides advice for Local Planning Authorities (LPAs) and developers, and their respective professional advisers which complements Government planning and noise policy and guidance and, in particular, aims to:

- advocate full consideration of the acoustic environment from the earliest possible stage of the development control process;
- encourage the process of good acoustic design in and around new residential developments;
- outline what should be taken into account in deciding planning applications for new noise-sensitive developments;
- promote appropriate noise exposure standards; and
- assist the delivery of sustainable development.

Vibrations during Construction Phase

7.2.16 It is considered that the main source of vibration during construction works relates to piling operations

7.2.17 There are currently no British Standards that provide a methodology to predict levels of vibration from construction activities, other than that contained within BS 5228: Part 4, which includes a methodology relating to percussive or vibratory piling only. However, it is generally accepted that for the majority of people, vibration levels in excess of between 0.15 and 0.3 mm/s peak particle velocity are just perceptible. **Fehler! Verweisquelle konnte nicht gefunden werden.**

7.2.18 Table 7.2-1 below details the distances at which certain construction activities relevant to the proposed development give rise to a just perceptible level of vibration. These figures are based upon historical field measurements at various similar construction sites.

Table 7.2-1: Approximate distances at which vibration may just be perceptible

Construction Activity	Distance from activity when vibration may just be perceptible
Heavy Vehicles (e.g. dump trucks)	5-10 m

Excavation	10-15 m
Vibratory compaction	10-15 m
Hydraulic breaker	15-20 m
Rotary bored piling	20-30 m
Auger piling	15-20 m

Operational Vibration

7.2.19 As the vibration levels from the proposed development will be controlled by applying good engineering practice, it is highly unlikely that disturbance in public, residential or sensitive ecological areas will arise due to ground vibration.

7.2.20 However, as a precautionary measure, the impacts of machinery operations on residents near the paper mill have been assessed in order to prevent annoyance and disturbance generated by vibrations and ground-borne noise.

Magnitude of Change (Impact)

7.2.21 In accordance with the IEMA guidelines, noise impact may be determined by comparing the predicted noise level with an absolute noise limit value and/or by calculating the change in the noise level.

7.2.22 The impact magnitude of noise associated with the operation of fixed plant is determined with reference to BS4142:2014, as shown in Table 7.3-4.

Table 7.2-2: Operational Noise – Impact Magnitude

Magnitude	Definition
Major	Rating level is 10dB or more above the background sound level
Moderate	Rating level is between 5,5 and 9,9dB above the background sound level
Minor	Rating level is between 0,1 and 5,4dB above the background sound level
Negligible	Rating level is between 0 and 9,9dB below the background sound level
None	Rating level is 10dB or more below the background sound level

Significance of Effect

7.2.23 Generic noise effects are detailed in the IEMA guidelines. Where an adverse impact is identified, the IEMA guidelines present the following generic relationship between noise impact and noise effect:

- **Negligible Impact Noise Effect** – “Noise impacts can be heard but do not cause any change in behaviour or attitude, e.g. turning up volume on television, speaking more loudly, closing windows. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life”;
- **Minor Impact Noise Effect** – “Noise impact can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume on television, speaking more loudly, closing windows. Potential for non-awakening sleep disturbance. Affects the character of the area such that there is a perceived change in the quality of life”;

- **Moderate Impact Noise Effect** – "Causes a material change in behaviour and/or attitude. e.g. avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty getting back to sleep. Quality of life diminished due to a change in character of the area"; and
- **Major Impact Noise Effect –** "Significant changes in behaviour and/or inability to mitigate the effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening, loss of appetite, significant medically definable harm, e.g. auditory and non-auditory".

7.2.24 The significance of the noise effect will depend on the receptor type and its sensitivity to the noise impact. The sensitivity of the receptor is shown in Table 7.2-3.

Table 7.2-3: Significance of Noise Effects

Magnitude	Sensitivity Very high	Sensitivity High	Sensitivity Medium	Sensitivity Low
Major	Major	Major	Major	Moderate
Moderate	Major	Moderate	Moderate	Minor
Minor	Moderate	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible
None	None	None	None	None

7.3 Baseline Conditions

7.3.1 Ambient sound data was obtained as part of the application for the existing permit. Background sound levels were identified and accepted as part of the permit application. These background sound levels have been adopted for this assessment.

7.3.2 The adopted background sound levels are presented in the table below.

Background Noise Levels

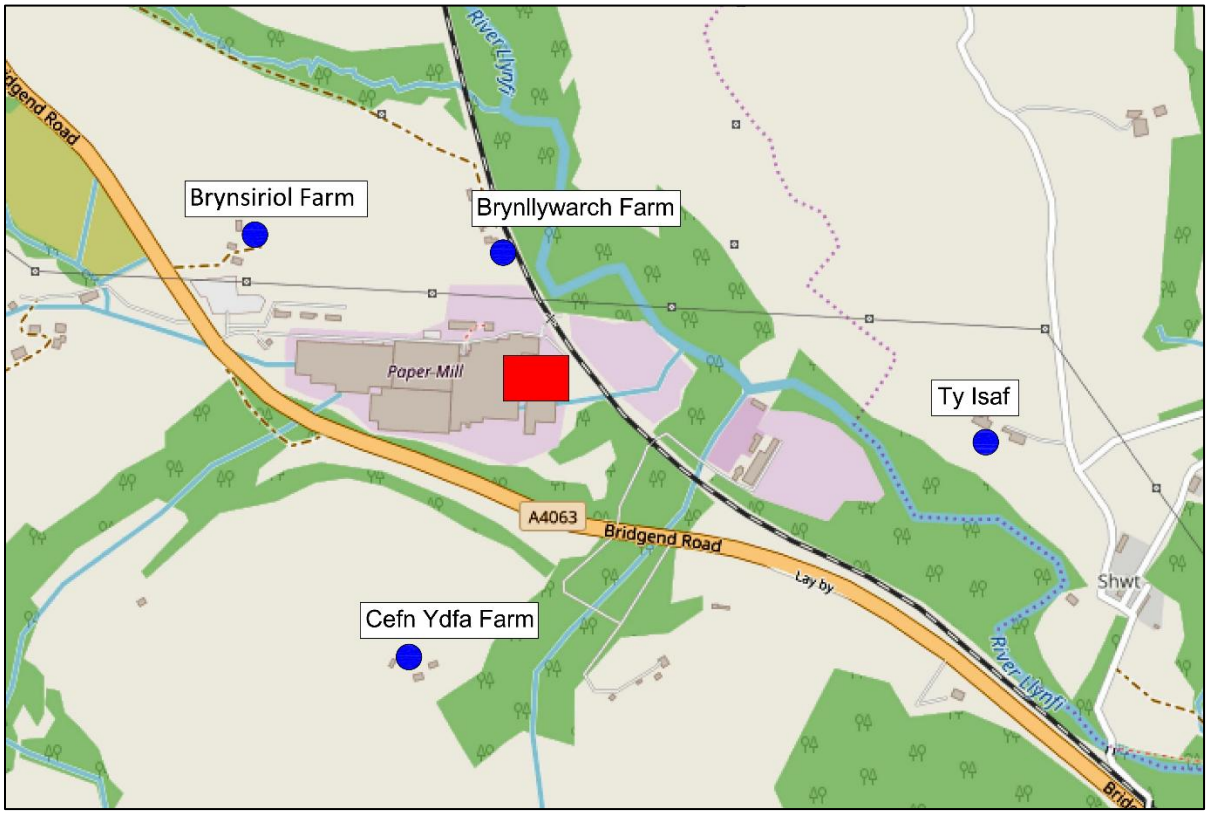
7.3.3 The nearest residential receptors to the site are situated between approximately 160m and 630m away from the WEPA facility. The nearest receptors are detailed in Table 7.3-1.

Table 7.3-1 Residential receptors

ID	Receptor	Distance from nearest boundary
R1	Brynllywarch Farm	160 m
R2	Brynsiriol Farm	220 m
R3	Cefn Ydfa Farm	380 m
R4	Ty Isaf	630 m

7.3.4 The residential receptors and proposed boiler house location are presented in Figure 7.3-1.

Figure 7.3-1: Site Layout and Nearest Residential Receptors



7.3.5 Ambient sound data was obtained as part of the application for the existing permit. Background sound levels were identified and accepted as part of the permit application. These background sound levels have been adopted for this assessment. The adopted background sound levels are presented in Table 7.3-2 below.

Table 7.3-2 Adopted Background Sound Data

Receptor	Background Sound Level, dB $LA_{90,T}$	
	Day	Night
R1 -Brynllywarch Farm	43	41
R2 -Brynsiriol Farm	49	37
R3 -Cefn Ydfa Farm	46	41
R4 -Ty Isaf	46	41

7.3.6 The previously accepted background sound levels have been adopted to allow assessment in accordance with BS 4142 and to determine the likelihood of adverse effects relating to the proposed development. These levels have been adopted to allow consideration of the likelihood of impacts, in the absence of the current on-site activities.

7.4 Assessments of Effects

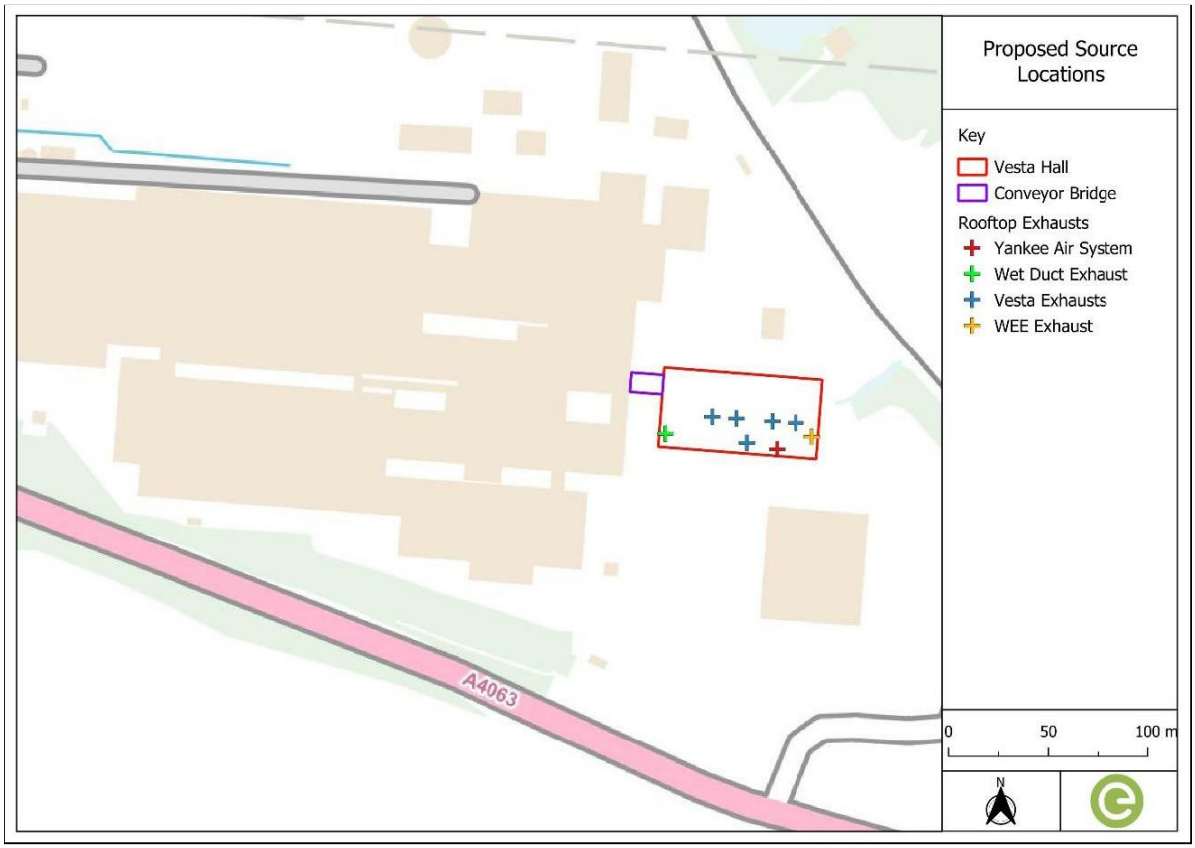
Computer Noise Modelling

7.4.1 The potential for impacts arising from the proposed activities has been determined by calculation of likely noise levels due to the proposed Vesta paper machine building. The proposed sources have been considered both in isolation and in combination with the previously calculated on-site activities. The previously accepted background sound levels have been adopted for assessment in accordance with BS 4142.

7.4.2 Sound emission levels from the Proposed Development have been calculated using predictive computer noise modelling. The noise modelling software (Cadna-A) uses algorithms based on ISO 9613 ‘Attenuation of sound during outdoor propagation’ to predict noise levels generated at receiver locations by noise sources.

7.4.3 The proposed sources have been modelled based on information provided by the applicant, and include the proposed Vesta building, rooftop exhausts and conveyor bridge. Sound levels have been calculated at nearby noise sensitive receptor locations as presented in Figure 7.4-1. The locations of modelled sources are presented in Figure 2.

Figure 7.4-1: Modelled Activity Locations



7.4.4 The source sound power levels and derived octave band sound power levels are presented in Appendix B1 of the Noise Assessment.

Table 7.4-1: Plant Items and Source Levels

Plant Item	Sound Power Level, LWA
Vesta Building (Internal)	108.0
Vesta Building Exhausts	80.0
WEE Roof Exhaust	85.0
Wet Dust Exhaust	85.0
Yankee Air System Exhaust	85.0
Conveyor Hall	78.4

7.4.5 It is understood that the building cladding will be Kingspan KS1000 cladding system or similar. The roller doors are understood to be closed during typical operation. Adopted octave band data for the roof and façade construction is presented in Appendix B2. The building details are presented in Appendix B3. The modelled noise levels for the proposed building and conveyor hall are presented in Appendix B4.

7.4.6 The calculated specific sound levels at the nearest residential receptors are presented in Table 7.4-2.

Table 7.4-2: Calculated Specific Sound Levels

Receptor ID	Specific Sound Level, dB
R1	28
R2	21
R3	26
R4	19

7.4.7 BS 4142 requires that an acoustic feature correction is applied to the specific sound level in order to obtain a rating level LAr,Tr at the identified receptor. Where applicable, the correction is applied in order to consider the effect of additional acoustic characteristics present in the source of interest. The correction is applied based on tonality, impulsivity and intermittency that may be perceptible at the receptor location.

7.4.8 Calculated specific levels are well below the adopted background sound levels and therefore are highly unlikely to be perceptible at the receptor locations. Accordingly, no feature correction is required.

Proposed Activities

7.4.9 The rating levels for the proposed plant items, in isolation from the extant on-site activities, and subsequent BS 4142 assessment are presented in Table 7.4-3.

Table 7.4-3: Calculated Rating Levels, LAr,Tr and BS 4142 Assessment

Receptor ID	Specific Sound Level	Acoustic Feature Correction	Rating Level	Background Sound Level	Excess Over Background
Day					
R1	28	0	28	43	-15
R2	21	0	21	49	-28
R3	26	0	26	46	-20
R4	19	0	19	46	-27
Night					
R1	28	0	28	41	-13
R2	21	0	21	37	-16
R3	26	0	26	41	-15
R4	19	0	19	41	-22

7.4.10 The calculated rating levels do not exceed the background sound levels during all assessment periods. BS 4142 indicates that where the rating level does not exceed the background sound level the impact of the specific sound level is likely to be low.

7.4.11 The rating levels pertaining to the proposed plant items are unlikely to result in impacts at the nearby residential receptors.

Combined Activities

7.4.12 The previously accepted commercial sound assessment identified that acoustic feature corrections would be required for the on-site plant and activities. The previous feature corrections and calculated specific levels, without mitigation, have been adopted to ensure a cautious consideration of the combined proposed and existing activities. The combined sound levels include the most recent application for a proposed boiler house in order to ensure an appropriate worse-case assessment.

7.4.13 The rating levels for the combined activities (existing and proposed sources) and BS 4142 assessment are presented in Table 7.4-4.

Table 7.4-4: Calculated Rating Levels, LAr,Tr and BS 4142 Assessment

Receptor ID	Specific Sound Level	Acoustic Feature Correction	Rating Level	Background Sound Level	Excess Over Background
Day					
R1	34	2	36	43	-7
R2	29	5	34	49	-15
R3	34	2	36	46	-10
R4	31	2	33	46	-13
Night					
R1	32	2	34	41	-7
R2	29	5	34	37	-3
R3	33	2	35	41	-6
R4	30	2	32	41	-9

7.4.14 This combined assessment is considered to be suitably cautious and does not take account of any on-site mitigation for existing activities or for the removal of the existing Jupiter paper machine, which will be decommissioned following the with introduction of the proposed Vesta paper machine building.

7.4.15 The calculated rating levels remain below the adopted background sound levels even after consideration of combined sound levels and acoustic feature corrections.

Uncertainty – BS 4142

7.4.16 The calculation of the specific level for proposed items is based on information provided by the applicant and the resultant calculations as presented within this assessment. Any changes in activities, plant items or processes will affect the results of this assessment. Based on the information provided, it is understood that the assessment is representative of current on-site and proposed activities.

7.4.17 The calculated combined sound levels include previously calculated levels for the WEPA site, which are inclusive of all extant activity. The existing Jupiter paper machine is therefore included within these sound levels. The existing machine will be decommissioned with the implementation of the proposed Vesta building and therefore will not be a source of sound.

7.4.18 Additionally, the application for the proposed boiler house has been included within these calculations and the same approach was taken for the assessment of associated sound levels.

7.4.19 It is therefore considered that these sound levels are appropriately cautious and that sound levels may fall below those calculated based on the information provided.

7.4.20 The background sound levels were accepted as part of the previous permit application and have been adopted to allow consideration of the combined on-site activities as well as proposed items. The use of these previously accepted levels is considered to be appropriate for cautious consideration without the inclusion of the previously introduced plant items. The current background sound level is likely to be higher. In such a case, the calculated rating levels associated with the proposed Vesta building would fall further below the background sound levels.

7.4.21 The impact magnitude and significance of operational noise effects during the daytime and night-time periods, at each receptor, are shown in Table 7.5-5.

Table 7.4-5: Operational Noise Effect Impact Magnitude and Significance

Receptor	Period	Predicted Specific Sound Level, LAeq,T - Derived Background Sound Level LA90	Impact Magnitude	Significance of Effect
R1	Daytime	-7	None	None
	Night-Time	-7	None	None
R2	Daytime	-15	None	None
	Night-Time	-3	None	None
R3	Daytime	-10	None	None
	Night-Time	-6	None	None
R4	Daytime	-13	None	None
	Night-Time	-9	None	None

7.4.22 The results in Table 7.4-5 show that the magnitude of noise impacts associated with the operation of the proposed development is predicted to be 'None' at all assessed receptors.

7.4.23 The results in Table 7.4-5 also show that the significance of noise effects associated with the operation of the proposed development is predicted to be 'None' at all assessed receptors:

Vibration Effects during Construction Phase

7.4.24 The closest vibration-sensitive residential property to the proposed development is Brynllywarch Farm at a distance of 160m. On the basis of these figures, it is highly unlikely that vibration from construction operations would be perceptible and mitigation measures are considered unnecessary.

7.4.25 Vibration will also be controlled such as to not interfere with the operation of the existing paper machines which is highly sensitive in terms of vibrations.

7.4.26 Another potential source of vibration related to the operation of the development would be vehicles on the road network in particular trucks serving the proposed facility. However, these sources already exist, and there would be no significant increase in traffic and consequently in vibration magnitude, simply a small increase in event numbers during the construction phase. Hence, any impact from vibration related to additional traffic would be temporary and insignificant.

Vibration Effects during Operational Phase

7.4.27 The assessment divides the whole mechanical system into the subsystems emission of vibrations by machine operation (A), transmission by wave propagation in machine foundations and subsoil (B) as well as emission of vibration and secondary noise in residential buildings (C).

(A) Machine Operation

7.4.28 Tissue machinery induces continuous machine vibrations from rotating equipment within a frequency range from 3-25 Hz as turning frequencies as well as multiples thereof from harmonics.

7.4.29 The amplitudes mainly from residual unbalances are limited due to high product quality requirements like basis weight fluctuations. This implicates the necessity for precision balancing with grades of G 1.0-2.5 according to ISO 1940 and a machine installation on rigid and heavy concrete foundations. Furthermore, machine vibrations have to be limited for maintenance, operational safety, energy consumption, and noise emissions. Guidelines for machine vibrations are provided in ISO 10816 (e.g. 4.5mm/s for permanent operating machinery) and/or machine suppliers. The machine foundations have to be designed according to dynamic principles in order to provide enough mass inertia, structural stiffness and damping. Therefore, concrete framework structures with beams, columns, walls and raft foundations are constructed to diminish machine vibrations at machine footplates to 1.0mm/s. A massive raft foundation with ground support or piles cause further vibration reductions at ground level close to the human perception threshold of 0.1 mm/s (vibration velocity according to DIN 4150-2) or 15 mm/s' (vibration acceleration according to ISO 2631-1).

(B) Transmission by wave propagation in machine foundations and subsoil

7.4.30 Structural vibrations are transmitted to the soil and propagate as body or surface waves. This wave propagation combined with material damping attenuates the amplitudes further. For a distance of 340m between the closest residential property and the new tissue machine and wet clay an amplitude of 0.004 mm/s can be calculated (DIN 4150-1). A possible transmission path for body waves in piles and bedrock in a depth of 6-15 m is not given for residential buildings without pilings connected to the same bedrock layer. Therefore, a direct structure born noise generation with subsequent secondary low frequency noise emission do not occur.

(C) Emission of vibration and secondary noise in residential buildings

7.4.31 Due to resonance effects in buildings especially floor slabs, the predicted amplitudes must be increased by a resonance factor of 5.0-10.0 yielding not more than 0.004 x 10 = 0.04mm/s, which is well below the perception threshold.

7.4.32 Consequently, vibrations from the paper machine results in vibration levels which are well below the human perception threshold. They are therefore considered not significant.

7.5 Mitigation Measures

Construction Noise Mitigation

7.5.1 It is assumed that specific mitigation measures to reduce sound levels during the construction phase are not required. Notwithstanding the above, several safeguards exist in order to control and minimise the effects of construction noise, and these would apply during the construction phase. These include:

- European Commission (EC) Directives and United Kingdom (UK) Statutory Instruments of control noise emissions from construction plant;
- The guidance within BS5228-1:2009+A1:2014 on the control of noise from construction sites; and
- Section 60 of the Control of Pollution Act 1974, which gives local authorities the power to control noise from construction sites

7.5.2 The adoption of Best Practicable Means is usually the most effective means of controlling noise from construction sites. Experience has shown that by implementing these measures, typical noise levels from construction activities could be reduced by 5dB or more. Furthermore, problems concerning noise from construction works can sometimes be avoided by taking a considerate and neighbourly approach with local residents.

7.5.3 As construction activities would be temporary in nature, and noise levels have been predicted for a worst-case scenario, no specific mitigation measures are considered necessary.

Operational Noise Mitigation

7.5.4 The assessment has shown that predicted noise rating levels for the operation of the development are expected to be negligible at all receptor locations.

7.5.5 Mitigation measures will therefore not be required.

7.6 Residual Effects

7.6.1 The results of the Noise Assessment show that at all receptor locations, the significance of effects will be ‘Negligible’ or ‘None’. No residual effects are therefore expected to occur.

7.7 Summary and Conclusion

7.7.1 An assessment has been undertaken for the potential impacts attributable to the sound emitted from the proposed Vesta paper machine building at the existing WEPA paper mill site in Bridgend.

7.7.2 Information provided by the applicant has been used to calculate the specific and rating sound levels attributable to the proposed and existing activities at the nearest receptors.

7.7.3 Based on the information provided and considerations as presented within this assessment, the excess of the calculated rating over the background sound level indicates that there is low likelihood of newly introduced adverse impacts due to the proposed Vesta paper machine building and associated rooftop plant.

7.7.4 Consideration of the combined sound levels, inclusive of current on-site activities indicates that the combined rating level would also fall below the previously accepted background sound levels, which have been adopted for this assessment.

7.7.5 The assessment has been undertaken based on the information provided and the associated calculations are detailed within this report. The calculations indicate that significant impacts are unlikely.

8.0 Landscape and Visual Amenity

8.1 Introduction and Scope

Technical Scope

8.1.1 This report presents the assessment of landscape and visual effects arising from the proposed development. It describes and assesses the existing landscape and visual resources of the Development Site and its vicinity.

8.1.2 This includes identification of the character and features of the landscape and consideration of the changes that will result as a consequence of the extension of the WEPA paper mill (Landscape Character Assessment).

8.1.3 In addition, it considers the potential visual effects arising as a result of the proposed development (Landscape and Visual Impact Assessment (LVIA)).

8.1.4 The assessments are considered separate, although linked, processes.

Landscape Character Assessment

8.1.5 Landscape character and resources are considered to be of importance in their own right and are valued for their intrinsic qualities irrespective of whether they are seen by people. Effects on the landscape include physical changes to the landscape as well as changes to landscape character. It may also include effects on areas designated for their scenic or landscape qualities.

Landscape and Visual Impact Assessment (LVIA)

8.1.6 In relation to ' visual effects', visual amenity is defined as the pleasantness of the view or outlook of an identified receptor or group of receptors. Visual amenity effects are perceived by people and are therefore clearly distinguished from, although closely linked to, effects on landscape character.

8.1.7 The visual assessment determines the degree of anticipated change to visual amenity that would occur as a result of the proposed development, considering buildings and roads.

Study Area

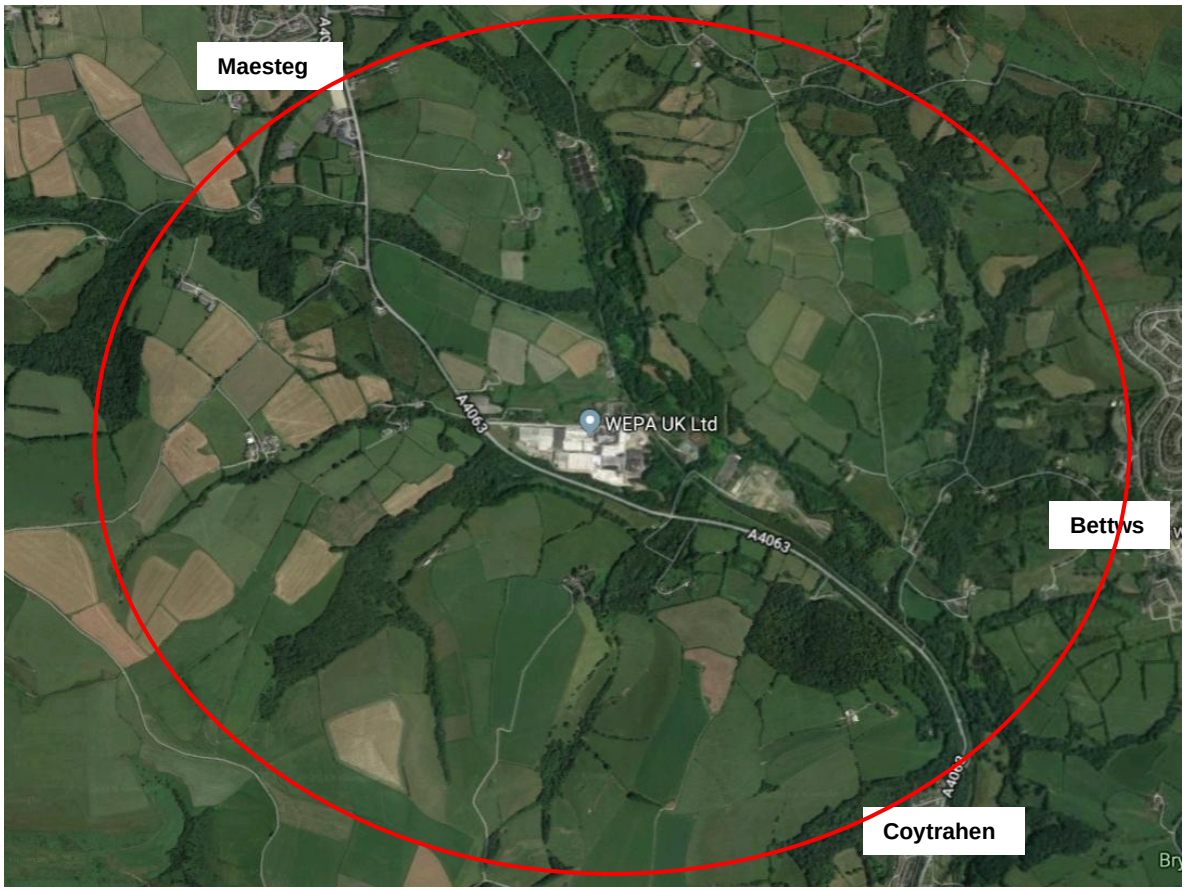
8.1.8 For this assessment, the potential visual influence within the wider landscape of the proposed development has been obtained through field survey aided by the presence of existing tall structures such as the existing 40m high stack of the WEPA power plant, and a number of pylons of overhead high voltage cables. These existing structures have been used as locational and height reference points to assist with the likely visibility of the proposed development, selection of viewpoints and assessment of effects.

8.1.9 Using the existing paper mill and the pylons as a guide, it was observed that at distances greater than approximately 4 km a development of the scale proposed will not be visible to the naked eye. The existing paper mill is visible at distances approximately 3 km from the site, but it has little impact on the view. Therefore, for this assessment, the study area for both the landscape and visual impact assessment includes the area within a 2 km radius around the development site. (Figure 8.1-1).

Land use in the study area

8.1.10 The WEPA mill site is bordered to the south and west by the A4063. The River Llynfi runs to the east of the site. To the north of the site, there are open fields and farmland. In the immediate surrounding of the site, sheep farming is the predominant land use. Woodland cover in the area is generally sparse, mainly confined to lining roads, around villages and along small streams and rivers such as the River Llynfi and its tributaries.

Figure 8.1-1: Study area



Objectives of this Assessment

8.1.11 This section presents the results of the Landscape Statement that assesses the potential landscape and visual impacts of the proposed development (Document Ref.: 59200-0044).

8.1.12 Specifically, the LVIA addresses the following:

- landscape planning context for the development including a review assessment of the relevant landscape designations and the planning policies;
- landscape character and condition of the site and its relationship with the surrounding area;
- visual prominence of the proposed development within the surrounding landscape and the identification of representative visual receptors;

- the significance of the impacts arising from the new development on landscape character and landscape elements and features within the development site boundary; and
- the significance of the impacts arising from the development on representative visual receptors from locations within the short, middle and long distance.

8.2 Assessment Methodology

Guidance

8.2.1 The landscape and visual impact assessment (LVIA) has been undertaken in accordance with relevant guidance provided in the following publications:

- Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management and Assessment, 3rd Edition, 2013;
- Countryside Council for Wales / CADW (2007) 'Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process'; and
- Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals.

Desk Study

8.2.2 As part of the desk study the baseline landscape and visual resource was defined within a 2.0 km radius study area and the main users of the area, key viewpoints and key features were identified.

8.2.3 Existing data such as Ordnance Survey Maps, detailed ordnance survey map data for the site, the Local Development Plan, plans, elevations and cross-sections of the proposed development were reviewed in order to identify suitable viewpoints. The size of the study area has been based on the scale and the likely visibility of the proposed development.

Field Survey / Assessment

8.2.4 The assessment of potential effects has used information gathered from site visits, and site photographs. Photomontage impressions have been generated from a selection of these photographs to indicate the potential changes in views from selected locations.

Photographs and Panoramas

8.2.5 Using computer aided design and visualisation software, a 3D model of the proposed development and of the topography of the surrounding area was created. Views of the proposed development were generated, to correspond to the photographic panorama. The photomontages were prepared by combining the computer-generated views with the photographic image, using graphics software to create the final image.

8.2.6 All photographs have been taken with a digital camera, with 70mm focal length lens, mounted on a level panoramic head tripod. They seek to illustrate the full extent of the proposals within the local landscape that would be experienced at each viewpoint.

8.2.7 The criteria for selection were that they are:

- representative of the dominant aspects of the proposed development from different directions,
- from publicly accessible viewpoints where numbers of people might be expected to linger, or, if travelling, where the same view was held for some distance

8.2.8 In each case, the direction of view from the viewpoint is that towards the proposed development. The photomontages indicate the location, scale and massing profile, without showing architectural details. The location, scale and massing relate directly to the information illustrated in the plans and drawings accompanying the planning application documents.

8.3 Assessment Criteria

8.3.1 In order to provide a level of consistency to the assessment, the prediction of magnitude and assessment of significance of visual effects will be on the following pre-defined criteria.

Sensitivity of the Landscape Characters to Change

8.3.2 The capacity of the landscape to accept change of the type and scale proposed has to be assessed based on the vulnerability of each landscape character area to degradation through the introduction of new features, or through the loss of existing features. The sensitivity to change for various areas is illustrated within Table 8.4-1. A three-point scale has been adopted which broadly defines landscape areas relative to their quality and their capacity to accept changes arising from the Proposed Development. The degree of sensitivity to change relates to exiting land use; the pattern and scale of the landscape, visual enclosure/openness of views and location of visual receptors, the scope for mitigation and the value placed on the landscape. The scale is as follows:

Table 8.4-1: Sensitivity to Change Rating (Landscape Character)

Sensitivity Rating	Criteria Description
High sensitivity to change	A landscape of particularly distinctive character and scenic quality where any development would greatly affect landscape character and ‘sense of place’. Where mitigation would be required but effective mitigation would be difficult to achieve. This would include: • Nationally and regionally designated landscape for its scenic quality and character; • Iconic landscape of national significance; • Contains features or sites of national importance; and • Landscape characteristics very highly sensitive to development
Medium sensitivity to change	A landscape of moderately valued characteristics and scenic quality where some types of development would have an effect on landscape character and ‘sense of place’. Where mitigation would be required but effective mitigation results may take time to be effective. This would include: • Locally designated landscape for its scenic quality and character, contains some features of interest;

Sensitivity Rating	Criteria Description
	• The landscape is relatively intact, with a distinctive character; • The landscape is reasonably tolerant of change; • Undesignated landscape which may be valued locally - for example an important open space; and • Landscape with relatively ordinary characteristics, some detractors.
Low sensitivity to change	A landscape of no distinctive character and scenic quality where most types of development would be accommodated without affecting landscape character and 'sense of place'. Where effective mitigation would be readily achievable. This would include: • Relatively degraded or low value landscape with no designations; • Landscape in poor condition and a degraded character; • No designations present; • Extensive detractors overwhelm sense of place • No features of interest; and • Characteristics not affected by development.

Sensitivity of Visual Receptors

8.3.3 Visual receptors are those who will potentially see the proposed development from particular locations or viewpoints. They typically include the users of public footpaths, cycle routes and published walks; visitors to tourist attractions, residents; users of recreation and amenity open spaces; users of public roads, railways, navigable waterways; and workers (in their workplace). The sensitivity of visual receptors depends upon the location of the viewpoint, the activity of the receptors, and their expectations in relation to the view. The criteria for the assessment of visual receptor sensitivity are provided in Table 8.4-2. Sensitivity of the visual receptors is classified as high, medium or low.

Table 8.4-2: Definition of Visual Receptor Sensitivity

High	Viewers' attention likely to be focused on the landscape or have high interest in their everyday visual environment and/or with prolonged and regular viewing opportunities. Such receptors would include: • Occupiers of residential properties; • Visitors to tourist attractions; • Recreational receptors using recreational facilities such as National Cycle Routes, National Trails, and designated long distance footpaths; • Recreational receptors using public rights of way or viewpoints in nationally or locally designated landscapes; • People experiencing views from important landscape features of physical, cultural or historic interest, beauty spots and picnic areas;

	• Large number of viewers and/or location in highly valued landscape could elevate viewer sensitivity to highest.
Moderate	Viewers with moderate interest in their environment, and discontinuous and/or irregular viewing periods. Such receptors would include: • Users of schools; • Local viewpoints; • Road or rail users – travellers and passengers of moving vehicles. • Users engaged in outdoor sport or recreation other than appreciation of the landscape (i.e., hunting, shooting, golf, water-based activities) • Users of secondary footpaths or footpaths that may be already impacted by intrusive features
Low	Viewers with a passing interest in their surroundings and momentary viewing periods. Such receptors include: • People engaged in outdoor sports or recreation where enjoyment of the landscape is incidental rather than the main interest; • people in commercial buildings or commercially engaged pedestrians, whose attention may be focused on their work or activity rather than the wider landscape; • Drivers/travellers and/or passengers of moving vehicles including trains. • People at their place of work, including agricultural workers and other non-motorised users on most roads or those already impacted by intrusive features.

Magnitude of Impacts

8.3.4 According to Guidelines for Landscape and Visual Impact Assessment (GLVIA 3) (IEMA 2013), the magnitude of impacts is described as a “combination of the scale, extent and duration of an effect. The magnitude of landscape and visual impacts are judged using the criteria set out below.

Magnitude of Landscape Impacts

8.3.5 The magnitude of landscape impacts is defined as high, medium, low, or negligible depending on the following factors:

- Scale and degree of change to the existing landscape resource;
- Nature and duration of the change caused by the proposed development (e.g. beneficial or adverse)
- Timescale or phasing of the proposed development

Magnitude of Visual Impacts

8.3.6 The magnitude of visual impacts is defined as high, medium, low or negligible depending on the following factors:

- The scale of change in the view with respect to the loss and/ or addition of new features;
- The degree of contrast, or integration of / compatibility with any new features with existing features in the view;
- The duration of the effect (temporary or permanent, intermittent or continuous). Temporary effects are considered to be less significant than longer term or permanent effects;
- The distance of the receptor from the source of the effect;
- The angle of view and presence of intervening vegetation or features;
- The dominance of the impact feature in the view.

8.3.7 It is assumed that the visual effects of the Project will reduce as viewing distance increases. The magnitude of visual effects at any given distance will vary according to a range of factors. They include the extent of the new buildings and structures that would be visible; their position in the view; the presence of other conspicuous features; and the extent to which views of the Project would be screened or filtered by intervening landform or by landscape elements such as trees, woodlands, hedgerows, or built structures; and the extent of mitigation planting.

Assessment Criteria for Magnitude of Impacts

8.3.8 Criteria used to assess the magnitude of predicted landscape and visual amenity effects are set out the Table below.

Table 8.4-3: Definition of Magnitude of Effects

Magnitude	Landscape Effects	Visual Effects
High	Total permanent/ long term loss or major change to key landscape features or elements of the baseline that is important to character.	Total permanent/ long term loss or major change in the existing view, change very apparent involving high level of change in character and composition of baseline, i.e. pre-development view
Medium	Notable partial/ long term loss or alteration to one or more key landscape features or elements of the baseline that is important to character.	Notable partial/ long term loss or alteration to the existing view, change apparent involving change in character and composition of baseline, i.e. pre-development view
Low	Minor permanent/ long-term loss or alteration to one or more key landscape features or elements of the baseline that is important to character.	Minor permanent/ long term loss or alteration in baseline, i.e. pre-development view, change will be distinguishable from the surroundings whilst composition and character of view, although altered will be broadly similar to pre-change circumstances

Negligible	Very minor permanent/ long term loss or change to one or more key landscape features or elements of the baseline that are important to character.	Very minor permanent/ long term loss or change in the existing view, change barely distinguishable from surroundings. Character and composition of view substantially unaltered

Evaluating the significance of Landscape / Visual effects

8.3.9 The significance of effects combines the **sensitivity** of the receptor and the degree to which the receptor would be affected (i.e. **magnitude** of effect). The significance of effect is expressed on the following scale:

- Large;
- Moderate;
- Slight;
- Neutral.

Table 8.4-4: Assessing the Significance of Landscape / Visual Effects

VISUAL SENSITIVITY	**High**	Very Large / Large	Large / Moderate	Moderate	Slight
	Medium	Large	Moderate	Slight / Moderate	Slight / Neutral
	Low	Moderate	Moderate / Slight	Slight / Neutral	Slight / Neutral
		High	**Medium**	**Low**	**Negligible**
		MAGNITUDE OF EFFECT			

8.3.10 Where visual effects have been identified as **large** or **large / moderate**, this is considered a significant effect. It should be noted that significant impacts need not be unacceptable, or necessarily negative, and may be reversible.

8.3.11 Judgements on the overall significance of effect need to be determined using informed and well-reasoned professional judgement. To help guide the judgements the following scale of significance and associated descriptions will be used in the assessment (Table 8.4-5).

Table 8.4-5: Definition of Significance of Landscape / Visual Effects

Significance	Landscape Effects	Visual Effects
Very large	The Project would result in effects that: • Are at a complete variance with the landform, scale and pattern of the landscape; • Would permanently degrade, diminish or destroy the integrity of valued characteristic features, elements and/or their setting;	The Project would cause a very significant deterioration in the existing view. The view would be completely lost on a permanent/ very long-term basis. The visual, aesthetic and perceptual qualities would be very substantial altered in detriment to the special

Significance	Landscape Effects	Visual Effects
	• Would cause a very high quality landscape to be permanently changed and its quality diminished; and • Will be substantially damaging to a high quality landscape.	qualities/ key characteristics of the landscape and its amenity.
Large	The Project would: • Be out of scale with the landscape or at odds with the local pattern and landform; and • Will leave an adverse impact on a landscape of nationally recognised quality.	The Project would cause a significant deterioration in the existing view. The view would be partially lost on a permanent/ very long term basis. The visual, aesthetic and perceptual qualities would be significantly altered in detriment to the special qualities/ key characteristics of the landscape and its amenity.
Moderate	The Project would: affect the character of the designated landscape or reason for which it was designated; Be out of scale and/ or out of context with the receiving landscape;	The Project would cause a noticeable deterioration in the existing view. The view would be partially impacted upon. The visual, aesthetic and perceptual qualities would be changed/ altered affecting the special qualities/ key characteristics of the landscape and its amenity.
Slight	Slight or minor change affecting the character of the landscape or the elements therein.	The Project would cause a barely perceptible deterioration in the existing view.
Neutral	No perceptible change affecting the character of the landscape or the elements therein. Includes, 'no effect'.	No discernible deterioration or change in the existing view. Includes, 'no effect'

8.4 Baseline Conditions and Receptors

Site history

8.4.1 Prior to development of the mill site most of the land in the area was undeveloped farmland with woodland in the bottom of the Nant Gwyn Valley. The two farmsteads of Brynllywarch-fach and Brynllywarch-fawr were established by 1877, as was the Bridgend to Maesteg railway. Aerial photographs indicate that earthworks were in progress at the mill site by 1947 and Wiggins Teape started production there in 1950 using water from the Afon Llynfi and power and steam from the adjacent Llynfi Power Station. By 1960, the mill was producing tissue from four paper machines. Expansion took place in the early 1960s. By this time, the Nant Gwyn had been culverted, the filtration plant and sludge ponds had been extended and further settling tanks constructed. It was at this time that the three bungalows on the site were constructed. The current "Jupiter" paper machine was installed in 1969.

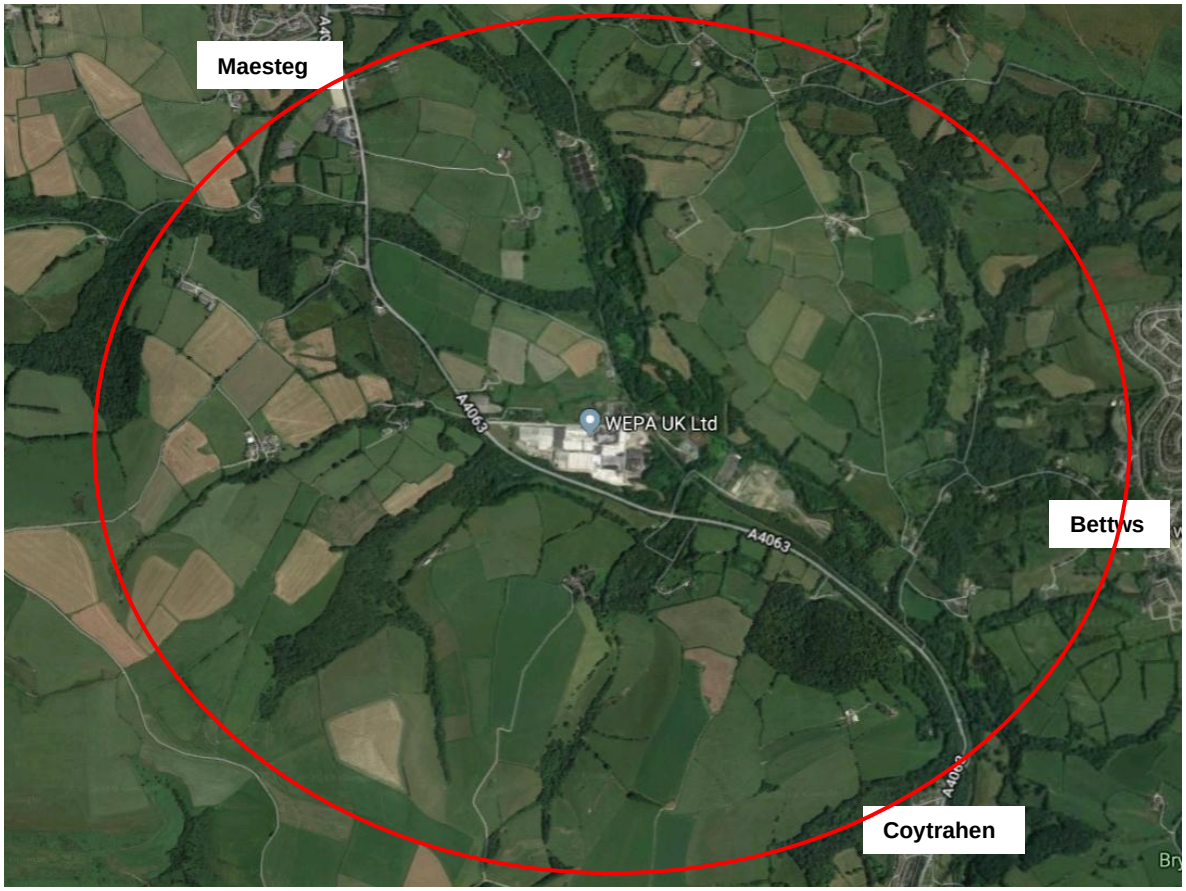
8.4.2 The mill has continued to expand since the 1960s. Parts of the mill site have been used for the tipping of ash from the power station and unsuitable wastes from construction have been deposited to the east of the railway line. Land in the vicinity of the development site has remained undeveloped with only a few buildings being constructed at the surrounding farmsteads.

The Site and the Surrounding Area

8.4.3 The development site is situated in a rural area approximately 5km to the south-east of the town of Maesteg, and areas of farmland and woodland lie in all directions. The WEPA mill site is bordered to the south and west by the A4063. The River Llynfi runs to the east of the site. To the north and to the east of the site there are open fields and farmland. In the immediate surrounding of the site, sheep farming is the predominant land use. The wider landscape is made up of open countryside, small agricultural landholdings and open grazing land with small patches of woodland on nearby hills. In the wider countryside, field hedgerows are varied. Around the large grazing fields, they are often gappy, with single old stunted hawthorns or the occasional oak tree. Some boundaries having been grubbed up to form large field sizes, leaving ditches and the occasional solitary tree.

8.4.4 The paper mill site occupies a less elevated position (80 - 90m AOD) at the mouth of the Nant Gwyn valley. Currently the paper mill is relatively well hidden due to tree screening along the A4063 and as a result of a dip in the topography; the principal markers approaching from the south are a vent stack and steam plumes. It is, however, highly visible from the road and from elevated vantage points around.

Figure 8.5-1: Development site and surrounding



red circle = 2km radius study area

8.4.5 There are numerous areas of woodland located within 2km of the proposed development site, the nearest of which lies approximately 20m to the south-west of the site, just beyond the A4063.

Figure 8.5-2: Woodland sites near the development site and in the surrounding

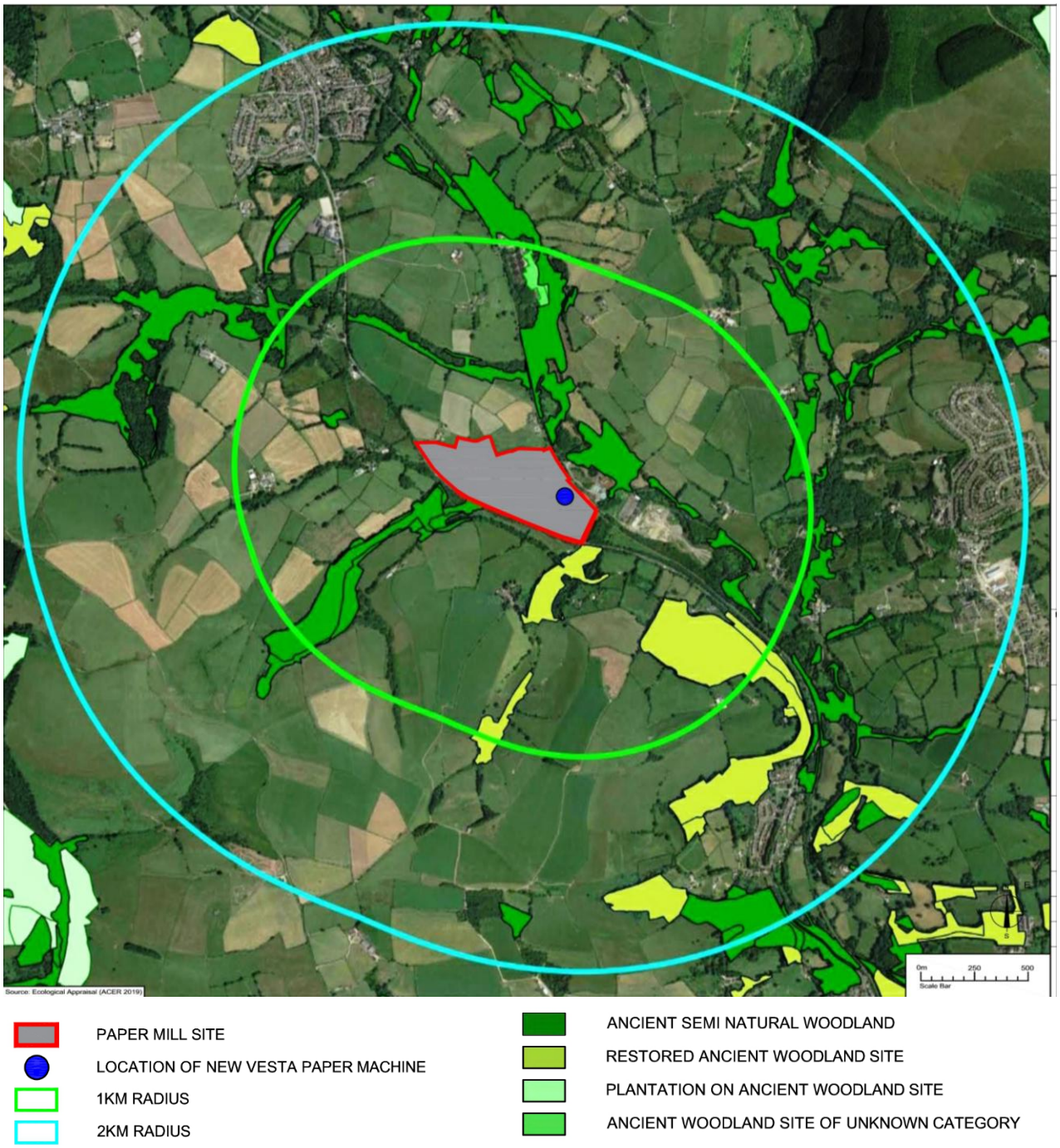
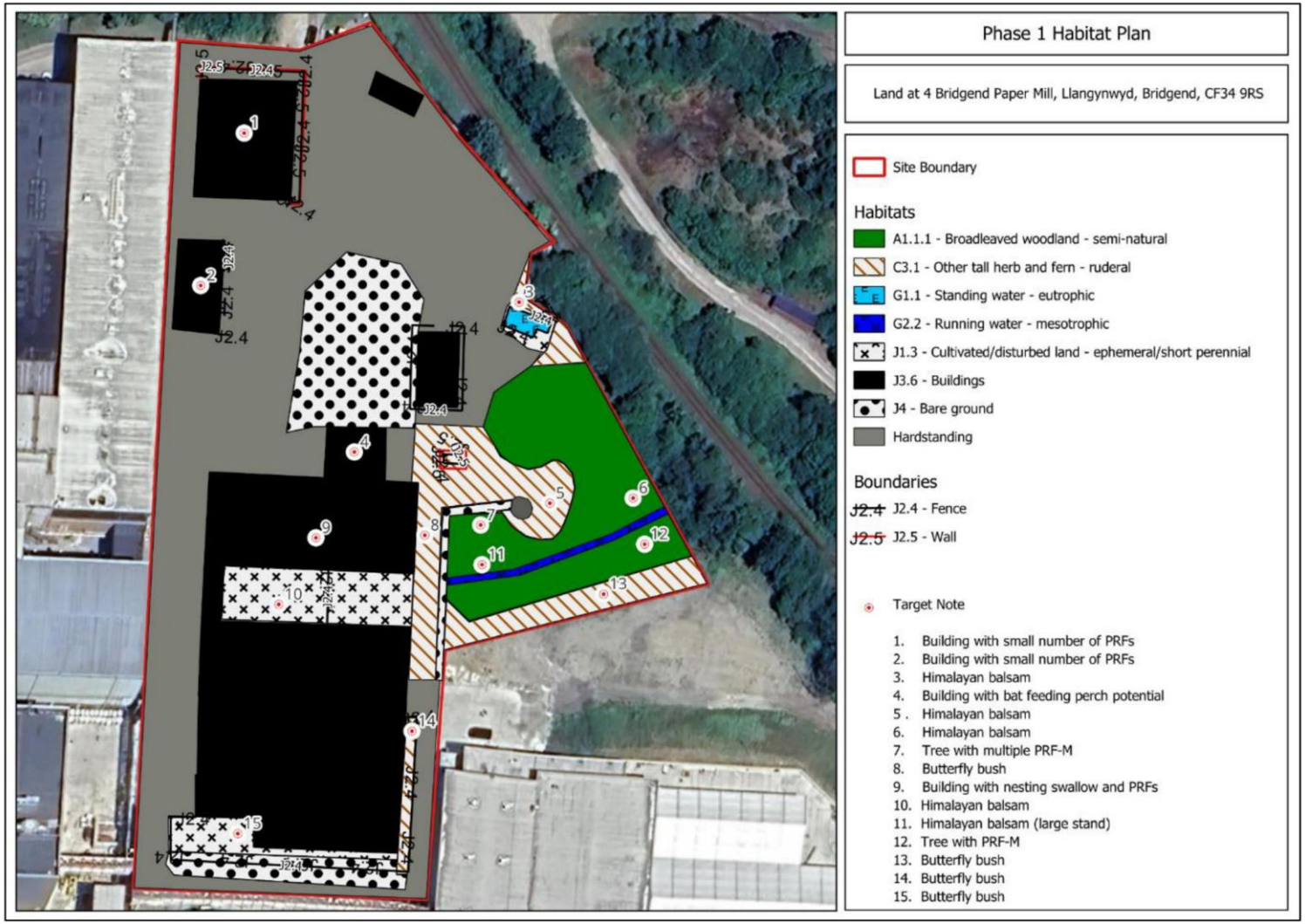


Figure 8.5-3: Extended Phase I Habitat Plan



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Landscape Character Areas

8.4.6 Several studies are of relevance to understanding the character of the landscape in the vicinity of Bridgend mill. The national and local scale assessments provide an important overview of landscape character to understand the site and its wider setting.

National Landscape Character Area (NLCA)

8.4.7 At the national scale, the proposed development falls within National Character Area 37 – South Wales Valleys. The landscape of the South Wales Valleys is one of Wales' more widely known images, combining the wilder and often inclement upland setting with the heavily industrialised valleys. Active mines and industry are now generally an image of the past, however the legacy remains extensively apparent today and together with the steep topography of the valley sides, has a defining influence on landscape character.

8.4.8 Levels and old railway alignments, the generally reclaimed but sometimes still perceptible physical footprints of mine spoil heaps, the often intensively urbanised valley floors with old industrial buildings, and lower valley sides with their distinctive long rows of workers terraces, retain the traditional image.

8.4.9 It is a landscape of contrasts. The valleys contain the extensive ribbon development, which snakes along the valley floors and lower valley sides, and sometimes with settlements precariously extending over intervening slopes and spurs. Devoid of settlement, the open upland plateaux afford extensive views across the valleys, southwards to the Severn Estuary and northwards to the Brecon Beacons. At times, views from plateau to plateau conceal the intervening valleys and thus visually connect more with the wider uplands of Wales. The sense of openness and remoteness is compromised by proximity to industry and people, for example reclaimed spoil heaps, fly tipping, pressure of people accessing the area for recreation in an unmanaged way, and occasional pylon lines, telecommunications masts and occasional wind turbine developments.

Local Landscape Character Areas

Application Site

8.4.10 The proposed development is located entirely on the WEPA UK premises, which is heavily industrial and developed land. The development will be viewed in the context of the existing paper mill. The value (sensitivity to change) of the landscape character of the application site is **low**.

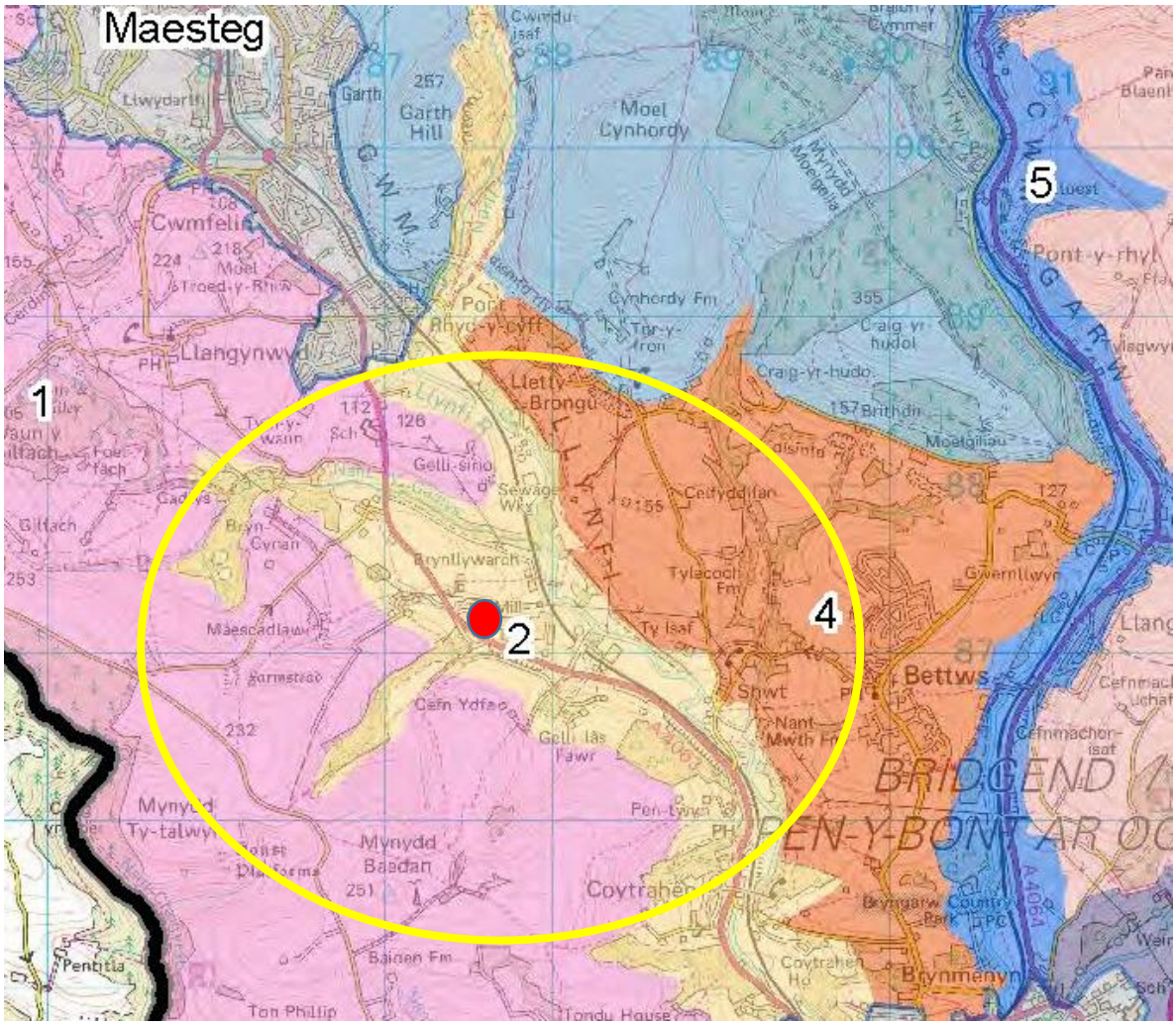
Study Area

8.4.11 The Landscape Assessment for the Study Area takes into account the "Landscape Character Assessment for Bridgend County Borough" (BCB 2013), which was designed to provide a sound evidence base for planners and developers to consider the character and sensitivity of the different landscapes of the County Borough when considering new developments. The primary aim of the Bridgend LCA is to ensure the area's distinctive, varied and dynamic landscapes are considered in the planning of any new development or land uses, and opportunities to enhance and strengthen character are pursued wherever possible.

8.4.12 The County Borough's Landscape Character Assessment classifies the development site and its surrounding area as part of three different Landscape Character Areas (Figure 8.5-4):

- Landscape Character Area 1 (LCA 1): Llangynwyd Rolling Uplands and Forestry;
- Landscape Character Area 2 (LCA 2): Llynfi Valley Floor and Lower Slopes; and
- Landscape Character Area 4 (LCA 4): Bettws Settled Farmland.

Figure 8.5-4: Landscape Character Areas in the Study Area



Reference: LCA for Bridgend County Borough (2013); yellow circle = 2km radius study area; red circle = Development Site

Landscape Character Area 1: Llangynwyd Rolling Uplands and Forestry

8.4.13 This Landscape Character Area is located along the north-western fringes of the County Borough, to the west of Maesteg. All of the landscape is defined as 'Upland' in LANDMAP's Visual & Sensory aspect (Level 2). The southern half of this LCA overlaps with the 'Western Uplands' Special Landscape Area SLA 3.

Landscape

8.4.14 LCA 1 is described as a strongly undulating upland landscape with a series of north-east facing slopes and hill summits ranging from 120 to 365 metres AOD. The distinctive topography is influenced by the heavily dissected Upper Coal Measures plateau greatly modified by the effects of glaciation. The landscape is crossed by a number of fast-flowing springs and streams, flowing into the Llynfi Valley to the east of this LCA.

Land use

8.4.15 This highly attractive rural area contains a network of irregular and small-scale pasture fields Agricultural land use is dominated by rough sheep and pony grazing on higher ground with a strong pattern of irregular fields enclosed by hedgerows, tree belts and stone walls.

8.4.16 The landscape is well wooded, with broadleaved woodland and scrub on the valley sides, particularly along the streams. Hedges are common throughout and comprise mainly hawthorn with hedgerow trees. The more elevated areas contain commercial plantations, which often extend up onto the upland plateau. The dark, straight plantation edges provide a stark contrast to the adjacent muted grasslands on rounded slopes.

8.4.17 The settlement pattern is characterised by small groups of dwellings thinly dispersed in the open countryside. A small number of minor roads, tracks and footpaths cross through the landscape.

Views and perceptual qualities

8.4.18 Despite the close proximity of nearby development and settlements, the landscape is characterised as strongly rural and tranquil. Tranquil qualities are eroded by the presence of pylons, telecommunications masts, urban fringe land uses close to Maesteg, and the established Bridgend paper mill. Ridgelines facing east afford panoramic views across the development site on distant skylines. Intervisibility with the paper mill is a strong feature of the eastern half of the LCA.

Evaluation and Sensitivity of the Landscape

8.4.19 The landscape is of **medium** value. The part of this LCA, which is a designated SLA, is considered of being of **high** value.

8.4.20 Its sensitivity to change is **medium** as a consequence of its undulating and generally well wooded character, which provides visual enclosure. However, open views across and out of the valley are important in places.

Landscape Character Area 2 “Llynfi Valley Floor and Lower Slopes”

8.4.21 This Landscape Character Area comprises the valley floor and lower slopes of the Llynfi Valley between Bridgend and Maesteg. All of the LCA is classed as ‘Lowland Valley’ in LANDMAP’s Visual & Sensory aspect (Level 2).

Landscape

8.4.22 The landscape is described as an attractive rural area containing a network of irregular and small-scale pasture fields on land that gently rolls towards the River Llynfi with valley sides dissected by frequent tributaries creating a landform of rounded spurs between incised valleys. It is largely a landscape of farmed valley sides, open topped hills and watercourses flanked by woodland. Hedges are common throughout and comprise mainly hawthorn with hedgerow trees. The more elevated areas contain commercial plantations, which often extend up onto the upland plateau.

Land use

8.4.23 Two dwellings look across to the site. Bryn-y-fro, which lies at a distance of less than 400m to the west, has an open aspect towards the site. The nearest dwelling, Brynllywarch-fawr, has a southerly aspect, with a view directly across the existing mill site, the boundary of which is about 150m away; it is about 250m from the proposed high bay warehouse.

8.4.24 Urban influences are generally limited. Settlement in the immediate vicinity of the paper mill is characterised by scattered dwellings and farmsteads. The central valley landscape is dominated by the large form of the Bridgend Paper Mills with landmark chimneys, along with pylons and other smaller industrial developments and sewage works dotted along the valley floor.

8.4.25 The valley floor of the River Llynfi is crossed by the snaking forms of the railway line and A4063 linking Bridgend and Maesteg.

Views and perceptual qualities

8.4.26 There are views to prominent hill summits either side – rising to over 350 metres at Craig-yr-hudol in the east, and overlooked by the hill summit of Mynydd Baedan (251 metres) in the west.

8.4.27 Other prominent features are the pylons of the 400kV overhead power line, which crosses the site east-west.

Evaluation and Sensitivity of the Landscape

8.4.28 This LCA is intimate in scale and enclosed both by dramatic, rolling landforms and broadleaved woodland and scrub. The river is highly attractive and forms a linear central feature; however, it is inaccessible for a large proportion of its length. Pasture fields are present in places and are small in scale with boundaries defined by mainly hawthorn hedges.

8.4.29 Views within this area are limited due to the visual enclosure. Detractors include the railway, sewage works, derelict land on the former site of the power station and Bridgend Paper Mill, although these are all well integrated and enclosed by woodland and landform.

8.4.30 This landscape is of medium value. Its sensitivity to change is low due to the extensive tree cover.

Landscape Character Area 4: Bettws Settled Farmland

8.4.31 This Landscape Character Area is centred on the hilltop village of Bettws, east of the development site and sandwiched between the Llynfi and Garw valleys. All of the LCA is classified as 'Lowland' in LANDMAP's Visual & Sensory aspect (Level 2).

Landscape

8.4.32 The landscape is strongly undulating with generally southerly facing slopes, with the elevated hill summit at Bettws rising up to 160 metres AOD.

Land use

8.4.33 Bands of broadleaved semi-natural woodland follow stream courses, linking with mature hedgebanks and in-field trees to produce a well-wooded character.

8.4.34 Agricultural land use consists of medium-scale irregular semi-improved grassland fields, with some rush pastures along streams. Mature hedgebanks and lines of trees form traditional field boundaries, with regular wooden-fenced horse paddocks a feature around Bettws.

8.4.35 Settlement is concentrated at Bettws, whose historic core is surrounded by post-war housing estates spreading along the hillside and sitting prominently on the elevated hill summit. Elsewhere scattered farmsteads and hamlets west of Bettws are linked by quiet rural lanes and occasional rights of way, including the Ogwr Ridgeway Walk.

Views and perceptual qualities

8.4.36 A largely peaceful, rural landscape is eroded locally by prominent housing development at Bettws (occupying a high hill summit). There are views to the urban edge of Bridgend in the south and the development site in the west.

Evaluation and Sensitivity of the Landscape

8.4.37 Views within this area towards the development site are limited due to the visual enclosure and the distance to the paper mill. Detractors include the presence of pylons, telecommunications masts, and the established Bridgend paper mill, although this is well integrated and enclosed by woodland and landform.

8.4.38 This landscape is of **medium** value. Its sensitivity to change is assessed as medium as a consequence of its visual enclosure and the distance to the development site. However, open views across and out of the settlement of Bettws are important in places.

National Cycle Network (NCN)

8.4.39 There is one proposed national cycle way routed through the study area as shown on Figure 8.1-1. Route 885 of the National Cycle Network connects Maesteg and Bridgend (Tondu). The route lies to the east of the development site and follows the River Llynfi. The route follows Public Rights of Way, tracks and minor roads, and links with other long distance routes in Bridgend. National Cycle Routes are considered of **high** value. As the route has not been officially designated as part of the NCN, the value is assessed as being **medium / high**.

8.5 Assessment of Effects

8.5.1 This section assesses the potential landscape and visual impacts, which would result from the construction and operational activities relating to the proposed development taking into account the implementation of mitigation measures.

8.5.2 Mitigation measures embodied in the project have been addressed from the earliest stages of the project design and benefitted from the input of stakeholders. Mitigation measures, whether they take the form of landscape proposals and the selection of materials for buildings, are embodied in the application proposals and as such are regarded as being inherent to the scheme.

Visual receptors and key views

Selection of viewpoints

8.5.3 Representative viewpoints have been selected from key visual receptors within the study area in agreement with Bridgend County Borough Council. These representative viewpoints have been photographed to provide an indication of the view experienced at the selected locations and the existing visual character within the landscape character areas surrounding the development site. They provide a sound base to assess the effects of the proposed development on the landscape as well as the visual amenity of the study area.

8.5.4 The viewpoints described below were selected to illustrate typical views of the proposed project that will be available to representative viewer / user groups from the major landscape similarity zones and sensitive sites within the study area. The selected viewpoints also include a variety of viewer distances to illustrate the range of visual change that will occur with the project in place.

8.5.5 No viewpoints that required viewing the proposed development through tree branches and tree tops were selected, thus minimizing potential concerns regarding the need to conduct this study during the "leaves-off" season. The locations of the selected viewpoints in relation to the development are indicated in Figure 8.5-1. The direction of each view from the viewpoint is that towards the new facility including the existing paper mill in its entirety.

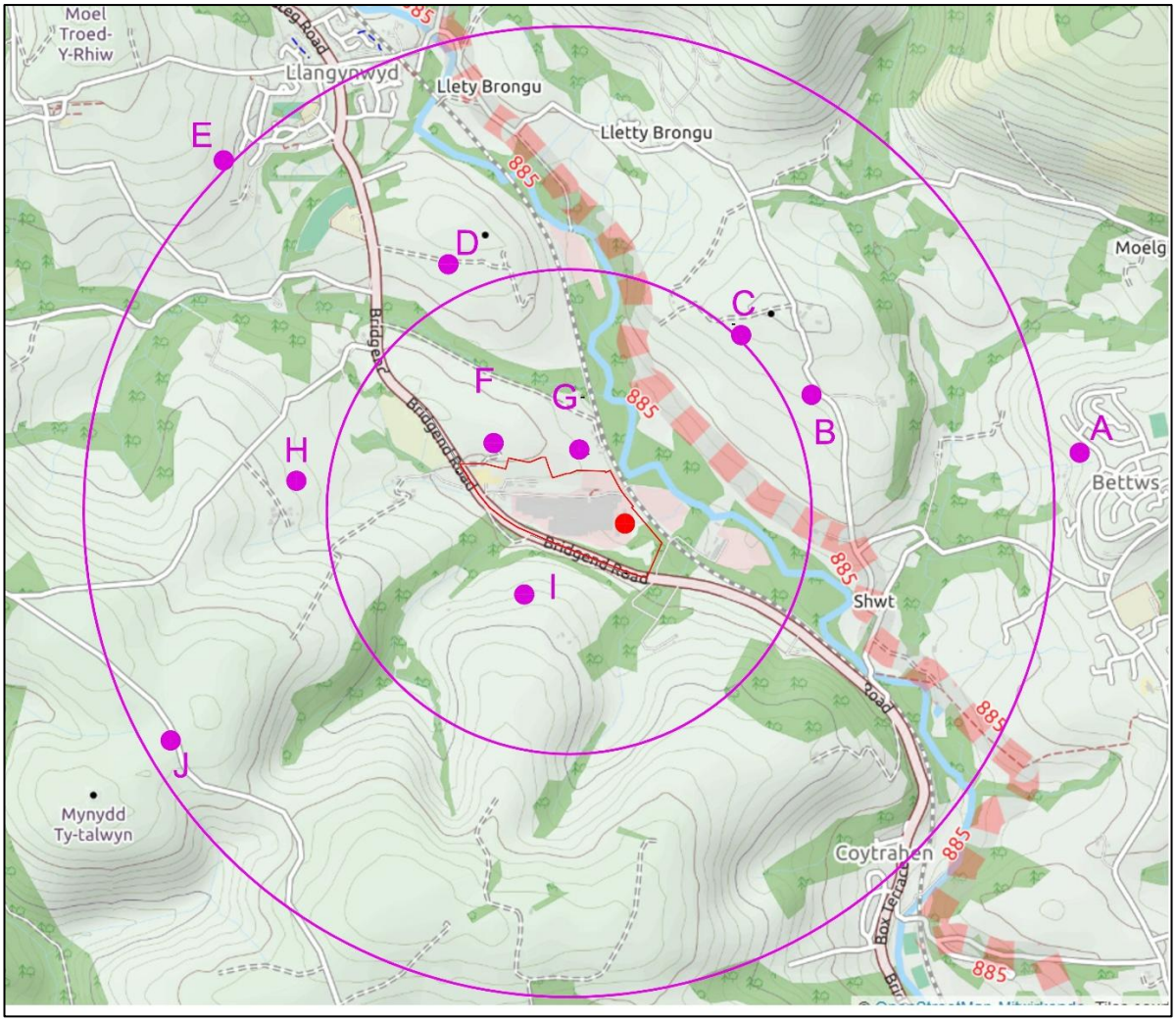
8.5.6 From the photo documentation conducted during field verification, eleven viewpoints have been selected to be included in the Landscape and Visual Assessment (LVIA).

Table 8.5-1: Schedule of viewpoints

Viewpoint location		Receptor type	Approx. distance to site (and range *)	Grid reference	Height AOD	LCA
A	Bettws	Residents	1,800m (lr)	289880, 187395	150m	4
B	Road north of Shwt	Residents, hikers, cyclists	900m (mr)	288782, 187632	135m	4
C	Celfyddifan	Residents	900m (mr)	288493, 187879	143m	4
D	East of Ysgol Gyfun, Gymraeg	Hikers, cyclists	850m (mr)	287286, 188167	118m	2
E	Pont Rhyd-Y-Cyff, Llanggynwyd	Residents	1,700m (lr)	286364, 188598	152m	1
F	Brynsiriol and Brynllywarch-fâch	Residents	500m (sr)	287480, 187527	107m	2
G	Brynllywarch-fawr	Residents	300m (sr)	287764, 187483	93m	2
H	Maescadlaw Farm	Residents	1,350m (lr)	286663, 187276	136m	1
I	Cefn Ydfa Farm	Residents	490m (sr)	287598, 186809	134m	1
J	Open landscape, east of Mynydd Ty-talwyn	Hikers, cyclists	2,000m (lr)	286144, 186210	216m	1

* sr = short range, mr = medium range, lr = long range

Figure 8.5-1: Viewpoint Locations



Inner circle = 1km radius, outer circle = 2.0km radius; 885 = proposed NCN route

Viewpoint Assessment

8.5.7 The assessment of magnitude and significance of impacts has been undertaken in line with the criteria set out in section 8.6 and includes consideration of mitigation measures embodied in the design of the proposed development. The assessment of impacts is also influenced by the professional judgement of the assessor, which is informed by a number of factors including the quality of design, understanding of landscape context and perceptual factors associated with the architectural design.

8.5.8 The viewpoint assessment is based on photographic simulations for 11 key views that were developed by constructing a three-dimensional computer model based on facility specifications provided by the project developer, and the survey coordinates of the proposed facilities.

8.5.9 Locational details and the reasons for selection of each key viewpoint are also described in the table below. Photomontages displaying the existing view as well as the proposed development are illustrated in Figures 8.6-1 to 8.6-10 of the Landscape Assessment.

Viewpoint A: Bettws

Existing view

8.5.10 This long distance viewpoint was chosen to represent views potentially gained from residential properties along the western edge of Bettws, east of the development site. It should be noted that residential properties are set behind this viewpoint, and roadside vegetation (e.g. mature trees) and fencing partially obscure the view seen by these residents during certain times of the year.

8.5.11 The foreground comprises rough grazing land and patches of woodland. The existing mill is hardly noticeable as it is located behind and considerably masked by woodland. Only the office building, the stack of the CHP power plant and the permitted but not yet built high bay warehouse are clearly visible.

Photomontage

8.5.12 It is anticipated that the lower part of the proposed paper machine building will be screened by existing vegetation. Due to the presence of existing buildings of the paper mill, the new paper machine building will hardly be perceived in the context of the existing industrial installations.

Assessment of Effects

8.5.13 The sensitivity of the view to change is **high** as it is located in a residential area.

8.5.14 The magnitude of change will be **negligible** mainly due to long distance and the screening effect of vegetation.

8.5.15 The effect caused by the proposed development is anticipated to be **slight**.

Viewpoint B: Road north of Shwt

Existing view

8.5.16 The location was chosen to reflect views of pedestrians and cyclists using the proposed NCN cycle way 885 along the River Llynfi. It also provides a typical view from the open countryside of Landscape Character Area 4. The foreground comprises rough grazing land. The existing mill is clearly visible.

Photomontage

8.5.17 The new paper machine building will only be perceived in the context of established installations of the paper mill. The change in the view caused by the new building will hardly be noticed by users of the countryside.

Assessment of Effects

8.5.18 The sensitivity of the view to change is **medium** as it is located in an open landscape area which is experienced only by a small number of users.

8.5.19 The magnitude of change will be **low** as change will be distinguishable from the surroundings whilst the composition and the character of the view will be broadly similar to the current view.

8.5.20 The significance of the effect caused by the proposed development is anticipated to be **slight**.

Viewpoint C: Celfyddifan

Existing view

8.5.21 This is a view gained by residents of the small farmstead Celfyddifan as well as by visitors using the open countryside for recreational purposes such as hiking and cycling. From this elevated viewpoint only the upper stories of the office building and the permitted but not yet built high bay warehouse are visible. All other installation is well hidden due to the topography of the plateau in the foreground of this view.

Photomontage

8.5.22 The new paper machine building is well hidden due to the topography of the plateau as well as the screening effect of vegetation in the foreground of this view.

8.5.23 The addition of new building structures would not result in a noticeable change of this view.

Assessment of Effects

8.5.24 The sensitivity of the view to change is **high** for a small number of residents and **medium** for users of the open landscape.

8.5.25 The magnitude of change will be **negligible** for all receptors as the change in view will not be apparent.

8.5.26 The significance of the effect caused by the proposed development is anticipated to be **slight**.

Viewpoint D: East of Ysgol Gyfun, Gymraeg

Existing view

8.5.27 This is a view gained by visitors using the open countryside of Landscape Character Area 2 for recreational purposes such as hiking and cycling. From this viewpoint, only the upper part of existing buildings and the permitted but not yet built high bay warehouse are visible. All other installations are well hidden due to the topography of the plateau in the foreground of this view.

Photomontage

8.5.28 The new paper machine building is well hidden due to the topography of the plateau as well as the screening effect of vegetation in the foreground of this view

8.5.29 The addition of new building structures would not result in a noticeable change of this view.

Assessment of Effects

8.5.30 The sensitivity of the view to change is **medium** for a small number of visitors of the open landscape.

8.5.31 The magnitude of change will be **negligible** as there will not be a notable alteration to the existing view.

8.5.32 For users of the open landscape, the significance of the effect caused by the proposed development is anticipated to be **slight**.

Viewpoint E Pont Rhyd-Y-Cyff, Llanggynwyd

Existing view

8.5.33 In this long-distance view from residential properties of Llanggynwyd, buildings of the existing Bridgend paper mill are not visible, only the permitted but not yet built high bay warehouse would be visible.

8.5.34 The presence of the mill is only visible due to water vapour emissions from the paper machine.

Photomontage

8.5.35 The new paper machine building is well hidden due to the topography of the plateau as well as the screening effect of vegetation in the foreground of this view. The addition of a new building would not result in a noticeable change of this view.

Assessment of Effects

8.5.36 The sensitivity of the view to change is **high** for residents in Llanggynwyd.

8.5.37 The magnitude of change will be **negligible** as there will not be a notable alteration to the existing view in the long distance.

8.5.38 The significance of effect on recreational users is considered **slight.**

Viewpoint F Residential area near Brynsiriol and Brynllywarch-fâch

Existing view

8.5.39 This viewpoint illustrates an unobstructed view from the area near the residential property situated closest to the development site.

Photomontage

8.5.40 From this location, the upper part of the new paper machine building would be noticeable behind the vegetated ridge, which is too thin to effectively screen the new building entirely. The new development would not be particularly prominent, especially in the context of the permitted but not yet built high bay warehouse.

Assessment of Effects

8.5.41 The sensitivity of the view to change is **high** for occupiers of this residential property.

8.5.42 The magnitude of change will be **low** due to the small distance. There will be a noticeable change in the existing view and the change will involve a moderate level of change in the composition of the baseline.

8.5.43 The predicted significance of effect will be **moderate**. However, it should be noted that only a small number of residents would be affected by the view of the new development.

Viewpoint G Brynllywarch-fawr

Existing view

8.5.44 The view experienced from residential properties northeast of the site is similar to the view of viewpoint F. The existing structures of the paper mill are well hidden behind the vegetated ridge in the foreground. Only the permitted but not yet built high bay warehouse would be visible.

Photomontage

8.5.45 From this location, the upper half of the new paper machine building would be clearly noticeable behind the vegetated ridge, which is too thin to effectively screen the new building. The new development would be clearly noticeable with daily, prolonged and sustained views from this location.

Assessment of Effects

8.5.46 The sensitivity of the view to change is **high** for residents near this viewpoint.

8.5.47 The magnitude of change will be **medium** due to the small distance. There will be a major change in the existing view and the change will involve a medium level of change in the composition of the baseline.

8.5.48 The predicted significance of effect will be **moderate**. However, it should be noted that only a small number of residents would be affected by the view of the new development.

Viewpoint H Maescadlaw Farm

Existing view

8.5.49 This viewpoint provides a middle range view from small farmsteads scattered in the western part of the study area. The existing paper mill is clearly visible, but it forms only a small part of the landscape.

Photomontage

8.5.50 The photomontage illustrates that the new development will introduce new elements to this view. The proposed structures would be viewed within the context of the existing mill and other vertical elements including pylons. From this elevated viewpoint, the new paper machine building will be small but clearly visible features of the landscape.

Assessment of Effects

8.5.51 The sensitivity of the view to change is **high** for a small number of residents living near this viewpoint.

8.5.52 The magnitude of change will be **negligible** as the new building will be viewed in the context of the existing mill site. The paper machine building will cause a slight change in the baseline view.

8.5.53 The predicted significance of effect will be **slight,** and it should be noted that only a small number of residents would be affected by the view of the new development.

Viewpoint I Cefn Ydfa Farm

Existing View

8.5.54 This short-range viewpoint was chosen to represent views potentially gained from residential properties south of the A 4063. The foreground comprises rough grazing land. The existing mill is hardly noticeable as it is located behind and considerably masked by the line of trees and the woodland along the A 4063. Only the upper stories of the office building as well as the permitted but not yet built high bay warehouse would be visible.

Photomontage

8.5.55 It is anticipated that the new paper machine building will be screened by existing vegetation.

Assessment of Effects

8.5.56 The sensitivity of the view to change is **high** as it is located near a farmstead with a small number of residents.

8.5.57 The magnitude of change will be **negligible** as there will not be a notable alteration to the existing view in this short range view.

8.5.58 The predicted significance of effect will be **slight,** and it should be noted that only a small number of residents would be affected by the view of the new development.

Viewpoint J Open landscape, east of Mynydd Ty-talwyn

Existing view

8.5.59 This viewpoint was chosen because it provides a long-range view. It is located within the Special Landscape Area (SLA 3). The existing paper mill in the centre of this view is hardly visible as it is well screened behind vegetation.

Photomontage

8.5.60 The new paper machine building would not be visible from this long-range viewpoint. It would form an unnoticeable structure behind the existing tree line.

Assessment of Effects

8.5.61 The sensitivity of the view to change is **medium** to **high** as it is located within the Special Landscape Area (SLA 3).

8.5.62 The magnitude of change will be **negligible** due to the distance.

8.5.63 The significance of effect caused by the proposed development is considered **slight** due to distance.

Assessment of Effects on Landscape Character Areas

Effects during construction (including demolition)

8.5.64 Potential adverse temporary landscape and visual effects will arise during demolition/ construction from the following activities:

- Site clearance, removal of vegetation and topsoil stripping from the application site;
- Earthworks to construct platforms and excavate foundations;
- Construction of internal road for access to the buildings and storage area;
- Movement of construction related traffic including delivery and removal of materials to and from site, off-site road traffic including workers travelling to and from site;
- General construction activities including the movement of large scale construction equipment; site compounds and temporary buildings required for construction and parking on site materials stockpiles; presence of temporary traffic signage;
- Construction site lighting, in particular during the winter months; and
- Construction of the main buildings and any other ancillary structures.

8.5.65 The effect of the construction activities of the proposed development on landscape character will be contained to the locality around the Application Site within the existing industrial estate. As a result, there will be no significant adverse effects on key landscape character receptors within the locality, whether associated with the Special Landscape Area 3 or sensitive aspects identified through the visual assessment

8.5.66 The magnitude of change will be **low to medium** and therefore even in situations where the visual receptors have high sensitivity, the significance of effect is going to be **moderate**. Therefore, during construction of the development the landscape effects will not be significant.

Effects during Operation

8.5.67 The following operational actions will contribute to the landscape effects from the proposed development:

- the introduction of new paper machine building and associated built structures;
- the creation of new hard and soft landscape elements associated with the development;
- increased vegetation cover following tree and shrub mitigation planting;

Effects on Landscape Character Area 1: Llangynwyd Rolling Uplands and Forestry

8.5.68 The southern half of this LCA overlaps with the SLA 3 “Western Uplands”. LCA 1 is described as a strongly undulating upland landscape with a series of north-east facing slopes and hill summits ranging from 120 to 365 metres AOD.

8.5.69 This highly attractive rural area contains a network of irregular and small-scale pasture fields. The landscape is well wooded, with broadleaved woodland and scrub on the valley sides, particularly along the streams. The settlement pattern is characterised by small groups of dwellings thinly dispersed in the open countryside.

8.5.70 The landscape is of **medium value**. The part of the LCA that is a designated SLA, is considered being of **high value**.

8.5.71 Its sensitivity to change is **medium** as a consequence of its undulating and generally well wooded character, which provides visual enclosure.

8.5.72 Based on the visual assessments for the viewpoints E, H, I, and J, where the development causes a **negligible** magnitude of change, the significance of effects on the landscape character is considered **slight**.

Effects on Landscape Character Area 2: Llynfi Valley Floor and Lower Slopes

8.5.73 The landscape of this LCA is described as an attractive rural area containing a network of irregular and small-scale pasture fields on land that gently rolls towards the River Llynfi with valley sides dissected by frequent tributaries creating a landform of rounded spurs between incised valleys. Two dwellings look across to the site. Bryn-y-fro, which lies at a distance of less than 500m to the west, has an open aspect towards the site. The nearest dwelling, Brynllywarch-fawr, has a southerly aspect, with a view directly across the existing mill site.

8.5.74 This landscape is of **medium value**. Its sensitivity to change is **low** due to the extensive tree cover. The visual assessment of viewpoint D provides an indication of the effects experienced in this LCA. The magnitude of change is assessed as being **negligible**. Consequently, the significance of effects on the landscape character is considered **slight**.

Landscape Character Area 4: Bettws Settled Farmland

8.5.75 This LCA is centred on the hilltop village of Bettws and it covers the eastern part of the study area. The landscape is strongly undulating with generally southerly facing slopes, with the elevated hill summit at Bettws rising up to 160 metres AOD. Bands of broadleaved semi-natural woodland and in-field trees produce a well-wooded character. Settlement is concentrated at Bettws. Scattered farmsteads and hamlets lie west of Bettws. There are views to the urban edge of Bridgend in the south and the development site in the west.

8.5.76 Views within this area towards the development site are limited due to the visual enclosure and the distance to the paper mill.

8.5.77 The landscape is of **medium value**. Its sensitivity to change is assessed as **medium.**

8.5.78 The viewpoint assessment for viewpoints A and B indicate a **negligible** to **low** magnitude of effects as a consequence of its visual enclosure and the distance to the development site.

8.5.79 Consequently, the significance of effects on the landscape character is considered **slight**.

Effects on Local landscape character of the application site

8.5.80 The operation of new development will be in keeping with the industrial use in the local landscape character. The sensitivity of the application site is assessed as being **low**. The magnitude of change will be **medium**. As a result, there will be only **slightly** adverse effects on the landscape character within the locality.

Effects on National Cycle Network (NCN)

8.5.81 There is one proposed national cycle way routed through the eastern study area. The effects of the proposed development on Route 885 of the National Cycle Network are represented by viewpoints A and B, which conclude that the landscape effects are considered **slight**.

8.5.82 The impacts on the proposed National Cycle Route, which is considered of **moderate** to **high** value, are of **slight** significance.

8.6 Mitigation Measures

8.6.1 Mitigation of adverse environmental impacts can be achieved by avoidance, reduction, remedying of, or compensation. Two forms of mitigation that have been considered.

Primary Mitigation

8.6.2 The first form includes the broad scale planning of design elements of the development in order to mitigate potential significant effects (Primary Mitigation). In order to minimise landscape and visual impacts the Applicant has given consideration to potential landscape and visual impacts that could arise from the development. Alterations to the layout have been made wherever appropriate. This has been an iterative process whereby significant adverse effects were, as far as possible, ‘designed out’ of the scheme.

Secondary Mitigation

8.6.3 In landscape and visual terms, the secondary mitigation included the design of elements that would help, for example, to screen views, reduce apparent heights of elements, and manipulate the skyline to a less adverse effect.

8.6.4 Due to the lack of space within the application site and its surrounding, earth bunds to provide high screening vegetation would in itself result in unacceptable impacts on the landscape character and ecological feature and were therefore, not put forward.

8.6.5 However, a limited number of solutions to reduce visual impact has been adopted:

Colour

8.6.6 The proposed colours would not unduly contrast with the surrounding landscape colours or industrial structures. All treatments would be in non-reflective colours.

Lighting

8.6.7 The proposed development will not generate excessive levels of sky glow, light spill or glare, and therefore not significantly affect the existing surrounding area or sensitive receptors. The lighting installed at the development site, both during construction and operational phases, will accord with current best practice and design guidance to ensure that the residual effects on sensitive receptors will be within acceptable levels.

8.6.8 Except as required by security and worker safety requirements, night-time lighting will be hooded to direct illumination downward and inward toward the areas to be illuminated in order to minimize light spillage and glare, backscatter to the night-time sky, and visibility of lighting to motorists on the A 4063 and the adjacent residential areas.

Construction Environmental Management Plan (CEMP)

8.6.9 In order to minimise the impacts of the Project during construction a CEMP would be implemented. The CEMP would include a number of measures to mitigate the landscape and visual impact in accordance with Local Policies, including: tree retention and protection, temporary storage of topsoil to screen construction works, agreed site access points, maintenance of site compound, lighting provision in accordance with an outline Lighting Strategy, and reseeding and planting within the Development Site.

8.6.10 An outline CEMP (Document Ref.: 59200-0051) has been prepared and should be read in conjunction with this report.

8.7 Residual Effects

8.7.1 Indirect impacts upon the landscape character are of importance as the new High Bay Storage (HBS) building will be seen from Special Landscape Area SLA 3 (Western Uplands) west of the development site.

8.7.2 Although the development will always be seen within the context of the existing mill, the proposed HBS will extend development above the ground level of the existing mill site, and on to the more open and undeveloped landscape.

8.7.3 It will extend the swathe of industrial development and interrupt views from the open landscape. The scale of development will affect the rural character and reduce the quality of the landscape in its environs. Landscape impacts of moderate to large significance will be experienced by the users of the open landscape west and north of the Site.

8.7.4 The development is large in scale and it will be difficult to mitigate the impacts for some views. These include close range views e.g. from the dwellings at Brynsiriol, Brynllywarch-fâch, and Brynllywarch-fawr but also the middle range views from the valley slopes to the northeast at Celfyddifan. Within these views, the development will represent a considerable intrusion into the rural landscape.

8.7.5 Due to the height of the HBS, planting or earthworks as mitigation would not effectively screen or filter these views. All landscape and visual mitigation is embedded in the design and it is described in Chapter 3. All effects identified in the table below are therefore residual.

8.8 Summary and Conclusion

8.8.1 In accordance with SP17 and DNP4, an assessment of the likely visual impact associated with the Proposed Development has been undertaken as part of the Planning Application.

8.8.2 Where visual effects have been identified as **large** or **large / moderate**, this is considered a significant effect. It should be noted that significant impacts need not be unacceptable, or necessarily negative, and may be reversible.

Viewpoint Assessment

8.8.3 The findings of the assessment of 10 representative viewpoints anticipate a slight adverse impact on views from residential areas east of the development site including Bettws and Shwt, and medium to high impacts from views gained from residential properties in the vicinity of the Application Site.

Table 8.8-1: Summary of Viewpoint assessment

Viewpoint		Receptors	Sensitivity of receptor	Change and effect	Magnitude of effect	Significance of effect
A	Bettws	Residents	High	new building will be screened by topography and existing vegetation,	Negligible	Slight
B	Road north of Shwt	Residents, hikers, cyclists	Medium	new building will only be perceived in the context of established installations, change in the view caused by the new building will not be noticed	Low	Slight
C	Celfyddifan	Residents Hikers, cyclists	High Medium	new building is not visible due to the topography and vegetation, no noticeable change in view	Negligible	Slight
D	East of Ysgol Gyfun, Gymraeg Llanggynwyd	Hikers, cyclists	Medium	new building is not visible due to the topography and vegetation, no noticeable change in view	Negligible	Slight
E	Pont Rhyd-Y-Cyff, Llanggynwyd	Residents	High	new building is not visible due to the topography and vegetation, no noticeable change in view	Negligible	Slight
F	Open landscape north of Brynsiriol and Brynllywarch-fâch	Residents	High	upper part of the new building noticeable behind vegetated ridge, not particularly prominent near high bay warehouse	Low	Slight
G	Brynllywarch-fawr	Residents	High	upper half of new building clearly noticeable behind vegetated ridge, clearly noticeable	Medium	Moderate
H	Maescadlaw Farm	Residents	High	Noticeable within the context of existing mill, new building small but clearly visible	Negligible	Slight
I	Cefn Ydfa Farm	Residents	High	New building screened by existing vegetation	Negligible	Slight
J	Open landscape, east of Mynydd Ty-talwyn (in SLA 3)	Hikers, cyclists	Medium / high	not visible behind vegetation, unnoticeable behind the existing tree line	Negligible	Slight

Landscape Assessment

8.8.4 In terms of landscape character, the development will not have a significant effect on landscape character areas within the Study Area.

8.8.5 However, it should be noted that the fact that a proposed project will be visible from within a Special Landscape Area should not in itself be a reason for refusing consent. It is considered that the proposed (embodied) mitigation measures will reduce the visual intrusion and impact of the Project on visual amenity as far as reasonably practicable.

Table 8.8-2: Summary of Landscape Assessment

Landscape Character	Receptor sensitivity to change	Magnitude of effect	Significance of effect
Landscape Character Area 1 Llangynwyd Rolling Uplands and Forestry	Medium	Negligible	Slight
SPA 3 Western uplands	High / medium	Negligible	Slight
Landscape Character Area 2: Llynfi Valley Floor and Lower Slopes	Medium	Negligible	Slight
Landscape Character Area 4: Bettws Settled Farmland	Medium	Negligible	Slight
Local Landscape Character (application site)	Low	Medium	Slight
Proposed National Cycle Route 885	High / moderate	Negligible / low	Slight

8.8.6 In determining proposals, a judgement is to be made as to whether the visual effects on sensitive receptors outweigh the benefits of the project.

9.0 Ecology and Nature Conservation

9.1 Introduction and Scope

9.1.1 This chapter presents information on baseline conditions and the nature conservation value of the application site and identifies the potential ecological effects associated with the proposed development. It also summarises the findings of the Ecological Appraisal (I & G 2024) which is submitted as a separate report as part of this application (Document Ref. 59200-0003).

9.1.2 It goes on to provide an assessment of the significance of potential ecological impacts on the existing ecologically sensitive receptors within the site and surrounding areas after mitigation and compensation has been taken into consideration.

9.1.3 A Habitat Regulations Assessment (HRA) has been prepared for the proposed development to accompany the Planning Application and this is provided as the Non-Significant-Effects NSE report (Document Ref. 59200-0050).

9.1.4 Full details of the development proposed are presented in Chapter 3 which sets the basis against which this assessment has been conducted.

9.2 Assessment Methodology

Relevant Guidance

9.2.1 The ecological assessment of the study area follows established guidelines. Throughout the investigation, the approach adopted has been based upon recognised techniques of ecological survey and impact assessment (e.g. Institute of Environmental Assessment (IEA), 1995; and guidance developed by the Institute of Ecology and Environmental Management (IEEM, 2006).

9.2.2 The species surveys were undertaken following standard methods as described in the Chartered Institute of Ecology and Environmental Management (CIEEM) Preliminary Ecological Appraisal 2016 guidelines, and the Phase 1 Habitat Survey followed the methodology provided by the Joint Nature Conservation Committee (JNCC 2010).

Desk Study and field surveys

9.2.3 To inform the ecological evaluation of the development site and to determine what impacts the proposed development may have on the ecological value of the Site and its surroundings, a desk study and series of site surveys were undertaken by I & G between September and October 2024.

Desk study

9.2.4 A desk study was conducted on 23/09/2024 with the purpose of determining any existing ecological information pertaining to the site and surrounding environment relevant to the proposed development. The sources utilised and the type of information obtained are summarised in Table 9.2-1.

Table 9.2-1: Sources of ecological records

Source	Information and data sets	Search buffer from the site centre/ boundary
South East Wales Biodiversity Records Centre (SEWBReC)	• Protected and priority species. • Non-statutory designated sites.	• 2km • 1km
Multi-Agency Geographic Information for the Countryside (MAGIC)	• International statutory designated sites. • National statutory designated sites. • Standing waterbodies.	• 10km • 5km • 0.25km

9.2.5 The search buffers within Table 9.2-1 were chosen to cover the Zone of Influence (ZoI) of the proposed development in relation to protected and priority species, habitats, and designated sites.

9.2.6 The impact the proposed development may have on the biological features of nearby designated protected sites has been fully considered.

9.2.7 An evaluation of previous ecological surveys relevant to the proposed development has been undertaken.

9.2.8 A search for standing waterbodies within 0.25km of the site using aerial imagery has been undertaken to assess the likelihood of potential site use by Great Crested Newt in accordance with the Great Crested Newt Conservation Handbook (Langton et al. 2001).

Field Survey

9.2.9 A Phase 1 Habitat Survey was conducted by a suitably qualified ecologist at 10:00 on 10/09/2024, using the methodology outlined in the Handbook for Phase 1 habitat survey (JNCC, 2010). Additionally, the habitats present on site were assessed for their potential to support protected species, and visual surveys were used to search for signs that such species are using the site.

9.2.10 Signs of site use by protected species may relate to the following:

- Evidence of badger – setts, well-worn paths and runs, snagged hair, latrines, sites and foraging.
- Evidence of otter - spraint marking, slides, hovers, resting sites.
- Evidence of dormouse – nests or foraged hazel nuts with characteristic round gnawing holes.
- Evidence of birds – nests.
- Evidence of bats – bat droppings or urine staining adjacent to a Potential Roost Feature (PRF).
- Evidence of reptile – sloughs.
- Evidence of amphibians – spawn.
- Evidence of water vole – droppings, latrines, foraging signs and footprints.

9.2.11 The presence of any invasive non-native plant species listed under Schedule 9, Section 14 of the Wildlife and Countryside Act 1981 (as amended) were also noted and mapped during the site survey. These species include Japanese Knotweed (*Fallopia japonica*) and Himalayan Balsam (*Impatiens glandulifera*). Additionally, species which are not listed under Schedule 9, Section 14, but are known to be invasive to ecosystems in the United Kingdom were also noted and mapped during the site survey, including Butterfly Bush (*Buddleja davidii*) and Ground Elder (*Aegopodium podagraria*).

Survey Limitations

9.2.12 A species may be perceived to be absent within the surrounding area due to a lack of records returned during the desk study. However, a lack of records does not necessarily indicate a species is absent from the area and may be a result of a combination of multiple factors. These factors include, but are not limited to, a lack of surveying within the search buffer area, recent colonisation of a new area, low population density, and how cryptic the species in question may be.

9.2.13 The findings presented within this report are valid for an 18-month period following the survey, in line with CIEEM (2019) guidance. Should the proposed development scope change in any way, then an updated Preliminary Ecological Appraisal will be required.

9.3 Assessment Criteria

9.3.1 In order to provide a level of consistency to the assessment, the prediction of magnitude and assessment of significance of ecological effects will be on the following pre-defined criteria.

Determining the value (relative sensitivity) of ecological receptors

9.3.2 The value of the habitats and features of the site have been evaluated and graded in accordance with a geographical frame of reference as detailed in Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (CIEEM, 2018). The level of value of specific ecological receptors is assigned using a geographic frame of reference, i.e. international value being most important, then national, regional, county, district, local and, lastly, within the immediate zone of influence of the site only.

9.3.3 The categories of ecological value used in this assessment are as listed in the table below.

Table 9.3-1: Criteria for assessing the value (relative sensitivity) of Ecological Receptors

Level of Value	Criteria Description
Very high (International)	Internationally designated or proposed sites such as Ramsar Sites, Special Protection Areas (SPA), Biosphere Reserves and Special Areas of Conservation (SAC), or non-designated sites meeting criteria for international designation. Sites supporting populations of internationally important species or habitats.
High (National)	Nationally designated sites such as Sites of Special Scientific Interest (SSSIs), or non-designated sites meeting SSSI selection criteria (NCC 1989), National Nature Reserves (NNRs) or Nature Conservancy Review (NCR) Grade 1 sites, viable areas of key habitats within the UK Biodiversity Action Plan. Sites supporting viable breeding populations of Red Data Book

	(RDB) species (excluding scarce species), or supplying critical elements of their habitat requirements.
Medium (Regional)	Sites containing viable areas of threatened habitats listed in a regional Biodiversity Action Plan, comfortably exceeding Site of Importance for Nature Conservation (SINC) criteria, but not meeting SSSI selection criteria. Sites supporting regionally significant areas of BAP habitats or large and viable populations Nationally Scarce species, or those included in the Regional Biodiversity Action Plan on account of their rarity, or supplying critical elements of their habitat requirements.
Medium (County / District)	Site identified as a Site of Importance to Nature Conservation (SINC) at the district level; meeting South Wales Wildlife Sites Partnership (SWWSP) 2004 published designation criteria, but falling short of SSSI designation criteria, whether designated as a SINC or not. Ancient woodlands and sites supporting regionally significant areas of UK BAP habitat. Large scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/ LBAP or threatened species (other than badger).
Medium / Low (High Local)	Habitats which just fail to meet Regional value criteria, but which appreciably enrich the ecological resource of the locality. Sites supporting species which are notable or uncommon in the county; or species which are uncommon, local or habitat-restricted nationally, and which might not otherwise be present in the area. Moderate scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/ LBAP or threatened species.
Low (Local)	Old hedges, woodlands, ponds, significant areas of species-rich grassland, small scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/LBAP or threatened species. Undesignated sites or features which appreciably enrich the habitat resource in the context of their immediate surroundings, parish or neighbourhood (e.g. a species-rich hedgerow). Rare or uncommon species may occur but are not restricted to the site or critically dependent upon it for their survival in the area.
Low (Site value, low local)	Low-grade and widespread habitats. Woodland plantations, structured planting, small areas of species-rich grassland and other species-rich habitats not included in the UK or Local BAP
Negligible	No intrinsic nature conservation value associated with habitat. Generally these are areas of hard standing or buildings with no nature conservation interest

Determining the value (relative sensitivity) of a site for bats

9.3.4 Table 9.4-2 outlines the value of a development site for bats. The value is assigned based on the value of the identified population, rather than the scarcity or legal protection of the species as a whole, and therefore individual occurrences within the site of a nationally scarce species are not necessarily valued at the National level.

Table 9.3-2: Criteria for assessing potential suitability of a site for bats

Suitability	Commuting and Foraging Habitat
High	Commuting Habitat Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. Foraging Habitat High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Proximity to Known Bat Roosts Site is close to and connected to known roosts
Medium	Commuting Habitat Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Foraging Habitat Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low	Commuting Habitat Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Foraging Habitat Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Negligible	Negligible habitat features on-site likely to be used by commuting and foraging bats.
Suitability	**Description of Roosting Habitat**
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Medium	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status42 (with respect to roost type only) the assessments in this table are made irrespective of conservation status, which is established after presence is confirmed.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection appropriate conditions40 and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity) or hibernation.
Negligible	Negligible habitat features on site likely to be used by roosting bats.

Identifying Impacts and Determining Magnitude

9.3.5 In assessing the effects of the proposed development upon ecological receptors, it is necessary to consider the value of the receptor, as well as the magnitude of any impact.

9.3.6 The magnitude of the potential effect on the conservation status of the particular valued ecological receptor and on the integrity of the habitats that support them as a result of the proposed development, is determined using the criteria as described in Table 9.4-3.

9.3.7 The scale of the magnitude of impacts is:

- Major;
- Moderate;
- Minor;
- Negligible;
- No Change.

9.3.8 The magnitude of an effect is independent of the value of the receptor. Effects can be permanent or temporary, of various duration, direct or indirect, adverse or beneficial and can be cumulative.

9.3.9 In terms of timescales the following definitions have been applied:

- 'immediate' within approximately 12 months;
- 'short-term' within approximately 1 to 5 years;
- 'medium-term' within approximately 6 to 15 years;
- 'long-term' more than 15 years.

Table 9.3-3: Criteria Determining Magnitude of Impact

Magnitude	Examples
Major	Significant effect on the nature conservation status of the site, habitat or species; likely to threaten the sustainability and long-term integrity of the ecosystem, Not replaceable or reversible. Will be detectable in short-, medium and long-term.
Moderate	Noticeable effect on the nature conservation status of the site, habitat or species population, but would not threaten sustainability or the long-term integrity of the system. Replaceable or reversible given time. Effect on nature conservation status likely to be detectable in short and medium-term.
Minor	Some measurable change in attributes or quality, a short-term, reversible impact on the extent or size or integrity of a site, habitat, species population, no material effect on the conservation status of the site, habitat or species population
Negligible	Very minor change but reversible within 12 months, within normal bounds of variation, Not expected to affect the conservation status of the site, habitat or species population
No change	No detectable effects on the ecological resource, even in the immediate term.

Determining Significance

9.3.10 The significance of an effect is largely a product of the interaction between the value of the ecological receptor and the magnitude of the effect on it, moderated by professional judgement, to determine whether the integrity of the receptor will be affected. An ecologically significant effect is defined in the IEEM Guidelines as: 'effect (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area.' Within this assessment a significant effect therefore means that the predicted effects are considered likely to affect the integrity of a receptor.

9.3.11 The significance of effects is defined using a matrix in which ecological value and magnitude of impact are combined to determine different grades of significance. The significance of effect is expressed on the following scale:

- Very Large;
- Large;
- Moderate;
- Slight;
- Neutral.

9.3.12 In line with IEEM Guidelines the following matrix is used to define the significance of an impact.

Table 9.3-4: Assessing the Significance of Effects

VALUE / SENSITIVITY	**Very high** (International)	Neutral	Slight	Moderate	Large / Very Large	Very Large
	High (National)	Neutral	Slight	Moderate	Large	Large / Very Large
	Medium (Regional, County, District)	Neutral	Neutral/ Slight	Slight	Moderate	Large
	Medium / Low (High Local)	Neutral	Neutral	Slight	Slight	Moderate
	Low (Local)	Neutral	Neutral	Neutral/ Slight	Slight	Moderate
	Low (Site value)	Neutral	Neutral	Neutral	Neutral	Slight
	Negligible	Neutral	Neutral	Neutral	Neutral	Neutral
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
		MAGNITUDE OF IMPACT				

9.3.13 The IEEM guidelines define an ecologically significant impact as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area.

9.3.14 Effects are unlikely to be significant where features of low importance are subject to small-scale or short-term impacts. However, where there are a number of small-scale effects that are not significant alone, the assessor may determine that, cumulatively, these may result in an overall significant effect.

9.3.15 Effects defined in Table 9.4-4 as **large** or **moderate** are considered significant.

Inherent Mitigation

9.3.16 The assessment incorporates inherent mitigation that is considered integral to the design of the Project. The prescribed inherent mitigation has been taken into account in the assessment of the significance of the effects of the impacts and has been incorporated into the design of the Project. In addition to measures required to mitigate adverse effects on ecological features, further biodiversity enhancement measures have been identified in the landscape design of the proposed development.

9.4 Baseline Conditions and Receptors

9.4.1 This section describes the biodiversity baseline of the study area, which includes desk study information obtained for a 10km radius around the development site, and field survey results from within the development site and the immediate surrounding. The detailed results of each survey as well as a list of records of notable species is contained within the Ecological Appraisal (Document Ref.: 59200-0003).

Desk Study

Statutory Nature Conservation Designated Sites

9.4.2 The Application Site does not lie within, or overlap any designated statutory or non-statutory nature conservation sites. A number of statutory sites and other sites of conservation importance were identified within a 10 km radius of the Application Site. The locations of these designated sites are displayed in Document Ref: 59200-0046 and 59200-0047.

Table 9.4-1: Summary of Designated Site Abbreviation

Abbreviation	Designated Site
SAC	Special Areas of Conservation
SSSI	Site of Special Scientific Interest
NNR	National Nature Reserve
LNR	Local Nature Reserve
SINC	Site of Importance for Nature Conservation
ASNW	Ancient Semi-Natural Woodland
RAWS	Restored Ancient Woodland Site

Protected Sites & Sites of Conservation Importance

9.4.3 No SACs or SSSIs specially designated for bats lie within 10km of the site.

9.4.4 There are no SACs or SSSIs within 2km of the proposed development site.

9.4.5 No NNRs, LNRs, or other protected sites are present within 2km of the site.

9.4.6 Multiple SINCs were recorded within 1km of the study area. These were:

• Bettws West	• Gelliheblyg	• Nant Mwrth
• Coed Coytrahen	• Lletty Brongu	• North Bettws Woodland
• Coed Pentwyn	• Llety Woods	• Rifle Range Wood
• Coed Tondu	• Llywn-y-Brian	• Tylacoch North
• Cwm Cefnydfa	• Moelgilau-fawr	• Tylacoch South
• Cwm Nant Gwyn	• Nant Bryncynan Woods	• Ty'n-y-Waun; and
• Drysity'n-y-waun	• Nant Cwm-bach	• Waun-y-Gilfach woods

9.4.7 There are 57 areas of Ancient Woodland Sites located within 2km of the proposed development site, the nearest of which lies approximately 50m to the south-west of the site, just beyond the A4063. In addition, 10 RAWS and two Ancient Woodland Sites of Unknown Category are present within the same search radius. Considering the scale and location of the works, none of these woodlands are anticipated to be affected by works. Although an area of Unknown Category Ancient Woodland lies only 20m from the south-eastern corner of the site, it is separated from the proposed development site by the A4063.

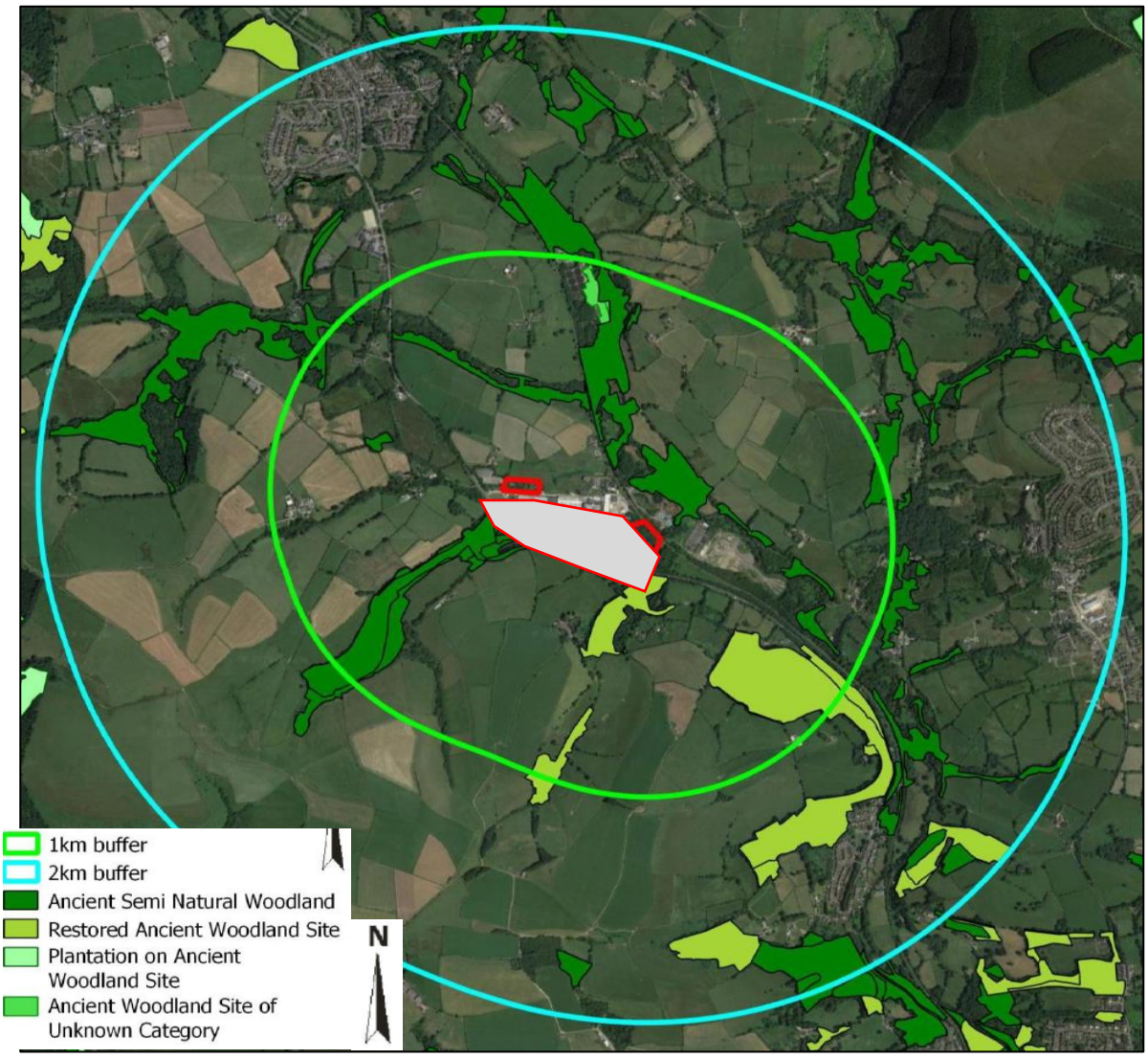
9.4.8 Statutory sites are located beyond the 2 km zone of influence for air quality impacts to SACs and SSSIs, and due to the distances and their locations are not considered to be at risk of any other significant effects. There are 15 statutory sites within a 10km radius of the Application Site of which 7 are internationally designated sites.

Table 9.4-2: Designated sites of ecological importance within 10km of the site

	Designation	Name	Distance from site
1	SSSI	MYNYDD TY-ISAF, RHONDDA	9.1km
2	SSSI	CWM DU WOODLANDS	1.9km
3	SSSI	CWM CYFFOG	4.9km
4	SSSI;	DAREN Y DIMBATH	7.5km
5	SSSI; SAC	BLACKMILL WOODLANDS	4.2km
6	SSSI	CWM RISCA MEADOW	2.4km
7	SSSI, SAC	BRYN - BACH, CEFN CRIBWR	3.7km
8	SSSI, SAC	CAEAU CEFN CRIBWR	4.0km
9	SSSI	WAUN CIMLA	4.6km
10	SSSI, SAC	WAUN-FAWR, CEFN CRIBWR	5.4km
11	SSSI, SAC	PENYCASTELL, CEFN CRIBWR	5.8km
12	SSSI; NNR, SAC	MERTHYR MAWR	9.0km

	Designation	Name	Distance from site
13	SSSI, NNR, SAC	CYNFFIG/ KENFIG	7.7km
14	SSSI	EGLWYS NUNYDD RESERVOIR	7.8km
15	SSSI	MARGAM MOORS	9.0km

Figure 9.4-1: Protected sites near the development site and in the surrounding



Desk Study

Connectivity to the surrounding landscape

9.4.9 The site is bordered to the east by a narrow strip of woodland which forms part of a network of wooded corridors that provides connectivity to multiple areas of woodland within 1km of the site in all directions. Furthermore, a network of mature hedgerows bordering agricultural fields provide further connectivity to the wider landscape.

9.4.10 A section of the partially wooded river corridor of the Nant Gwyn is located on site and provides connectivity to the Llynfi River which runs approximately 126m to the north-east, the Nant Cefnydfa which runs 256m to the south-east, and the Nant Y Gadlys which runs 483m to the north-west.

Figure 9.4-2: Aerial image of the landscape surrounding the site

Previous ecological surveys

9.4.11 In 2024, I&G Ecological Consulting Ltd undertook a Preliminary Roost Assessment followed by a dusk emergence survey on the buildings located at the south of the site to determine whether the buildings currently support roosting bats. No bats were found to be using the buildings, and no activity was detected on site during the dusk emergence survey.

9.4.12 In 2020, Acer Ecology undertook a number of surveys within close proximity to the site which are considered relevant to the proposed development, including surveys on an area of land directly adjacent to the south-eastern boundary of the site. A summary of the surveys are as follows:

- An initial PEA found no evidence of dormouse, great crested newt, or otter, and determined that no statutory designated sites would be adversely affected by a proposed development.
- A breeding bird survey identified a total of 26 breeding bird species with a maximum of 68 territories recorded, including 25 territories within the area directly adjacent to the site.
- Bat surveys confirmed the presence of a small day roost containing individual common pipistrelle, soprano pipistrelle, myotis species, and an unidentified species within a bungalow approximately 440m to the north-west of the site. Furthermore, relatively high levels of bat activity were identified within the area directly adjacent to the site boundary during a transect survey.

- A potential badger sett was identified; however, no badgers were observed during a static camera trap survey, and no additional evidence of badger was identified.
- A reptile translocation effort identified and relocated 17 slow-worms, 11 common lizard, and one grass snake, with five slow-worms being discovered within the area directly adjacent to the site.

9.4.13 In 2003, ARUP undertook a PEA on the area of land adjacent directly adjacent to the southeastern boundary of the site, as well as a number of surveys on an area of land directly north of the papermill. A summary of the surveys are as follows:

- A PEA on the area directly adjacent to the south-eastern site boundary determined that no statutory designated sites would be affected by a proposed development.
- A breeding bird survey on the land north of the papermill recorded a total of 38 species.
- Bat surveys on the land north of the papermill confirmed the presence of a day roost containing 18 common pipistrelle and 18 soprano pipistrelle within a farmhouse, and found the following four species to be using the area as foraging and commuting habitat: common pipistrelle, soprano pipistrelle, serotine, and Myotis species.
- A dormouse survey on the land north of the papermill inspected several hundred hazelnut cases and found no evidence of dormouse.
- A badger survey on the land north of the papermill identified three badger setts and numerous field signs. A record of a historic badger sett was found at the area of land directly adjacent to the site during the desk study, however this sett was not identified on site.
- A reptile survey on the land north of the papermill recorded low populations of common lizard, grass snake, and adder.
- A hedgerow survey and invertebrate survey was conducted on the land north of the papermill, finding no information relevant to the current proposed development.

Priority and protected species

9.4.14 A summary of priority and protected species records found within 2km of the candidate site can be found in Table 9.4-3.

Key records

9.4.15 There are five records of otter within 2km of the candidate site. This species is sensitive to noise and light pollution and is likely to occur within the Llynfi River which runs 126m from the site.

9.4.16 There are 3 records of brown trout and one record of European eel within 2km of the candidate site. These species are sensitive to sediment pollution and are likely to occur within the Llynfi River which runs 126m from the site.

9.4.17 There are 28 records of badger within 2km of the candidate site. This species utilises a variety of habitats within a large home range including woodland, grassland, scrub, and hedgerow, all of which can be found either on site or in the surrounding landscape.

9.4.18 There is a single record of water vole within 2km of the candidate site, located 1099m to the north-east. This species utilises watercourses, excavating burrows along banks and foraging

on riparian and aquatic vegetation. The Nant Gwyn on site and the Llynfi River which runs 126m from the site may be suitable for water vole.

Table 9.4-3: Priority and Protected species records within 2km of the candidate site.

Priority and protected		Number of records (number of species)
Groups	**Species**	
Bats	Brown long-eared	3
	Common pipistrelle	12
	Lesser horseshoe	3
	Noctule	4
	Serotine	1
	Soprano pipistrelle	6
	Unidentified bat	6
	Unidentified *Myotis*	1
	Unidentified *Pipistrellus*	1
	Unidentified *Plecotus*	2
Other Mammals	Badger	28
	Common shrew	3
	Hare	9
	Hazel dormouse	5
	Hedgehog	13
	Otter	5
	Polecat	3
	Roe deer	1
	Water vole	1
	Weasel	1
Reptiles	Adder	2
	Common lizard	2
	Grass snake	2
	Slow-worm	1
Amphibians	Great crested newt	1
	Other amphibians	12 (3)
Birds	Schedule 1	86 (18)
	Section 7	225 (29)
Fish	Category 1	4 (2)
Invertebrates	Category 1	144 (50)
Plants	Category 1	19 (2)

Field Survey

Habitats and Vegetation

9.4.19 The results of the general survey of habitats and vegetation are shown on Figure 9.5-1. A botanical species list is provided in the Ecological Appraisal (Document Ref.: 59200-0054).

Summary of Habitats Present within the Site

9.4.20 The site consists of ten elements which are described in detail below.

9.4.21 These comprise:

- **A1.1.1** Semi-natural broadleaved woodland
- **C3.1** Tall ruderal
- **G1.1** Standing water (eutrophic)
- **G2** Running water
- **J1.3** Ephemeral
- **J2.4** Fence
- **J2.5** Wall
- **J3.6** Buildings
- **J4** Bare ground

9.4.22 Descriptions of the habitats present on site using Phase 1 survey habitat classification can be found in Table 9.4-4.

9.4.23 The extended Phase 1 habitat plan in Appendix I was produced using QGIS software and illustrates the distribution and extent of the habitats present on site, in addition to the location of each Target Note. Furthermore, a full species list (including scientific names) can be found in Appendix III.

Table 9.4-4: Habitats and linear features on site.

Habitat / Linear feature	Species present
A1.1.1 Semi-natural broadleaved woodland Location and extent: An area of woodland is located at the east of the site. A small stream (Nant Gwyn) runs through the centre of this habitat.	Tree species: black alder, sycamore, ash, grey willow, goat willow, and downy birch. Ground layer species: common ivy, Himalayan balsam, wood speedwell, wild strawberry, common rush, opposite-leaved golden saxifrage, herb Robert, common nettle, fringed willowherb, yellow pimpernel, bramble, elmleaf blackberry, woodland figwort, cock's foot, oak, broadleaved willowherb, hazel, common foxglove, field horsetail, common dog violet, hairy willowherb, enchanter's nightshade, common polypod, hart's tongue fern, common lady fern, silver moss, red stemmed feathermoss, *Hypnum* sp., *Climacium* sp., and liverwort.
C3.1 Tall ruderal Location and extent: four small areas of tall ruderal are located at the east, northeast, south-east, and centre of the site.	Eastern area species: butterfly bush, hemp agrimony, black alder, cock's foot, grey willow, fringed willowherb, common rush, scentless mayweed, white clover, black medick, drooping sedge, common dandelion, common fleabane, common gorse, common nettle, downy birch, rough hawkbit, common plantain, creeping buttercup, Yorkshire fog, and silver moss. North-eastern area species: butterfly bush, Himalayan balsam, hemp agrimony, perennial sow thistle, cock's foot, rough hawkbit, common dandelion, common ivy, coltsfoot, black alder, goat willow, grey willow, creeping buttercup, and ragwort. South-eastern area species: butterfly bush, grey willow, colonial bent grass, cock's foot, ragwort, marestail, spear thistle, Yorkshire fog, coltsfoot, cleavers, black medick, common dandelion, white clover, fringed willowherb, common centaury, common selfheal, and creeping buttercup. Central area species: butterfly bush, hemp agrimony, downy birch, ragwort, black alder, bramble, grey willowherb, hairy willowherb, perennial sow thistle, common fleabane, pale willowherb, herb Robert, cock's foot, bitter sweet, curly dock, fringed willowherb, common rush, perennial ryegrass, Yorkshire fog, sycamore, hoary willowherb, marsh thistle, creeping buttercup, common vetch, elmleaf blackberry, white sweetclover, common yarrow, wild strawberry, common ivy, mouse-ear chickweed, colonial bent grass, oxeye daisy, silver moss, and red stemmed feathermoss.
G1.1 Standing water (eutrophic)	Species: none.
G2.2 Running water (mesotrophic) location and extent: a shallow stream runs through the woodland at the east of the site, before being directed underground beneath the papermill.	Species: liverwort

J1.3 Ephemeral Location and extent: three small areas of ephemeral are located at the north-east, south, and centre of the site,	North-eastern area species: cock's foot, colonial bent grass, rough hawkbit, ragwort, oxeye daisy, common dandelion, wall lettuce, wavy bittercress, common plantain, red stemmed feathermoss, and silver moss. Southern area species: butterfly bush, ash, hemp agrimony, cock's foot, bramble, marestail, common dandelion, common rush, oxeye daisy, and fringed willowherb. Central area species: butterfly bush, Himalayan balsam, hemp agrimony, cock's foot, rough hawkbit, common dandelion, ragwort, fringed willowherb, black alder, colonial bent grass, and silver moss.
J2.4 Fence Location and extent: various metal security fences are located around the site.	Species: none
J2.5 Wall Location and extent: various short brick and concrete walls are located around the site.	Species: common ivy, hemp agrimony, and silver moss.
J3.6 Buildings Location and extent: eight buildings of various sizes and materials are located on site. Occasional plant species can be found growing from gaps.	Species: hemp agrimony, cock's foot, rough hawkbit, wavey bittercress, common dandelion, and silver moss.
J4 Bare ground Location and extent: three areas of bare ground are located on site.	Species: cock's foot, herb Robert, common fleabane, fringed willowherb, and red fescue.
Hardstanding Location and extent: the most dominant habitat hype on site, comprised of various concrete surfaces. Occasional plant species can be found growing from cracks.	Species: coltsfoot, cock's foot, common plantain, red fescue, common dandelion, wall lettuce, marestail, wavy bittercress, red stemmed feathermoss, and silver moss

Habitat descriptions

9.4.24 The semi-natural broadleaved woodland at the site contains a high proportion of hydrophyte species including grey willow, goat willow, black alder, and downy birch, as well as various moss and fern species. Therefore, this habitat may be described as wet woodland, a priority habitat recognised by the United Kingdom Biodiversity Action Plan. Furthermore, the presence of following ancient woodland indicator species may suggest this habitat could be further classified as ancient woodland: hart's-tongue fern, enchanter's nightshade, wood speedwell, and wild strawberry. However, the woodland is not listed under the Ancient Woodland Inventory 2021. Various stands of invasive Himalayan balsam are found within the woodland and are concentrated around the shallow stream. This habitat contains multiple trees which possess Potential Roosting Features (PRFs) which may be used by roosting bats.

9.4.25 The four areas of tall ruderal at the site have predominantly developed on areas of bare ground covered with a crushed aggregate and have a vegetation height of 30-100cm. This

habitat contains a high proportion of native flowering species which are of value to pollinating insects. However, the area located at the north-east of the site contains a stand of invasive Himalayan balsam, and all four areas contain invasive butterfly bush.

9.4.26 An area of eutrophic standing water is located at the north-east of the site and forms part of a wastewater treatment system. There is water movement due to water being pumped in and out of the system. The depth of the central area is unknown; however, a concrete shelf provides a shallow area of approximately 5-10cm in depth around the perimeter.

9.4.27 The area of running water at the site comprises a narrow fast flowing stream with a depth of approximately 15cm. The stream is located within the woodland at the site and it therefore heavily shaded, with only liverwort growing aquatically. The stream flows towards the buildings at the south of the site before being redirected underground beneath the papermill and resurfacing 350m away from the site to the south-east.

9.4.28 The three areas of ephemeral at the site have developed on areas of bare ground covered with a crushed aggregate. This habitat has a patchy distribution of predominantly low growing plant species and has a vegetation height of 1-50cm, with a vast majority of vegetation growing lower that 10cm. The area near the site centre contains a patch of invasive Himalayan balsam, and two areas contain invasive butterfly bush.

9.4.29 A number of metal security fences are located throughout the site and vary from approximately 150cm to 300cm in height. These features are of little ecological value and may reduce connectivity within the site for wildlife.

9.4.30 Various walls constructed of brick and concrete with of height of approximately 150cm are located throughout the site. Some epiphytic plant species can be found growing on the walls; however, these features are of little ecological value.

9.4.31 Eight buildings of various sizes are located on site and are constructed of various materials. A number of PRFs in form of gaps, cracks, and openings provide potential habitat for roosting bats and nesting birds within some of the buildings, with swallows confirmed to be nesting within a building near the site centre.

9.4.32 Three areas of bare ground are located on site, two of which are covered with a crushed aggregate and one area near the site centre is waterlogged with industrial slurry. Occasional low growing plant species can be found growing in areas of crushed aggregate; however, no species were present within the waterlogged area.

9.4.33 Hardstanding is the most dominant habitat type on site, with a majority of the north and west of the site comprised of flat concrete surfaces. This habitat is of little ecological value, however occasional plant species can be found growing from gaps and cracks.

Protected and priority species on site

9.4.34 The confirmed presence, or likelihood of presence, of each protected, priority, and notable species that are considered relevant to the site is discussed below. Species that are not considered relevant to the proposed development at the site have been omitted.

Amphibians

9.4.35 No incidental evidence of amphibians was identified during the site survey. However, there are records of four amphibian's species within 2km of the site, including a single unverified record of great crested newt.

9.4.36 The woodland and tall ruderal habitats on site provide suitable foraging and commuting habitat for terrestrial phase amphibians. In addition, the presence of fallen deadwood within the woodland on site may provide suitable hibernation sites.

9.4.37 There are two standing waterbodies located within 250m of the site. A small pond is located 208m to the north-east but is separated from the site by the Llynfi River which acts as a barrier to dispersal for great crested newt. The Nant Cefnydfa feeds into an area of wet woodland 210m to the south-east of the site and may be suitable for fast breeding amphibian species (unsuitable for great crested newt).

9.4.38 The area of standing water on site forms part of a wastewater treatment system and therefore water is consistently being drawn and deposited into treatment areas. It is unlikely to be suitable for breeding amphibians.

Badger

9.4.39 No evidence of badger (including setts, well-worn paths, latrines, or tracks) was found on site. The woodland at the site possesses moist soils which are likely to be unsuitable for badger sett creation.

9.4.40 The site contains an area of woodland which is directly adjacent to a woodland corridor located to the north-east of the site and provides good connectivity to the surrounding landscape. Furthermore, there are several badger records approximately within 500m of the site. It is therefore likely that foraging and commuting badger could be using the site.

Bats

9.4.41 There are four buildings on site that are suitable for roosting bats. Two buildings at the north-west of the site contain a low number of small PRFs which may be utilised by crevice dwelling bat species. Furthermore, an open fronted building near the site centre may be suitable as a nighttime feeding perch, however an activity survey directly adjacent to the building detected no bat activity on site (I&G Ecological Consulting, 2024) and existing high levels of light pollution makes the building unlikely to be used as a feeding perch. A building near the site centre possesses openings large enough to facilitate access for all bat and bird species, however previous surveys at the site determined that no bats are using the building but confirmed the presence of nesting swallow (I&G Ecological Consulting, 2024).

9.4.42 The woodland at the east of the site contains a number of trees with a variety of PRFs in the form of ivy cover and broken/damaged limbs which have been assessed to be suitable for individual roosting bats (PRF-I). Furthermore, two trees within the woodland possess cavities that have been assessed to be suitable for multiple roosting bats (PRF-M).

9.4.43 The site has high levels of light pollution, reducing site suitability for light-adverse bat species.

9.4.44 The watercourse and woodland edge on site may provide flight corridors for foraging and commuting bats.

9.4.45 The woodland and tall ruderal on site provide suitable habitat for a variety of invertebrate species, which in turn provide foraging opportunities for local bat populations.

Birds

9.4.46 The following species were found to be present on site: swallow, common blackbird, and European robin.

9.4.47 The woodland on site provides nesting opportunity to birds and provides habitat for a variety of invertebrate species, which in turn provide foraging opportunity for insectivorous bird species.

9.4.48 Two buildings on site provide nesting opportunities for urban-nesting bird species. Swallow were confirmed to be nesting within a building located near the site centre.

9.4.49 The areas of tall ruderal and ephemeral at the site provides habitat for a variety of invertebrate species, which in turn provides foraging opportunities for insectivorous bird species.

Fish

9.4.50 No incidental evidence of fish was identified during the site survey, however there were two records of the following Category 1 fish species within 2km of the site: brown trout and European eel.

9.4.51 The stream on site is shallow but may be suitable for small common species including bullhead, however it lacks appropriate connectivity and depth to be suitable for migratory species such as Atlantic salmon and anadromous brown trout.

9.4.52 The Llynfi River is located 126m to the north-east of the site and is likely to be suitable for a range of priority fish species, including Category 1 species.

Hazel Dormouse

9.4.53 There are five records of dormouse within 2km of the site. However, no incidental evidence of hazel dormouse was identified during the site survey, and previous surveys undertaken in the surrounding area, including directly adjacent to the site, found no evidence of dormouse (Acer Ecology, 2020; ARUP, 2003).

9.4.54 The woodland on site contains foodplants including hazel and may be suitable for dormouse. However, the woodland lacks structural complexity which reduces suitability for dormouse. Furthermore, the woodland contains moist soils making it unsuitable for dormouse hibernation.

Invertebrates

9.4.55 No incidental evidence of invertebrates was identified during the site survey. However, the habitats on site are suitable, and therefore it is assumed that invertebrates are using the site.

9.4.56 The woodland on site is likely provide habitat and foraging opportunity for a range of invertebrate species. Furthermore, foodplants such as bramble, nettle, oak, willow, and common dog violet are present which provide foraging opportunities to a range of Category 1 invertebrate species returned in the data search. Fallen deadwood within the woodland may support invertebrates, including deadwood dependant species.

9.4.57 The tall ruderal on site contains a high proportion of native flowing species and therefore provides foraging opportunity to pollinating insects.

9.4.58 The ephemeral on site contains some native flowing species and therefore provides limited foraging opportunity to pollinating insects.

9.4.59 The shallow stream on site may provide suitable habitat for aquatic invertebrate larvae.

Otter

9.4.60 No incidental evidence of otter was identified during the site survey.

9.4.61 The Llynfi River runs approximately 126m to the north-east of the site at its nearest point and is likely to support populations of otter. Furthermore, there are 5 records of otter within 2km of the site, include one record directly adjacent to the Llynfi River.

9.4.62 The woodland at the east of the site may be suitable for otter foraging and holts, and otter may use the site to commute between watercourses. However, the existing high levels of light and noise pollution at the site reduced the likelihood of otter utilising the habitats on site.

Reptiles

9.4.63 No incidental evidence of reptiles was identified during the site survey.

9.4.64 Previous surveys found slow-worm to be present directly adjacent to the south-eastern site boundary (Acer Ecology, 2020), and slow-worm, common lizard, grass snake, and adder to be present in the surrounding area (Acer Ecology 2020; ARUP, 2003).

9.4.65 The woodland on site may provide suitable foraging and cover habitat for reptiles. Furthermore, the hardstanding and bare ground near the woodland edge offer a beneficial mix of open basking areas and sheltered foraging habitat for reptile species.

9.4.66 The areas of tall ruderal on site provide suitable habitat for foraging and commuting reptiles.

Water vole

9.4.67 There is a single record of water vole within 2km of the site, and the stream on site may be suitable. However, no incidental evidence of water vole was identified during the site survey and previous surveys found no evidence of water vole in the wider area surrounding the site (Acer Ecology 2020; ARUP, 2003). Therefore, it is unlikely that water vole is using the stream at the site.

9.4.68 The Llynfi River is located 126m to the north-east and may be suitable to support populations of water vole.

White clawed crayfish

9.4.69 No incidental evidence of white clawed crayfish was identified during the site survey and there are no records within 2km of the site.

9.4.70 The stream on site may be suitable for white clawed crayfish. Furthermore, the Llynfi River is located 126m to the north-east and may be suitable to support populations of white clawed crayfish.

Invasive species

9.4.71 Several stands of Himalayan balsam were present throughout the site. Himalayan balsam is listed as an invasive species under Schedule 9, Section 14 of the Wildlife and Countryside Act 1981 (as amended).

9.4.72 A number of individual butterfly bush plants were present at the site. This species is not listed as invasive under the Wildlife and Countryside Act 1981 (as amended); however, it is known to reduce local biodiversity through invading ecosystems and outcompeting native species.

Ecological Value and Impact Level Criteria

9.4.73 The value of habitats and ecological features at the site is assigned according to their level of importance using the following terminology:

- International value
- National value
- Regional value
- County value
- District value
- Local value
- Site value
- Negligible value

9.4.74 The criteria used to assess the predicted impact level of the development to each ecological receptor relevant to the proposed development is found in the table below.

Table 9.4-5: Impact level criteria

Severity of Impact	Impacts to Ecological Feature
Severe	Extensive irreversible damage or permanent loss of feature.
Major	Extensive loss of feature and/or quality and integrity of key characteristics; major long-term disruption and/or permanent damage to key ecological processes.
Moderate	Partial but significant loss of feature, but does not adversely affect the integrity and ecological function of the feature; significant and noticeable changes to the attributes, quality, or vulnerability of the feature.
Minor	Minor measurable changes in attributes, quality or vulnerability; minor loss of, or alteration to one (or more) key characteristics, features or elements.
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
Neutral	No detectable impacts.

9.5 Assessment of Effects

Overview of Development Impacts

9.5.1 The proposed development will result in the removal and/or disturbance to habitat features and their associated species. An overview of the potential effects resulting from the proposed development are as follows:

- Disturbance and loss of woodland at the east of the site.
- Disturbance and loss of tall ruderal habitats on site.
- Disturbance and loss of ephemeral habitats on site.
- Modification, disturbance, and potential pollution of the Nant Gwyn on site.
- Loss of a mature tree with multiple PRF-M, and potential disturbance to a mature tree with a single PRF-M.
- Loss of building with bat feeding perch potential, and loss of building used by nesting swallow.
- Potential pollution to the Llynfi River which runs 126m to the north-east of the site.
- The potential for an increase in light pollution both during and post development.

Impacts to Designated Sites

9.5.2 There are ten statutory designated sites, and four non-statutory designated sites located within the search buffer area of the desk study. The candidate site is not within, adjacent to, nor within 2km of any statutory designated site, with the nearest record of a statutory designation belonging to the Cwm Du Woodlands (SSSI) located 2.24km to the south-east. However, the Kenfig (SAC) is located 8.81km to the south-west and is hydrologically connected to the Llynfi River which runs 126m to the north-east of the candidate site. Furthermore, the Cwm Nant Gwyn (SINC) is located 487m to the south-west of the candidate site and is hydrologically connected to the stream located within the candidate site.

9.5.3 Given the sensitivity, pressures and threats to the designated sites located within the vicinity of the site boundary, and the predicted impacts of the proposed development, the following designated sites will require further consideration in relation to the proposals:

Cwm Nant Gwyn (SINC)

9.5.4 The Cwm Nant Gwyn (SINC) is primarily designated to protect ancient woodland and highquality grassland found at the site, with little focus placed on the ecological value of its watercourses. However, a Pollution Prevention Plan (PPP) will still be required to reduce the risk of pollution to the stream on site (Nant Gwyn) and in turn protect its downstream habitats, including the Cwm Nant Gwyn (SINC).

9.5.5 With the implementation of the Pollution Prevention Plan (PPP), it is unlikely that further consideration regarding the Cwm Nant Gwyn (SINC) will be required.

Impacts to Habitats and Features

9.5.6 The following habitats/features were identified on site and the impact of the proposed development to these habitats/features is discussed below:

- Semi-natural broadleaved woodland

- Tall ruderal
- Standing water (eutrophic)
- Running water (mesotrophic)
- Ephemeral
- Fence
- Wall
- Buildings
- Bare ground
- Hardstanding

Semi-natural broadleaved woodland

9.5.7 The woodland on site possesses a species assemblage characteristic of wet woodland, a priority habitat listed under the United Kingdom Biodiversity Action Plan (UK BAP). In addition, the woodland possesses a rich ground layer of native species, including four ancient woodland indicator species, suggesting it may be further classified as ancient woodland. The woodland is likely to support a range of invertebrate species and contains native early flowering species which may be of value to pollinators. The woodland is likely to provide suitable foraging and nesting habitat for bird species, as well as commuting and foraging habitat for reptile and amphibian species. Furthermore, a number of trees within the woodland may be suitable for roosting bats, with several trees containing features which may be suitable for individual roosting bats (PRF-I) and two trees containing features which may be suitable for multiple roosting bats (PRF-M). In addition, bats may forage on the invertebrate populations which reside within this habitat and use the woodland edge as flightlines for foraging and commuting. Furthermore, the woodland may provide foraging habitat for a range of mammal species including otter, badger, hedgehog, and hazel dormouse. The habitat has been assessed to have **district value** as it may be listed as a priority habitat under the UK BAP, contains multiple ancient woodland indicator species, and may support a range of protected species, including roosting bats.

9.5.8 Under the current proposed design, loss or damage to this habitat would be **major** without mitigation, as the design requires the removal of a large section (approximately 50%) of the woodland at the site. Furthermore, increases in noise and light pollution both during and post construction may disturb wildlife using the remaining area. Any change in design may require an updated assessment by a qualified ecologist.

Tall ruderal

9.5.9 The tall ruderal at the site contains a high proportion of native flowering species and is therefore likely to provide foraging opportunities for pollinating insects. Furthermore, bats and birds may forage on invertebrate populations which reside within this habitat. In addition, the tall ruderal may provide foraging and commuting habitat for reptile, amphibian, and small mammal species. This habitat has been assessed to have **site value** as it is common and widespread in the surrounding landscape

9.5.10 Under the current proposed design, loss or damage to this habitat would be **major** without mitigation, as the design requires the removal of large portions of this habitat. Any change in design may require an updated assessment by a qualified ecologist.

Standing water (eutrophic)

9.5.11 The water treatment area at the site may provide breeding opportunities for amphibian species and habitat for aquatic invertebrate larvae. Bats and birds may forage on invertebrate populations which reside within or are attracted to this habitat. Furthermore, the standing water may provide drinking water to bird and small mammal species using the site. Although this habitat is artificial and low grade, it has been assessed to have **site value** due to a lack of other standing water sources at the site.

9.5.12 Under the current proposed design, loss or damage to this habitat would be **negligible** without mitigation, as the proposed design does not require the removal of this habitat. However, increases in noise and light pollution both during and post construction may disturb wildlife which use this feature. Any change in design may require an updated assessment by a qualified ecologist.

Running water (mesotrophic)

9.5.13 The running water at the site may provide habitat for fish and aquatic invertebrate species, including white clawed crayfish. It is fast flowing and therefore unlikely to be suitable for breeding amphibians or water vole. Additionally, the running water may provide foraging and commuting habitat local otter populations. Furthermore, bats and birds may forage on invertebrate populations which reside within this habitat. The stream channel has been previously modified and redirected underground to flow beneath the adjacent papermill. This habitat has been assessed to have **district value** as it has the potential to support and range of protected species and is hydrologically connected to a wide range of habitats downstream.

9.5.14 Under the current proposed design, loss or damage to this habitat would be **moderate** without mitigation, as the proposed design requires an additional section of the stream to be redirected beneath the adjacent papermill, and the increases in noise and light pollution may disturb wildlife using the watercourse both during and post construction. Any change in design may require an updated assessment by a qualified ecologist.

Ephemeral

9.5.15 The areas of ephemeral habitat at the site contain a number of native flowering species and may therefore provide foraging opportunities for pollinating insects. Bats and birds may forage on invertebrate populations which reside within this habitat. Furthermore, the ephemeral areas may be used by reptiles, terrestrial phase amphibians, and small mammals as commuting habitat. This habitat has been assessed to have **site value**, as it is common and widespread in the surrounding landscape.

9.5.16 Under the current proposed design, loss or damage to this habitat would be **moderate** without mitigation, as the proposed design requires the removal of the area of ephemeral located near the centre of the site. Any change in design may require an updated assessment by a qualified ecologist.

Fence

9.5.17 The fencing at the site offers little ecological value and may reduce site connectivity to the surrounding landscape. Low-flying bat species may use the fencing as flight corridors when

commuting, however the high levels of light pollution at the site reduce suitability has flight corridors. Therefore, the habitat has been assessed to have **negligible value**.

9.5.18 Under the current proposed design, loss or damage to this habitat would be **moderate** without mitigation, as the proposed design will require the removal of an area of fencing at the east of the site. Any change in design may require an updated assessment by a qualified ecologist.

Wall

9.5.19 The walls at the site offer little ecological value and may reduce site connectivity to the surrounding landscape. Low-flying bat species may use the walls as flight corridors when commuting, however the high levels of light pollution at the site reduce suitability has flight corridors. Therefore, the habitat has been assessed to have **negligible value**.

9.5.20 Under the current proposed design, loss or damage to this habitat would be **moderate** without mitigation, as the proposed design will require the removal of a walled area at the east of the site. Any change in design may require an updated assessment by a qualified ecologist.

Building

9.5.21 Four of the buildings at the site possess PRFs and therefore offer roosting habitat for bat species, as well as nesting habitat for urban-nesting bird species. The cluster of three buildings at the south of the site have previously undergone a bat survey and no bats were found to be using the buildings (I&G Ecological Consulting Ltd, 2024). However, nesting swallow were confirmed to be present within the building near the site centre. Therefore, the habitat has been assessed to have **site value**.

9.5.22 Under the current proposed design, loss or damage to this habitat would be **major** without mitigation, as the proposed design will require the demolition of four buildings at the site, including the build used by nesting swallow (Target Note 9) and the open-fronted building with bat feeding perch potential (Target Note 4). However, high levels of light pollution at the site significantly reduces the suitability of the open-fronted building to be used as a feeding perch. Any change in design may require an updated assessment by a qualified ecologist.

Bare ground

9.5.23 The bare ground at the site possesses occasional native flowing species and may offer some foraging opportunities to pollinating insects. The habitat has been assessed to have **negligible value** as it is artificial, provides little ecological benefit, and is widespread in the surrounding landscape.

9.5.24 Under the current proposed design, loss or damage to this habitat would be **moderate** without mitigation, as the proposed design will require the removal of a small area of bare ground used as a road at the east of the site. Any change in design may require an updated assessment by a qualified ecologist.

Hardstanding

9.5.25 The hardstanding at the site possesses occasional native flowing species and may offer some foraging opportunities to pollinating insects. The habitat has been assessed to have **negligible value** as it is artificial, provides little ecological benefit, and is widespread in the surrounding landscape.

9.5.26 Under the current proposed design, loss or damage to this habitat would be **minor** without mitigation, as the proposed design will require the removal of a small area of bare ground used as a road at the east of the site. Any change in design may require an updated assessment by a qualified ecologist.

Impacts to Species

9.5.27 The following protected or priority species were identified as present, likely present, or unconfirmed at or within the vicinity of the site:

- Amphibians
- Badger
- Bats
- Birds
- Fish
- Hazel Dormouse
- Invertebrates
- Otter
- Reptiles
- Water vole
- White clawed crayfish

9.5.28 The predicted impact of the proposed development without mitigation to protected or priority species relevant to the site is summarised in the table below.

Table 9.5-1: Impacts of the proposed development to relevant priority and protected species.

Protected or priority species	Impacts of proposed development without mitigation
Amphibians	Reduction in woodland and tall ruderal habitat area may result in adverse impacts to common amphibian species.
Badger	Insensitive artificial lighting schemes both during and after construction, noise pollution during construction, and reduction in woodland habitat area are likely to result in adverse impacts to foraging badger.
Bats	Removal of a significant section of the woodland on site, containing trees with multiple PRF-Is and a single PRF-M, may result in the destruction of bat roosting sites if bats are utilising these features. Furthermore, insensitive artificial lighting schemes both during and after construction may result in roost abandonment or prevent light adverse species from emerging from the PRFs identified on site outside of the footprint of the proposed development if bats are utilising these features. In addition, a reduction in woodland, tall ruderal, and running water habitat area may
	result in adverse impacts to foraging bats. Furthermore, should the woodland edge and surrounding area be subject to increased

Protected or priority species	Impacts of proposed development without mitigation
	light pollution, there may be a reduction in habitat connectivity for light adverse species and therefore in foraging and commuting habitat. The proposed development without mitigation is therefore likely to result in adverse impacts to bats using the site.
Birds	Reduction in woodland and building area may result in adverse impacts to nesting birds. Furthermore, reduction in woodland, tall ruderal, and running water habitat area may result in adverse impacts to foraging birds.
Fish	Reduction in surface-level stream area may result in adverse impacts to fish species. Furthermore, potential pollution to the onsite stream and nearby Llynfi River may result in adverse impacts to a range of priority fish species.
Hazel Dormouse	Reduction in woodland habitat area may have adverse impacts to foraging and commuting dormice. Furthermore, insensitive artificial lighting schemes both during and after construction, as well as noise pollution during construction, may result in adverse impacts to dormice using the remaining woodland adjacent on site.
Invertebrates	Reduction in woodland, tall ruderal, ephemeral, and running water habitat is likely to result in adverse impacts to invertebrate populations at the site.
Otter	Reduction in woodland area may result in adverse impacts to foraging and commuting otter. Furthermore, insensitive artificial lighting schemes both during and after construction, as well as noise pollution during construction, are likely to result in adverse impacts to otter using the remaining woodland on site and in the surrounding area.
Reptiles	Reduction in woodland and tall ruderal habitat area may result in adverse impacts to common reptile species.
Water Vole	Reduction in surface-level stream area may result in adverse impacts to water vole. Furthermore, insensitive artificial lighting schemes both during and after construction, as well as noise pollution during construction, may result in adverse impacts to water vole using the site. In addition, potential pollution to the onsite stream and nearby Llynfi River may result in adverse impacts to water vole.
White Clawed Crayfish	Modification, disturbance, and potential pollution of the onsite stream, and potential pollution to the nearby Llynfi River may result in adverse impacts to white clawed crayfish.

Impacts to Ecosystem Resilience

9.5.29 Area loss can cause populations of organisms to decline due to a decrease in habitat size. The habitats present on site are relatively widespread, especially in the surrounding landscape, and only small areas of habitat are to be lost by the development. Therefore, if the proposed development is to be undertaken without any mitigation, the impact on ecosystem resilience is expected to be **minor**. Should the results of any further surveys listed in Section 6 confirm the likely presence of any protected species, this assessment may require updating by a suitably qualified ecologist.

9.6 Mitigation Measures

Avoidance Measures

9.6.1 The site has been selected to maximise the integration of the proposed development within the existing paper mill site. This approach maximises the use of existing buildings and infrastructure, where possible. It minimises the amount of new building and development. In turn, it minimises the effects on habitats, protected species and green infrastructure when compared to a greenfield site.

9.6.2 The reality of this approach is that the extent of the proposed development will require the use of most of the land within the red line boundary. These constraints limit the retention of habitats within the site. Where practicable, habitats will be maintained together with appropriate buffer zones.

Minimisation of Impacts

9.6.3 The landscape and ecological mitigation proposals are focused on the paper mill site. Existing on-site green infrastructure is largely made up of woodland along the eastern site boundary

<u>Designated Sites</u>

9.6.4 The designated sites within the Zone of Influence (ZoI) of the development require the following considerations: The production and implementation of a Pollution Prevention Plan (PPP) to minimise the risk of pollution to the Cwm Nant Gwyn (SINC) which is hydrologically connected to the stream on site. Furthermore, this will also minimise pollution risk to the Kenfig (SAC) which is hydrologically connected to the Llynfi River that runs 126 m from the site.

<u>Measures During Construction Phase</u>

Pollution Prevention Plan

9.6.5 A Pollution Prevention Plan will minimise pollution risk to the onsite stream and nearby Llynfi River and their associated aquatic species, including otter, brown trout, and European eel.

Lighting

9.6.6 All works are to be undertaken during the day and any artificial lighting will be kept to a minimum during construction to minimise disturbance to nocturnal species which may be foraging on site and in the surrounding area, including bats, badger, otter, and dormouse. Furthermore, the site is to be subject to a sensitive lighting strategy during construction and all Potential Roosting Features (PRFs) at the site are to remain at current or lower levels of brightness.

Protected Species

9.6.7 Precautionary working methods are recommended during construction to minimise the risk of harm to badger, dormouse, otter, reptiles, amphibians, and hedgehog. These may enter the site for a variety of reasons, such as foraging in new territory and fleeing predation, and may therefore be at risk during construction. Precautionary working methods include:

- Preventing and protecting mammals from accessing materials through the use of spoilproof fencing.
- Fencing off and covering of open excavations, in order to prevent animals becoming trapped or injured. Ramps-like structures should be installed to allow any animals that may become trapped to leave the groundworks.
- Access routes and machine should be chosen with the minimisation of sediment run-off as a priority.

Vegetation Clearance

9.6.8 All vegetation clearance and demolition of buildings required to fulfil the proposed design should be undertaken from September to February to avoid bird nesting season. If these works are to be undertaken during nesting season (March to August), a nesting bird check by a suitably qualified ecologist will be required within 24 hours of the commencement of the works. If any nests are identified, a 5m buffer zone will be measured around the nest, all work will stop in that area, and it will be left undisturbed until the nest is complete.

Invasive Species

9.6.9 Himalayan balsam and butterfly bush are present throughout the site. Poor biosecurity standards during construction may result in these species colonising more of the site, and may result in the spreading of these species, particularly Himalayan balsam, to habitats off site. Therefore, it is recommended that the Himalayan balsam at the site is removed before construction commences, and that high biosecurity standards are maintained throughout construction of the development to ensure these species do not spread further.

9.7 Mitigation and Enhancement Measures

9.7.1 The measures to mitigate, compensate, and enhance the expected impacts on habitats and species include the following:

- Enhancement of the remaining woodland east of the site boundary to mitigate for the loss of woodland habitat area, including the creation of hibernacula for reptile and amphibian species.
- Site enhancement for invertebrate species to mitigate for the loss of woodland, tall ruderal, and ephemeral habitat area, including wildflower planting and the creation of microhabitats.
- Installation of number of bird and bat boxes around the site to mitigate for the loss of roosting and nesting habitat.
- Enhancement of the onsite stream (east of the site boundary) to mitigate for the loss of surface watercourse habitat.
- Removal of all invasive non-native species at the site, including Himalayan balsam and butterfly bush, and replacement with native species (shrub and tree planting).

- Installation of spoil mounds and gabions, retaining excess soil and spoil from the wider site works on site and utilising for habitat creation.
- Clearance and construction personnel will be briefed by a suitably qualified ecologist about the confirmed presence of reptiles remaining on the site and the necessary course of action, if any reptile is encountered.
- Prior to the commencement of any translocation, a suitable receptor was identified to the north-east of the proposed development site.
- Once the site has been cleared of reptiles, the suitable areas for reptiles will be stripped of all vegetation and the topsoil removed, leaving bare subsoil. Any potential refugia will be dismantled by hand, carefully searching for any reptiles that may not have been discovered during the translocation exercise. The final stripping may be done with machinery (ideally using a toothed bucket).
- Upon completion of the trapping exercise, the site will remain in a sterile (reptile-free) condition by regular ploughing or intensive mowing to prevent the area from becoming suitable for re-colonisation of reptiles.
- A Pollution Prevention Plan is recommended to minimise pollution risk to the onsite stream and nearby Llynfi River and their associated aquatic species, including otter, brown trout, and European eel.
- Preventing and protecting mammals from accessing materials through the use of spoil proof fencing.
- All works are to be undertaken during the day and any artificial lighting will be kept to a minimum during construction to minimise disturbance to nocturnal species which may be foraging on site and in the surrounding area, including bats, badger, otter, and dormouse. Furthermore, the site is to be subject to a sensitive lighting strategy during construction and all Potential Roosting Features (PRFs) at the site are to remain at current or lower levels of brightness.
- Precautionary working methods are recommended during construction to minimise the risk of harm to badger, dormouse, otter, reptiles, amphibians, and hedgehog. These may enter the site for a variety of reasons, such as foraging in new territory and fleeing predation, and may therefore be at risk during construction. Precautionary working methods include:
- Fencing off and covering of open excavations, in order to prevent animals becoming trapped or injured. Ramps-like structures should be installed to allow any animals that may become trapped to leave the groundworks.
- If possible, access routes and machine should be chosen with the minimisation of sediment run-off as a priority.
- All vegetation clearance and demolition of buildings required to fulfil the proposed design should be undertaken from September to February to avoid bird nesting season. If these works are to be undertaken during nesting season (March to August), a nesting bird check by a suitably qualified ecologist will be required within 24 hours of the commencement of the works. If any nests are identified, a 5m buffer zone will be measured around the nest, all work will stop in that area, and it will be left undisturbed until the nest is complete.
- Himalayan balsam and butterfly bush are present throughout the site. Poor biosecurity standards during construction may result in these species colonising more of the site, and may result in the spreading of these species, particularly Himalayan balsam, to habitats

off site. Therefore, it is recommended that the Himalayan balsam at the site is removed before construction commences, and that high biosecurity standards are maintained throughout construction of the development to ensure these species do not spread further.

- Enhancement of the remaining woodland to mitigate for the loss of woodland habitat area, including the creation of hibernacula for reptile and amphibian species.
- Site enhancement for invertebrate species to mitigate for the loss of woodland, tall ruderal, and ephemeral habitat area, including wildflower planting and the creation of microhabitats.
- Installation of number of bird and bat boxes around the site to mitigate for the loss of roosting and nesting habitat.
- Enhancement of the onsite stream to mitigate for the loss of surface watercourse habitat.
- Removal of all invasive non-native species at the site, including Himalayan balsam and butterfly bush, and replacement with native species.

Lighting

9.7.2 Any exterior lighting on site would be kept to a minimum and be subject to a sensitive lighting strategy with input from a suitably qualified ecologist. This will reduce disturbance to nocturnal species using the surrounding area, including bats, badger, otter, and dormouse. The sensitive lighting strategy will:

- Maintain current or lower brightness levels to all remaining Potential Roosting Features (PRFs) identified on site.
- Maintain dark corridors along the woodland edge at the east of the site and the woodland edge adjacent to the north-eastern site boundary.

9.8 Summary and Conclusion

9.8.1 There are no internationally designated sites or SSSIs close enough to the site whose features would be directly or indirectly affected by the development. Similarly, sites of local nature conservation importance should not be affected.

9.8.2 The combination of desk and field surveys undertaken at the proposed development site identified that the site has a **local value** ecologically, due to the presence of UK BAP habitats and potential ancient woodland.

9.8.3 However, the habitats on site are relatively widespread in the surrounding landscape and the dominant habitat of hardstanding is of **negligible value** ecologically.

9.8.4 Species of principal importance that are confirmed as present include a variety of bird species.

9.8.5 With the proposed mitigation and enhancement strategy successfully in place, all adverse impacts are reduced to an at least slight level of significance.

9.8.6 As only ecological effects that have been identified as large or large / moderate, are considered significant, the proposed development does not result in significantly adverse impacts on the ecological features of the site or its surrounding.

10.0 Flood Risk and Drainage

10.1 Introduction and Scope

10.1.1 Flood Risk Assessments are required depending on the location of developments relative to Natural Resources Wales (NRW) flood mapping zones or where the development is more than 1 hectare. Quorum Consulting Engineers had been commissioned to undertake a Flood Consequences Assessment (FCA) (Document Ref. 59200-0016) for the construction of the proposed development.

10.1.2 This FRA has been prepared in accordance with current planning policy and complies with the requirements of Technical Advice Note 15: Development and Flood Risk (TAN 15). An assessment has been made of the risks posed to the new development from a range of sources such as fluvial, groundwater, surface water and sewers. All available information at the time of writing the report has been reviewed such as geology, topography and hydrology.

10.1.3 The proposed development will need to comply with the Statutory Standards for Sustainable Drainage Systems produced by Welsh Government and the CIRIA SuDS Manual (C753).

10.2 Assessment Methodology

10.2.1 Development Advice Maps (DAMs), published in conjunction with TAN 15, designate different flood zones according to the flood risk associated with them and are set out below:

- Zone 1 – areas that have a low probability of flooding i.e. less than 1 in 1000 annual probability of river or sea flooding.
- Zone 2 – areas that have a medium probability of flooding i.e. between a 1 in 100 and 1 in 1000 annual probability of river flooding; or between a 1 in 200 and 1 in 1000 annual probability of sea flooding.
- Zone 3a – areas that have a high probability of flooding i.e. 1 in 100 or greater annual probability of river flooding or 1 in 200 or greater annual probability of sea flooding.
- Zone 3b – areas classed as functional flood plains where water has to flow or be stored in times of flood.

10.2.2 Although the NRW flood maps show the above flood zones for planning purposes, TAN 15 which is still relevant in Wales classifies these zones slightly different to this with zones from A to C. These are explained below;

- Zone A – Considered to be at little or no risk of fluvial or tidal/coastal flooding.
- Zone B – Areas known to have been flooded in the past evidenced by sedimentary deposits.
- Zone C – Based on the extreme flood outline, equal to or greater than 0.1% (river, tidal or coastal).
    - Zone C1 – Areas of the floodplain which are developed and served by significant infrastructure, including flood defences.
    - Zone C2 – Areas of the floodplain without significant flood defence infrastructure.

Vulnerability classification

10.2.3 The vulnerability (or sensitivity) of the land use development must be taken into account as the consequences of flooding may not be acceptable for particular types of development. The precautionary framework identified in the TAN 15 categorises different uses by their vulnerability.

10.2.4 In accordance with TAN 15, the proposed industrial use fall under the Less Vulnerable category. Based on the criteria described in Table 10.3-1, it is assessed as being of **low** sensitivity.

Table 10.2-1: Assigning Sensitivity to Flooding

Sensitivity of receptor	Description
High	Emergency services (hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood)
Medium	Highly vulnerable (all residential premises, public buildings, especially vulnerable industrial development, and waste disposal sites)
Low	Less vulnerable (general industrial, employment, commercial and retail development, transport and utilities infrastructure, car parks, mineral extraction, sites and associated processing facilities, excluding waste disposal sites).

10.3 Baseline Conditions

Site Topography

10.3.1 Access to the site is via a single access off the A4063 with a gradient of between 1 in 30-40.

10.3.2 Overall, the site sits in a valley with levels falling into the site from the North, West and South. Levels range from approximately 105mAOD to 72.50mAOD at the railway line. The levels continue to fall away to the East into the Llynfi River.

10.3.3 To the west of the site near the entrance there is a large area of parking, three bungalows and a security hut. The main building / series of buildings and plant sits in the centre of the site. The loading bays and storage yards are located along the south of the site. There is a wastewater treatment facility located over the railway line next to the river. However this is not being considered as part of this report as no works are located further than the railway line.

Site Geology

10.3.4 The site has had an array of ground investigation carried out both recently and historically with further information to be published shortly. Works have been carried out by Golder Associates, Ove Arup and Integral Geotechnique. A plan showing where boreholes and trial pits have been carried out can be seen in the full Flood Risk Assessment (Document Ref. 59200-0016) along with samples of boreholes taken across the site to give an overall idea of the ground conditions.

10.3.5 The British Geology Survey maps indicate the bedrock across the site to be a sequence of sandstones, siltstones and mudstones. The superficial deposits comprise of alluvium where the valley was historically located (now culverted watercourse) and glacial till surrounding this to the North and South.

10.3.6 The culverted section of watercourse will need to be relocated towards its western outfall to accommodate the proposed paper machine building. An ordinary watercourse consent application has been made to the local authority and this permitting process will serve to ensure riparian flood risk is not materially increased through the relocation of the culvert. The culvert diversion is proposed to be implemented in advance of the construction of the proposals.

10.3.7 Groundwater has been recorded at varying depths across the site along with seepages at shallow depth. To the west Golder Associates recorded ground water at depths of 7-9m Bgl, Ove Arup recorded ground water at 4m Bgl in the same area. To the east Ove Arup have recorded ground water from approximately 3m Bgl which did rise in two of the boreholes.

10.3.8 Localised groundwater monitoring is understood to be in progress as part of the geotechnical investigation being undertaken in connection with the proposed development.

10.3.9 The bedrock is classified as a Secondary A aquifer and the overlying superficial soils are classified as either a Secondary A or a Secondary – undifferentiated aquifer.

10.3.10 The site is not underlain by a principle aquifer and is not located within a source protection zone.

Existing Drainage

10.3.11 Dwr Cymru Welsh Water (DCWW) plans were not available at the time of writing the report however it is not believed any of the onsite systems are adopted.

10.3.12 The site has an extensive network of existing foul and surface water drainage.

10.3.13 Surface water flows are discharged into the culverted (1200dia) Nant Gwyn watercourse which is culverted throughout the site until it discharges into the Llynfi River. Many areas are not attenuated however the “Neptune development” constructed c. 2020 features two large capacity cellular attenuation tanks. Foul flows are directed to the onsite treatment works before being discharged into the Llynfi River.

10.3.14 The existing 1200dia culverted watercourse also has a second inlet near the site entrance from an unnamed watercourse to the Northwest.

10.3.15 The site is expansive, and the development proposals are limited only to the east of the site. An existing on-site drainage plan, localised to the project area can be seen in Appendix E of the FRA.

10.4 Assessments of Effects

10.4.1 This section explores the potential flood risk from a range of sources.

Fluvial Flooding

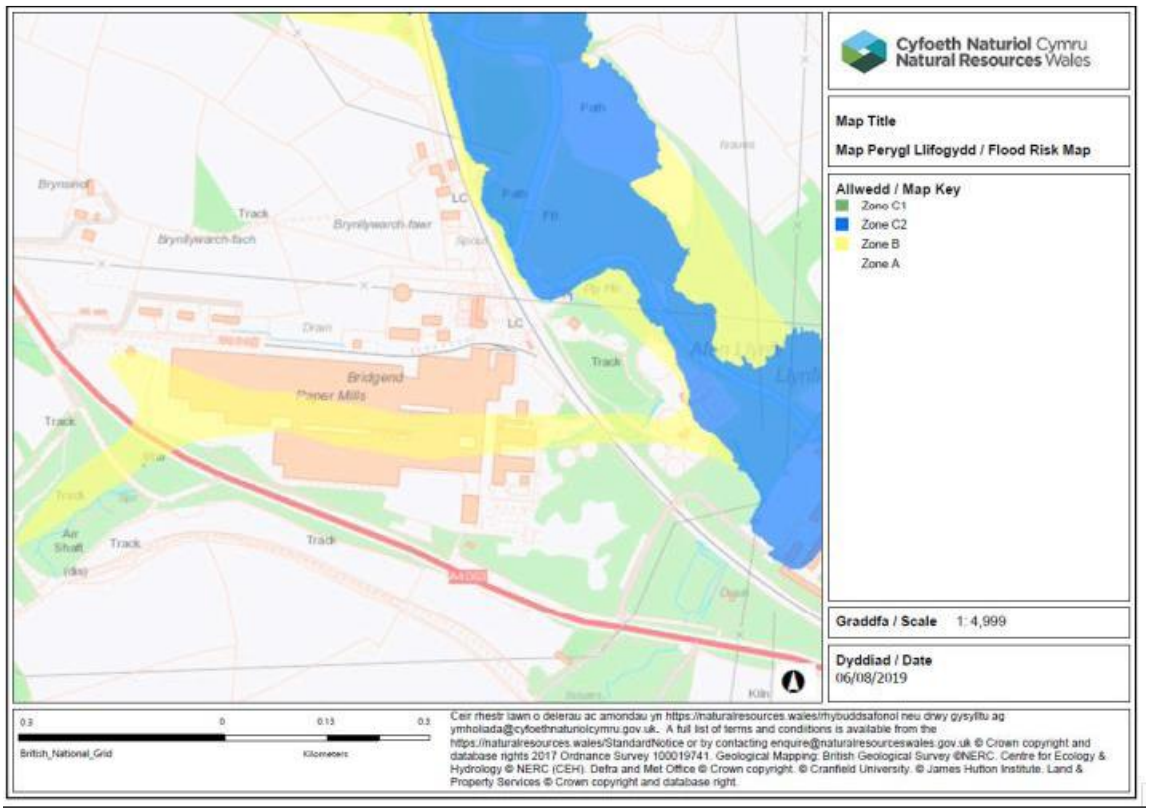
10.4.2 The nearest main river to the application site is the Llynfi river located along the Eastern boundary of the site on the opposite side of the railway line.

10.4.3 The NRW flood map for planning in Figure 10.5-1 shows that the proposed development site is located mainly in Zone A but with a section through the centre of the site falling under Zone B. Ordinarily, this zone would be assessed based on levels compared to flood level data for the river. However, as this zone is based on the underlying geology, it is believed to no longer be relevant as the existing site has been developed. Levels have been raised, and the watercourse has been culverted. The British Geology Survey Map shows exactly the same shape for the superficial alluvium deposits as the NRW flood Zone B.

10.4.4 This principle has been previously agreed with the local drainage officer at detailed design stage (SAB).

10.4.5 The site is therefore considered at this stage to be at little or no risk of fluvial flooding.

Figure 10.4-1: NRW Flood map for planning



10.4.6 The site is therefore considered at this stage to be at little or no risk of fluvial flooding.

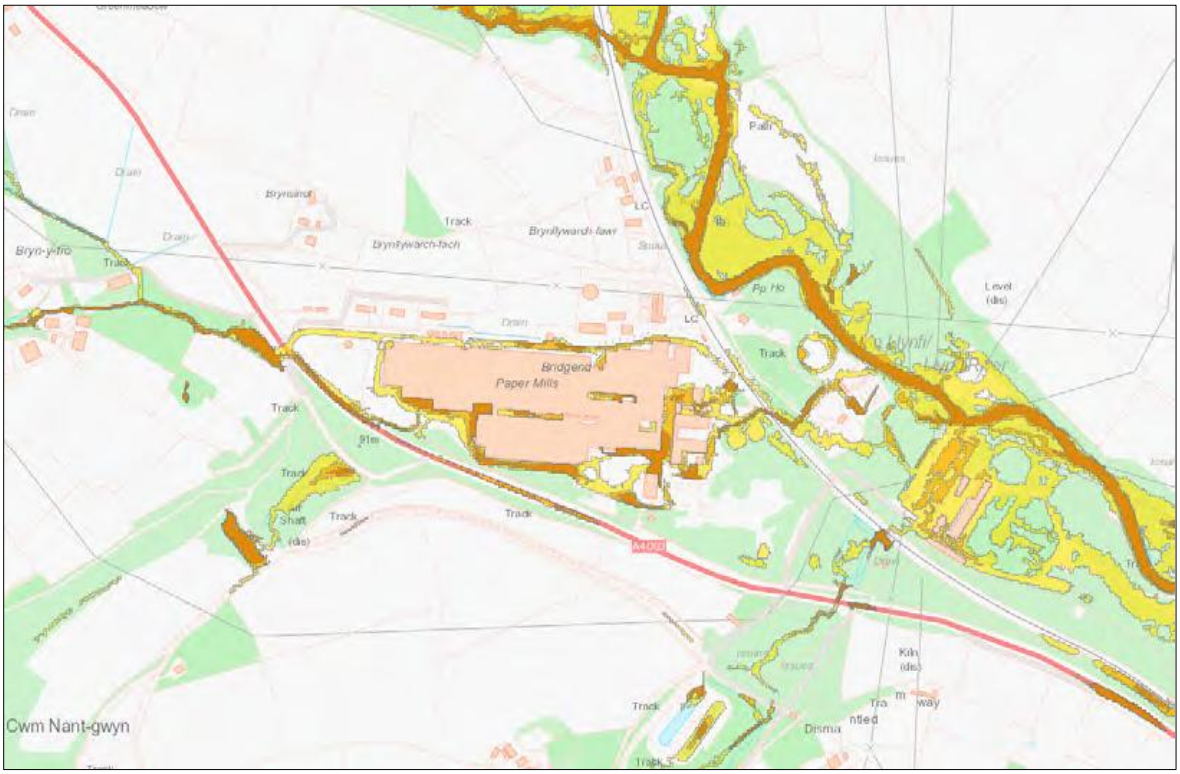
Tidal Flooding

10.4.7 The site is not influenced by Tidal flooding.

Surface Water (Overland) Flooding

10.4.8 Intense periods of rainfall over a short duration can often lead to overland flow and flooding as rainwater is unable to infiltrate into the ground or enter drainage systems. It is made worse when soils are saturated so that they cannot accept any more water. The NRW surface water flood map in Figure 10.5-2 has been generated by simulating rainfall events over the site to determine where surface flows and collects based on Lidar survey information.

Figure 10.4-2: NRW Surface water flood map



10.4.9 The map shows that the hardstanding areas surrounding the main buildings are at **low** to **high** risk from surface water flooding.

10.4.10 As mentioned, much of this is based on rainfall simulation and lidar data which does not take into account the existing on-site drainage systems.

10.4.11 For the existing scenario there is a large system of gullies and drainage channels which intercept the surface water flows and therefore prevents surface water flooding to the buildings. In the proposed scenario some of the areas of risk highlighted will now be replaced with additional buildings or external hardstanding and under Schedule 3 of the Flood and Water Management Act 2010 these will be subject to having a sustainable drainage scheme designed and approved by the local Sustainable Drainage Approval Body (SAB).

10.4.12 It is considered that the existing site drainage, which includes new attenuation tanks installed during the 2020 development in addition to the new sustainable drainage systems will mitigate the risks posed by surface water runoff.

Flooding from Sewers

10.4.13 There is no evidence to suggest there are any capacity issues with the onsite drainage systems. No CCTV reports of the condition of the on-site sewers were available at the time of writing the report, however they appear to be performing adequately, even under recent heavy rainfall events.

10.4.14 The culverted watercourse has been noted as causing flooding on two occasions in the past. The most recent event which was approximately 6 years ago was caused by a partial collapse near the site entrance. The second event was approximately 10 years ago and was caused by a blockage of the culvert. In both scenarios remedial works were carried out. The

smaller un-named branch has also been recently renewed as a pro-active measure by WEPA Uk Ltd.

10.4.15 There are no known issues with capacity in the culvert at the time of writing the report.

10.4.16 It is therefore considered at this time that there is **little** to **no** risk of flooding from sewer systems.

Flooding from Groundwater

10.4.17 There are no known springs within the site. As mentioned earlier in this chapter, ground water has been encountered in boreholes across the site at varying depths but has not been recorded as rising to the surface or above, therefore, it is considered that there is a **low** risk of flooding from groundwater which will need to be considered with any foundation design or design of the new sustainable drainage systems.

Flooding from Artificial Sources

10.4.18 There are no artificial bodies of water located within or near the proposed application area and as a result it is considered that flooding from artificial sources poses **no** risk to the development.

Flooding from Construction Activities

10.4.19 Construction activity is known to increase flow rates into drainage systems and off site usually through the stripping of surface vegetation. It is also known for clogging up existing systems through siltation and washing away of rubble etc.

10.4.20 As part of the SAB approval process a detailed construction surface water management plan will be required to be submitted and approved highlighting how run off will be restricted and how contaminants will be prevented from entering the river.

Flooding from Operation of the site

10.4.21 Operation and maintenance of the existing drainage systems will remain the responsibility of the site owners and regular maintenance and inspection regimes should be followed. In regard to the new proposed systems these will be approved by the council SAB team before construction can commence and then maintenance will again fall to the site owner.

10.4.22 The risk from the future operation of the site is therefore considered to be **low** so long as maintenance and inspection regimes are followed.

10.4.23 Suitable flow restriction into the culverted watercourse will be required for any of the proposed systems so as not to increase flood risk on site or downstream, this will either follow greenfield rates for each rainfall event or be restricted to Q_{bar} in line with the current Welsh Government guidance.

10.5 Mitigation Measures

10.5.1 The long-term implications of the development in terms of flood risk are likely to be **low**; and hence do not require further assessment or the implementation of mitigation measures.

10.5.2 However, management of the activities during construction may be required to mitigate potential flood risk issues. These would be:

- Under Schedule 3 of the Flood and Water Management Act 2010, the surface water proposals will be reviewed and approved by Bridgend County Borough Council SAB team.
- The on-site sewers will be designed to the current standards and in line with good practice at an early stage of the construction phase. All systems will be designed for the 1 in 100 year + 40% climate change event.
- Floor levels and the site drainage strategy has been designed to work together in order that the risk of on-site flooding as a result of site run-off is minimised.
- The works/ scheme will be constructed and completed in accordance with the approved plans/ specification at such time(s) as may be specified in the approved scheme

10.6 Residual Effects

10.6.1 The implications of the development in terms of flood risk are likely to be **low**; and hence do not require the implementation of further mitigation measures. All effects identified in this chapter are therefore residual.

10.7 Summary and Conclusion

10.7.1 The majority of the site is located in Flood Zone A, and partially within Flood Zone B. Flood Zone B extent is likely in relation to the underlying geology as shown on the British Geology Survey Maps.

10.7.2 The Site lies in a valley with levels falling into the site from the West, North and South.

10.7.3 The river Llynfi lies to the East of the site and the Nant Gwyn watercourse is culverted through the site before discharging into the River Llynfi.

10.7.4 The site bedrock geology consists of sandstones, siltstones and mudstones. The superficial deposits comprise of alluvium and made ground.

10.7.5 Groundwater has been encountered at a range of depths from 1mBgl.

10.7.6 No Dwr Cymru Welsh Water assets are located within the site, and all existing drainage is considered to be private.

10.7.7 The development can be considered to be at low to no risk from the majority of sources. Surface water flooding mitigation will be provided by existing and proposed drainage systems.

10.7.8 Under Schedule 3 of the Flood and Water Management Act 2010 the surface water proposals will need to be reviewed and approved by Bridgend County Borough Council SAB team.

10.7.9 All systems need be designed for the 1 in 100 year + 40% climate change event.

10.7.10 On the basis of the findings of this assessment, there are no grounds for objecting to the proposed development due to flood risk.

11.0 Archaeology and Cultural Heritage

11.1 Introduction and Scope

11.1.1 This Section of the Environmental Statement (ES) reports the findings of the assessment and impact of development on cultural heritage in terms of archaeology and built heritage.

11.1.2 This assessment addresses all known and potential heritage receptors that could potentially be impacted by the development. These are Scheduled Monuments, archaeological remains, listed buildings, conservation areas, Registered Historic Landscapes, registered parks and gardens, non-listed buildings of historic or architectural value, and the wider historic landscape. The assessment also considers the potential of the relevant Study Area (Figure 11.1-1) to contain unknown archaeological remains i.e. archaeological potential. No World Heritage Sites or candidate World Heritage Sites would be affected by the Scheme as none of these receptors are located within the identified study areas.

11.1.3 A description of the features of historic importance on and around the site is given in Chapter 11.4 and additional information can be found in Appendix 11-1.

Archaeological Assessment 2003

11.1.4 An archaeological assessment of the site and surroundings was conducted by Glamorgan-Gwent Archaeological Trust (GGAT – Contractors) in 2003 and its report is provided at Appendix 11-1. As the development site lies entirely within the study area of this previous archaeological assessment, all findings of the 2003 assessment also apply for the location of the proposed development.

11.1.5 All information provided in this chapter has been extracted from the full Archaeology Assessment in Appendix 11-1, which should be consulted for detailed information.

11.2 Assessment Methodology

Data collection

11.2.1 The assessment comprises a review of existing information about the archaeological resource within a 400ha study area, centred at NGR SS 87489 87615.

11.2.2 Information recorded on the regional Sites and Monuments Record (SMR) and National Monuments Record (NMR) was assessed. Cartographic and documentary sources were studied, along with relevant published information. Current Listed Building data and information on Scheduled Ancient Monuments and registered landscapes was obtained from Cadw: Welsh Historic Monuments. Collections of aerial photographs held by the Central Register of Air Photography for Wales and Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) were examined. The National Museums and Galleries of Wales was also contacted for information regarding artefacts found within the study area, but no reply was received within the project timetable.

11.2.3 The Bridgend County Borough Councils Unitary Development Plan (2001) was consulted; LANDMAP information was also requested, but was not forthcoming.

11.2.4 A site visit was undertaken on the 14 March 2003 to assess the current condition of the known archaeological features and to check for previously unrecorded sites.

Assessment Criteria

11.2.5 The archaeological sites within the study area are categorised in accordance with the only available criteria that are nationally agreed; these are set out in the Department of Transport/Welsh Office/Scottish Office Design *Manual for Roads and Bridges* (DMRB) paragraph 3.4 Vol. 11 Section 3 Part 2 (Cultural Heritage).

Determining the value (relative sensitivity) of receptors

11.2.6 The assessment of the importance of individual sites is essentially a subjective exercise based upon the experience of the assessor. The importance of certain sites will be implied by their status within the statutory framework, e.g. Scheduled Ancient Monuments will always be of national importance; Listed Buildings will be of at least regional importance.

11.2.7 Values assigned to other sites are given both in relation to their individual importance and to their context within the wider landscape.

Table 11.2-1: Criteria for assessing the value (relative sensitivity) of Cultural resources

Category	Examples
Category A: National importance	Scheduled Monuments Grade I and Grade II* Listed Buildings Grade I and Grade II* Registered Parks and Gardens Other Listed Buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the Listing grade. Registered Historic Landscapes of Outstanding Historic Interest Conservation areas containing very important buildings. Undesignated structures of clear national importance. Undesignated assets of schedulable quality and importance. Assets that can contribute significantly to acknowledged national research objectives.
Category B: Regional importance	Grade II Listed Buildings Grade II Registered Parks and Gardens. Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations. Registered Historic Landscapes of Special Historic Interest Conservation areas containing buildings that contribute significantly to its historic character. Historic Townscape or built-up areas with important historic integrity in their buildings, or built settings (e.g., including street furniture and other structures). Designated or undesignated assets that contribute to regional research objectives.

Category	Examples
Category C: Local importance	'Locally Listed' buildings. Historic (unlisted) buildings of modest quality in their fabric or historical association. Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g., including street furniture and other structures). Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives
Category D: Low importance	Buildings of no architectural or historical note; buildings of an intrusive character. Features with very little or no surviving archaeological interest.
Category U: Unknown	Features with some hidden (i.e., inaccessible) potential for historic significance.

11.2.8 The condition of individual sites and the general overall condition of surviving remains has bearing on the value of the sites themselves and on the value that they impart within a wider landscape context. The condition of sites is recorded following the system used by the GGAT SMR, using the following criteria:

- Intact: the site is intact
- Near intact: the site is nearly intact
- Damaged: the site has been moderately damaged
- Near destroyed: the site has nearly been destroyed
- Destroyed: the site has been destroyed
- Restored: the site has been restored
- Moved: the site has been moved (usually finds)
- Not known: the condition of the site is not known

11.2.9 The assignment of values to identified interests requires consideration of the reliability and accuracy of the source data, ranging from fully recorded features seen in open excavation to antiquarian comments on finds of note from a poorly-defined location. The confidence with which the values have been assigned is noted, using the following criteria:

- Very high: existing information is derived from excavation to modern standards with full supporting detail
- High: existing information is reliable and detailed
- Medium: existing information is apparently reliable but limited in detail
- Low: existing information is too limited to allow its reliability to be assessed

Assessing the Magnitude of Effect

11.2.10 The effect of the proposal on the archaeological resource has been assessed using the following criteria:

Table 11.2-2: Broad Criteria for Assessing the Magnitude of Change / Effect

Magnitude of Effect	Description and Nature of Change / Effect
Severe	Substantial harm to, or total loss of, an asset's significance as a result of changes to its physical form or setting; For example, this would include demolition, removal of physical attributes critical to an asset, loss of all archaeological interest or the transformation of an asset's setting in a way that fundamentally compromises its ability to be understood or appreciated. The scale of change would be such that it could result in a designated asset being undesignated or having its level of designation lowered.
Major	Less than substantial harm to an asset's significance as a result of changes to its physical form or setting; For example, this could include: physical alterations that remove or alter some elements of significance but do not substantially alter the overall significance of the asset; notable alterations to the setting of an asset that affect our appreciation of it and its significance; or the unrecorded loss of archaeological interest; Significant loss likely to result in a reduction of value of the surviving site.
Minor	Limited harm to an asset's significance as a result of changes to its physical form or setting (Less than Substantial Harm); For example, this could include: physical changes that alter some elements of significance but do not noticeably alter the overall significance of the asset; and small-scale alterations to the setting of an asset that hardly affect its significance; Loss unlikely to result in a reduction of value of the surviving site.
None / Neutral	no identifiable effect
Beneficial	development will protect, preserve or enhance site better than if the development did not occur

Determining Significance

11.2.11 By combining the magnitude of the impact (or change) on the significance of an asset as a result of the development and the importance (value) of each heritage asset, an assessment will be made of the significance of the effect, taking into account the possibility and nature of available mitigation options.

11.2.12 The significance of effect is expressed in the manner set out in the matrix below (Table 11.3- 3). Effects are defined on a five-point scale (severe, major, moderate, minor, and negligible).

11.2.13 Generally, moderate to severe effects are considered to be 'significant' in EIA terms.

Table 11.2-3: Assessing the Significance of Change / Effect

Significance	Examples
Severe	Damage to a World Heritage Site. Damage to a Scheduled Ancient Monument. Demolition of/ damage to a Grade I/II* Listed Building. Land take or damage resulting in the loss of integrity of a Landscape of Outstanding Historic Interest in Wales, Grade I/II* Historic Park or Garden or cultural heritage site of national importance, to the extent that the designation would be affected. The resulting loss of integrity could involve a dramatic change in the setting or visual amenity of the feature/site.
Major	Extensive change to the setting or visual amenity of a Scheduled Ancient Monument. Land take which by reason of scale or loss of a critical qualitative component results in the degradation of a Landscape of Outstanding Historic Interest in Wales, Grade I/II* Historic Park or Garden or a cultural heritage site of national importance. Extensive damage to the value of a Conservation Area, or adverse effects on the setting of a Grade I/II* Listed Building. Demolition of/damage to a Grade II Listed Building. Loss of integrity of sites of archaeological interest of known county or equivalent value, e.g. a dramatic change in the setting or visual amenity of a county site.
Moderate	Extensive change to the setting of a Grade II Listed Building. Encroachment upon a Conservation Area, Grade II Historic Park or Garden and or a Landscape of Outstanding Historic Interest in Wales where the quality of the setting, its amenity or intrinsic value would be noticeably impaired. Encroachment on a feature or site which has yielded a series of finds or a site where a high archaeological potential is considered to exist at a county or equivalent scale, reducing its integrity or creating a noticeable change in the setting or amenity of the site.
Minor	Slight change to the setting of a Grade II Listed Building. Encroachment upon a Conservation Area, Grade II Historic Park or Garden and or a Landscape of Outstanding Historic Interest in Wales but where no intrusive views are created or effects upon its integrity or overall value would result. Encroachment on an area where common archaeological features/areas have been identified, but where low archaeological potential is considered to exist.
Negligible	Landscape or ecological planting on an area where common archaeological features have been identified.

11.3 Baseline Conditions

Archaeological Background

11.3.1 The majority of the Llynfi Valley remained rural in character until the arrival of industry in the early nineteenth century. The development area is located within the parish of Llangynwyd (Llangynwyd); the village itself lies on the northern edge of the study area. The settlement of Maesteg developed following the arrival of the iron industry during the nineteenth century. An iron works was opened at Maesteg (known as the 'Old Works') during this period. The 1841 Tithe Map shows a small number of streets, together with the place name 'Maesteg'.

Prehistoric and Roman

11.3.2 There is no direct evidence for any Prehistoric or Roman activity within the study area.

Medieval

11.3.3 Medieval activity in the wider area is attested to by the presence of St. Cynwyds Church at Llangynwyd (PRN 00910m) and the Llangynwyd Mound and Bailey Castle.

11.3.4 There is also the possibility that farmsteads such as Gellisiriol and Brynllywarch-fawr have medieval precursors. However, evidence within the evaluation area is restricted to the possible presence of a number of holy wells, such as Llangynwyd Well, Ffynnon Wrgan, Ffynnon Caerau, Ffynnon Vysgar and the pump at Cefn Ydfa. Apart from the pump, the exact location of all of the wells is unclear.

Post-Medieval

11.3.5 Post-medieval activity in the area was initially mainly agricultural in nature and is represented in the archaeological record by several farmhouses, such as Cefn Ydfa (along with its associated outbuildings and stable, Gellisiriol, Brynllywarch-fawr and Tyn-ywaun. These tend to be of a regional type dated to the seventeenth century.

Industrial

11.3.6 In addition to the ironworks at Maesteg, nearby industrial sites include four furnaces and a calciner at Caerau (then known as Spelters), constructed by James H. Allen of Neath.

11.3.7 The industry of the area was served by two railways: the Dyffryn Llynfi and Porthcawl Railway (DLP) and the Port Talbot Railway. The Dyffryn Llynfi and Porthcawl Railway was authorised by an Act of Parliament in 1825. Construction began in 1826, and the line was opened in 1828. This line transported raw materials, such as zinc ore, up the valley from Porthcawl, with the products returned to the same port for shipping.

11.3.8 In 1894, the Port Talbot Railway and Docks Company was incorporated and provided the first competition to GWRs' monopoly of the developing coalfields. The first section was opened for freight traffic in 1897 and extended for just under eleven miles from Port Talbot through Maesteg to Lletty Brongu on the eastern slope of the Llynfi Valley. In 1898, the Port Talbot Railway was extended for three miles to a junction at Pontyrhyll with the Garw Branch.

Identified Archaeological Interests

11.3.9 There are 21 identified sites of archaeological interest within the study area, including four Grade II Listed Buildings. These sites are shown in Figure 11.1-1. There are no Scheduled Ancient Monuments within the study area. Further information relating to these interests can be found in Appendix 11-1.

11.3.10 Numbers with a letter suffix are Primary Record Numbers (PRN) in the regional Scheduled Monuments Register (SMR). Fivefigure numbers without a suffix are National Primary Record Numbers (NPRN) of the National Monuments Record, as supplied to the SMR.

Table 11.3-1: Identified Archaeological Interests

ID	NGR	Name and type	Period
00136m/18292	SS87778662	Cefn Ydfa	Post medieval
00911m/18754	SS87638801	Gelli Sirion / Gellisiriol	Post medieval
01142m	SS8687	Llangynwyd Well	Medieval
01143m	SS8687	Ffynnon Wrgan	Medieval
01144m	SS8687	Ffynnon Caerau	Medieval
01145m	SS8686	Ffynnon Vysgar	Medieval
01229,0w	SS56079800	GWR Brunel's S Wales Railway	Post medieval
01402m/18132	SS87908739	Brynllywarch-fawr	Post medieval
03111,0m	SS86108684	Ffordd y Gyfraith	Not known
04291,0w	SS78398982	Port Talbot Railway	Post medieval
04470m	SS8648686614	Maesteg Landscape	Modern
04471m	SS87608750	Brynsiriol drainage ditch	Post medieval
04472m	SS86058792	Gadlys Woollen Mill	Post medieval
04473m	SS87528847	Gellisiriol Colliery	Post medieval
04474m	SS88058815	Maes-y-Bettws Colliery	Post medieval
20235	SS86548842	Tyn-y-waun farmhouse	Post medieval
32334	SS87738665	Cefn Ydfa, pump	Medieval?
34804	SS86728836	Dyffryn Llynfi and Porthcawl Railway	Post medieval
34805	SS86688798	DLP Railway embankment	Post medieval
37493	SS87738665	Cefn Ydfa outbuildings	Post medieval
37494	SS87738665	Cefn Ydfa stable	Post medieval

11.4 Assessments of Effects

11.4.1 For the purposes of assessment, any site within 100m of the proposed development has the potential to be directly affected by the development (see Figure 11.1-1).

Table 11.4-1: Effect on Known Sites

ID	NGR	Value	Effect	Significance
00136m/18292	SS87778662	B	None	Negligible
00911m/18754	SS87638801	B	None	Negligible
01142m	SS8687	U	None	Negligible
01143m	SS8687	U	None	Negligible

ID	NGR	Value	Effect	Significance
01144m	SS8687	U	None	Negligible
01145m	SS8686	U	None	Negligible
01229,0w	SS56079800	C	None	Negligible
01402m/18132	SS87908739	B	None	Negligible
03111,0m	SS86108684	D	None	Negligible
04291,0w	SS78398982	D	None	Negligible
04470m	SS8648686614	C	None	Negligible
04471m	SS87608750	U	None	Negligible
04472m	SS86058792	C	None	Negligible
04473m	SS87528847	C	None	Negligible
04474m	SS88058815	C	None	Negligible
20235	SS86548842	B	None	Moderate
32334	SS87738665	U	None	Negligible
34804	SS86728836	D	None	Negligible
34805	SS86688798	D	None	Negligible
37493	SS87738665	B	None	Negligible
37494	SS87738665	B	None	Negligible

11.4.2 All effects on known sites of archaeological interest are considered ‘negligible’.

Effect on potential sites

11.4.3 There is no specific evidence for the existence of potential sites in the development area, although there remains a general possibility that unexpected archaeological remains survive within the area. Furthermore, four medieval wells are believed to be located in the region, although their exact location is unknown.

Effect on settings and landscape

11.4.4 Within the Maesteg Landscape (04470m), a major road and railway are already apparent, and the proposal will not greatly alter the existing landscape character. There will be no effects during the construction phase.

11.4.5 The hedgerow system, which is deemed to be of historic importance (being part of a field system pre-dating 1845 and shown on the Tithe Map of 1841), will not be affected as no hedgerows would have to be removed as a result of the proposed development.

11.4.6 A designated landscape of Special Historic Importance, Margam Mountain (HLW (WGI/MGI) (Cadw/ICOMOS UK/CCW 2001, 63) is located 5km to the west of the development area. However, it is located beyond the boundaries of the proposed scheme, and it is considered that it will not be directly or indirectly affected by the proposal.

11.5 Mitigation Measures

11.5.1 The implications of the development in terms of Archaeology and Cultural Heritage are likely to be **negligible**; and hence do not require the implementation of mitigation measures. All effects identified in this chapter are therefore residual.

11.5.2 It is recommended that contingency plans be drawn up, for the unlikely occurrence of unexpected archaeological remains being discovered during the development scheme.

11.6 Summary and Conclusion

11.6.1 GGAT (Contracts) has undertaken an assessment of the archaeological effects of the extensions to the Bridgend Paper Mill, Maesteg. The assessment reviewed information held by the regional Sites and Monuments Record and the National Monuments Record, as well as aerial photographs, cartographic and documentary sources.

11.6.2 A total of 21 sites of archaeological interest were identified, including 4 Grade II listed buildings.

11.6.3 The implications of the development in terms of Archaeology and Cultural Heritage are negligible.

11.6.4 Additional effects on the historic landscape are considered likely to be negligible.

11.6.5 Contingency plans for unexpected archaeological remains being discovered during the construction works should be made.

12.0 Water Resources and Water Quality

12.1 Introduction and Scope

12.1.1 This chapter of the Environmental Statement (ES) considers the impact of the proposed development on water resources (including both groundwater and surface water), flood risk and drainage at the site of the proposed development and in the surrounding area. It seeks to identify possible hydrogeological and hydrological impacts associated with the scheme during both the construction and operational phases, including impacts associated with the required changes in the abstraction and discharge regime.

12.1.2 It should be noted that, as an impact assessment, this chapter does not explicitly consider the risk of flooding to the proposed development but does consider how the proposals may alter flood risk at the site and elsewhere.

12.1.3 The flood risk to the proposed development is considered separately in a Flood Risk Assessment (FRA) which is enclosed as Document Ref. 59200-0016.

12.2 Legislation

12.2.1 Reference has been made to relevant legislation, technical guidance and other codes of best practice in the design of the proposed development to limit,

- the potential for contamination of ground and surface waters,
- the potential for flooding to be caused or exacerbated by the proposed development, and
- other potential impacts on the water environment.

12.2.2 Water within the local area of the proposed development is currently regulated according to the following key European Commission (EC) Directives and the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017. These legislations will remain extant and applicable within Wales despite Brexit until they are either superseded by national legislation by the UK government or devolved assembly.

Water Framework Directive

12.2.3 The Water Framework Directive (2000/60/EC) (the "WFD") provides the foundation for the protection of the UK's water environment. The WFD seeks to protect all elements of the water cycle and to enhance the quality of groundwater, surface waters, estuaries and coastal waters. The Directive is transposed and implemented within England and Wales through the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

Groundwater Directive

12.2.4 The Groundwater Directive (2006/118/EC, including amendments to Annex II detailed under Directive 2014/80/EU) (the "GWD") is designed to combat groundwater pollution and sets out procedures for assessing quality of groundwater. Aspects of the GWD are transposed and implemented through the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, the Environmental Permitting (England and Wales) Regulations 2016 and the Groundwater (England and Wales) Regulations 2009.

Floods Directive

12.2.5 The Floods Directive (2007/60/EC) requires assessment of all watercourses and coastlines to determine risk of flooding and action to take adequate and coordinated measures to reduce this flood risk. The Flood Risk Regulations 2009 transpose the EU Floods Directive into law in England and Wales.

12.2.6 The Flood and Water Management Act 2010 largely devolved powers in relation to flood risk management in Wales to Welsh Ministers.

Freshwater Fish Directive

12.2.7 The Freshwater Fish Directive (78/659/EEC) (recodified 2006/44/EC) was originally adopted on 18th July 1978 but consolidated in 2006. The Directive seeks to protect freshwater bodies identified as waters suitable for sustaining fish populations. For those waters identified, physical and chemical water quality objectives are set for salmonid waters and cyprinid waters. Waters protected under the Directive are formally designated through the issue of a notice. In Wales, the notice is issued by the Department for Environment, Food and Rural Affairs (DEFRA) and it places an obligation on the Natural Resources Wales (NRW) to ensure that designated waters meet their objectives.

Nitrates Directive

12.2.8 The Nitrates Directive (91/676/EEC) aims to reduce water pollution by nitrate from agricultural sources and to prevent such pollution occurring in the future. The directive requires DEFRA and the Welsh Assembly Government to identify surface or groundwaters that are, or could be, high in nitrate from agricultural sources. Nitrogen is one of the nutrients that can affect plant growth. Surface waters also have to be identified if too much nitrogen has caused a change in plant growth which affects existing plants and animals and the use of the water. Once a water body has been identified, all land draining to that water is designated as a Nitrate Vulnerable Zone.

12.3 Assessment Methodology

Study Area

12.3.1 The study area encompasses the site of the proposed development and immediate environs. All water features have been screened and those relevant have been considered.

Predicting Effects

12.3.2 A qualitative risk assessment methodology has been used to assess the significance of the potential effects associated with the proposed development. Two factors have been considered using this approach: the sensitivity of the receiving environment and the potential magnitude of impact, should that potential impact occur.

12.3.3 This approach provides a mechanism for identifying the areas where site specific mitigation measures are required and for considering the effectiveness of mitigation measures proposed to manage the risk presented by the proposed development. This approach also allows effort to be focused on reducing risk where the greatest benefit may result.

Sensitivity of Receptor

12.3.4 Criteria for determining the significance of effects relates primarily to the importance of the hydrological receptor. Definitions are provided in Table 12.3-1.

Table 12.3-1: Value / sensitivity assessment

Sensitivity	Definition
High	• International importance. • Receptor with a high quality and rarity, regional or national scale and limited potential for substitution / replacement.
Medium	• National importance. • Receptor with a high quality, local scale and limited potential for substitution / replacement; or • Receptor with a medium quality and rarity, regional or national scale and limited potential for substitution / replacement.
Low	• Regional importance. • Receptor with a medium quality and rarity, local scale and limited potential for substitution / replacement; or • Receptor with a low quality and rarity, regional or national scale and limited potential for substitution / replacement.
Negligible	• Local importance. • Receptor with a low quality and rarity, local scale. • Environmental equilibrium is stable and is resilient to changes that are greater than natural fluctuations, without detriment to its present character.

Magnitude of Change (Impact)

12.3.5 The criteria that have been used to assess the magnitude of potential impacts (i.e. the potential scale of change) to the hydrological and hydrogeological environment will be based on professional judgement. Examples are however provided in Table 12.3-2.

Table 12.3-2: Magnitude of change (impact)

Magnitude	Criteria	Definition
High	Results in loss of attribute	Fundamental (long term or permanent) changes to hydrology, hydrogeology or water quality, such as: • Wholesale changes to watercourse channel, route, hydrology or hydrodynamics. • Changes to the application site resulting in an increase in runoff with flood potential and also significant changes to erosion and sedimentation patterns. • Major changes to the water chemistry or hydro-ecology. • Major changes to groundwater levels, flow regime and risk of groundwater flooding.
Medium	Results in impact on integrity of attribute or loss of part of attribute	Material but non-fundamental and short to medium term changes to hydrology, hydrogeology or water quality, such as: • Some measurable changes to watercourses, hydrology or hydrodynamics. Changes to land cover within the application site resulting in an increase in runoff within system capacity. • Moderate changes to erosion and sedimentation patterns. • Moderate changes to the water chemistry of surface runoff and groundwater. • Moderate changes to groundwater levels, flow regime and risk of groundwater flooding.
Low	Results in minor impact on attribute	Detectable but non-material and transitory changes to hydrology, hydrogeology or water quality, such as: • Minor or slight changes to the watercourse, hydrology or hydrodynamics. • Changes to application site resulting in slight increase in runoff well within the drainage system capacity. • Minor changes to erosion and sedimentation patterns. • Minor changes to the water chemistry of surface runoff and groundwater. • Minor changes to groundwater levels, flow regime and risk of groundwater flooding.
Negligible	Results in an impact on attribute but of insufficient magnitude to affect the use/integrity.	No perceptible changes to geology, hydrology, hydrogeology or water quality, such as: • No impact or alteration to existing important geological environs. • No alteration or very minor changes with no impact to watercourses, hydrology, hydrodynamics, erosion and sedimentation patterns. • No pollution or change in water chemistry to either groundwater or surface water. • No alterations to groundwater recharge or flow mechanisms.

12.3.6 It should be noted that many potential hydrological and hydrogeological impacts are probabilistic in nature. This type of impact (i.e. an impact relate to a severe storm or flood event) is clearly different from one that will definitely occur (i.e. changes process effluent discharge quality or volumes). As such, where appropriate and with justification, professional judgement would be used to adjust the stated magnitude of an impact for low probability impacts.

Significance of Effect

12.3.7 The sensitivity of the receiving environment together with the magnitude of the impact defines the significance of the potential effect, as identified within Effects of 'major' and 'moderate' significance are considered to be 'significant' in terms of the EIA Regulations.

Table 12.3-3: Significance of Effect

	Sensitivity of Receptor				
Magnitude of Effect		High	Medium	Low	Negligible
	High	Substantial / Major	Substantial / Major	Moderate	Neutral / Negligible
	Medium	Substantial / Major	Moderate	Minor	Neutral / Negligible
	Low	Moderate	Minor	Minor	Neutral / Negligible
	Negligible	Neutral / Negligible	Neutral / Negligible	Neutral / Negligible	Neutral / Negligible

12.3.8 The characteristics of the impacts are described in terms of direct / indirect, secondary, cumulative, transboundary, temporary (reversible) / permanent (irreversible), together with timescales (Short, medium, long term).

12.4 Baseline Conditions

Existing Site

12.4.1 The existing site is a paper mill set within a series of large buildings with associated hardstanding. The site is located in the Afon Llynfi Valley, the applicant ownership boundary extending to the river in the north east. The site consists of the area to the south east of the railway, which separates the treatment plant from the rest of the factory.

12.4.2 The existing mill buildings and associated hardstanding cover around two thirds of the land broadly to the south and centre of the application site. The north of the site is currently predominantly grass fields and the eastern part of the site, which is raised, is an area of wood and scrubland.

12.4.3 A watercourse called the Afon Llynfi flows through this land from the northwest to the southeast.

12.4.4 The existing paper mill abstracts water from Afon Llynfi and passes it through sand and gravel filters for use as process water. Effluent from operations is routed towards the effluent treatment plant and either recycled or treated for discharge to the river depending on demand. The abstractions and discharges are permitted by NRW under environmental permit EPR/EP3738NG.

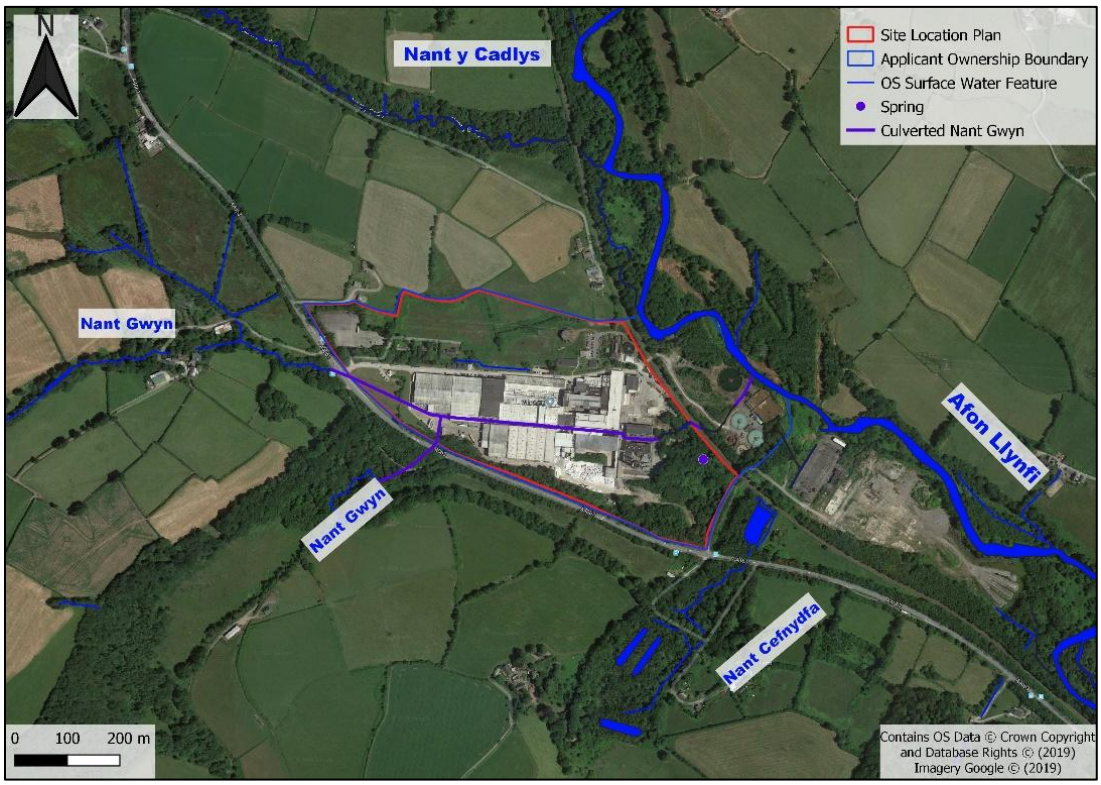
Catchment Overview

12.4.5 An overview of mapped surface water features near the site is presented in Figure 12.4-1.

12.4.6 The site is located within the Llynfi Valley with all surface water (runoff and watercourses) naturally proceeding towards the Afon Llynfi which is located to the north east of the application site. The Afon Llynfi flows from west to east past the site and has an upstream catchment of circa 39.2km^2. Upstream of the site the river passes through the urban area of Maesteg as well as some rural agricultural land.

12.4.7 Afon Llynfi is monitored under the Water Framework Directive WFD and is assigned a status for hydromorphological, ecological, chemical criteria. An overall status (moderate) is also assigned.

Figure 12.4-1: Local Hydrology



12.4.8 The Nant-Gwyn, a tributary of the Llynfi passes through the site. The section of the Nant-Gwyn through the application site (i.e. to the west of the railway line) is culverted and consists of two branches. One approaches the site from the south and one which approaches from the west. The southern branch has an upstream catchment of circa 1.27km^2 and the western branch has an upstream catchment of circa 0.98km^2. Both enter culverts on the opposite side of the A4063 to the site. The two branches converge in the south west of the site in an area that is currently a yard. The Nant-Gwyn has a short section of open channel immediately west of the railway line and is open channel to the east of the railway line past the treatment works.

12.4.9 The Nant-Gwyn receives runoff from roofs within the application site. While runoff from yard area on the site do not drain to Nant-Gwn, undeveloped areas of the site do still drain to this

watercourse via surface and shallow sub surface pathways. It is also possible that small amounts of flow from the operational site (at ground level) could drain to this stream via misdirected drainage connections or damaged / cracked pipework and hardstanding.

12.4.10 There is a spring feature located in the east of the site which is associated with steep topographic gradient in this area. Flows discharging from the spring drain into Nant-Gwyn.

Abstractions and Discharges (Site)

12.4.11 The existing paper mill is self-reliant in terms of water resources for processing purposes and has an abstraction licence (21/58/41/0015) with the main water intake from the Afon Llynfi and a second abstraction point from the Nant-Gwyn. The licence allows for the abstraction of up to 12,000 m^3/day at an instantaneous rate not exceeding 167l/s. The abstracted water is pumped under the railway line into the operational site and then processed through a filtration plant before being used in processes within the factory.

12.4.12 The paper mill has its own effluent treatment plant with a two stage treatment system. The treated water is either sent back to the mill for reuse or discharged into Afon Llynfi. The maximum daily flow volume of the discharge under the environmental permit (EPR/EP3738NG) is 17,500m^3/day.

12.4.13 Foul water (sewerage) is also processed at the site passing initially into a settlement tank before discharging into the site effluent going to the main treatment plant.

12.4.14 Surface water runoff from the roofing areas is currently discharged directly into the Nant-Gwyn with no treatment or attenuation. Surface water runoff from the yard areas, which have potential for contamination with pulp or processing chemicals, is discharged into the effluent drainage and therefore drains to the treatment plant.

12.5 Assessment of Potential Effects

12.5.1 This section identifies the potential impacts of the proposed development on the hydrogeological and hydrological environments prior to mitigation during both the construction and operation of the proposed development. It also assesses the magnitude of each identified impact.

12.5.2 It should be noted that the magnitude of the potential impacts has been assessed as described in Table 12.2-2. The significance of any potential effect has then been assessed (based on the sensitivity of the receptor) as described in Table 12.2-3.

12.5.3 The proposed design and operation of the application site incorporates measures to mitigate potential impacts on the water environment. Except where detailed in the development description above these measures are not included in the initial assessment of impacts so that their effect can be explicitly stated in the mitigation section of this chapter.

12.5.4 In this assessment the sensitivity of the potential receptors is designated as follow:

- Afon Llynfi – **Medium** Sensitivity - because it is a designated by NRW as a main river which is classified as moderate in line with the WFD with good chemical status. Afon Llynfi also provides connection to the large urban area of Bridgend to the south of the site.
- Nant-Gwyn – **Low** Sensitivity - due to the potential impacted reaches of the watercourse being entirely within WEPA's site boundary, it being predominantly culverted and only

locally important. However, the Nant-Gwyn enters Afon Llynfi and represents a significant potential pathway for impacts to this receptor and downstream urban areas including Bridgend to the south of the site.

- Groundwater – **Low** Sensitivity - the underlying geology is designated as either a Secondary A aquifer or a Secondary undifferentiated aquifer which indicates that it could have local importance as for base flow. Records provided by local authorities did not indicate that there were local abstractions of groundwater.

Demolition and Construction Phase

12.5.5 During the demolition of existing buildings and the construction of the new buildings for the extension of the paper mill, there is potential for adverse impacts on surface water environment and groundwater quality associated with

- the use and storage of oil and chemicals associated with construction activities;
- high level of suspended solids arising from earthworks and the use of plant on the site,
- the use and storage of cementitious material associated with construction activities; and
- physical disturbance to the Nant-Gwyn culvert.

Groundwater and Surface Water Quality

12.5.6 Spilled oils and fuels from site vehicles and / or equipment on the site, if unmitigated could enter surface water runoff from the site. This could enter shallow groundwater or flow over land following topographic gradients entering the Nant-Gwyn, or the operational site drainage systems.

12.5.7 Oils and fuels entering the operational site drainage system would pass to the effluent treatment plant, which would normally effectively treat flows prior to discharge. If a spill was large this could however overload the plant causing a contaminated discharge to Afon Llynfi or resulting in damage from the plant. The magnitude of this potential impact is therefore assessed to be **'Medium'**.

12.5.8 As noted above spills of fuels and oil in the areas of the site that are not already developed could drain into one of the branches of Nant-Gwyn. The Afon Llynfi is also a secondary receptor via the Nant-Gwyn. The magnitude of the potential impact from spilled oils and fuels entering the Nant-Gwyn is assessed to be **'Medium'**.

12.5.9 There is no direct flow pathway for spills from the construction site to enter the Afon Llynfi and therefore all potential impacts have been discussed in the previous pathways.

12.5.10 The magnitude of the impact of oil and fuels entering the groundwater as a result of spill in undeveloped areas is considered **'Medium'**.

12.5.11 Based on the above the significance of the potential effect is assessed to be Moderate for the Afon Llynfi and the Existing Operational Papermill Site and Minor for Nant-Gwyn and Groundwater.

Elevated level of Suspended Solids

12.5.12 Without the incorporation of formalised mitigation measures, the construction of the new buildings has potential to generated turbid runoff from the following potential sources:

- Storm runoff across ground churned up construction traffic;
- Intense rainfall onto exposed earth surface and / or spoil heaps;
- Dewatering of excavations for foundations; and
- Tracking of soil by plant onto adjacent roads and hardstanding and mobilisation from there into storm drainage network.

12.5.13 The increased sediment loading could result in blockage of the effluent drainage network. Resulting surcharges could result in flooding of the yard areas with potentially mildly contaminated water (potentially containing paper fibres – bleaching chemicals are highly controlled and therefore unlikely to be in this effluent water). High sediment loading could also overload the effluent treatment plant potentially causing damage to the treatment plant or contaminated discharge to the Afon Llynfi. The magnitude of unmitigated of this potential impact is assessed to be **'High'**.

12.5.14 The sediment loaded surface water could passes directly into the Nant-Gwyn via the section of open channels or into the culvert through cracks or damaged manholes. The magnitude of the potential impact on the Nant-Gwyn is considered **'High'.**

12.5.15 The Nant-Gwyn flows into the Afon Llynfi, however due to the distance downstream (and settlement along the channel) as well as the higher dilution capacity, the magnitude of the potential impact on the Afon Llynfi would be lower and is assessed as **'Medium'**.

12.5.16 The topography of the other areas of development (adjacent to existing building) are relatively flat and the potential for turbid surface water runoff to be generated is therefore smaller. The magnitude of the impacts from construction activity in these areas, if unmitigated, is assessed to be **'Medium'**.

Cementitious Material

12.5.17 Spillage or accidental discharge of cementitious material during groundworks of construction and spillages of raw building material throughout construction could enter the surface water runoff from the site. This could enter shallow groundwater or flow over land following topographic gradients entering the Nant-Gwyn, or the operational site effluent drainage networks.

12.5.18 The Nant-Gwyn flows into the Afon Llynfi and therefore cementitious materials could be conveyed to this receptor either via this pathway or via the effluent treatment plant if this was not working or was overwhelmed. The magnitude of the potential impact taking into account the probability of a major spill is assessed to be **'Medium'**.

12.5.19 The significance of the potential effect is therefore **'Moderate'** for the Afon Llynfi and the existing papermill site and **'Minor'** for the Nant-Gwyn and underlying groundwater.

Operational Phase

12.5.20 The proposed development involves the extension of an operational paper mill, and the mill will continue to be operated in the same manner. The existing water abstraction, processing, recycling, treatment and discharge will be maintained.

12.5.21 Without the incorporation of formalised mitigation measures, the construction of the new buildings has potential to generated turbid run-off from the following potential sources:

- Accidental emissions impacting groundwater and surface water quality;
- Changes in groundwater recharge;
- Changes in abstraction and discharge impacting water resources; and
- Changes to flood risk and drainage.

Groundwater and Surface Water Quality – Accidental Emissions

12.5.22 If unmitigated, the operational extension to the papermill could result in contamination of surface water runoff from paper fibres, pulp etc. However, the construction of the site inherently mitigates against the impact of this by connecting all yard areas into the effluent drainage network which is routed via the existing treatment plant.

12.5.23 Fracturing of piping, rupturing or overfilling of containment vessels could potentially result in accidental emissions of chemicals and / or fibres. All new pipework and storage areas will be constructed in accordance with Best Available Techniques. Due to the position of the proposed development the probability of an accidental emission from this source is not altered as a result of the development and therefore the magnitude of the impact is **'Negligible'.** The significance of the impact is therefore **'Negligible'**.

12.5.24 Spilled oils and fuels from site vehicles and / or equipment on the site, if unmitigated would enter effluent runoff from the site, which could, if the volumes were very high, overwhelm the effluent treatment plant. This would result in contaminated discharge to Afon Llynfi or failure of the treatment plant. The magnitude of the potential impact taking into account the very low probability of a major spill is assessed to be **'Low'**. The significance of the impact is therefore **'Minor'.** There is no pathway to any other receptor and therefore the magnitude of potential impact and significance of effect for those is assessed to be **'Negligible'**.

Groundwater Recharge

12.5.25 Due to the increase of impermeable coverage as a result of the development there will be a very small reduction in the potential for rainfall to infiltrate into the ground. However, due to the limited increase in impermeable area relative to the catchment of the aquifer and the nature as *Secondary Aquifer*, the magnitude of the potential impact is **'Negligible'** and therefore the significance of effect is **'Negligible'**.

Water Resources

12.5.26 As for existing operations, no additional water would be abstracted as the new paper machine consumes considerably less water than the existing 'Jupiter' machine.

12.5.27

12.6 Proposed Mitigation Measures

12.6.1 Mitigation measures to address potential significant effects are described below. These measures reduce the magnitude of potential impact.

12.6.2 A number of operational mitigation measures and best available techniques have been incorporated into the procedures already used at the existing operational site. These have been considered as incorporate mitigation within the initial assessment as the proposed development will continue to operate in the same manner.

Construction Phase

Groundwater and Surface Water Quality

12.6.3 The construction of the proposed development would be undertaken in line with relevant technical guidance and codes of best practice, to limit the potential for contamination of both ground and surface waters.

12.6.4 Best practice techniques would be incorporated within the management procedures for construction and operation activities onsite in order to protect the water environment from pollution incidents. This would involve the preparation of detailed 'construction - site water management plan' which would be completed and agreed with NRW prior to work commencing at the application site.

12.6.5 The following standard good practice measures would be incorporated and expanded upon within the plan:

- The use and storage of potentially polluting materials on site, including oils and fuel, would be minimised as far as is reasonably possible;
- All on-site fuel, and chemical storage would be above ground and would be lined and bunded;
- Emergency spill response kit would be provided and maintained on site and site personnel would be trained in their use; and
- A vehicle management system including strict speed limits and road markings would be put in place wherever possible to reduce the potential conflicts between vehicles and thereby reduce the risk of collision;
- Direct discharge of sediment laden water to adjacent surface water bodies would be forbidden;
- Spoil heaps should be minimised and kept covered as far as possible; and
- Wheel cleaning should be carried out on exit to the site to minimise tracking of sediment onto adjacent roads.

Operational Phase

12.6.6 The extension areas of the paper mill will be operated in the same way as the existing papermill site and within the requirements of the environmental permit.

12.6.7 Spillage kits will be located adjacent to chemical storage and loading areas and only staff trained in the use will be responsible for the unloading of chemicals.

12.6.8 The initial assessment concluded that given the incorporated mitigation inherent within the design of the scheme all other operational impacts relating to water resources, flood risk and drainage were minor or negligible and as such no further mitigation or management measures are required.

Table 12.6-1: Summary of the Residual Potential Impact after Mitigation

Potential Impact	Receptor	Spatial and Temporal Impact	Magnitude of Impact	Significance of Potential Effect	Mitigated Magnitude of Impact	Significance of Potential Effect after Mitigation
Construction Phase						
Groundwater and Surface Water Quality						
Spilled pollutants, oils, fuels etc. contamination	Afon Llynfi	Regional, Short Term (Adverse)	Medium	Moderate	Low	Minor
Spilled pollutants, oils, fuels etc. contamination	Nant-Gwyn	Local, Short Term (Adverse)	Medium	Minor	Low	Minor
Spilled pollutants, oils, fuels etc. contamination	Groundwater	Local, Short Term (Adverse)	Medium	Minor	Low	Minor
Turbid Surface Water Runoff	Afon Llynfi	Regional, Short Term (Adverse)	Medium	Moderate	Negligible	Negligible
Turbid Surface Water Runoff	Nant-Gwyn	Local, Short Term (Adverse)	Medium	Minor	Negligible	Negligible
Turbid Surface Water Runoff	Groundwater	Local, Short Term (Adverse)	Medium	Minor	Negligible	Negligible
Turbid Surface Water Runoff	Existing Papermill Site - Flooding	Local, Short Term (Adverse)	Medium	Moderate	Negligible	Negligible
Cementous material spillage	Afon Llynfi	Regional, Short Term (Adverse)	Medium	Moderate	Negligible	Negligible
Cementous material spillage	Nant-Gwyn	Local, Short Term (Adverse)	Medium	Minor	Negligible	Negligible
Cementous material spillage	Groundwater	Local, Short Term (Adverse)	Medium	Minor	Negligible	Negligible

Potential Impact	Receptor	Spatial and Temporal Impact	Magnitude of Impact	Significance of Potential Effect	Mitigated Magnitude of Impact	Significance of Potential Effect after Mitigation
Cementous material spillage	Existing Papermill Site - Flooding	Local, Short Term (Adverse)	Medium	Moderate	Negligible	Negligible
Operational Phase						
Groundwater and Surface Water Quality						
Fracturing of piping, rupturing or overfilling of containment vessels	Afon Llynfi	Regional, Medium Term (Adverse)	Negligible	Negligible	Negligible	Negligible
Fracturing of piping, rupturing or overfilling of containment vessels	Nant-Gwyn	Local, Medium Term (Adverse)	Negligible	Negligible	Negligible	Negligible
Fracturing of piping, rupturing or overfilling of containment vessels	Ground-water	Local, Medium Term (Adverse)	Negligible	Negligible	Negligible	Negligible
Spillage of Chemicals during Unloading	Afon Llynfi	Regional, Medium Term (Adverse)	Low	Minor	Low	Minor
Spillage of Oils and Fuels from Site Vehicles	Afon Llynfi	Regional, Medium Term (Adverse)	Low	Minor	Negligible	Negligible
Spillage of Oils and Fuels from Site Vehicles	Nant-Gwyn	Local, Medium Term (Adverse)	Low	Minor	Negligible	Negligible
Spillage of Oils and Fuels from Site Vehicles	Ground-water	Local, Medium Term (Adverse)	Low	Minor	Negligible	Negligible
Groundwater Recharge						
Reduction in Recharge due to increases in impermeable cover	Ground-water	Local, Long Term (Adverse)	Negligible	Negligible	Negligible	Negligible

12.7 Cumulative Effects

12.7.1 This development has been considered in the context of any potential cumulative effects on the Water Environment, and specifically on the Afon Llynfi.

12.7.2 The site is located in a relatively remote location. Review of Bridgend Council Planning Application search for the area of Llangynwyd Middle Community Council (in which the site is located) indicates that there are no planning applications within the last five years for any industrial developments that would result in cumulative effects with the proposed papermill extension.

12.8 Summary and Conclusions

12.8.1 The surface water and groundwater regimes at the application site have been assessed with reference to information held by the BGS, Natural Resources Wales, Local Authority, and by the consideration of site specific investigation and reports relating to the application site. Key potential receptors identified are the:

- Afon Llynfi, from which water is abstracted and discharged, and which is adjacent to the site;
- Nant-Gwyn, a culverted watercourse through the main operational area and open channel passed the effluent treatment. Nant-Gwyn flows into the Afon Llynfi adjacent to the site;
- Groundwater within some of the superficial deposits and bedrock geology;
- Bridgend Papermill Effluent and Surface Water Drainage networks.

12.8.2 The potential impacts of the proposed development upon the hydrological and hydrogeological environment have been identified and assessed. Key potential impacts relate to the management of pollution during the construction and operation of the site.

12.8.3 Where appropriate, mitigation measures will be implemented during construction and have also been accommodated into the design of the proposed development and ongoing operations. Critically the construction of the extension to the papermill will be undertaken in line with current technical guidance and relevant codes of best practice to limit the potential for contamination of both ground and surface waters. Best practice techniques, including the treatment and controlled release of all process water, will be incorporated within the management procedures for construction and operation activities onsite in order to protect the water environment from both regular discharges and any pollution incidents.

12.8.4 This assessment has found that there would be no significant residual effects on the water environment. It is therefore also concluded that the proposals would not have a significant impact on the objectives of the Water Framework Directive.

12.8.5 Assessment of the residual effects of the development proposals on the water environment alongside other approved developments within the area has also been undertaken. This assessment has also identified no significant effects of multiple developments being carried out within the same sub-catchment (draining to Afon Llynfi).

12.8.6 Overall, it is concluded that, with respect to groundwater and surface water, there would be no significant residual or cumulative effects of the proposed development after inclusion of the identified mitigation measures.

13.0 Traffic and Transportation

13.1 Introduction and Scope

13.1.1 This chapter assesses the potential effects of the proposed development in relation to Traffic and Transport. It summarises the findings of the Transport Assessment (TA) (Document Ref.: 59200-0017) which is submitted as a separate report as part of the application. It also describes the methods used to assess the impacts; the baseline conditions currently existing at the site and in the surrounding area; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual impacts after these measures have been adopted.

13.2 Baseline Conditions

Site Location

13.2.1 The proposed development site is located on the site of the existing Bridgend mill site approximately 5 km to the north of Bridgend town centre, in an area bound to the south and to the west by the A4063, to the east by the River Llynfi, and to the north by open farmland. The site is orientated along its long axis in an approximate west to east direction and it is accessed via the A 4063 (Bridgend Road) between Maesteg and Coytrahen, with site traffic generally proceeding south towards the M 4. The A4063 in this location is subject to a 60mph speed limit with a comprehensive street lighting system in place.

13.2.2 The existing WEPA site has two access points. One at the north-western end of the site, which, through the development of the site, was upgraded in 2019. In order to facilitate the development of the Neptune paper machine in 2019, a second vehicle access point has been constructed at the southern end of the site, primarily to allow HGV access to the site.

Figure 13.2-1: Main Site Access

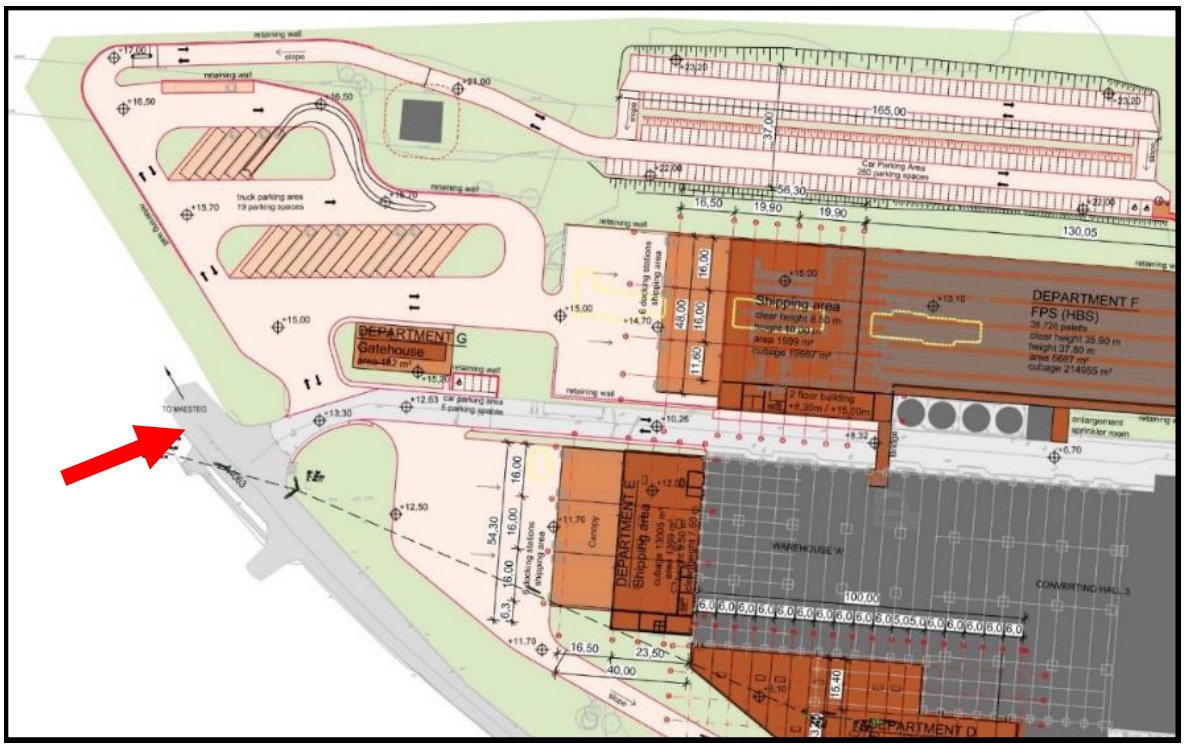
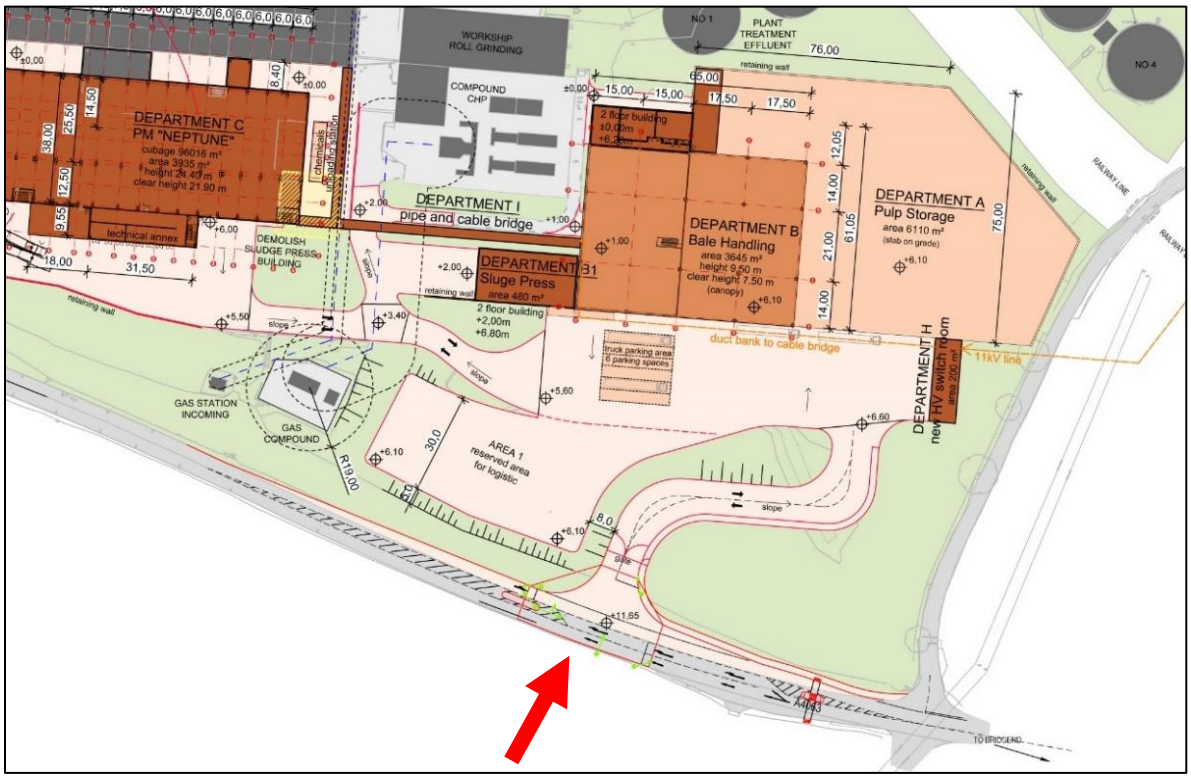


Figure 13.2-2: Secondary Site Access



13.2.3 The A4063 is a suitable route for HGVs and current traffic conditions on this route are considered to be satisfactory. The A4063 provides access to the M4 Junction 36 and Bridgend to the south. Access to Cardiff is provided by the M4, at Junction 32 located approximately 20 miles southeast of the development site.

13.2.4 There will be different sized vehicles servicing the site for

- delivery of raw materials,
- dispatch of goods,
- operational maintenance,

alongside with normal ‘domestic’ vehicular traffic generated by employees.

13.2.5 The maximum anticipated length of vehicles would be 16.5m.

13.2.6 The overall number of vehicles using both the main (primary) entrance and the new secondary access will vary through to project maturity:

13.2.7 In relation to dispatch of goods, all lorry spaces are located remotely from the main access road to the site. Each delivery has a designated window of time within which they will arrive. In the event of trucks arriving too early for shipping or in case of all docking stations being occupied, they have to wait on the truck parking area in front of the Gate House; 19 parking spaces for HGVs will be provided close to the primary access at the western entrance of the Site. In relation to delivery of raw material, stock is stored in open hardstanding areas located remotely from the public highway with abundant space; potential delay to offloading is minimal and manageable.

Walking and cycling

13.2.8 The A4063 does not currently benefit from pedestrian footways. There are no crossing facilities currently within close proximity to the development site.

13.2.9 There are no dedicated on-road cycle lanes available, but all roads are of sufficient width for cyclists to share the carriageway with motor vehicles thus ensuring no impediment to cyclists.

13.2.10 There is one proposed national cycle way routed along the River Llynfi east of the site. Route 885 of the National Cycle Network connects Maesteg and Bridgend (Tondu). The route follows Public Rights of Way, tracks and minor roads, and links with other long distance routes in Bridgend.

Public Transport

13.2.11 Bus services 70 and 71 pass the site travelling between Bridgend and Cymmer via Maesteg. The bus services along Bridgend Road are scheduled to stop at the bus stop “Paper Mills” (H9FF+2G Llangynwyd) which is the nearest stop to the main entrance of the site.

13.2.12 Bus tables illustrate that the service frequencies vary between 30 minutes during peak times and 60 minutes off-peak. The tables also reveal that there are sufficient services during the early (7am) and late (7pm) shift change.

13.2.13 Up-to-date bus timetables are displayed on the staff’s notice boards.

Figure 13.2-3: Location of “Paper Mills” bus stop

Baseline Traffic Data 2025

13.2.14 As set out in the Transport Assessment, to ascertain the current baseline traffic conditions and to enable a thorough and fit for purpose assessment of the proposed development impacts, a traffic survey programme was outlined and agreed with BCBC.

13.2.15 In order to better understand the local highway network Manual Classified Counts (MCC) have been carried out at the following junctions:

- Junction 1 – WEPA (West)/ A4063 South/ A4063 North
- Junction 2 – WEPA (East)/ A4063 South/ A4063 North
- Junction 3 – A4063 Maesteg Road (North)/ Unnamed Road/ A4063 Maesteg Road (South)

13.2.16 All surveys took place on Thursday 20th February 2025.

13.2.17 The survey results are summarised below in the figures below with full survey results detailed in the Transport Assessment (Document Ref.: 59200-0017):

Figure 13.2-4 – J1 - Existing traffic flows 2025 – 0800-0900hrs

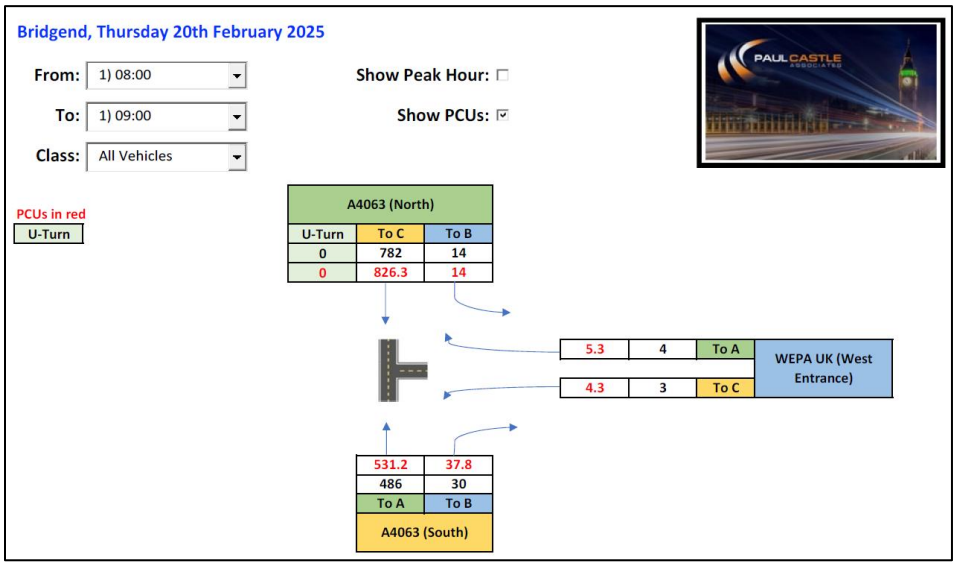


Figure 13.2-5 - J1 – Existing traffic flows 2025 – 1700-1800hrs

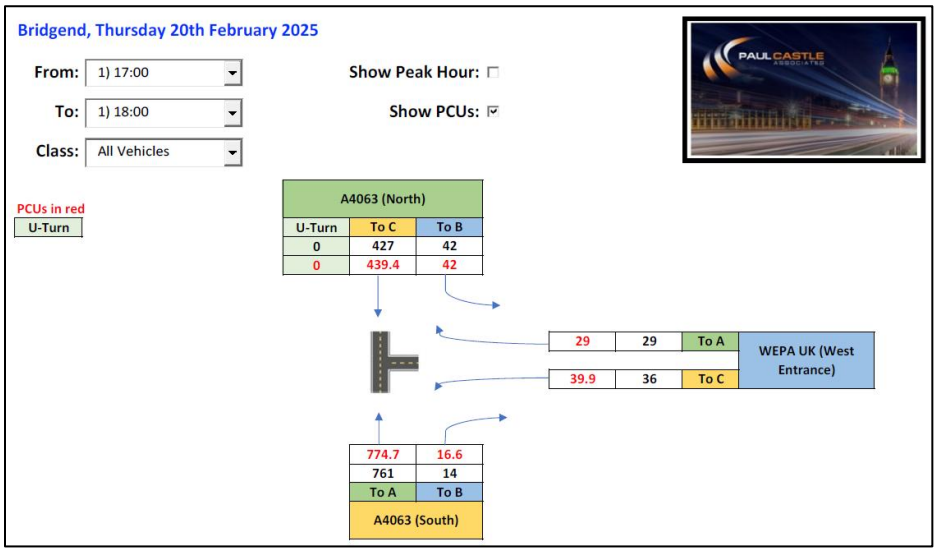


Figure 13.2-6 - J1 – Existing traffic flows 2025 – Daily i.e. 0700 -1900hrs

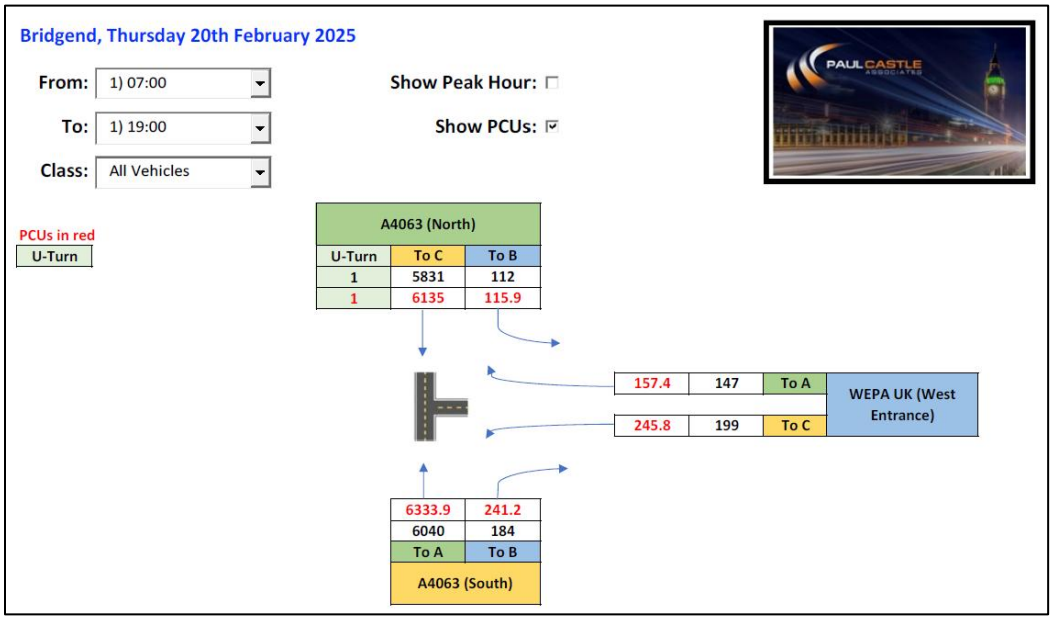


Figure 13.2-7 – J2 - Existing traffic flows 2025 – 0800-0900hrs

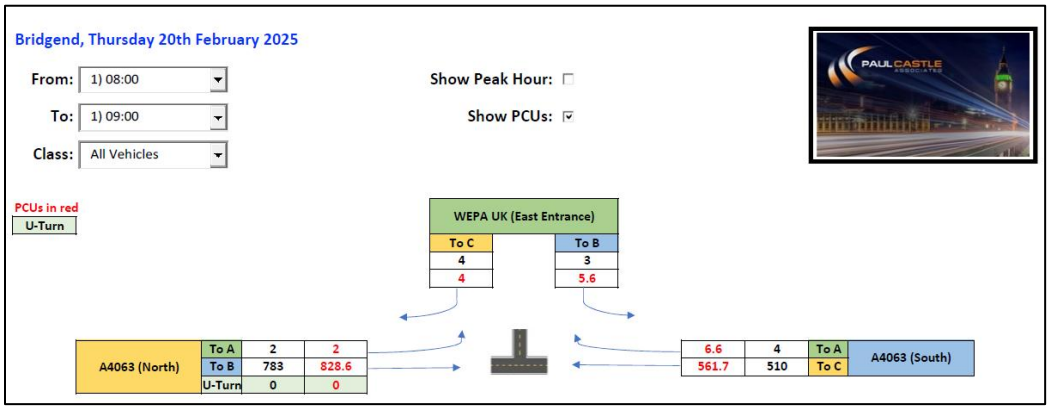


Figure 13.2-8 - J2 – Existing traffic flows 2025 – 1700-1800hrs

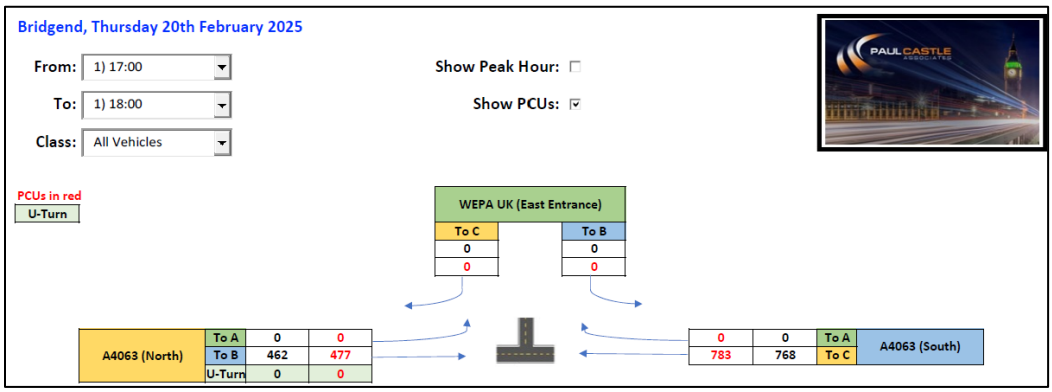


Figure 13.2-9 – J2 - Existing traffic flows 2025 - Daily

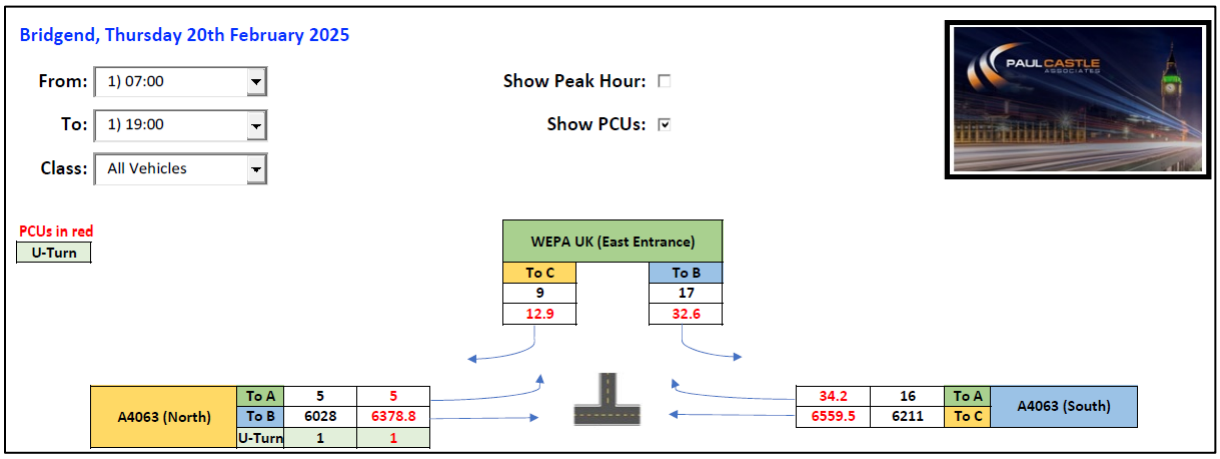


Figure 13.2-10 – J3 - Existing traffic flows 2025 – 0800-0900hrs

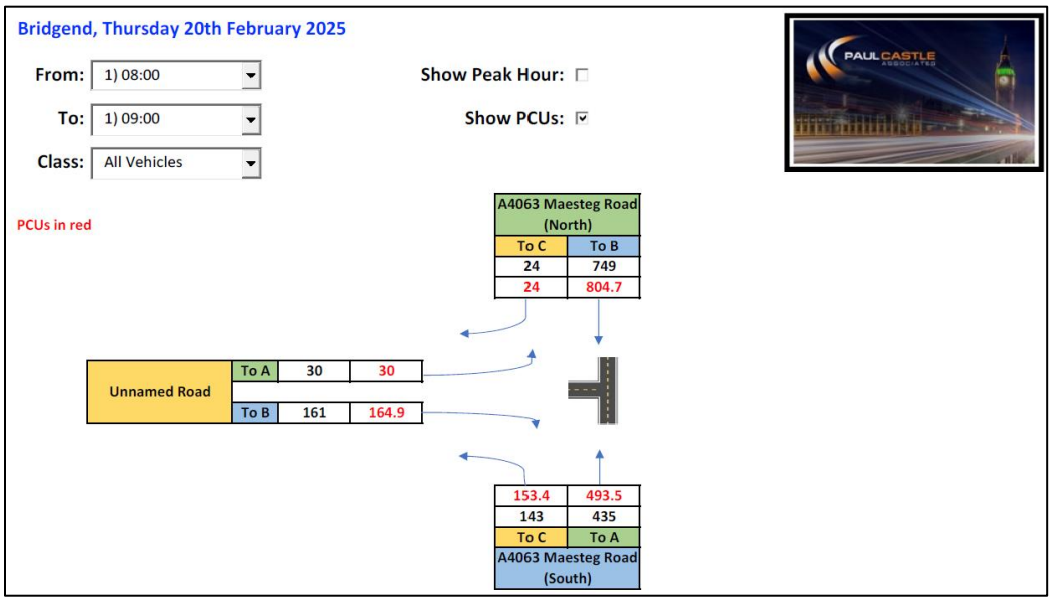


Figure 13.2-11 - J3 – Existing traffic flows 2025 – 1700-1800hrs

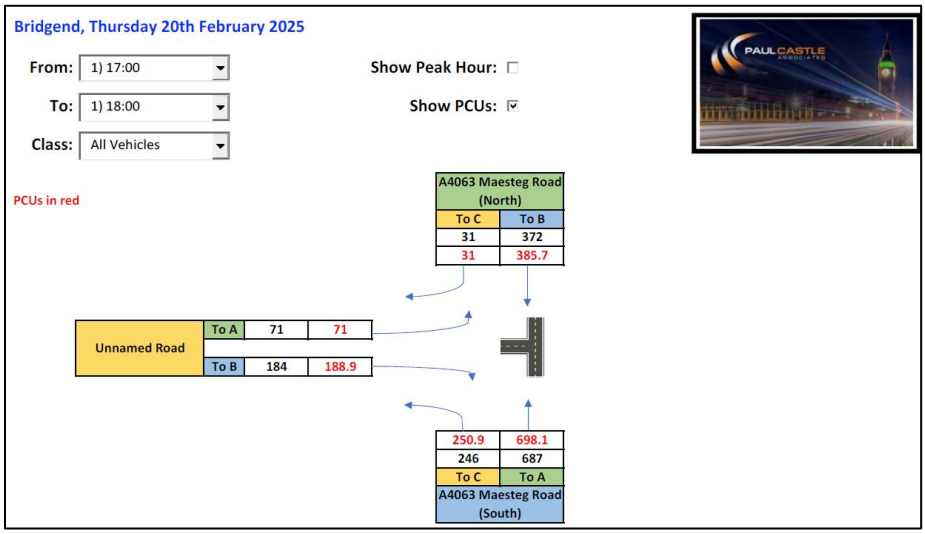
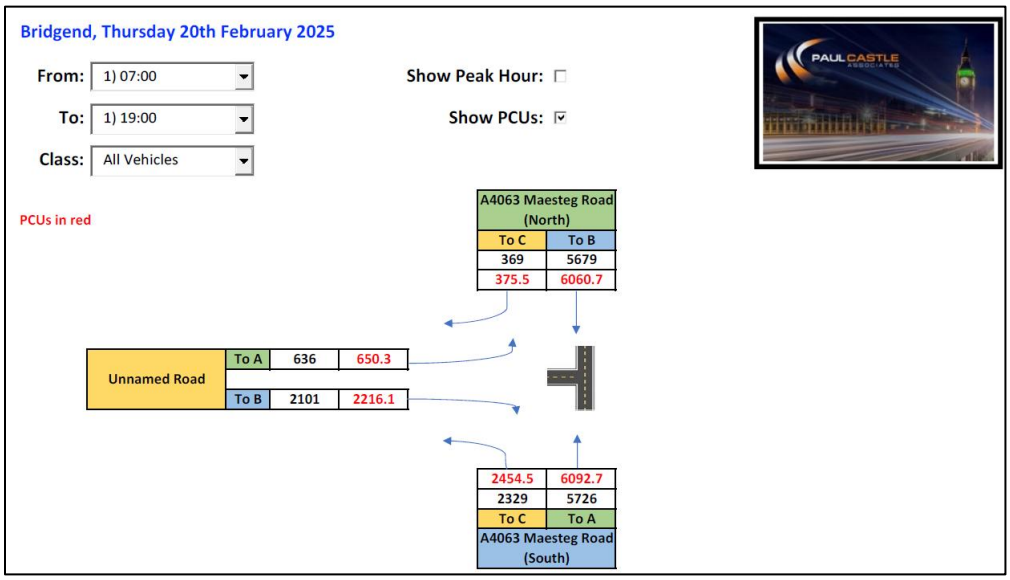


Figure 13.2-12 – J3 - Existing traffic flows 2025 - Daily



HGV's

13.2.18 The existing HGVs using the A4063 between Tondu and the WEPA site is summarised below:

- J3 – A4063 northbound - AM - 35 HGVs
- J3 – A4063 northbound - PM - 7 HGVs

- J3 – A4063 southbound – AM - 29 HGVs
- J3 – A4063 southbound - PM - 9 HGVs

- J3 – Daily – Southbound - 254 HGVs
- J3 – Daily – Northbound - 250 HGVs
- J3 – Daily – Total - **504 HGVs**

WEPA HGVS:

- J1 – WEPA - Daily – Northbound Arrivals - 44 HGVs
- J1 – WEPA – Southbound Departures - 36 HGVs
- J1 – Daily – Total - **92 HGVs**

- J2 – WEPA - Daily – Northbound Arrivals - 14 HGVs
- J2 – WEPA - Daily – Southbound Departures - 12 HGVs
- J2 – Daily – Total - **26 HGVs**

13.2.19 Total WEPA HGVs daily equates to 118 HGVs two-way using the A4063.

Future Traffic Conditions

13.2.20 With the new machine being a direct upgrade to the previous “Jupiter” machine, it will not require any increase in staff numbers.

13.2.21 The traffic conditions after the “VESTA” project completion will remain unchanged compared to the traffic movements already approved within the previous “Neptune” project application.

13.2.22 In this regard, no further analysis is considered necessary with no change the current conditions.

13.3 Assessment of Effects and Mitigation Measures

13.3.1 As yet a contractor has not been appointed so full details of the construction operations and programme have yet to be finalised however, it is intended that Construction Traffic Management Plans (CTMP) will be developed for each phase of the development including (but not necessarily limited to):

- CTMP September 2025 to December 2025 for site clearance activities

  Construction lorries movements Mon-Fr. 07:00 – 19:00 approximately 20 movements/hour and Sat. 07:00 – 17:00 approximately 20 movements/hour
- CTMP January 2026 to July 2026 GC contractor

  Construction lorries movements Mo-Fr. 07:00 – 19:00 approximately 20 movements/ hour and Sat. 07:00 – 17:00 approximately 20 movements/ hour

13.3.2 Nevertheless, aside from a number of abnormal loads, which will be specified on an individual basis and routing agreed with the relevant authorities, it is anticipated that the largest vehicle accessing the site will be a 16.5m articulated semi-trailer.

13.3.3 The site and surrounding road network are capable of receiving deliveries from large vehicles; it is therefore not deemed necessary for large loads to be broken down into smaller delivery vehicles prior to being delivered to site. This will reduce the overall volume and impact of deliveries upon the road network and neighbours; however, it may be necessary to limit the use of large vehicles during peak commuting times.

13.3.4 It is anticipated that traffic flows will generally take place out of peak hours (0800-0900 and 1700-1800) when the local highway network has a greater operational capacity.

13.3.5 Access routes to and from the site which will be utilised by HGVs will be agreed with BCBC prior to the start of any site-based works as will any local traffic management measures. As no route closures are proposed at this stage, it is considered that there will be a minor adverse effect on the journey times for pedestrians, cyclists or public transport along delivery routes.

13.3.6 The presence of additional large vehicles on the local highway network often has the potential to have a temporary, local, minor adverse effect on fear and intimidation of vulnerable road users. Furthermore, construction traffic has the potential to have a

temporary, local, minor adverse effect of driver severance and delay as well as disruption to pedestrians.

Mitigation Measures

13.3.7 BCBC have advised that a Construction Method Statement (CMS) will be required prior to start on site and must be approved in writing by, the Local Planning Authority. Furthermore, the approved Statement shall be adhered to throughout the construction period.

13.3.8 The Statement shall provide for:

i. The timing and routeing of HGV construction traffic to/from the site to avoid the peak network hours
ii. the parking of vehicles of site operatives and visitors
iii. loading and unloading of plant and materials
iv. storage of plant and materials used in constructing the development
v. wheel washing facilities and location
vi. measures to control the emission of dust and dirt during construction
vii. the provision of temporary traffic and pedestrian management along the A4063

13.3.9 In this regard, a draft CMS will be prepared in due course but at this stage it envisaged that this would form part of the conditions if approval is granted.

13.3.10 The CMS will then in due course be finalised by the appointed contractor.

13.4 Summary and Conclusion

13.4.1 Based upon the appraisal of the impacts discussed above, the residual impacts associated with the construction phase are deemed to be of **negligible** significance, short-term and temporary in nature, and therefore, no further analysis is required.

13.4.2 There are **no** impacts associated with the operational phase of the development.

13.4.3 Abnormal loads would be scheduled to occur during off-peak periods, at times to be agreed with the Local Authority and the Police in order to minimise delays to other road users.

13.4.4 The implementation of a Travel Plan will assist in minimising any arising impact.

13.4.5 However, it is acknowledged that prior to the start of the construction period there will be a need to quantify vehicle movements especially HGV movements required to construct the “Vesta” project.

13.4.6 In this regard, a CTMP and a CMS is to be conditioned and will be agreed with BCBC prior to works commencing on site.

14.0 Socio-Economics

14.1 Introduction and Scope

14.1.1 This chapter sets out the assessment of likely significant effects of the development socio-economics.

14.1.2 This chapter considers the relevant socio-economic baseline for the proposal. The assessment methodology and significance criteria are outlined. The likely socio-economic impacts from the proposal are assessed for the construction and operational phases of the project. Mitigation measures required to prevent, reduce, or offset the effects are then considered, together with the residual effects following mitigation.

14.1.3 The construction and operation of the proposed development have the potential to impact on the local and regional economy. It is anticipated that the overall effect of the proposed development is positive. The inward investment to the area is estimated at £70M, which will further stimulate the local economy.

14.1.4 During construction, it will involve a fairly substantial construction workforce, although during operation the workforce will be lower. The proposed development will also have the capacity to bring economic benefits through supply chain and product related consequences.

14.1.5 As the new Vesta paper machine is a replacement of the existing 'Jupiter' paper machine, no new jobs for the operation of the proposed development will be created. Existing jobs will, however, be safeguarded.

14.2 Assessment Methodology

14.2.1 In the absence of a Government regulation or guidance setting out a prescribed method to quantify socio-economic effects, the significance criteria employed for most other EIA topics of this ES are not used. Instead, a broader qualitative assessment is made of whether effects are significant.

14.2.2 However, using accepted good practice in terms of converting temporary employment into fulltime equivalents (FTEs) (Homes and Communities Agency, 2015), it is possible to equate construction activity associated with a development to permanent full-time jobs.

14.2.3 It is generally accepted in economic appraisals of development schemes that 10 person-years of employment is the equivalent of one FTE job.

Table 14.2-1: Assessment of Significance

Magnitude	Criteria
Large	Considerable impact (by extent / duration / magnitude) to an area of regional or national importance. Examples of adverse socio-economic indicators would show major detrimental effect upon the economy or well-being of the population, reducing quality of life in the South Wales region and leading to greater levels of deprivation.
Major	Considerable impact (by extent / duration / magnitude) of local or district significance.

	Examples of adverse socio-economic indicators would show major change attributable to the development, such as a significant reduction in JSA or an increase in deprivation; or where there are more than 100 FTE affected at any one time, or where there is potential for cumulative impact (a large number of impacts upon more than 50 people).
Moderate	Limited impact (by extent / duration / magnitude) which may be considered significant. These effects, if adverse, while important at a local scale, are not likely to be key decision-making issues. Examples would include effects on resources such as accommodation close to the Application Site that is attributable to the development; or where there are 20 to 100 FTE affected at any one time, or where there is potential for cumulative impact (a large number of impacts upon up to 50 people).
Minor	Slight impact (by extent / duration / magnitude) of no significant consequence. These are small effects that may be raised as local issues but are unlikely to be of importance in the decision-making process. Nevertheless, they are of relevance in enhancing the subsequent design of the development and consideration of mitigation or compensation measures; or where there are up to 20 FTE affected at any one time
Negligible	No measureable impact (by extent / duration / magnitude). Such effects should not be considered by the decision maker.

14.3 Baseline Conditions

14.3.1 This section establishes the regional and local economic baseline with regard to the following characteristics relevant to the proposed development:

- Area and Population
- Local Employment and Economic Profile
- Index of deprivation
- Unemployment and job seekers allowance (JSA)

14.3.2 A desk study was undertaken to establish the existing situation for the region and locality to allow assessment in line with the defined significance criteria. The study area for this assessment is focused on the local authority area of Bridgend County Borough Council.

Sources of Information

14.3.3 This desk study has relied on assembling relevant data to establish the baseline conditions from a number of sources:

- http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=10151
- http://www.neighbourhood.statistics.gov.uk
- http://www.wales.gov.uk/statistics
- The Welsh Index of Multiple Deprivation (WIMD)
- Statistics published by BCBC on their website

Area and Population

14.3.4 The total extent of the County Borough of Bridgend is 250 square kilometres and has a population of approximately 146.136 (2022). In Bridgend, the population size has increased by 4.5%, from around 139,200 in 2011 to 145,500 in 2021. The population density of Bridgend was 583 people per square kilometre (compared to 151 people per square kilometre across Wales).

14.3.5 The largest town and main commercial centre is Bridgend (pop: 48,225), followed by Maesteg (pop: 23,382) and seaside resort of Porthcawl (pop: 17.536). Table 14.3-1 below shows an approximate breakdown of population between the sub-areas of the county borough. As it demonstrates, the three major towns together account for 61% of the total population. A significant proportion of the population is located in and around the settlements of Pyle, Kenfig Hill and North Cornelly, near junction 37 of the M4.

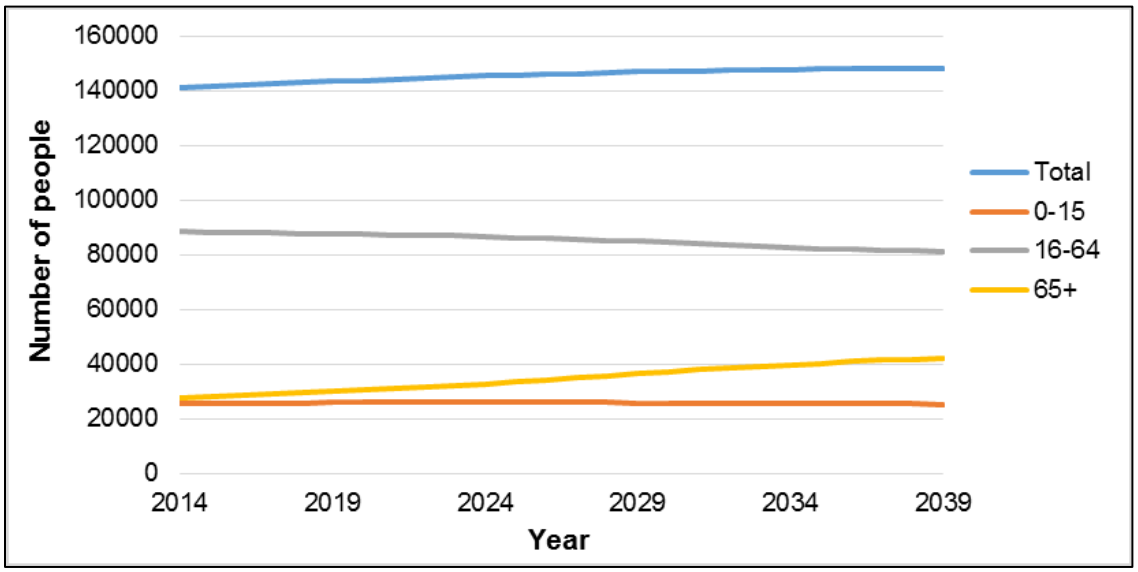
Table 14.3-1: Population distribution by sub area

Sub Area	Proportion (%)
Bridgend	33
Porthcawl	12
Maesteg (Llynfi Valley)	16
Pencoed	7
Valleys Gateway	8
Pyle / Kenfig / Cornelly	12
Ogmore Valley	6
Garw Valley	6

14.3.6 The county borough benefits from good transportation infrastructure with the M4 motorway crossing the southern part of the county borough in an east-west alignment, providing speedy access to Cardiff, Swansea and the rest of South Wales and beyond. There are three motorway junctions (35-37) within the county borough. Additionally, an inter-city high speed rail service linking the area with the whole of the national rail network provides fast and efficient rail transport whilst Cardiff Airport is only 15 miles away. Bridgend is also well connected to the seaports, with Barry, Cardiff, Port Talbot and Swansea within 30 minutes drive-time (Bridgend County Borough Profile – 2018).

14.3.7 The median average age in Bridgend in 2022 was 43.4, with people of working age (ages 16-64) representing 61.2% of the population.

Figure 14.3-1: Projected population of Bridgend by age group, 2014 to 2039.



Source: 2014-based local authority population projections for Wales: 2014 to 2039, Welsh Government

Employment and Economic profile

14.3.8 Employment in Bridgend has decreased compared with the previous year. Of people aged 16 to 64 years living in Bridgend, 67.1% were employed, which was lower than across Wales as a whole in 2023. This is a decrease compared with the year 2022 when the local rate was 71.9%.

14.3.9 Unemployment (people looking for work) has risen since a year earlier. The unemployment rate (3.5 %) for Bridgend was lower than across Wales as a whole.

Index of Deprivation

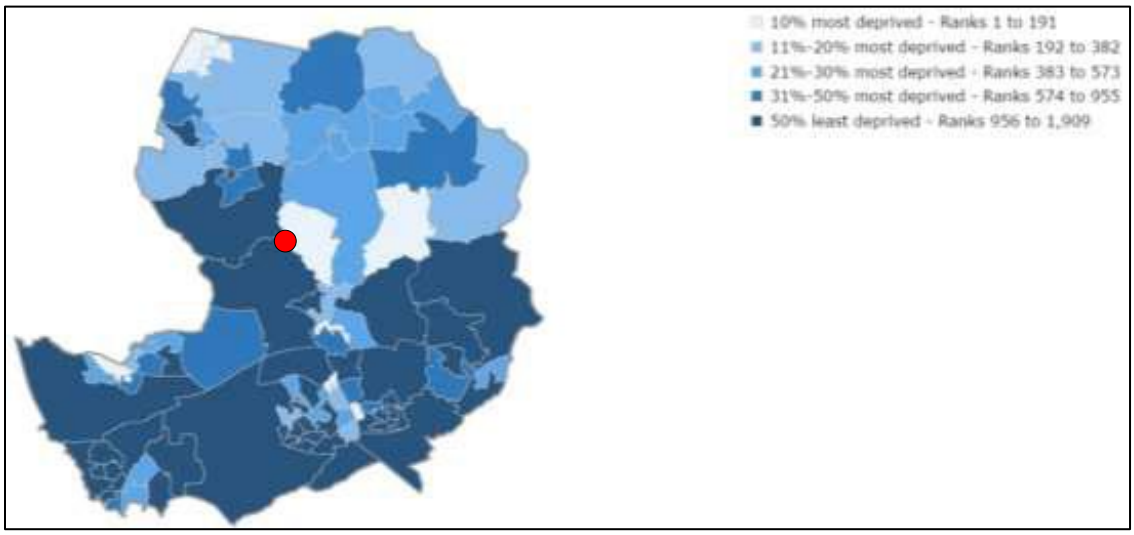
14.3.10 The Welsh Index of Multiple Deprivation (WIMD) is the Welsh Government's official measure of relative deprivation for small areas in Wales. It identifies areas with the highest concentrations of several different types of deprivation. WIMD ranks all small areas in Wales from 1 (most deprived) to 1,909 (least deprived). It is a National Statistic produced by statisticians at the Welsh Government. The most recent index was published in 2019. Although WIMD does not provide deprivation ranks for local authorities as a whole, it is possible to look at the rank of LSOAs within a local authority.

14.3.11 In Bridgend (which has 85 LSOAs):

- 10 LSOAs (12%) fall within the 10% most deprived LSOAs in Wales;
- The majority (59%) of LSOAs are more deprived than the Wales average.

14.3.12 In relation to Wales as a whole, this means that a relatively high proportion of areas in Bridgend are among the 10% most deprived, and overall, the majority of areas fall in the more deprived half of Wales. Figure 14.3-2 shows what proportion of Bridgend's LSOAs are in the 10% most deprived in Wales for each individual domain as well as for overall deprivation.

Figure 14.3-2: Deprivation in Bridgend County Borough (WIMD Overall 2014)



Source: WIMD 2014, Local Government Data Unit, Welsh Government and Ordnance Survey

14.3.13 In the context of the County Borough, areas of high deprivation are particularly concentrated in the Bridgend Valleys.

14.3.14 The proposed development is a Class B2 (general industrial use) development, and it is located in an area considered highly deprived.

14.4 Assessments of Effects

Construction Phase

14.4.1 Construction works to be carried out on site will include site preparation, provision of access roads within the site, piling, forming of foundations, erection of structural steel work, erection of cladding and roofing to structures, and mechanical and electrical works.

14.4.2 As part of the engineering design work, a detailed programme for the development will be determined. Subject to planning permission, construction work is planned to start in 2026. The construction and commissioning phases of the proposed plant are expected to last approximately 15 months. Standard construction techniques for buildings, roads and pavements, lighting, utility services and telecommunications will be adopted. The full details on site construction are currently not available but would be provided as part of the final project design, depending on the equipment of the contractor selected.

14.4.3 The construction workforce peak is anticipated to be between 100 and 120 personnel, however average numbers would be of the order of 70 to 90.

14.4.4 Subject to procurement rules, it is anticipated that as many as possible of these workforces would be recruited locally. During the construction phase, accommodation will be required for all workers visiting the area. This will provide a strong trade for the temporary accommodation market in the region.

14.4.5 A summary description of development is provided in Chapter 3, and the construction phasing programme will be described in the Construction Environmental Management Plan (CEMP) (Document Ref. 59200-0051).

Ancillary Employment Associated with Construction Works

14.4.6 The figures referred to above exclude personnel required to facilitate the proposed development in other ways. Such ancillary personnel will include existing staff in various sectors who will benefit from additional work as a by-product of the scheme, and newly created posts which are directly attributable to construction of the new development.

14.4.7 There will also be indirect employment in the Bridgend area associated with the manufacture of building materials and equipment used in construction. They include:

- Component manufacturers
- Component suppliers
- Plant hire firms
- Aggregate suppliers
- Hauliers
- Shipping companies
- Storage and reception companies
- Support services – administrative, catering, telecommunications, accommodation, utilities etc.

14.4.8 In addition, substantial indirect benefits will derive from the boost to employment levels created by the presence of construction workers and suppliers working in the area - the local retail sector in particular.

14.4.9 It is likely that a high proportion of contracts will be let to local contractors and suppliers during the construction period, assuming that their proximity enables them to offer more competitive terms than others further afield.

14.4.10 In relation to population and workforce in the construction sector, the available figures suggest that there is unlikely to be a shortage of construction workers within the area who could be employed in the construction of the development.

Table 14.4-1: Calculation of Fulltime Employment (FTE)

Construction Work	Week	Staff average No.	Person weeks	Person years	FTE jobs*
site preparation, provision of access roads within the site, piling, forming of foundations, erection of structural steel work, erection of cladding and roofing to structures, and mechanical and electrical works	70	80	5,600	108	10.8
Total			5,600	108	10.8

*10 person years of employment is the equivalent of one Full Time Job (FTE) job

14.4.11 The construction/ decommissioning and operation of the proposed development will not result in significant population change or change to occupational profiles in the region. The numbers of operations staff required for the extended mill means that there will be no significant requirement for particular skill-sets as a result of the development.

14.4.12 Overall, the temporary employment of construction workers over the predicted construction period would have a **beneficial** effect.

Operational Phase

14.4.13 The WEPA paper mill already represents an important contributor to the local economy as it employs approximately 325 people in a variety of disciplines.

14.4.14 As the new Vesta paper machine is a replacement of the existing 'Jupiter' paper machine, no new jobs for the operation of the proposed development will be created. Existing jobs will, however, be safeguarded.

14.4.15 In addition, the inward investment to the area is estimated at more than £70M, which will further stimulate the local economy. However, it is acknowledged that there could also be negative effects of a minor magnitude on tourism due to adverse impacts on the landscape views.

14.4.16 Overall, the positive impacts would considerably outweigh the negative impacts, which largely relate to visual implications that would only marginally impinge upon the tourism economy. These would be greatly overshadowed by the fact that the proposed development would be located in an already industrialised area surrounded by similar buildings which are already a feature of the WEPA site character. Moreover, the proposed development is important to ensuring the competitiveness of the WEPA group in the tissue paper industry. As such, the proposed development will enable the site to improve efficiency, the competitiveness of the site and, therefore, its longevity.

14.4.17 There will also be substantial annual operating costs. These expenditures will result in economic benefit to the local and regional economy.

Multiplier Effects

14.4.18 It is widely recognised that projects of this magnitude have multiplier effects. There are four related ways that the area economy benefits from construction and operation of the mill expansion:

- Introduction of new work and employment opportunities,
- Expansion and creation of local businesses directly attributable to the needs of the paper mill (e.g. raw material suppliers, hauliers, accommodation, etc.),
- Community income from payment of local rates and taxes,
- Spread of wealth through the local economy – from people benefiting from the receipt of wages/salaries and having more disposable income, more liquidity and finance available to local companies to spend in the area etc.

14.4.19 These factors cannot be quantified in financial terms at a local level, but it can reasonably expected that a proportion of both the estimated construction value of the mill and associated developments and, particularly, the annual wage bill, will find its way into the local economy directly or indirectly.

14.4.20 Based on the criteria described in Table 14.3-1, the creation of 11 full time construction and the safeguarding of jobs in operation of the mill, the potential economic impacts of the proposed development are assessed of being **major beneficial**.

14.5 Mitigation Measures

14.5.1 Since the economic impacts of the project will be beneficial, no mitigation measures or monitoring programme are considered necessary.

14.6 Summary and Conclusion

14.6.1 The proposed development is important to ensuring the competitiveness of the WEPA group in the tissue paper industry. As such, the proposed development will enable the site to improve efficiency, the competitiveness of the site and, therefore, its longevity.

14.6.2 There will also be substantial annual operating costs. These expenditures will result in economic benefit to the local and regional economy.

14.6.3 This is particularly important since the Paper mill is one of the largest employers in the Bridgend area, where manufacturing, mining and heavy industrial jobs markedly are in decline.

14.6.4 The expansion and consolidation of employment – supplemented by 'multiplier effects' – will be a boost to the local economy and will bring a number of socio-economic benefits. Accordingly, the proposed development is considered to be of **moderate beneficial** significance.

15.0 Geology and Ground Conditions

15.1 Introduction and Scope

15.1.1 This chapter summarises the geological and hydrogeological conditions at the Application Site and outlines the potential environmental impacts of the proposed development. It describes the status of the Development Site in terms of existing contamination and the potential risks posed to human health (particularly future site users). Where potentially significant impacts have been identified, mitigation measures have been proposed to reduce the severity of such impacts to an acceptable level.

15.1.2 This section is based on the Site Investigation Report (Document Ref. 59200-0013) provided by spectrum geo services.

15.1.3 There are not anticipated to be any impacts relating to geology and land contamination during the operational phase of the development.

15.1.4 Potential effects on ground conditions are interrelated with effects on the surface water environment and therefore this chapter should be read in conjunction with Chapter 12 Water Resources.

15.2 Assessment Methodology

15.2.1 In assessing the effects of the proposed development, it is necessary to consider the sensitivity of the resource, as well as the magnitude of any impact.

Sensitivity of Receptors

15.2.2 Sensitivity criteria can be based both on the degree of environmental response to any particular impact, as well as the 'value' of the receptor, e.g. brownfield sites are less sensitive than a site with an agricultural land use. The sensitivity of a receptor is determined in accordance with the criteria outlined in Table 15.2-1.

Table 15.2-1: Criteria for Determining Sensitivity (value) of receptor

Sensitivity	Criteria	Examples
High	Feature or attribute with high quality and rarity, important at national or regional scale or a feature of high quality and rarity	<u>Geology / Soils</u> • Designated SSSI for geology/soils • Grade 1 agricultural land • Land supports nationally rare plant species <u>End users</u> • Residential, allotments, play areas <u>Construction Workers</u> • Extensive earthworks and demolition of buildings • The users of the site will come into contact with potentially contaminated soils on site i.e. construction workers <u>Surrounding Land Uses</u> • Greenfield Site • Residential area <u>Controlled waters</u>

Sensitivity	Criteria	Examples
		• Major aquifer or surface water in close proximity to site • Aquifer providing potable water to a large population
Medium	Feature or attribute with a medium quality and rarity, important at a regional scale, or a feature of medium quality and rarity	<u>Geology / Soils</u> • Non designated geological exposures • Grade 2 agricultural land currently used for important crops • Land supports regionally/locally rare plant species <u>End users</u> • Landscaping or public open space • Occasional contact of site users with potentially contaminated soils i.e. installers of utilities in landscape areas. <u>Construction Workers</u> • Limited earthworks <u>Surrounding Land Uses</u> • Open spaces • Commercial use <u>Controlled waters</u> • Minor aquifer • Aquifer supporting abstraction for agriculture or industrial use
Low	Feature or attribute with low quality and rarity, important at a local scale	<u>Geology / Soils</u> • Brownfield / industrial site, • Site of little or no agricultural value, landscaped areas <u>End users</u> • Hard end use (e.g. industrial, car parking) <u>Construction Workers</u> • Minimal ground disturbance <u>Surrounding Land Uses</u> • Industrial area <u>Controlled waters</u> • No surface water bodies or aquifers close to the site
Negligible	Environment is insensitive to impact, no discernible changes.	• Previously disturbed land, • Soils are not in use, the land has an industrial/ commercial land use and/or mainly covered by hardstanding, • Contaminated land, • Site users will not come into contact with any potentially contaminated soils on site i.e. site is completely covered with hard standing/ buildings.

Magnitude of Impact

15.2.3 The magnitude of the impact is assessed without regard to the sensitivity /value of the resource. The criteria used to determine the magnitude of a potential impact are defined in Table 15.2-2. Assessment of magnitude includes consideration of the amount and intensity of impact and the duration of that impact (i.e. whether permanent or temporary).

Table 15.2-2: Magnitude of Impact

Magnitude	Criteria / Examples
Major	A permanent or long term adverse impact on the integrity and value of an environmental attribute or receptor, or exposure to acutely toxic contaminants. Fundamental changes to the geology and hydrogeology; loss of a feature e.g., pollution of a potable groundwater abstraction. For example, harm to human health, designated habitats or pollution to controlled waters.
Moderate	Adverse impact on the integrity and/or value of an environmental attribute or receptor, but recovery is possible in the medium term and no permanent impacts are predicted. Material but non-fundamental changes to geology or hydrogeology.
Minor	An adverse impact on the value of an environmental attribute or receptor, but recovery is expected in the short-term and there would be no impact on its integrity. Measurable but non-material changes to geology and hydrogeology. For example, temporary effects on receptors not designated under environmental legislation.
Negligible	No impact would be detectable

Significance of Effects

15.2.4 The significance of effects combines the **sensitivity** (value) of the resource and the degree to which the resource would be affected (i.e. **magnitude** of effect).

Table 15.2-3: Assessing the Significance of Effects

SENSITIVITY / VALUE	**High**	Slight	Moderate	Large	Large
	Medium	Neutral/ Slight	Slight	Moderate	Large
	Low	Neutral/ Slight	Neutral/ Slight	Slight	Moderate
	Negligible	Neutral	Neutral	Slight	Moderate
		Negligible	**Minor**	**Moderate**	**Major**
		MAGNITUDE OF IMPACT			

15.2.5 Only **Moderate** and **large** effects are considered to be significant.

Sources of Information

15.2.6 The work instructed included a desk study review of available information, site reconnaissance and intrusive investigation. This was followed by laboratory testing, onsite monitoring and geotechnical and geo-environmental reporting.

15.2.7 Previous site investigation reports have been completed within the area of the existing factory. When compiling the Site Investigation Report (Document Ref. 59200-0013), reference has been made to the following reports:

- Geotechnical Report reference 7261/C dated November 1997 completed for Quorum Associates Limited and entitled “Proposed New Warehouse, Jamont UK Limited, Llangynwyd, near Bridgend”.
- Site Investigation Factual Report reference 7741/C dated December 1999 completed for Fort James UK Limited and entitled “Proposed Expansion of Bridgend Paper Mills, Llangynwyd, Bridgend”.
- Geotechnical Report reference 8670/PB/03 dated July 2003 completed for Quorum Associates Limited and entitled “Proposed New Warehouse and Paper Mill, Bridgend Paper Mills”
- Golder Associates UK Consulting Limited Engineers report reference 9253009 dated April 1992 completed for James and Nicholas entitled “Ground Investigation at British Tissues, Maesteg”.
- Ground Investigation Geotechnical and Contaminated Land Consultants report reference p-w.0960-01.letter.doc dated February 2012 completed for Georgia-Pacific UK Limited entitled “Bridgend Paper Mill”
- Spectrum geo services, PROJECT VESTA, WEPA, MAESTEG– PHASE 1 AND GROUND INVESTIGATION REPORT, November 2024

15.2.8 The above reports should be reviewed in conjunction with this assessment to gain a detailed appraisal of the site and the works completed to date.

15.3 Baseline Conditions

Site History

15.3.1 The history of the site was assessed with the aid of historical maps included within the Envirocheck Report presented within the site investigation report (Document Ref. 59200-0013).

15.3.2 The earliest edition of the map dated 1877 indicated the site to be undeveloped fields with a number of field boundaries passing through the site. Trees and vegetation were indicated through the central area of the site, approximately along the banks of an existing surface water feature, on a west-east orientation. The Great Western Railway line formed the northeast boundary of the site and an existing road ran along the southern boundary of the site. The nearest developments at this time were two farms to the north of the site known as Brynllywarch-fach and Brynllywarch-fawr.

15.3.3 The site remained relatively unchanged until the editions of the maps dated 1918-1921. The central area of the site was still crossed by a surface water feature but was indicated to be less heavily vegetated. Two old levels were indicated within the western area of the site.

There was also evidence of disturbed ground within the area and a small pond feature which could have been a third coal level. All the levels are orientated in a northerly direction into the site. An old tramway was indicated to the south of the site and old quarries and an air shaft was indicated to the southwest.

15.3.4 The map dated 1947-1953 indicated development to have commenced within the site. At this stage a small access road was constructed across the northern area of the site on an east-west orientation. Some small buildings were also constructed off the road and some general earthworks were evident in the vicinity of the road.

15.3.5 The 1964 edition of the map indicated the area of the site to the north of the surface water feature, known as Nant Gwyn, to have been developed by a large “Mill” building. The access roads had also been upgraded with access into site from the west. Three bungalows known as Glan Nant, Cae Glas and Tir-iarll were constructed to the north of the access road within the northwest area of the site. A car parking area had also been constructed to the south of the bungalows with the construction of a fill embankment.

15.3.6 new road had also been constructed along the southeast boundary of the site by the 1960’s to access the nearby power station on the other side of the railway line. The road was constructed on a large embankment which extended into the site. A large pond feature was now evident within the southeast area of the site to the south of Nant Gwyn, with two large settling tanks to the east of the pond. The southern area of the site remained undeveloped and covered with vegetation. By the 1960’s there was no longer any indication of the old coal levels.

15.3.7 During the 1980’s the mill continued to expand to the south and east of the original building and became known as Bridgend Paper Mills. The large pond feature was infilled to accommodate the expansion, and Nant Gwyn had been culverted along parts of its course.

15.3.8 Overhead electricity lines were indicated to cross the northern area of the site on an eastwest orientation.

15.3.9 The Paper Mill continued to expand during the 1990’s and 2000’s and was indicated to be the approximate layout, as it is today, by circa 2003. It is understood that the southeast corner of the site was covered with pulverised fuel ash (PFA) spoil from the nearby power station, which is understood to have been shut down in the 1970’s. In later years the Nant Gwyn was completely culverted.

15.3.10 One of the most recent developments within the site was a new security lodge and weighbridge within the north-western area, adjacent to the main access road. It is understood that drilling and grouting works were carried out in order to stabilise underlying shallow mine workings beneath this area including the adjacent stretch of the main access road. It is also understood that drilling and grouting stabilisation works were undertaken beneath the westernmost of the three bungalows to the north of the access road.

Geology and Soils

15.3.11 The 1:50,000 and 1:10,560 scale geological maps of the area indicate that the majority of the site is underlain by Brithdir Member Sandstone and Mudstone and with the northern area underlain by Hughes Member sandstone and mudstone, all of the Carboniferous period. These rocks typically comprise green-grey Pennant sandstones with thin mudstone/siltstone and seatearth interbeds, and mainly thin coals. The geological map indicates that these

strata dip approximately 10o in a northerly direction The bedrock beneath the majority of site is indicated to be overlain by Devensian Till deposits of the Quaternary period. These deposits are generally poorly sorted and variable in nature and are likely to comprise sands, clays and gravel. Through the centre of the site, along the path of the stream, alluvium deposits, also of the Quaternary period are indicated to be present. Alluvium is a general term for clay, silt, sand and gravel deposited by a river as a sorted or semi-sorted sediment. It often comprises soft to firm, unconsolidated, compressible silty clays, but can contain layers of silt, sand, peat and basal gravel. A stronger, desiccated surface zone may be present. No superficial deposits are indicated to be present within the northern and southeast areas of the site.

15.3.12 Made ground is likely to be present within the site, particularly around the buildings and in the western area of the site, in the vicinity of the former old coal levels and also within the east where pulverised fuel ash (PFA) was historically deposited.

Mining

15.3.13 The geological map indicates that the northerly dipping Bettws Four Feet seam outcrops near the site access road and is therefore likely to underlie this area and the northern part of the site at shallow depths. The seam has a thick workable section and both the geological map and the 1918 historical map show evidence of past associated mining activity in the form of levels near the access road. These levels were orientated in a northerly direction. Extensive open cut mining of the seam has also taken place further to the west of the site.

15.3.14 The conjectural outcrop of the Brithdir Rider seam is indicated to south of the paper mill site and this seam would also underlie the site but at greater depths. The generalised Vertical Section indicates another seam, Glyngwilym, in between the Bettws Four Feet and the Brithdir Rider.

15.3.15 The Coal Authority online viewer indicates that the northern area of the paper mill site is classified as a high-risk development area, as well as the areas in the vicinity of the mine adits. The high-risk classification is due to the likely presence of recorded shallow workings within the area and the presence of the mine entries.

15.3.16 A Coal Mining Report for the site has been obtained from the Coal Authority (Document Ref. 59200-0012). The report states that no coal mining licensing was recorded within 200 metres of the development site boundary.

15.3.17 It further states that it is not aware of any damage due to geological faults or other lines of weakness affected by coal mining.

Hydrology and Hydrogeology

15.3.18 The Envirocheck Report indicates that the nearest surface water features are located on site. The on-site feature is known as Nant Gwyn and is culverted underground at points within the site. The on site features flow approximately in an easterly direction towards the River Lynfi which is located 37m to the northeast at the nearest point.

15.3.19 The Environment Agency groundwater vulnerability map and aquifer database classifies the bedrock beneath the site as a Secondary ‘A’ Aquifer. Secondary ‘A’ Aquifers are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in

some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

15.3.20 The Environment Agency groundwater vulnerability map and aquifer database classifies the Alluvium deposits beneath the site to also be a Secondary 'A' Aquifer. The Devensian Till deposits are classified as a Secondary Aquifer Undifferentiated. This classification has been assigned in cases where it has not been possible to attribute either category A or B to a strata type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the strata type.

15.3.21 A perched water body could be encountered within the made ground.

15.3.22 There are three discharge consents recorded on site and an additional seven within 500m of the site boundary. Only one on site consent is currently active, the other two have been revoked. The active discharge consent is a final treated sewage discharge received by Nant Gwyn. Two discharge consents are recorded 110m to the east of the site, one of which has been revoked. The active consent is for a trade effluent discharge received by Nant Gwyn. A further five discharge consents are recorded 165m to the east of the site but only one is active. The consent is for an unspecified discharge received by the River Lynfi.

15.3.23 Tables 15.3-1 and 15.3-2 present a summary of the hydrological features and key hydrogeological nature of the site.

Table 15.3-1: Summary of Site Hydrology

Feature	Distance from Site	Flow	Classification	Abstraction	Discharge
Unnamed features and Nant Gwyn	On site	Easterly	Not known	No	River Llynfi
River Llynfi	37m north-east	Not known	Not know	No	River Ogmore
Surface run-off	On site	Flows into site drainage	N/A	No	Not known
Site drainage	On site	Not known	N/A	No	Not known

Table 15.3-2: Summary of Site Hydrogeology

Geological Unit	Aquifer Classification	Aquifer Characteristics	Source Protection Zone	Groundwater Abstractions
Made ground	Not classified	Highly variable permeability and porosity. Perched water may be present with variable flow directions.	No	None
Divensian Till	Secondary Aquifer Undifferentiated	Variable low to moderate permeability and porosity with intergranular flow possible. High clay content likely to restrict flow	No	None
Alluvium	Secondary A Aquifer	Variable moderate permeability and porosity with intergranular flow possible. High clay content likely to restrict flow	No	None

Brithdir Member and Hughes Member	Secondary A Aquifer	Variable permeability sandstones, with thin mudstone/siltstone and thin coals	No	None

15.3.24 The Groundwater Vulnerability map indicates that the secondary bedrock aquifer has a high vulnerability with a high pollutant speed and well-connected fractures.

Potential Contamination

15.3.25 During the recent site investigation works undertaken by spectrum geo services representative samples of made ground were taken from across the site and tested for a range of chemical elements/ compounds.

15.3.26 The suite of geo-environmental laboratory testing undertaken on the samples of made ground was based on the guidelines provided in the Environment Agency CLR publications as part of the CLEA Model, and other contaminants typical on brownfield sites. The testing suite typically comprised:

- Arsenic, boron, beryllium, cadmium, total chromium, chromium VI, copper, lead, mercury, nickel, selenium, vanadium, zinc, Total cyanide, pH value, total polyaromatic hydrocarbons (PAH), phenols, asbestos screen and organic content.

15.3.27 No visual or olfactory evidence of contamination was observed during the site works, and no obvious point sources of contamination (tanks, hydrocarbons, electrical substations, etc.) were encountered within the areas of the proposed development works.

Assigning sensitivity of receptors

Critical Sensitive Receptor – Human Health

15.3.28 The proposed redevelopment of the site is for a commercial end use. Therefore, the critical sensitive receptor from a human health perspective is an on-site commercial receptor.

15.3.29 In accordance with S4UL/C4SL and CLEA guidance for a standard commercial scenario, the critical sensitive receptor for a commercial end use risk assessment is a female adult, with exposure from 16 to 65 years.

15.3.30 Only the users of the site could come into contact with potentially contaminated soils on site i.e. construction workers.

15.3.31 Based on the criteria described in Table 15.3-1, the receptors sensitivity is considered **high**.

Critical Sensitive Receptor – Controlled Waters

15.3.32 Based on the proposed redevelopment of the site for a commercial end use, and the findings of the desk study, the critical sensitive receptor from a controlled water perspective is groundwater within the Secondary ‘A’ Aquifer of the Brithdir Member and Hughes Member strata or the Alluvium deposits.

15.3.33 By considering groundwater as the critical sensitive receptor for controlled waters, the groundwater/hydrogeological risk assessment will also be protective of the Nant Gwyn and other surface water features which cross the site.

15.3.34 The sensitivity of controlled water in the vicinity of the Site is assessed as being **medium**.

15.4 Assessments of Effects

Construction Phase

Conceptual Site Model

15.4.1 Based on the findings and observations, a conceptual site model has been defined for the site. This includes consideration to the residual structures within the ground and the identified made ground.

15.4.2 The potential active pathways by which future end users and the wider environment could be affected by the contaminant sources identified are listed below:

1. Outdoor/indoor inhalation of fugitive dust;
2. Indoor inhalation of ground gas;
3. Migration of contaminants in ground to drinking water supply pipes

15.4.3 The remediation works to be carried out at the site have been designed to address the identified potentially active contaminant pathways listed above.

Asbestos

15.4.4 No asbestos was detected.

15.4.5 Based on the proposed commercial/industrial end use of the site, and the nature of the proposed development within the area of the site where asbestos was identified, which comprises predominantly hardstanding, the potential risk to end users (considered of **high** sensitivity) is considered to be **low**.

15.4.6 The potential risk to controlled waters (considered of **low** sensitivity) is considered to be **low**. The proposed development indicates that the majority of the site will be covered with buildings and hardstanding with the inclusion of capping soils in any landscaped areas, the potential generation of leachate will be reduced from the current status quo.

Soil and Geology

15.4.7 In the absence of contamination, the risk to human health through ingestion, inhalation and/or dermal contact with soil contamination is considered **low**. Although the magnitude of such exposure is considered to be **medium**, this exposure pathway is considered of **minor** significance.

Controlled Waters

15.4.8 Shallow perched groundwater is expected in the excavations for building foundations required at the Site. Although such groundwater is generally non-potable, exposure to this water does not represent a significant risk to the health of construction workers assuming appropriate personal hygiene protocols and Personal Protection Equipment (PPE) are used during construction. Such short-term exposure is considered to represent an effect of **minor** magnitude, and a risk to human health of **minor** significance.

15.4.9 Disturbance of soil during construction may result in the mobilisation of any unknown localised contamination by increased exposure to rain, alteration to ambient physical and chemical conditions etc. This may result in a deterioration of perched groundwater quality held within the topsoil and superficial geology on the Site. The magnitude of the effect is considered **minor**, considering the recorded quality of perched groundwater at the Proposal

Site and its negligible resource value. Thus, the significance of a deterioration of perched groundwater quality is considered **minor**.

15.4.10 Deep excavations for pile foundations may open new preferential pathways for contamination transport from the surface and/or near surface. This may result in a deterioration of water quality in deep groundwater by accidental spillages during construction and or leakage of shallow perched groundwater. The disturbance of the unsaturated zone soils is likely to have an effect of **negligible** magnitude on any groundwater within or beneath the Site. The significance of this effect is considered to be **minor** and is unlikely to affect any other controlled waters or groundwater dependent environmental receptors.

15.4.11 The accidental spillage of hazardous substances from vehicles, plant and the storage of materials on the construction site could result in an effect of **moderate** magnitude ranging from **negligible** to **minor** significance depending on the size and nature of the spillage and proximity to open excavations.

15.4.12 Temporary groundwater control and/or dewatering may locally reduce perched groundwater levels in the shallow confined superficial deposits on the Site. In the absence of any groundwater dependent receptors down gradient of the Site (e.g. abstractions, wetlands, rivers and springs) the significance of this temporary effect on controlled waters is **negligible**.

15.4.13 The accidental spillage of hazardous substances from vehicles, plant and the storage of materials on the construction site could result in an effect of **moderate** magnitude ranging from **negligible** to **minor** significance depending on the size and nature of the spillage and proximity to open excavations.

Ground Gas

15.4.14 The recorded concentrations of potentially hazardous ground gases on the Site are generally low. The risk posed to construction works as a result of vertical and lateral migration of ground gas is considered to be **minor** magnitude, resulting in an effect of **minor** significance.

Operational Phase

Soils / Geology and Groundwater

15.4.15 Any necessary land remediation would be undertaken as part of the construction phase. Consequently, no potential human health pollutant linkages are anticipated to remain during the operational phase. There will be no further disturbance to the underlying soils or geology during operation of any elements of the development.

15.4.16 The proposed development will operate under an environmental permit, which will ensure that pollution protection measures including appropriate fuel and chemical storages, a sustainable surface water drainage system, etc. will be designed and installed to very high standards. All potentially contaminative activities will be strictly controlled under current legislation, and as such, it is considered very unlikely that the operation of the proposed development will result in contamination. It is considered that the groundwater and the soil of the application site and its surroundings will be largely unaffected.

15.4.17 The application site is accorded a **low** sensitivity with regard to groundwater resources and soils. The magnitude of impact is assessed as being **negligible**, and the effect is considered **neutral to slight**.

Ground Gas

15.4.18 Provided ground gas measurements during the construction phase of previous developments showed carbon dioxide and methane levels within acceptable ranges, therefore, the magnitude of impact from ground gas in the underlying ground is considered to be **negligible**, and the effect is assessed as being **slight**.

15.5 Mitigation Measures

Construction Phase

Geology and Soils

15.5.1 Any vegetation, topsoil and subsoil will be removed to expose a suitable sub-grade. Any soils, sub-soils or aggregate suitable for reuse will be stockpiled on impermeable liners. Soils which are to be re-used on-site will be tested both geo-technically and for contamination.

Outline CEMP

15.5.2 All construction works will be undertaken under the control of a Construction Environmental Management Plan (CEMP) set out within Document Ref. 59200-0051 of this Planning Application. The CEMP will ensure that all relevant national guidance and current UK best practice is adhered to.

15.5.3 The CEMP will incorporate appropriate mitigation measures (such as covering stockpiles or siting stockpiles away from watercourses) that will be approved by the relevant authorities and adopted, such that it would be unlikely that any impacts would arise during construction.

15.5.4 Groundwater is likely to be encountered in shallow excavations required at the construction site. Although groundwater in the shallow aquifer is generally non-potable, exposure to this water does not represent a significant risk to the health of construction workers provided appropriate personal hygiene protocols and PPE are used during construction, as specified in the CEMP.

15.5.5 In the event of encountering groundwater within deep excavations, groundwater management precautions may be required and these may include: dewatering to lower confined water pressures, use of sheet piling to support the excavation and/or sump pumping to control groundwater ingress.

15.5.6 If groundwater is encountered during excavations, a groundwater control and management plan will be produced by a suitably qualified specialist. The risk of uncontrolled discharges of groundwater to surface watercourses will be mitigated by the prior sampling and analysis of groundwater and adoption of appropriate discharge arrangements which will be specified in dedicated Risk Assessments and/or Method Statements prior to construction.

Other Contaminants

15.5.7 Water supply pipes will need to be protected from any contamination present within the ground. Measures to protect the pipes will include clean backfill to trenches and possibly alternative material selection. The final design and selection of the pipe and associated backfill should be agreed with the appropriate Regulator prior to installation.

Operational Phase

15.5.8 As discussed, there are not anticipated to be any operational impacts relating to contamination or ground conditions resulting from the development.

15.5.9 Nevertheless, all substances stored and handled on site will be done so in accordance with for all best practice guidelines.

15.5.10 The site will be mainly capped with a layer of impermeable hardstanding, which will break any pollutant linkages to future site users. Additionally, any landscaped areas of softstanding will be capped with a 300 mm layer of clean cover, thus again breaking any pollutant linkages.

15.6 Residual Effects

15.6.1 Following the appropriate use of all mitigation measures outlined in this section, there are not considered to be any residual impacts relating to the geology, soils, hydrogeology or hydrology of the development site or surrounding area.

15.7 Summary and Conclusion

15.7.1 An assessment of the baseline ground conditions has been undertaken for the proposed development. This assessment has been based on extensive site investigations, that relate to the Site history, geology, hydrology, hydrogeology, and previously known contamination of the Site.

15.7.2 The contamination test results and investigation observations have not identified any contaminants above commercial screening values and hence the site is suitable for the proposed development.

15.7.3 Perched groundwater has been identified within the site soils and superficial deposits. The geological and hydrogeological setting of the Site suggests that perched groundwater in the underlying superficial deposits and adjacent surface water courses is at little risk of contamination regardless of activities during the construction and development phases.

15.7.4 The Brithdir Member Sandstone and Mudstone area are non-aquifer units. The proposed development does not pose a risk to groundwater resources.

15.7.5 The majority of the Site will comprise hardstanding areas post construction, such that direct human exposure to contaminated soils following development will be negligible. Thus, the inadvertent contact, ingestion and inhalation of soils represents a low risk to human health, and the need for formal remediation of near surface contaminated soils is not considered to be necessary.

15.7.6 The risk of the Site to construction workers and operational workers is low.

15.7.7 All risks to construction works resulting from short-term exposure to soil and / or groundwater contamination will be minimised by the development of a Construction Environmental Management Plan (CEMP) for the construction phase.

15.7.8 Site investigation data indicates that ground gas poses a low risk to construction works, with a lesser risk to future site users. The data also indicates that ground gas protection measures should not be required for the development.

15.7.9 Residual effects consequent on implementation of the mitigation measures are either minor or negligible.

15.7.10 In conclusion, there is considered to be a low risk that significant contamination exists beneath the site for the proposed development. Further intrusive investigation is not considered to be necessary at this stage.

16.0 Appendices

17.0 Figures