

PLANNING STATEMENT

Proposed Waste Heat Recovery Scheme

Ardagh Glass, Barnsley

AMP Clean Energy

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1.0 Introduction

This Planning Statement has been prepared by SLR Consulting Limited (SLR) on behalf of the applicant, AMP Clean Energy (AMP), in support of a full planning application at the Ardagh Glass Factory in Monk Bretton, Barnsley (Ardagh Glass Ltd., Burton Road, Monk Bretton, Barnsley, S71 2QG). The application seeks permission from Barnsley Metropolitan Borough Council for the construction and operation of a waste heat recovery scheme ('the proposed development') to generate electricity for use within the Ardagh Glass Factory.

The proposed development would utilise waste heat generated from the glass furnaces to generate electricity in a new heat exchanger unit. The electricity produced would be used onsite in the glass factory operations. The overall aim of the proposed development is to help Ardagh Glass become more energy efficient and significantly reduce their carbon emissions.

This Planning Statement provides an overview of the site location context, a description of the development proposals and process, the need for and benefits of the proposed development, an appraisal of the potential environmental impacts of the proposals, planning history and an assessment of the key planning policy considerations that are relevant to the determination of this application.

This Statement should be read in conjunction with the following relevant plans and figures which accompany this application, namely:

- Drawing PL001: Proposed ORC House Plans and Sections;
- Drawing PL002: Proposed ORC House Elevations;
- Drawing PL003: Proposed Site Plan;
- Drawing PL004: Existing Site Plans; and
- Drawing PL005: Location Plan.

1.1 Rationale for the Development

Heat within the exhaust gases from the four blast furnaces onsite, used for the manufacture of glass products for the food industry, is currently wasted by being emitted to the atmosphere. The proposed development would recover a significant proportion of the wasted heat and use it to drive an Organic Rankine Cycle (ORC)¹ turbine for the generation of 10,700MWh of clean electricity, amounting to around 10% of the total electrical consumption of Ardagh Glass' Barnsley site and giving rise to an anticipated annual CO₂ saving of 2,495 tonnes². The amount of heat recovery would be necessarily limited to avoid any consequential impact on the effectiveness of the existing exhaust gas dispersion. Depending on the temperature of the furnace exhaust gases (variable, depending on glass product requirements) the total electrical generation would be around 1.23MWe.

1.2 AMP Clean Energy – The Applicant

AMP Clean Energy is a distributed energy company which funds and develops low carbon heat and power solutions including biomass heat installations, solar PV and flexible energy plants. AMP Clean Energy's mission is to help UK businesses and organisations unlock the potential of decentralised, sustainable energy which

¹ Organic Rankine Cycle (ORC) systems convert thermal energy to electrical energy.

² Anticipated Carbon saving calculation: $(1230\text{kWe} \times 0.23314\text{kgCO}_2\text{e} \times 8700 \text{ hours}) / 1000\text{kg/t} = 2495 \text{ tonnes per year}$, where 1230kW is the gross electrical output of ORC generator, 0.23314kgCO₂e is the 2020 BEIS carbon factor for grid electricity and 8700 is the target operational hours of the plant.

supports the UK's transition to a net zero economy. Further information on AMP Clean Energy can be found on its website <https://www.ampcleanenergy.com/>.

AMP would own and operate the proposed waste heat recovery and electrical generation plant under a long-term energy supply agreement with Ardagh Group helping them to reduce their revenue costs and Scope 2 carbon emissions³.

1.3 EIA Screening

The proposed development is of a type listed in Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) as follows:

<i>Column 1</i> <i>Description of development</i>	<i>Column 2</i> <i>Applicable thresholds and criteria</i>
3. Energy industry (a) Industrial installations for the production of electricity, steam and hot water (unless included in schedule 1);	The area of the development exceeds 0.5 hectare.

The site area is 0.360ha and therefore falls below the applicable Column 2 threshold. The site is not located within a sensitive area as defined in the EIA Regulations. As such the proposed development does not require to be screened for EIA. Environmental considerations related to the proposed development are discussed in Section 4.

1.4 Planning and Pollution Control Permit

Ardagh Glass's current operations are regulated by a Part A(2) environmental permit (ref. IPPC/A2/01/2016/V1). Ardagh Glass has consulted with Barnsley Metropolitan Borough Council and they have advised that no new or varied environmental permit is required to incorporate the waste heat recovery system as a directly associated activity.

1.5 SLR Consulting Ltd

SLR is a Registered Environmental Assessor Member of the Institute of Environmental Management and Assessment (IEMA) and holder of the EIA Quality Mark (<http://www.iema.net/qmark>). SLR is also a Registered Organisation validated by the Institute for Archaeologists (IfA), a member of the Association of Geotechnical and Geo-environmental Specialists, and a Landscape Institute (LI) Registered Practice.

The company has significant experience in the preparation of planning applications and undertaking EIA for a wide variety of projects, including waste, minerals, renewable energy and infrastructure developments.

Further information on SLR can be found on its corporate website at www.slrconsulting.com.

³ Indirect greenhouse gas emissions from the consumption of purchased electricity, steam, heating or cooling.

2.0 Site Location and Description

2.1 Location

The site is located within the Ardagh Glass Factory complex in the village of Monk Bretton c. 3km northeast of the centre of Barnsley in South Yorkshire. The site location is shown on Drawing PL005.

2.2 Site Description

The application site is located within the boundary of the existing Ardagh Glass Factory and extends to 0.360ha, which would comprise a plant room, housing the ORC waste heat recovery unit, with a footprint area of 0.034ha, a further 0.126ha which includes two heat recovery exchangers and high-level insulated steel pipework, and 0.2ha for access and vehicle circulation areas. The proposed plant room would be located within an area of existing grass with an elevation of 57m AOD and centred on NGR 437210, 408590, between an existing sand store and filter unit. Photographs 1 and 2 show the site location for the plant room.



Photograph 1
Site Location for Plant Room:
from grassy area looking south towards existing batch plant,
with sand store on the left and filter unit on the right



Photograph 2
Site Location for Plant Room:
from hardstanding area north of the existing batch plant, looking north

The piped heat network would be mounted on a 6.6m high pipe bridge. It would extend southwards from the proposed plant room over hardstanding and be routed around an existing batch plant to a small heat exchanger at NGR 437220, 408480 within another small grassy area occupied by three immature trees as shown in Photograph 3. The application site boundary is shown on Drawing PL005.



Photograph 3
Site Location for most southerly Heat Exchanger:
from the edge of the site road looking north

2.3 Site Setting and Surroundings

Ardagh Glass is an existing glass manufacturing company located within Monk Bretton, Barnsley, South Yorkshire. It occupies a site of approximately 30ha within the north-eastern outskirts of Barnsley. The factory manufactures glass bottles for various commercial uses, primarily for the food and beverage sector. Production runs for 7 days a week, 24 hours a day. The site comprises numerous production and warehousing units which are of a similar design.

The factory site is bounded by Fish Dam Lane to the west, Burton Road to the south and east and West Green/Cudworth Bypass to the north. The site is accessed from Burton Road. An area of greenspace and mature woodland is located to the north west of the site.

The surrounding road network provides good connections to both the A628 and A1 to the east and the A628, A633, A6133 and M1 to the south and west. A mineral railway line transects the site from southwest to northeast, providing train deliveries and exports approximately three times a week during daylight hours.

The closest environmental designation to the site is the Carlton Marsh Local Nature Reserve (LNR) located approximately 650m to the northeast. The Dearne Valley Park LNR is also located approximately 1.7km to the southeast of the site.

The nearest residential properties are located on Fish Dam Lane bordering the site to the west and on Burton Road, Burton Crescent and Faith Street bordering the south and east of the site. The factory has been in operation for over 60 years and many of the surrounding properties were once owned by the plant.

2.4 Site History

A search of the Barnsley Metropolitan Borough Council's planning portal shows three approved planning applications at the Ardagh Glass Factory. The applications are as follows:

Reference	Description	Validated	Decision
2018/0492	Demolition of 7no dilapidated buildings and erection of a steel portal framed warehouse building for the storage of pallets and glass products, canopy and associated service area.	4 July 2018	Approved with conditions
2012/1224	Increase height of existing chimney from 53m to 73m high.	30 October 2012	Approved with conditions
2007/2113	Erection of new warehouse and extension to existing warehouse.	12 December 2007	Approved with conditions

2.5 Access

Access to the site would be via the existing main entrance for the glass factory (at NGR 437399, 408428) from Burton Road, to the south of the site.

3.0 The Proposed Development

3.1 Introduction

The proposed development is a waste heat recovery unit which would comprise:

- an ORC generator and associated plant housed within a plant room;
- welfare and office facilities for maintenance staff;
- approximately 155m of high-level insulated steel pipework; and
- two waste heat recovery heat exchangers with connecting ducts into existing exhaust gas systems.

The proposed site layout is shown on Drawing PL003.

3.2 Plant Room

The building arrangement would be predicated on the specific requirements of the ORC generator unit and the associated plant, with suitable and safe access arrangements for installation, maintenance and removal of the equipment.

The building would be 25.8m in length, 13m in width and 7.6m in height with a footprint of 335.4m². It would be a steel-frame structure with insulated profile steel wall cladding over a brick plinth in powder coated goose wing grey to be in keeping with adjacent buildings. The finishes schedule is provided on Drawing PL002. The use of a partially glazed façade on the west side of the building would allow the internal plant to make a visible statement and showcase the energy and carbon saving credentials of AMP and Ardagh Group. Dry air coolers would be mounted on the roof. A roller shutter door would be located on the south side of the building along with a door for pedestrian access and fire exit. Maintenance access to the building would be via a door situated on the north side which would also provide egress in case of fire. Four small inset louvres would be located on the eastern side of the building and one large one above the access door on the north side.

It is anticipated that the building foundations would be short piles to column bases with concrete ring-beam and raft slab. A fully tanked, 3.0m deep plant pit would be constructed as indicated on Drawing PL001. Surface and foul water drainage would be connected to the existing site drainage infrastructure.

An office/rest room and WC would be located within the building as shown on Drawing PL001. Mains cold water would be connected to the existing site supply. New foul water drainage pipes from the building would connect to the existing combined sewer as shown on Drawing PL003.

3.3 Pipe Network

The plant room would be connected to the two heat exchanger units by 155m of steel thermal oil pipework mounted on a steel frame pipe bridge at 6.6m agl for the main pipe and two spurs of pipework mounted at 4.5m agl. Thermal oil pipework support towers would be located at various intervals along the length of the pipe, with brackets securing the pipe in place. The indicative route of the piped heat network is shown on Drawing PL003, with further detail of elevations shown on Drawing PL002.

3.4 Process Description

Currently, hot exhaust gases from the glass furnaces are passed through two existing electrostatic-precipitation (ESP) filters to remove particulate matter and then, in the existing arrangement, are discharged to the atmosphere via the chimney stacks.

In the proposed development, the exhaust gases leaving the ESP filters would be diverted through a free-standing heat exchanger before being returned back to the existing system. The heat energy would be transferred via a closed-loop thermal oil circuit to an ORC process to drive the electrical generator. Dry air coolers mounted on the roof would be used to fully condense the ORC fluid to its liquid state. Depending on the temperature of the furnace exhaust gases (which would be variable, depending on glass product requirements) the total electrical generation would be around 1.23MWe. The simplified waste heat recovery process is shown in Diagram 1.

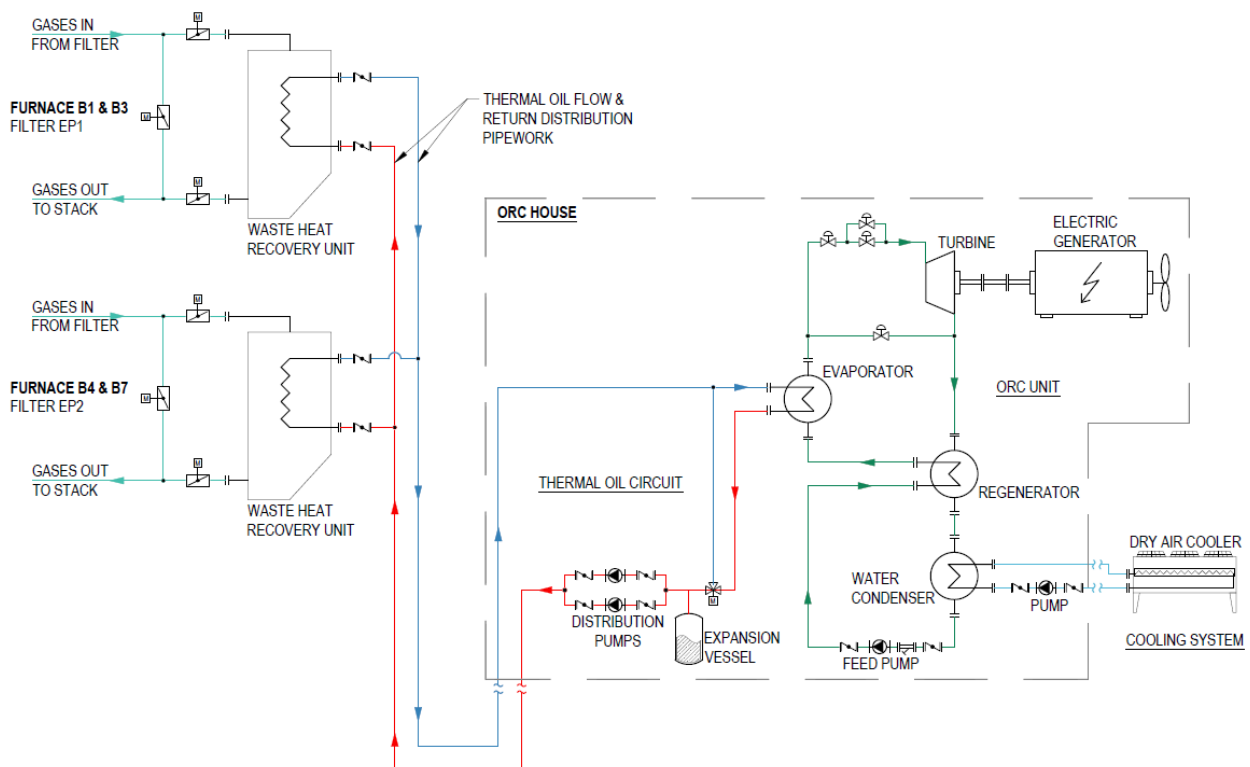


Diagram 4
Waste Heat Recovery Process

3.5 Technology

The nature of the proposed development requires specialised equipment and design. AMP would work with Turboden, a world leading specialist with previous experience in waste heat recovery and electrical generation from glass manufacturing and similar process plants. The proposed development has already been successful in obtaining substantial grant funding from BEIS under the Industrial Energy Transformation Fund scheme, recognising its importance in carbon reduction.

3.6 Hours of Operation

The proposed development would operate 24/7, 365 days a year as required to match the glass furnace operation.

3.7 Access and Traffic

Access would be via the main site entrance from Burton Road. Maintenance visits would occur weekly by a maintenance engineer using a light vehicle.

3.8 Lighting

Low energy LED external lighting, with integrated emergency function, would be installed above each pedestrian door of the plant room. There would be LED flood lighting above the roller door for use during maintenance visits or in emergencies.

3.9 Construction

The construction of the facility would take approximately nine months including a period of approximately one month for onsite commissioning.

3.10 Maintenance and Safety

Remote monitoring of the plant would be undertaken by AMP or their appointed operation and maintenance contractor including safety alarm notifications which would be responded to accordingly by a team of mobile service engineers. Maintenance visits would be carried out weekly. The plant would have fully automatic safety systems to shut-down the plant in an emergency. Under this situation the exhaust gas heat exchangers would be bypassed to allow the gases to go directly to the existing stacks.

3.11 Employment

The proposed development would not result in the creation of any new positions, rather existing staff would be redeployed to maintain the facility. There would be indirect employment within the local area during construction as Ardagh Glass intend to employ local contractors.

4.0 Environmental Considerations

4.1 Introduction

This section sets out the environmental considerations associated with the proposed development.

4.2 Site Selection Process

The location of the proposed development within the Ardagh site was selected due to its proximity to existing infrastructure, minimising the length of pipework required to ensure the most efficient operation of the waste recovery heat network.

4.3 Air Quality

The waste heat recovery system would be fully contained with no external outlets or stacks. There would be no effect on emissions from the site, with respect the furnaces, as the glass factory would burn the same amount of natural gas and would, therefore, have the same volume of gases being discharged to atmosphere, albeit at a lower temperature. No adverse effects on air quality would result from the operation of the proposed development.

4.4 Noise

The approximate distance between the proposed development and each Noise Sensitive Receptor (NSR) as shown on Figure 1 is as follows:

- Fish Dam Lane: 190m.
- Faith Street: 350m.
- Burton Crescent: 255m.

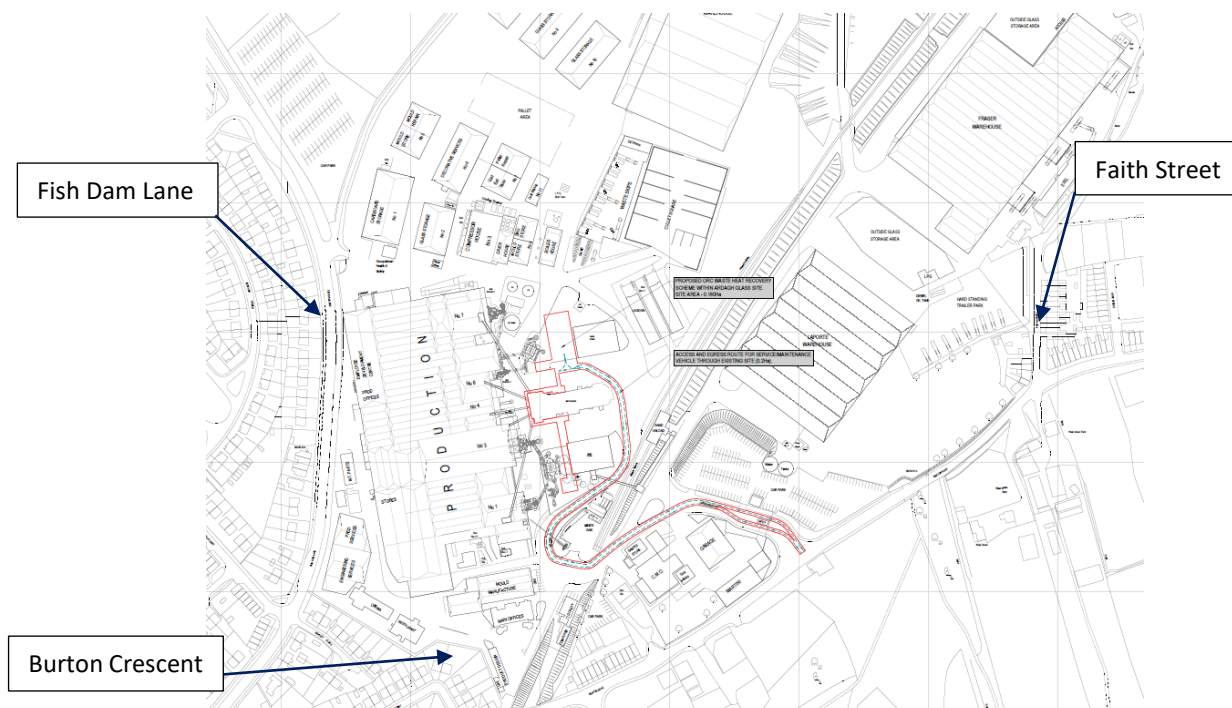


Figure 1
Site Location and Nearest Noise Sensitive Receptors

It should be noted, however, that other buildings within the Ardagh Glass Factory site are located in closer proximity to these residential properties than the proposed development.

It is understood that the principal external plant associated with the proposed development are two dry air coolers that would be located on the roof of the plant room. Each cooler would have a sound pressure level of 64dB(A) each at 10m. The combined sound power level of the plant equates to 95dB(A).

Predicted Specific Sound Levels

Table 1 details the predicted specific sound level of the two coolers at each NSR. The prediction is based on the following calculations:

- geometric divergence formula⁴:
 - $(20 \times \log_{10}(\text{Distance between source and receptor}) + 8)$
- atmospheric absorption formula⁵:
 - $(1.9 \times \text{Distance between source and receptor}) / 1000$
- ground effect formula⁶:
 - $4.8 - (2 \times 6.5^7 / \text{Distance between source and receptor}) (17 + (300 / \text{Distance between source and receptor}))$.

To account for screening of noise between the proposed development and the nearest NSR a correction of 5dB(A)⁸ has then been applied.

Table 1
Predicted Specific Sound Level dB(A)

Receptor	Geometric Divergence	Atmospheric Absorption	Ground Effect	Screening	Specific Sound Level
Fish Dam Lane	53.6	0.4	3.5	5	32.5
Faith Street	58.9	0.7	3.9	5	26.5
Burton Crescent	56.1	0.5	3.9	5	29.5

Baseline Background Sound Levels

SLR has reviewed the baseline background sound levels as presented in RPS Report (Ref: FTON64710 OO1R) Environmental Sound Level Survey, undertaken at the site in June 2018. Baseline background sound levels were presented for the daytime and the night-time period at Fish Dam Lane. The baseline background sound levels were as follows:

- day: 53dB(A).

⁴ ISO 9613-2 Equation 7. Assuming hemispherical radiation.

⁵ ISO 9613-2 Equation 8. Assumes atmospheric attenuation coefficient of 1.9 (the lowest 500Hz value, used as A-weighted data has been provided).

⁶ ISO 9613-2 Equation 10. Assumes soft / porous ground.

⁷ This value is the mean height of propagation above ground. 6.5m has been chosen as the fans are approx. 9m above ground and at night the receptor is 4m (first floor level).

⁸ See Page 130 of BS5228:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*.

- evening: 46dB(A).
- night: 36dB(A).

It is anticipated that the 2018 baseline background sound level at Fish Dam Lane would be representative of the noise climate at the NSRs in the area.

BS4142:2014+A1:2019 Assessment

Sound Penalties

The character of the fans and the sound penalty that will be applied in the BS4142:2014+A1:2019 assessment is detailed below:

- tonality: SLR has not undertaken the BS4142:2014+A1:2019 objective method for assessing the audibility of tones in sound: one third octave method. However, it is not expected that the fans would be tonal.
- impulsivity: It is not anticipated that the proposed fans would produce impulsive noise;
- other sound characteristics: When operating, the proposed fans may be readily distinctive against the residual acoustic environment. A 3dB penalty will therefore be required; and
- intermittency: Over the BS4142:2014+A1:2019 reference period of 1-hour in the daytime (07:00 – 23:00) and 15-minutes at night-time (23:00 – 07:00), it is anticipated that the fans would be constant; therefore, no intermittency penalty is required.

Based on the above, a 3dB penalty is applicable to the predicted specific sound level at the nearest noise-sensitive receptors to derive the corresponding rating levels.

Assessment Results

The penalties described above have been added to the predicted sound levels shown in Table 1 to derive the rating level at each of the nearest noise-sensitive receptors.

The rating levels have then been compared to the derived background sound levels, measured by RPS and assessed accordingly.

The results of the BS4142:2014+A1:2019 assessment are shown in Table 2. It must be noted that the rating levels and the representative background sound levels have been rounded to the nearest decibel.

Table 2
BS4142 Assessment, dB

Receptor	Assessment	Predicted Specific Sound Level, $L_{Aeq,T}$	Predicted Rating Level, $L_{Ar,T}$	Derived Background Sound Level L_{A90}	Difference
Fish Dam Lane	Daytime	33	36	53	-17
	Night-Time	33	36	36	0
Faith Street	Daytime	27	30	53	-23
	Night-Time	27	30	36	-6
Burton Crescent	Daytime	30	33	53	-20
	Night-Time	30	33	36	-3

It can be seen from Table 2 that:

- during the daytime, the rating level of the proposed development would be between 23dB(A) and 17dB(A) below the background sound level.
- during the night-time, the rating level of the proposed development would be between 6dB(A) and equal to the background sound level.

To conclude, it is not expected that noise from the proposed development would have an adverse noise impact at the NSRs assessed.

4.5 Landscape and Visual

At 7.6m high, the new steel framed building will be substantially smaller than some of the existing buildings within the factory setting. The building has been designed to match the exterior of other buildings onsite to enable it to successfully integrate into the visual fabric of the existing site buildings and structures. The high-level pipework has also been designed to match the design of the existing pipework onsite. No significant adverse landscape and visual effects are predicted.

4.6 Ecology

The proposed development would be predominantly located within an area of existing hardstanding and grassland in an industrial setting. The southern section of the pipe network and most southerly heat exchanger unit at NGR 437220, 408480 would be located where there are three existing trees. These trees would need to be felled to make way for the development. The trees are immature and are unlikely to have bat roost potential. It is recommended that they be removed outwith the bird nesting season (March-August).

It is recommended that three new trees are planted onsite to ensure no net biodiversity loss. The proposed location for this replanting is shown on Drawing PL0003, to the south of the proposed heat exchanger unit.

There are no nature conservation designations on or within close enough proximity to the site to be impacted. No significant impacts on nature conservation interests are predicted.

4.7 Access and Traffic

The site is easily accessible from the Burton Road. There would be light vehicle trips of one per week for maintenance visits. It is not envisaged that this level of additional vehicle movements would have a significant effect on the capacity of the surrounding road network.

4.8 Ground Condition

Review of the British Geological Survey (BGS) Geindex confirms that the proposed development is underlain by sandstone (BGS, <https://mapapps.bgs.ac.uk/geologyofbritain/home.html>). No superficial deposits are recorded. Boreholes undertaken within the factory site in 1978 show the site to comprise compact, brick rubble with fine medium and coarse gravel deposits, underlain by soft, silty and sandy clay, underlain by moderately jointed, thinly bedded clayey siltstone.

As this is an existing developed area and there is minimal ground-breaking required, there are no anticipated land quality issues.

4.9 Flood Risk

All surface water from the site is connected into a system of surface water drains. These drains terminate in an onsite reservoir at NGR 437290, 408620. The reservoir is used in the glass manufacturing process to cool water. Infrequently and during periods of very heavy and prolonged rainfall the reservoir may overflow through a pipe that discharges into Cudworth Dyke as covered by the Yorkshire Water Discharge Consent No. SE 375092.

Surface water run-off from the proposed development would connect into the existing system of surface water drains as shown on Drawing PL003.

The proposed development is located within the surface water catchment of the Cudworth Dyke which is located approximately 800m east of the site, at its closest extent; before flowing into the River Dearne approximately 2km to the southeast of the site. The Cudworth Dyke (from source to the River Dearne) has been classified by the Environment Agency as having a poor overall quality in 2019.

The Environment Agency flooding maps confirm that the site is not at risk of flooding from rivers or the sea. Parts of the factory site are shown to be at risk of flooding from surface water although the area occupied by the proposed development is not considered to be at risk.

With best practice construction techniques, the proposed development is not anticipated to impair existing groundwater or surface water resources.

4.10 Cultural Heritage

There are no statutory or non-statutory features of heritage interest within the proposed development site. The closest Scheduled Monument is Monk Bretton Standing Cross located approximately 1.25km to the southwest of the site. There are several Grade II Listed Buildings located in settlements around the site including Monk Bretton, Cudworth and Carlton. There will be no impacts on these heritage assets.

5.0 Planning Policy Assessment

5.1 Introduction

This section sets out the planning policy that is considered to be relevant to the proposed development. The relevant policies are highlighted and an analysis provided of the extent to which the proposed development complies with policy.

It is a fundamental principle of the planning system that in dealing with a planning application, the planning authority should determine it in accordance with the Development Plan unless other material considerations indicate otherwise. Therefore, this section also considers other material considerations. The process of 'weighing up' the relevant factors is often described as the 'planning balance' and will take all the relevant factors into account.

5.2 The Development Plan

Section 70(2) of the Town and Country Planning Act 1990 and Section 38(6) of the Planning and Compulsory Purchase Act 2004 require that planning decisions be made in accordance with the adopted development plan unless material considerations indicate otherwise.

The development plan for the proposed development comprises:

- the Barnsley Local Plan, adopted in January 2019;
- the Oxspring Neighbourhood Development Plan; and
- the Penistone Neighbourhood Development Plan.

There is no supplementary guidance of relevance to the proposed development. The Neighbourhood Plans are not considered to be relevant to the proposed development.

This section of the Planning Statement assesses the proposed development against the relevant provisions of the Development Plan and other relevant material considerations.

5.2.1 Barnsley Local Plan (2019)

The Barnsley Local Plan (2019) provides a vision and objectives for the borough of Barnsley up to the year 2033. Following public consultation and examination by an independent planning inspector, Barnsley's Local Plan was adopted by Full Council on 3 January 2019.

The Local Plan sets out how the council will manage physical development of the borough on behalf of residents and businesses. This includes providing sufficient land in the right places to attract more businesses into the borough and to allow existing businesses to grow. The Plan notes a desire to increase and encourage the production of renewable energy in the borough whilst protecting the countryside and amenity; and supporting the building of zero-carbon homes and business premises that are low energy and produce lower carbon emissions. The key policies for the proposed development are:

Policy SD1 Presumption in favour of Sustainable Development

When considering development proposals we will take a positive approach that reflects the presumption in favour of sustainable development contained in the National Planning Policy Framework. We will work proactively with applicants jointly to find solutions which mean that proposals can be approved wherever possible, and to secure development that improves the economic, social and environmental conditions in the area.

The proposed development is for a waste heat recovery system which is in line with National Planning Policy Framework (NPPF) in seeking to improve the economic, social and environmental conditions at the Ardagh Glass site by capturing thermal energy and converting it into electricity and reducing carbon emissions.

Policy GD1 General Development

Proposals for development will be approved if:

- *There will be no significant adverse effect on the living conditions and residential amenity of existing and future residents;*
- *They are compatible with neighbouring land and will not significantly prejudice the current or future use of the neighbouring land;*
- *They will not adversely affect the potential development of a wider area of land which could otherwise be available for development and safeguards access to adjacent land;*
- *They include landscaping to provide a high quality setting for buildings, incorporating existing landscape features and ensuring that plant species and the way they are planted, hard surfaces, boundary treatments and other features appropriately reflect, protect and improve the character of the local landscape;*
- *Any adverse impact on the environment, natural resources, waste and pollution is minimised and mitigated;*
- *Adequate access and internal road layouts are provided to allow the complete development of the entire site for residential purposes, and to provide appropriate vehicular and pedestrian links throughout the site and into adjacent areas;*
- *Any drains, culverts and other surface water bodies that may cross the site are considered;*
- *Appropriate landscaped boundaries are provided where sites are adjacent to open countryside;*
- *Any pylons are considered in the layout; and*
- *Existing trees that are to remain on site are considered in the layout in order to avoid overshadowing.*

Three trees have been identified as needing to be felled as part of the proposed development. It is proposed that three new trees will be planted within the Ardagh site to compensate for this loss of habitat. Since the proposed development is located within an existing industrial site and has been designed to be in-keeping with development within the site, it is not anticipated to result in any adverse effects on the environment, existing and future land use, thereby complying with policy GD1.

Policy LC1 Landscape Character

Development will be expected to retain and enhance the character and distinctiveness of the individual Landscape Character area in which it is located (as set out in the Landscape Character Assessment of Barnsley Borough 2002 and any subsequent amendments).

Development which would be harmful to the special qualities of the Peak District National Park will not be allowed.

The proposed development has been designed to be in-keeping with the industrial setting of the Ardagh Glass Factory and the plant room building will be clad in similar materials to existing buildings on site, thereby complying with policy LC1.

Policy CC1 Climate Change

We will seek to reduce the causes of and adapt to the future impacts of climate change by:

- *Giving preference to development of previously developed land in sustainable locations;*
- *Promoting the reduction of greenhouse gas emissions through sustainable design and construction techniques;*
- *Locating and designing development to reduce the risk of flooding;*
- *Promoting the use of Sustainable Drainage Systems (SuDS);*

- *Promoting and supporting the delivery of renewable and low carbon energy; and*
- *Promoting investment in Green Infrastructure to promote and encourage biodiversity gain.*

The proposed development seeks to install a low-carbon form of heat energy generation, thereby complying with policy CC1. The electricity generated would be used by the Ardagh Glass Factory, replacing their current reliance on more carbon intensive forms of heat energy generation. It anticipated that the waste heat recovery system would generate 10,700MWh of clean electricity, amounting to around 10% of the total electrical consumption of Ardagh Glass' Barnsley site and give rise to an anticipated annual CO₂ saving of 2,495 tonnes.

Policy CC2 Sustainable Design and Construction

Development will be expected to minimise resource and energy consumption through the inclusion of sustainable design and construction features, where this is technically feasible and viable.

All non-residential development will be expected, to achieve a minimum standard of BREEAM 'Very Good' (or any future national equivalent). This should be supported by preliminary assessments at planning application stage.

The building arrangement is predicated on the specific requirements of the ORC generator unit and the associated plant, with suitable and safe access arrangements for installation, maintenance and removal of the equipment, thereby complying with policy CC2.

Policy CC3 Flood Risk

The extent and impact of flooding will be reduced by:

- *Not permitting new development where it would be at an unacceptable risk of flooding from any sources of flooding, or would give rise to flooding elsewhere;*
- *Ensuring that in the Functional Floodplain (Flood Zone 3b), only water compatible development or essential infrastructure (subject to the flood risk exception test) will be allowed. In either case it must be demonstrated that there would not be a harmful effect on the ability of this land to store floodwater;*
- *Requiring developers with proposals in Flood Zones 2 and 3 to provide evidence of the sequential test and exception test where appropriate;*
- *Requiring site-specific Flood Risk Assessments (FRAs) for proposals over 1 hectare in Flood Zone 1 and all proposals in Flood Zones 2 and 3;*
- *Expecting proposals over 1000 m² floor space or 0.4 hectares in Flood Zone 1 to demonstrate how the proposal will make a positive contribution to reducing or managing flood risk;*
- *Expecting all development proposals on brownfield sites to reduce surface water run-off by at least 30% and development on greenfield sites to maintain or reduce existing run-off rates requiring development proposals to use Sustainable Drainage Systems (SuDS) in accordance with policy CC4; and*
- *Using flood resilient design in areas of high flood risk.*

As noted in Section 4.9, the proposed development is not located in an area identified to be at risk of flooding and would be less than 1ha in extent so does not require a FRA to be undertaken. Surface water run-off from the proposed development would connect into the existing system of surface water drains which is designed to manage periods of heavy rainfall and prevent flooding on site, thereby complying with policy CC3.

Policy CC5 Water Resource Management

To conserve and enhance the Boroughs water resources proposals will be supported which:

- Do not result in the deterioration of water courses and which conserve and enhance:*
 - The natural geomorphology of water courses;*
 - Water quality; and*
 - The ecological value of the water environment, including watercourse corridors.*

- b. Make positive progress towards achieving “good” status or potential under the Water Framework Directive in the boroughs surface and ground water bodies;*
- c. Manage water demand and improve water efficiency through appropriate water conservation techniques including rainwater harvesting and grey-water recycling; and*
- d. Dispose of surface water appropriately and improve water quality through the incorporation of SuDS, in accordance with Policy CC4.*

Surface water run-off from the proposed development would connect into the existing system of surface water drains which is designed to manage periods of heavy rainfall, and would not adversely affect the water quality of nearby watercourses, thereby complying with policy CC5.

Policy RE1 Low Carbon and Renewable Energy

All developments will be expected to seek to incorporate initially appropriate design measures, and thereafter decentralised, renewable or low carbon energy sources in order to reduce carbon dioxide emissions and should at least achieve the appropriate carbon compliance targets as defined in the Building Regulations.

We will allow development that produces renewable energy as long as there is no material harm upon:

- The character of the landscape and appearance of the area;*
- Living conditions;*
- Biodiversity, Geodiversity and water quality;*
- Heritage assets, their settings and cultural features and areas;*
- Key views of, from or to scenic landmarks or landscape features;*
- Highway safety, or*
- Infrastructure including radar.*

In assessing effect, we will consider appropriate mitigation which could reduce harm to an acceptable level.

Proposals will be expected to include information regarding their efficiency.

Proposals must be accompanied by information that shows how the local environment will be protected, and that the site will be restored when production ends.

Section 4.0 sets out the environmental considerations associated with the proposed development. It is anticipated that no material harm will occur to landscape, living conditions, biodiversity, water quality, heritage assets, views, highway safety or infrastructure from the proposed development. The proposed development, by its nature, seeks to incorporate appropriate design measures, to promote a low carbon energy source in order to reduce carbon dioxide emissions at the Ardagh Glass Factory, thereby complying with policy RE1.

Policy Poll1 Pollution Control and Protection

Development will be expected to demonstrate that it is not likely to result, directly or indirectly, in an increase in air, surface water and groundwater, noise, smell, dust, vibration, light or other pollution which would unacceptably affect or cause a nuisance to the natural and built environment or to people.

We will not allow development of new housing or other environmentally sensitive development where existing air pollution, noise, smell, dust, vibration, light or other pollution levels are unacceptable and there is no reasonable prospect that these can be mitigated against.

Developers will be expected to minimise the effects of any possible pollution and provide mitigation measures where appropriate.

Section 4.0 sets out the environmental considerations associated with the proposed development including potential effects on air quality, surface water, groundwater and noise. No adverse impacts are anticipated. The

design and construction of the proposed development would also ensure that there would be no other pollution from smell, dust, vibration, or light, thereby complying with policy Poll1.

5.3 National Planning Policy

Originally published in March 2012 and revised June 2019, the NPPF sets out the Government's planning policies for England, and is acknowledged as an essential material consideration to the proposed development. At the centre of the NPPF, lies the predominant themes of sustainable development and low-carbon economy, which are set out around three overarching interdependent objectives for the planning system: building a strong, responsive and competitive economy; supporting robust, vibrant communities; and contributing to protecting and enhancing the natural, built and historic environment. The NPPF requires that development proposals are approved, without delay, where they "*apply a presumption in favour of sustainable and development*" and accord with NPPF policies.

The NPPF provides that development plans should include strategic policies making sufficient provision for *inter alia* infrastructure for energy. Indeed, paragraph 148, highlights the need to support energy development that contributes towards security and stability of supply, as well as developments which support renewable infrastructure:

"The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure."

Paragraph 151, also states:

"To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);*
- b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and*
- c) identify opportunities for development to draw its energy supply from decentralised, renewable, or low carbon energy supply systems and for co-locating potential heat customers and suppliers."*

The proposed development is for a waste heat recovery system, which is in line with this NPPF vision.

5.4 Other Relevant Material Considerations

5.4.1 Climate Change and Energy Policy Considerations

The 2011 *Overarching National Policy Statement for Energy* (EN-1)⁹ sets out national policy for energy infrastructure in the UK. The UK aims to move to a secure, low carbon energy system which is identified in EN-1 as requiring major investment in new technologies to renovate buildings, the electrification of heating, industry and transport, prioritisation of sustainable bioenergy and cleaner power generation; and requiring major changes in the way energy is used by individuals, by industry, and by the public sector.

⁹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf

UK Government Guidance on ‘Renewable and low carbon energy’ (June 2015)¹⁰ notes that:

“There is an important contribution to be made by planning that is independent of the contribution from other regimes such as building regulations. For example, getting the right land uses in the right place can underpin the success of a district heating scheme. Similarly, planning can influence opportunities for recovering and using waste heat from industrial installations. Planning can provide opportunities for, and encourage energy development which will produce waste heat, to be located close to existing or potential users of the heat. Planning can also help provide the new customers for the heat by encouraging development which could make use of the heat.

The proposed development is an example of an industry thinking innovatively to work towards reducing their carbon footprint by utilising a waste product produced in their operations to generate electricity through a low carbon energy system and reuse of that energy onsite to power their operations.

5.5 Policy Summary

It is considered that the proposed development is in accordance with NPPF, the Development Plan and other material considerations.

¹⁰ <https://www.gov.uk/guidance/renewable-and-low-carbon-energy>

6.0 Summary and Conclusions

AMP Clean Energy is applying to Barnsley Metropolitan Borough Council for planning permission to construct and operate a waste heat recovery system including plant room and heat network to capture thermal energy which would otherwise be wasted, and convert it into electricity, replacing more carbon intensive generation at the Ardagh Glass Factory in Monk Bretton, Barnsley.

Waste heat recovery systems have been demonstrated to be a reliable low carbon energy technology and proven to have minimal environmental impacts. The design and layout of the development has addressed a range of technical matters and been reviewed against a series of environmental considerations. It has been considered against local and national policies.

The review has concluded that the environmental impacts associated with this small-scale development are minimal, particularly when viewed in the context of the benefits associated with the proposed development.

APPENDIX 01

Drawings

APPENDIX 02

Turboden Waste to Energy Brochure

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