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3. PROJECT DESCRIPTION

Introduction

- 3.1 The EIA Regulations require that the Environmental Statement (ES) should include a description of the development, which then provides a context for the assessment of the aspects of the environment likely to be significantly affected by the development, and the measures available to prevent, reduce and where possible offset any significant effects on the environment.

Summary of the Proposed Development

- 3.2 The application proposal is as follows:

“The construction and operation of an anaerobic digestion facility, ancillary infrastructure and the construction of a new access and access from Ashton Road in Ashton Keynes, Wiltshire”.

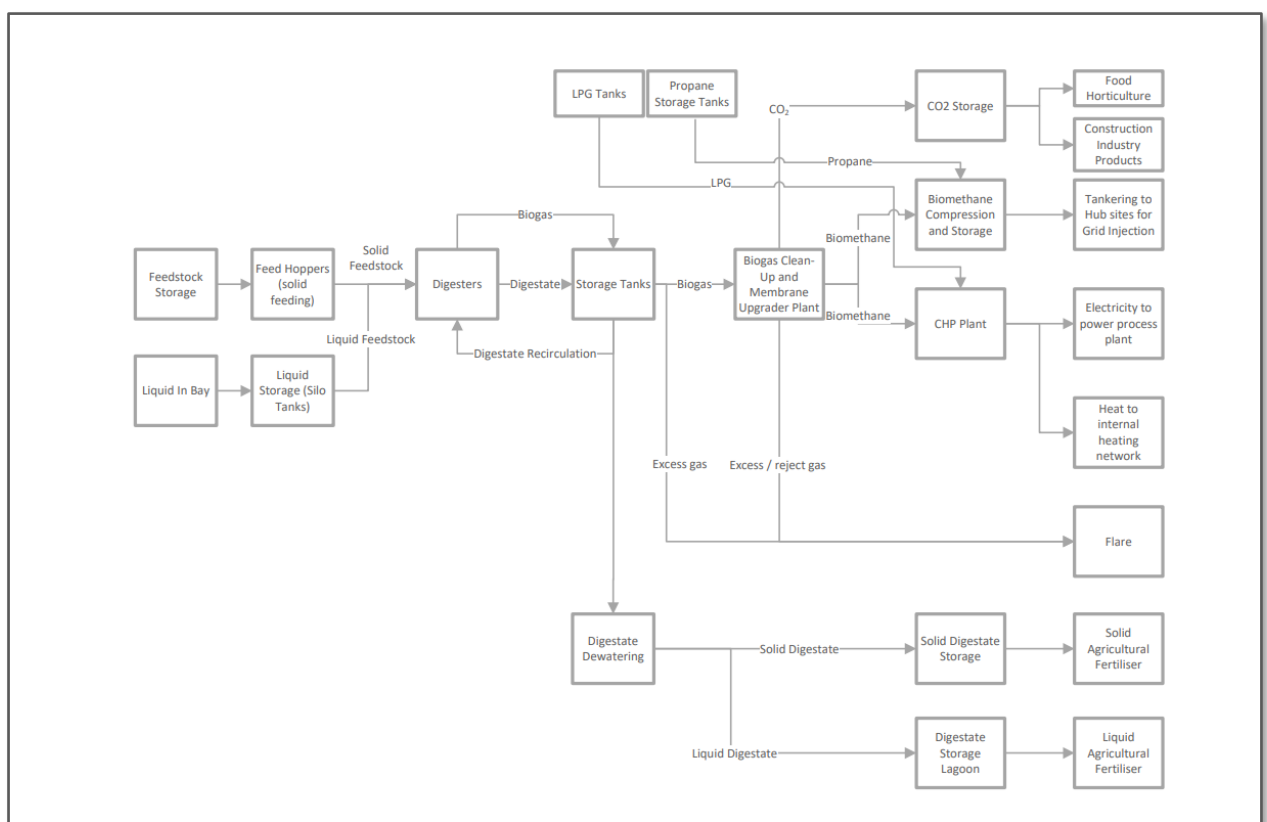
- 3.3 The 6.99 Ha application site (the Site) is located immediately west of Ashton Road in an agricultural area approximately 2km north of the village of Ashton Keynes, Wiltshire. Ashton Road runs adjacent to the eastern boundary of the site. Its junction with Spine Road (B4696) is to the south of the site approximately 1km away. Drawing 29419/P/101 - Rev F Layout Plan sets out the proposed land uses within the Site, including the access and highway extent.
- 3.4 The proposed development would import and treat in the region of 91,000 tonnes of feedstock per annum from the applicant's landholding and local farms, which would undergo a process of controlled decomposition (anaerobic digestion) within the Anaerobic Digestion (AD) facility. This anaerobic digestion generates biogas, which is upgraded on site into biomethane, before being removed by tanker to a central facility for injection into the national grid. The AD facility would have the capacity to produce approximately 9,815,904 Nm³ of biomethane per annum.
- 3.5 The feedstock would typically comprise the following:
- energy crops such as silage, rye, maize and grass;
 - straw; and
 - poultry litter, farmyard manure and dairy slurry.
- 3.6 In addition to the biomethane, the AD process also produces a nutrient rich solid fertiliser and soil conditioner and a liquid fertiliser (digestate), which would be used on local farms in place of raw manures and artificial fertilisers.
- 3.7 The AD process would also result in the production of carbon dioxide (CO₂) as a natural by-product. This by-product is usually vented by AD plant operators, for whom the main goal is the production of biomethane. However, as CO₂ is a precious resource, the proposed AD plant would be fitted with equipment to upgrade the CO₂ to 99.9% purity, suitable for almost all industrial and commercial

applications in the UK. Upgraded CO₂ would be liquefied and transported by road to end users within the market area. The proposed AD facility would capture approximately 13,714 tonnes of CO₂ a year.

Process Description

3.8 Figure 3-1 presents the AD process, which is further explained in the text below.

Figure 3-1
AD Process Diagram



3.9 The feedstock would be brought to the AD facility from the applicant's land and surrounding farms using tractors and trailers and HGV or tankers, depending on the type of feedstock. All vehicles would access the Site via the weighbridge, where the weighbridge operator would record the type of feedstock and tonnages.

3.10 An indication of the likely feedstock is set out below. However, it is important to note that the availability of different feedstocks can fluctuate as a result of local and national economic conditions. For example, livestock units are currently very vulnerable to high feed and energy costs and low meat prices. Therefore, the volumes of locally available slurry, manure and litter may be

reduced at certain times during the operation of the AD facility. For this reason, it will be important not to restrict any planning permission to specific amounts of specific feedstocks.

- silage (rye, maize and grass silage;
- straw;
- dairy slurry and farmyard manure; and
- poultry litter.

Feeding System

- 3.11 Feedstock would be unloaded into the three silage clamps, the manure shed and the straw bunker building as appropriate. The silage clamps would be constructed with pre-cast concrete sloping wall panels that are filled with earth for additional strength. The clamps would have a hard wearing and acid resistant rolled asphalt floor and be fitted with a protective sheet to preserve the feedstock and reduce odour. The clamps would have a liquid drainage and collection system for dirty liquid run-off and this would be pumped directly into the buffer tanks for feeding back into the process. Loading shovels would be used to transfer the crop silage from the clamps to the feed hoppers, which would be equipped with walking floors. Loading shovels would also be used to transfer feedstock from the manure shed and straw bunker into the feed hoppers.
- 3.12 A macerator would mechanically crush, homogenise and defibre the solid feedstock through shear forces rather than shredding. The feed screw pump also functions as a mixing pump, allowing captured rainwater or digestate required for dilution to be mixed with feedstock. Use of a macerator for pre-processing improves the digestibility of the solid feedstocks. The processed straw will then be fed into the digestion tank.
- 3.13 Liquid feedstock (farm slurry) would be transferred from a tanker through the liquid in-bay to a series of liquid feedstock storage tanks via the tanker connection point. Liquid feedstock would be transferred from the liquid feedstock storage tanks to the digester via a transfer pump.

Digestion

- 3.14 Within the series of digester tanks, the feedstock would undergo anaerobic digestion, a sequence of processes by which microorganisms break down the feedstock material in the absence of oxygen. Material in the feed hoppers and liquid feedstock storage tanks would be transferred to the digester tanks where it would remain for a minimum of 50 days to maximise the biogas potential from the feedstock.
- 3.15 Each digester would be equipped with submersible mixers to create uniform mixing. There would be a series of pipework entering and leaving the digesters including substrate, digestate, biogas, air, liquid digestate recirculation, and condensate. An optimum temperature of between 38-42°C would be maintained within the digesters through use of the internal heating system which would be supplied with heat from the on-site CHP via the heating manifold. Digestate would be heated

to a temperature of 70 °C for 1 hour in the pasteurisation plant to enable compliance with the BSI PAS 110 standards for digestate products.

- 3.16 The digesters would be fitted with a double layer, self-supporting membrane dome with to store the biogas. The membrane dome would be supported at all times by using air blowers to inflate the void between the two membranes. From the membrane domes, the biogas would be pumped into the gas cleaning unit, so that it is suitable for injection into the gas grid.

Storage and Digestate Separation

- 3.17 The digestate held within the storage tanks would be transferred to the digestate separation process for dewatering. The digestate would be temporarily stored in a header tank for flow regulation before being transferred to the screw presses via a series of screw pumps. The dewatered digestate would be stored in a storage bunker and the liquid digestate would flow to 2 liquid digestate storage lagoons, each with a capacity of 10,000m³. The lagoons will comprise a reinforced HDPE liner with a floating HDPE cover, with a leakage detection and geotextile protective lining. This protective lining will sit within a bunded earthen lagoon wall. The lagoons are designed to hold over six months' of storage and will have a free board of 750mm. This will ensure the agronomic benefits of the odourless digestate are maximised for local arable crop rotations and will be in full accordance with Environment Agency regulations and best practice guidelines.
- 3.18 The liquid digestate would be stored on site until it can be used as an agricultural fertiliser on surrounding land. This reduces the need to import artificial fertilisers. The solid part of the digestate would be exported by tractor and trailer for use on surrounding farmland. In addition, the potential to provide pipelines directly to enable spreading on neighbouring farmland is being investigated. This would enable the digestate to be piped directly to the land upon which it can be spread, avoiding the use of road transport. From there it could be spread with an umbilical system at the appropriate times of year.

Biogas Clean-up and Membrane Upgrading

- 3.19 Biogas held within the storage tanks would be processed through the biogas clean-up plant. The biogas clean-up and membrane upgrading plant would remove impurities within the biogas stream to produce biomethane and carbon dioxide. Contaminants include hydrogen sulphide, carbon dioxide and water vapour.
- 3.20 There would be sulphur nets in each digester which would convert hydrogen sulphide to elemental sulphur. Pre-treatment to remove contaminants would be required prior to biogas entry into the CHP and gas upgrader to remove contaminants.
- 3.21 The next step in the upgrading process would be to convert water vapour present in the biogas stream into a liquid through a condenser. In the condenser, cold utility fluid would be used to decrease the temperature of the biogas, promoting condensation of water vapour. Water vapour removed from the biogas would flow to the digestate storage lagoons.

- 3.22 Lastly, a membrane upgrader would be used to separate the methane present in the biogas from the carbon dioxide by only allowing methane molecules to pass through a permeable membrane, based on the operating conditions and membrane specification. Carbon dioxide would be recovered and stored onsite for offtake by end users in the food horticulture and construction products industries. Water vapour removed from the biogas would flow to the digestate storage lagoons.

Electricity Generation

- 3.23 The AD plant would have two CHPs; one 1,580kW thermal input CHP fuelled by biogas from the digestion process producing 635kWe, and one 3,508kW thermal input CHP fuelled by imported natural gas producing 1,506kWe. Heat produced from the CHP plant would be diverted to the digesters through the Site's heating manifold to improve process efficiency.

Biomethane Storage, Transport and Upgrading

- 3.24 Biomethane would be produced at a rate of approximately 1,250 m³/per hour, per day and delivered via a road tanker to a Hub Site where the biomethane would be compressed and cooled prior to injection into the National Grid through a Grid Entry Unit.
- 3.25 Any excess gas which cannot be used in the CHP plant, storage and transport, or through the grid entry unit would be fed back through the domes and captured. An emergency gas flare would be installed towards the south eastern corner edge of the Site, 10m from all structures and planting. The purpose of the emergency flare is to prevent build-up of pressure in the gas store in the event of a breakdown or power cut. This is required because the AD process is based around bacteria which will continue to create the biogas despite a breakdown or power cut. The gas flare will be completely shrouded and will meet Environment Agency Best Available Technology Guidance. This means it will burn up the gas at 1000 degrees centigrade, to prevent air pollution and the flame will be completely hidden from view. It will only be used when the CHP and the gas clean-up equipment is undergoing scheduled maintenance or in case of break down or emergency.

Water Management

- 3.26 As the AD process can be water intensive, the proposed AD facility would capture as much rainwater as possible for use in the process. Based on annual average estimates, rainwater capture is expected to be sufficient for approximately 100% of the process water demand. Two primary drainage systems will be adopted, for the clean (surface water runoff) and contaminated (foul) water systems.
- 3.27 Accordingly, the Site has been designed to have a clean rainwater lagoon (detention pond to the south east) to store rainwater and clean surface water runoff. Water would be pumped from the attenuation pond back into the AD process or if necessary, could be discharged at greenfield rates into the highways ditch at the proposed outfall.

Operational Hours

- 3.28 The AD process involves a biological process that is continuous. The processing plant would therefore be operational 24/7. The facility would be staffed as required during the hours of 07:00 – 18:00 Monday – Sunday, except during peak harvest periods when working hours would be extended as necessary. A supervisory control and data acquisition (SCADA) system would monitor the facility overnight when it is not manned.
- 3.29 Deliveries of crops to site would be determined by the harvest. Harvests are ordinarily completed on a campaign basis, therefore during the peak harvest periods, delivery hours would be in line with standard agricultural harvest-time activity.
- 3.30 Vehicle movements relating to delivery of agricultural by-products and export of digestate would generally be limited to the following hours:
- Monday – Friday 07:00 – 18:00; and
 - Saturday 07:00 – 13:00.
- 3.31 Export of the biomethane would take place once every 12 hours, including overnight. There will also be a number of CO₂ HGV trips, but these would be 1 to 2 per day over the year.

Description of biomethane trailer swap

- 3.32 After biogas has been upgraded into biomethane it is compressed to 200-300 bar and dispensed into gas container modules. A full module contains around nine tonnes of compressed biomethane. It takes about 12 hours to fill one module. When a module is full it is transported by road to the injection hub and ‘swapped’ with an empty module that has returned from the hub. The process of filling the new empty module then begins again, and the cycle continues with another ‘swap’ taking place roughly every 12 hours.

Site Construction Management

- 3.33 The construction process would be managed to ensure minimum disruption during the construction period. The process would be managed in accordance with construction good practice including the recommended management and mitigation measures out in the relevant technical reports accompanying this planning application. All appropriate health and safety management systems would be put in place.
- 3.34 A Construction Traffic Management Plan (CTMP) would set out measures for managing the following:
- setting out of site entrance and interface with traffic on Ashton Lane;
 - traffic management including routeing and timing of deliveries, including any abnormal load requirements;

- vehicle/plant/delivery schedule;
- staff parking to be accommodated within the site, away from the public highway
- provision of lorry parking and turning areas within the site;
- signs and instructions;
- protection of tree and hedge root protection zones; and
- visibility.

- 3.35 It is expected that construction of the proposed development would take approximate 70 weeks. Approximately 7,200 HGV deliveries would be required during the construction of the proposed development. This would equate to an average of approximately 27 HGV trips per day, across a 275-day year. In order to minimise traffic impacts on Ashton Road, the construction site access junction would be constructed prior to the main construction phase commencing.
- 3.36 It is proposed that construction activities, including deliveries, would be limited to 7am to 7pm Monday to Friday, with reduced hours on Saturday for the duration of the construction period. There would be no construction activities undertaken on Sundays or bank holidays without prior approval, unless in the case of emergency.
- 3.37 The AD facility would generate approximately 100 FTE jobs spread over the construction period and five FTE jobs during operation. The temporary increase in employment and the associated secondary economic effects such as supply chain multiplier effects, and spend on local services, would have positive effects at a local level during the construction phase.
- 3.38 Subject to the implementation of a CTMP, the construction impacts are likely to be minimal, manageable, and therefore are acceptable in terms of highway safety.

Description of Components

- 3.39 The primary components of the proposed development are shown on the accompanying drawings and would include the items of plant set out in Table 3-1:

Table 3-1
Description and Dimensions of AD Facility Components

Element	Description of Equipment/Plant	Dimensions
Slurry Tanks, Pre-Tanks, Dirty Water Tanks	Storage of liquid feedstocks contaminated dirty water run-off to be reused in the process. To be clad in green or an alternative colour agreeable to the LPA.	Total 3no each measuring 8m x 8.m and 3no each measuring 6 x 8 .
Chicken Manure Reception Shed	Storage of poultry litter and farmyard manures. To be partly clad in green under	26.0m x 19.5m x 6m to eaves, 8m to ridge.

Element	Description of Equipment/Plant	Dimensions
	a fibre cement roof or clad using an alternative colour agreeable to the LPA.	
Straw Building	To be partly clad in green under a fibre cement roof or clad using an alternative colour agreeable to the LPA. Eastern stretch of straw storage building including bunker and processing.	48.0m x 15.7 x 6m to eaves, 8m to ridge 18.7m long x 12.0m wide.
Silage Clamps (x3)	The three silage clamps will be constructed with pre-cast 3.53m high concrete panels that are filled with earth for additional strength. The clamps will have a hard wearing and acid resistant rolled asphalt floor. The clamps will have a liquid drainage and collection system for dirty liquid run-off. This will be pumped directly into the dirty water tanks for feeding back into the process.	Clamp 1 & 2 - 101.25m long x 35m wide x 3.52m high. Clamp 3 – 123.75m long x 35.0m wide x 3.52m high.
Feeder Hoppers (x3)	Feedstock is fed into the feed hoppers as per the sites feeding plan. Once the feed is loaded it exits and proceeds for further feed pre-treatment before pumped to the digesters. To be green or an alternative colour agreeable to the LPA.	3no Approx area 220m ³ each.
Digester Tanks / Fermenters (x5)	Tanks take feedstock, pumped from upstream processing equipment, with sufficient dry matter content. Digester tank configuration allows for a retention time, with the substrate within the digesters mixed by agitators and recirculated. Generated biogas will flow to the digester headspace before treatment to downstream equipment. To be clad in green or an alternative colour agreeable to the LPA.	Storage operational capacity of each 41,000m ³ ; straight wall height of 9m with 7.6m gas dome; 34m diameter; max height approx. 17m high.
Pasteurisation Tanks (x4)	The pasteurisation tanks would treat the fermented feedstock prior to it being pumped into the digestate lagoons.	4 x 25m ³ tanks approx. 3m diameter x11 m high (top of agitator).
Separator Building	The separator within the building would extract solids from the digestate before it is pumped to the digestate lagoons.	18m x 15m x 6m to eaves, 8m to ridge.

Element	Description of Equipment/Plant	Dimensions
Digestate Lagoons (x2)	The lagoons will be used to store the liquid digestate until it can be spread on to land. The lagoons will be covered in line with Environment Agency (EA) requirements.	Storage capacity 2 x 10,000m ³ .
Gas Flare	For infrequent use during maintenance to burn off any excess gas.	Stack height 9m. Flue diameter 2.4m. Footprint 5m x 4m.
Biogas Upgrade Unit	To clean and pressurise the gas prior to transfer to the gas grid. CO ₂ vent is connected from gas upgrade unit to the CO ₂ capture Unit	Footprint 26 x 9m x 3m. (2 no. iso containers and associated equipment). Vent height 7.5m.
CO ₂ Capture Unit	Captured CO ₂ to be transported on road tankers for utilisation or storage.	Process plant - approx. 10m x 16m x 4.75m
CO ₂ Tanks (x2)	Storage vessels for captured CO ₂	2no, 13.2m long x 3m diameter x 3.4m high (including plinth).
Combined Heat and Power (CHP) Units (x2)	To provide the AD facility with power and heat. One unit would be fuelled by biogas from the digestion process and the other by imported natural gas. To be clad in juniper green or an alternative colour agreeable to the LPA. Associated equipment includes heat exchangers and pumping systems.	CHP1 – 13m x 3m x 3m, stack 9m; CHP2 – 13m x 3m x 3m, stack 9m; (Plus, associated equipment).
Compressors (x2)	Compression of gas before injecting into road tankers.	Each – 2 no, 13m x 3m x 3m, stack 9m plus associated equipment.
Compressed Gas Storage (x2)	Storage vessels for compressed gas	2 x banks of gas storage, each 6.5m x 3m x 3m
Propane Tank (x1)	The propane tanks will add propane to the biomethane gas as required.	25ft below ground tank
Biomethane/CO ₂ off-take vehicle bay (x5)	Loading bay area for tanker parking	
Containment Bund	Civil engineering works on site related to the primary containment construction to current CIRIA guidance and recommendations.	Circa 12,119m ²
Remote lagoon offtake bay	HGV bay for extracting digestate.	1 no, offtake station for HGV.
Parking Area	6 bay car parking area for visitor car parking in office area.	1 no, offtake station for HGV.
New Site Access Roads	70m long on site hardsurfaced access road	70m long.

Element	Description of Equipment/Plant	Dimensions
Pump room container	Contains pumps to facilitate substrate/digestate between the final storage tank and digesters. Feed dosing undertaken here along with heat distribution systems to main equipment.	1no. inside containment bund and 2no outside containment bund 13m x 3m x 3m.
Rainwater Harvesting Lagoon (underground storage crates)	The development shall drain hardstanding by gravity into a below ground crate system to attenuate all runoff onsite. Water will then be pumped to a conveyance rainwater lagoon and discharged at greenfield rates into the highways ditch at the proposed outfall.	Circa 2,000m ³
SCADA Alarm Monitoring Systems	Supervisory Control and Data Acquisition (SCADA) system will provide an interface for the operator to control the plant, and capture/record all data produced by the process.	N/A
Site Boundary Fence	2.4m high v mesh fencing installed around the core site. Deer/wildlife fencing installed around lagoons. Double leaf vehicle access gates and a pedestrian access gate will allow entry into the Site.	Around the redline site boundary
Weighbridge and Site Office Welfare Office Unit (x2)	To record incoming and outgoing deliveries	4 x 40ft containers on top of each other.
LNG tank, vaporiser, and pump	To provide a back-up supply of natural gas into the CHP.	(if used) LNG tank of 13.7m x 2.4m x 2.6m plus associated equipment.

- 3.40 The AD facility layout will be as shown on Drawing 29419/P/101 - Rev F Layout Plan and has been designed to provide a safe and efficient working area, whilst also incorporating the required stand-off distances from trees, hedgerows and watercourses in the vicinity.

Planting / Landscaping

- 3.41 Topsoil and subsoils stripped from the site would be formed into screening bunds. As well as reducing views into the Site, the bunds can be seeded with an appropriate wildflower mix and planted with native trees, to deliver biodiversity net gain.
- 3.42 Existing off site hedges would be retained and allowed to increase in height to enhance the natural screening and gaps would be filled with native tree and hedge species. New hedge and tree planting

are proposed along the northern, western and southern site boundaries, to reduce views into the Site from the south and from the public right of way which is located to the west of the Site.

- 3.43 The proposed Landscape Masterplan (Figure 6 of the Landscape and Visual Impact Assessment in Chapter 7 presents the proposed location of new tree, hedgerow and grassland planting.

Fencing

- 3.44 The AD facility would be enclosed by means of palisade (or similar) fencing with double leaf vehicle access gates and a pedestrian access gate.

Operational Life

- 3.45 For the purposes of the technical assessments, it has been assumed that the AD plants would have a lifetime of c.25 years.

Vehicle Movements and Vehicular Access

- 3.46 Due to the nature of the AD facility feedstock, the proposals are likely to result in a varied traffic HGV traffic generation across the year. The traffic forecast in the Transport Statement indicated that for the majority of the year (10 months) the proposed development would generate 38-44 HGV/tractor trips per day associated with local farming operations, which equates to 76-88 HGV/tractor movements. On the basis of a 10 hour working day and an even traffic profile, this level of traffic would equate to an average of 4-5 loads or 8-10 movements per hour.
- 3.47 Proposed site traffic generation levels would then peak associated with seasonal harvest periods. This would likely be restricted to two weeks in June and July (Rye Silage) and two weeks in September (Maize Silage). Predicted traffic levels would peak for two weeks in June and July with up to 80 HGV/Tractor trips per day, which equates to 160 HGV/Tractor movements; a lesser peak is forecast to occur in September and October with up to 72 HGV/Tractor trips per day, which equated to 144 HGV/ Tractor movements.
- 3.48 Additionally, there would be some light vehicle trips associated with staff and visitor movement. Whilst the proposed site traffic will be new to the application site, a large proportion of the generated movements would already be on the wider local network as the proposed AD Facility will service existing local farms which have an existing traffic generation.
- 3.49 Access to the Site would be via an upgraded access at the location of the existing farm access on Ashton Road. The proposed site access junction has been designed in accordance with CD123 DMBR, as a simple priority junction with a 15 metre radii and tapers at 1:10 over 25 metres. The design has been assessed in terms of HGV swept-paths; the access drawing includes swept-paths for a maximum sized articulated lorry which demonstrates that this worst-case vehicle can access and egress without any issue. Critically, it demonstrates that an HGV can gain access to the site whilst another HGV waits to exit.

- 3.50 Junction visibility splays are illustrated on the proposed site access design at Drawing 03 of the Transport Statement, which demonstrates that the necessary splay extends across highway land providing the necessary 2.4 x 160 metre splays.

Parking

- 3.51 Parking spaces and manoeuvring spaces have been carefully considered to ensure that no vehicles would need to queue to get into the Site. Six car parking spaces are proposed close to the Site office and there would be additional space available for parking around the Site.
- 3.52 The proposed access road would have significant internal length serving traffic between the Site and the highway. This would provide a high level of potential internal vehicle queuing capacity, ensuring that no stacking back onto the highway would occur.

Vehicle-wash

- 3.53 Although the provision of a hard surfaced junction, access road and manoeuvring space would greatly limit the potential for vehicles to collect mud on their wheels, facilities would be available to clean vehicles of mud/debris. The facility would include a vehicle/plant washdown area adjacent to the weighbridge for general site maintenance purposes. This resource will be available for all vehicles, where necessary, to ensure that no mud/debris is tracked out onto the highway. The internal site area would be kept clean and maintained to a high level as part of good standard management practice, therefore any track out of mud/debris on to the highway relating to the application site will not occur.

Use

- 3.54 The proposed AD facility would process up to 91,000 tonnes of feedstock per annum to produce approximately 9,815,904 Nm³ of biomethane per annum. The proposed development would provide enough green gas to meet the heating demand of 8,700 UK households (based on 12.3 MWh/y per household). In comparison with standard UK grid emissions, the biomethane produced by the AD facility would have an equivalent saving of 34,000 tonnes of CO₂e each year, equivalent to taking 22,600 cars off the road.
- 3.55 In addition to the biogas, the AD process also produces a nutrient rich solid fertiliser and soil conditioner and a liquid fertiliser (digestate), which would be used on local farms in place of raw manures and artificial fertilisers. The AD process would also result in the production of carbon dioxide (CO₂) as a natural by-product.

Scale

- 3.56 The application site is approx. 6.99ha and details of the size of plant and buildings proposed are set out in Table 3-1. The scale of the development is dictated by the process undertaken at the proposed facility, and every attempt has been made to ensure the layout effectively apportions the scale of development across the site and that sufficient screening is proposed to minimise any visual impact.

Materials and Appearance

- 3.57 The design of the proposed AD facility has been carefully considered so as to ensure that the appearance of the proposed AD facility blends into its rural setting as much as possible. Design measures include the careful consideration of colour palette to integrate structures within the surrounds, and careful siting of development infrastructure, i.e. focusing taller structures along the northern edge of the Site and the careful use of external lighting.

Lighting and Security

- 3.58 Some limited external artificial lighting would be required at the facility to ensure safe working during periods of reduced daylight (i.e., during the winter months). A Lighting Assessment has been undertaken by Strenger¹ to quantify the impact of artificial light associated with the proposed development on its surroundings, which include residential and ecological receptors.
- 3.59 The assessment should be read alongside the following drawings:
- SK-01 Residential Receptor Location Plan;
 - SK-02 Assessed Scheme of Lighting; and
 - SK-03 Light Spill.
- 3.60 The Lighting Assessment concluded that “Based on the Assessed Scheme of Lighting, it has been demonstrated that the proposed development will be compliant with the residential receptor criteria as set out in the Institution of Lighting Professionals (ILP) Guidance Note 01/21: The Reduction of Obtrusive Light. Specifically, the assessed lighting associated with the Proposed Development is compliant with the obtrusive light criteria as set out for ILP Environmental Zone E2. For which, the obtrusive light criteria are as follows:
- ‘Light intrusion’ limit of 1 lux (Ev - vertical illuminance);
 - ‘Glare’ limit # of 63 to 500 cd (I - source intensity); and
 - ‘Sky-glow’ limit of 2.5 % (upward light ratio).
- 3.61 The levels of light spill to potentially light-sensitive ecological receptors are set out in Strenger Drawing SK-03 (light spill).
- 3.62 The following mitigation measures are integral to good lighting design, and have therefore been included in the Assessed Scheme of Lighting as a matter of course:
- the use of luminaires with zero direct contribution to upward light;

¹ Lighting Assessment for Proposed Anaerobic Digestion Facility – Ashton Keynes – February 2023

- adopting zero-degree luminaire uplift angles;
- careful aiming and positioning of luminaires;
- careful selection of luminaires;
- the use of light spill shields;
- the use of lower output luminaires bounding potentially light-sensitive ecological receptors;
- the use of optimal light distributions for their specific location and orientation;
- optimisation of mounting heights;
- the use of presence detection controls and zoned switching;
- a 365-day timer clock and photocell controls;
- using the lowest colour temperature light sources practicable (3000K generally & 4000K for explosive atmosphere luminaires but only where 3000K is not available);
- the adoption of the lowest intensity LED modules practicable; and
- minimising the task illuminance level.

3.63 The following mitigation measures have been adopted in the design and planned operation of the Proposed Development:

- embedded by design, the siting of areas requiring a high level of illumination away from potentially light sensitive ecological receptors; and
- by risk-assessed design & operation (by others), not lighting the site access road mouth.

SCADA Alarm Monitoring System

3.64 The AD facility will include a control system linked to a Supervisory Control and Data Acquisition (SCADA) system which provides an interface for the operator to control the plant and captures and records all the data produced by the process. The control system would control all aspects of the process and send out performance and error alarms to the operator.