8 Contents

8 Planning Policy

Planning is about controlling different uses of land. These uses can include housing, commercial activities such as shops and offices, industrial uses and agriculture. In most urban environments, space is also required for educational institutions, administrative buildings to service the public including libraries, leisure and recreation centres, parks and transport infrastructure. Land is also required to locate other activities required for modern settlements such as energy generation and waste management, including wastewater management.

Some uses need to be located close to good transport infrastructure, for example the highway network or good rail interchanges. Such uses include distribution and retail centres or places of work. Other uses are better located away from populations due to potential noise, odour, dust and light pollution. These uses might include heavy industry and waste management. Activities such as agriculture are best located where the land is most fertile, while mining and quarrying can only be carried out where the mineral occurs.

Some uses can compete with each other. A regulatory system is therefore required that will enable land to be made available for necessary buildings and infrastructure without creating conflicts between those uses. It will also help resolve these and maintain healthy conditions for people and the wider environment.

For the biogas industry, this regulatory framework would:

8.1 Map waste generation and align with spatial planning

At a national and regional level, wastes (organic, non-organic recyclable and residual waste) arising should be identified, spatially mapped and the treatment capacity needed to manage these arisings calculated. This calculation should be integrated into national and regional waste management strategies as well as planning policies.

For organic waste, this process will include calculation of treatment capacity for separately collected food waste, domestic sewage, crop residues, manures, industrial waste and wastewater and other feedstocks.

Mapping of current and required treatment capacity will be needed such that the organic wastes are treated locally and products utilised in the most economically or environmentally efficient manner. A good distribution of plants across a country or region would ensure that feedstock markets are not unnecessarily uneven which would support a steady market with reasonable prices or gate fees. Without this type of planning, biogas plants can cluster together in some areas and other areas can be left with very few facilities. Competition for feedstock can become overheated in the former type of area cutting into project profit margins while a dearth of facilities in the latter can leave municipalities and generators of food waste without adequate outlets for their material. An effective planning system can, therefore, benefit the industry, create profitable plants and avoid abortive expenditure on plants that turn out to be unviable.

Once information is available on how much of each type of waste is arising in a particular area, this information can be made available to different public agencies and utilities to integrate with wider waste management, energy and water infrastructure. This information should also be made available to biogas developers and other stakeholders to speed up planning and improve feasibility of new biogas plants.

e.g. The US Environmental Protection Agency has calculated the potential for anaerobic digestion of swine and dairy manure in top 10 states based on the number of operations, heard size and feasibility based on current farming operations. The potential is mapped and presented by county[1]. National Renewable Energy Laboratory has mapped landfill, animal manure, wastewater and organic waste based biomethane potentials by county[2]

[1] https://www.epa.gov/sites/default/files/2018-06/documents/epa430r18006agstarmarketreport2018.pdf
[2] Biomass Resource Data, Tools, and Maps | Geospatial Data Science | NREL

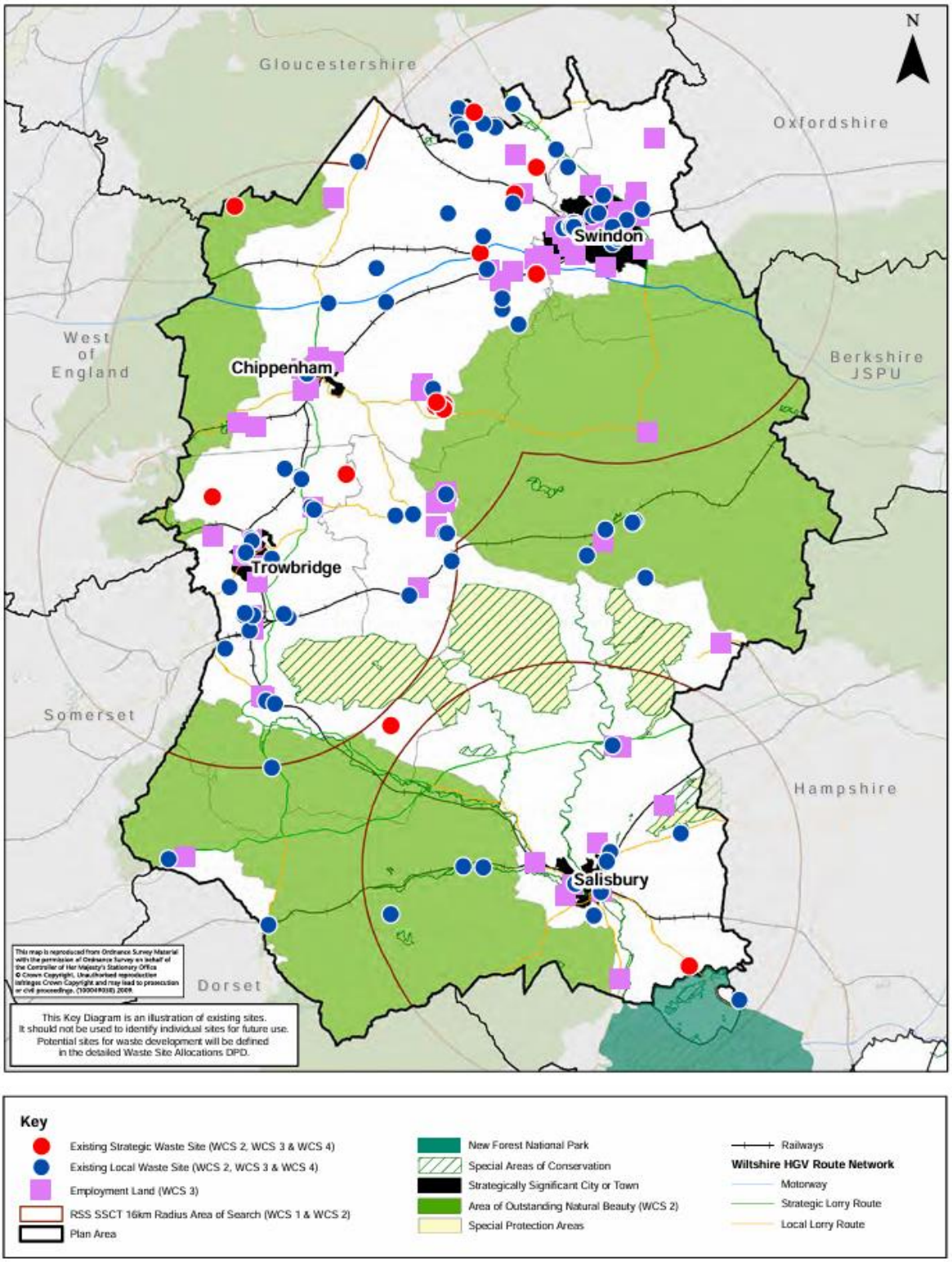
e.g. For European countries, biomethane potentials by country and feedstock (agricultural residues, animal manure, biowaste, industrial wastewater, permanent grassland, roadside verge grass, sequential cropping and sewage sludge have been calculated for 2030 and 2050[3]

e.g. Extensive guidelines are available from the United Nations Environment Programme for development of national waste management strategies[4]

e.g. In the UK, the Waste Local Plan for County of Wiltshire includes a key diagram[5] *that shows the main environmental constraints of the area such as the National Park and Areas of Outstanding Natural Beauty. It also shows the existing strategic and local waste sites and strategic employment sites which could accommodate new waste management facilities.*

[3] https://www.europeanbiogas.eu/wp-content/uploads/2022/07/GfC_Biomethane-potentials_2022.pdf
[4] https://wedocs.unep.org/bitstream/handle/20.500.11822/8669/-Guidelines%20for%20national%20waste%20management%20strategies_%20moving%20from%20challenges%20to%20opportunities-2013UNEP%20NWMS%20English.pdf?sequence=3&isAllowed=y
[5] https://www.wiltshire.gov.uk/media/8549/waste-core-strategy-july-2009-key-diagram/pdf/waste-core-strategy-key-diagram.pdf?m=1644847700407

Waste Core Strategy Key Diagram



8.2 Create land use zones and plans

A zoning system should be used to allocate areas of land for different uses such as heavy industrial, commercial, agricultural, residential, nature conservation and energy generation. This will ensure

that these can be strategically planned and are kept separate such that each has the right access and services as required. Zoning can also identify sensitive receptors in the region that need to be protected, such as areas for nature conservation, surface water bodies, areas with water stress, airports/aerodromes and heritage sites. Creating these zones can be the first step to ensure that uses are clustered together in areas where their impacts are considered acceptable or distributed evenly to provide good infrastructure coverage.

These zones should be aligned with national policies, regional land use plans, environmental permitting regulations and building permits.

Depending on the feedstocks that are processed, biogas plants may be built in agricultural, rural or industrial zones. It should be noted that there are no known specific identified zones for biogas plants.

e.g. The German Planning system implements a preparatory and legally binding land use plan that considers facilities measures to counteract climate change such as renewable energy[6]

e.g. In Columbus, Ohio each parcel of land is zoned for a particular use such as family housing, manufacturing, commercial or institutional. The zoning map can be found at https://gis.columbus.gov/zoning/

e.g. A number of states in the US have taken the zoning approach to planning policy including Pennsylvania, Tennessee and Ohio[7]*.*

e.g. The French Urban Planning Code takes a zoning approach to planning policy[8]*.*

8.3 Ensure suitable and adequate allocation of land

A comprehensive town planning system is required to ensure that suitable land is available for uses that can only be located in particular locations. The planning system should support the free market in delivering the right facilities at the right scale in the best locations.

Land needs to be allocated for different types of facilities that are required for a comprehensive, sustainable waste management system. The facilities that may be required include the following:

8.3.1 Biogas plant

Biogas plants should be located at a site that works for the operator as well as their neighbours and the wider economy. These need to be sited in locations with sufficient vehicular access, power and water supplies. Suitable feedstocks should be available within economic distances and the market for those feedstocks and the outputs from the biogas operation, including but not limited to energy, digestate and bio-CO_2, should be steady and not suffering from extreme shortages or over-capacity.

Proximity to feedstock supply and off-takers for digestate are key requirements for a good location for a biogas plant. While these materials are of high environmental value, they are typically of low economic value and therefore transport expenditure can quickly become a significant element of the operational costs if material is sent to or carried from large distances.

[6] https://www.arl-international.com/sites/default/files/dictionary/2021-09/preparatory_land-use_plan.pdf
[7] Siting of Large-Scale Renewable Energy Projects | Department of Energy
[8] Urban Planning Code - Légifrance (legifrance.gouv.fr)

An AD plant typically requires a site with an area of at least 2 to 4 hectares as well as ideally some additional land for the storage of feedstocks. Such a site would typically be located in open countryside, on farmland in conjunction with farm buildings or on an industrial site.

8.3.2 Waste collection infrastructure

Land use planning policies are also needed for supporting infrastructure for the collection of waste from households and businesses e.g. street width and layout in cities which influence collection choices, temporary waste storage options.

e.g. An example of good practice in planning for waste management in new developments is the guidance published by Bedfordshire and Luton Councils.[9]

8.3.3 Waste transfer stations

These are sites where material can be brought for sorting and bulking up. This type of site will comprise a yard where collections vehicles can off-load and be sent back out on their collection round. Material is then bulked up and sent for further sorting and processing.

These sites may be located in urban areas and need to be properly distributed to support the most efficient collection system as appropriate for the locality. However, due to access requirements and the potential for noise and odour to be emitted from the activities of handling waste, such sites should usually be located within industrial parks that are suitable for heavy industry and do not create any adverse impacts on residential or commercial occupiers.

8.3.4 Landfill or Energy from waste sites

Plastics and residual non-organic waste in feedstock and digestate that cannot be recovered is better sent to a sanitary landfill or an energy from waste site than allowed to enter the environment. Landfill sites where this waste is sent should be properly engineered and lined so that leachate from the waste is captured and treated. Gas emissions should also be captured and used for heating or power or flared to prevent contributing to climate change.

8.3.5 Refuelling stations

A fuelling station can form part of a biogas plant to supply fuel to waste collection or biogas distribution vehicles. If additional traffic movements are created from customers of such a fuelling station, the location will need to be suitably serviced to support this activity.

e.g. The German Planning system implements a preparatory and legally binding land use plan that takes into account facilities measures to counteract climate change.[10]

8.4 Spatially plan infrastructure grids and connections

The energy captured in biogas may be distributed and utilised off-site via electricity grid, district heat network, gas grid, or on-road truck networks. A good location for a biogas plant would need connection to one or multiple of these networks or a local user of the outputs.

[9] https://www.centralbedfordshire.gov.uk/migrated_images/managing-waste_tcm3-2196.pdf
[10] https://www.arl-international.com/sites/default/files/dictionary/2021-09/preparatory_land-use_plan.pdf

The development of infrastructure grids should go hand in hand with development of and grid connections for biogas plants and other decentralised low carbon/renewable energy generation facilities and vice versa.

From a developer and planning (a biogas project) perspective, the current capacity and future development plans of energy grids should be made available to biogas developers. Planning biogas plants such that they are suitably located with respect to grid connections can significantly reduce expense and time for development.

At the strategic planning level, the development of these grids should be spatially and volumetrically aligned with biomethane potential of the region. This can facilitate identification and development of biogas/biomethane ready areas.

e.g. Integration of biomethane into the gas grid has been recommended as a strategy by Gas for Climate 2050[11]

e.g. In France, The Open Data Réseaux Énergies (ODRÉ) platform provides stakeholders multi-energy, multi-operator and multi-network data in an open and real time format to assist the industry and policymakers including data and map of biomethane potential by canton by 2050[12].

e.g. Biomethane Industrial Partnership recommends development of a zoning approach based on infrastructure grid and future energy needs [13]

8.5 Balancing national interest with local needs in decision making

The way in which decisions about a planning application is made vary, from the very local to being decided at national scale, depending on the scale of the infrastructure that is being proposed. Some planning systems are very centralised with decisions on what kind of development can take place being made by central government, within certain parameters. In others, planning decisions are devolved to individual localities where the decisions on what sort of building is allowed in which locations is made by the local municipality.

Planning for infrastructure such as waste management and energy generation needs to be embedded into strategic plans at the national or regional level with the most suitable project identified at the local level.

It is critical that national interests are balanced with local needs and constraints and that it is reflected in the decision-making process and delegation of authority.

e.g. In Germany, a new legislation has been brought forward that would require 2% of land area would be allocated to development of onshore wind energy generation. The states will need to actively look for suitable land to designate to meet this requirement[14]

[11] https://www.grtgaz.com/en/our-actions/network-land-use-planning
[12] https://opendata.reseaux-energies.fr/
[13] https://www.europeanbiogas.eu/wp-content/uploads/2022/09/2022-Manual-for-National-Biomethane-Strategies_Gas-for-Climate.pdf
[14] New law reserves 2% of German land area for onshore wind by 2032 – Euractiv

e.g. In France, the planning system is more centrally controlled but requires a robust environmental impact assessment for development[15]

8.6 Alignment with environmental permitting

Environmental permitting is a process designed to control the environmental impacts of an industrial process. Any potential emissions to air, water or soil will need to be assessed and limits are set by public authorities. The emissions from permitted plant must be measured and the relevant limits adhered to. An environmental permit for a facility that receive waste must be obtained before operations are commenced and the assessment for the Permit is made on the basis of the technology to be employed. Monitoring visits may be made during the operation of a facility to ensure that the equipment is being properly employed.

Environmental permitting is a completely separate process from land use planning and so both types of permission will be required. It is, therefore, critical that these two permitting processes and criteria are in alignment with each other.

Further details on environmental considerations are discussed in Pillar 7 Environmental Permitting.

8.7 Integrating biogas facilities into existing national planning policy framework

At the national/regional level, planning policy frameworks should be developed to govern spatial planning and land use. It should provide guidance on sustainable development, housing, infrastructure planning, and environmental considerations – including deployment of renewable energy and biogas plants.

Ideally, national planning policy would contain guidance on the best types of locations for biogas plants including mechanisms for assessing feedstocks and off-take opportunities including digestate and power connections.

However, national planning policy that contains guidance on the delivery of energy and waste management infrastructure, specifically biogas plants, is not known to have been delivered anywhere.

e.g. In the UK, a national planning document has been published call the National Planning Policy Framework (NPPF)[16]*. However, the NPPF does not contain policies for the delivery of waste management infrastructure and needs to be read in conjunction with the National Planning Policy for Waste*[17] *(NPPW)which was published in 2014.*

e.g. The Code de l'Urbanisme (Urban Planning Code) in France includes guidance on agrivoltaics installations[18] *but not biogas plants.*

[15] Urban Planning Code - Légifrance (legifrance.gouv.fr)
[16] https://assets.publishing.service.gov.uk/media/669a25e9a3c2a28abb50d2b4/NPPF_December_2023.pdf
[17] https://assets.publishing.service.gov.uk/media/5a7ef594e5274a2e8ab4946c/141015_National_Planning_Policy_for_Waste.pdf

[18] Urban Planning Code - Légifrance (legifrance.gouv.fr)

8.8 Evaluating planning applications

Evaluation of planning applications for a biogas plant should ensure that the following minimum conditions are met:

8.8.1 Safeguard sensitive receptors

Biogas plants need to be carefully located and operated to realise maximum environmental benefits and minimise unintended consequences. Environmental considerations such as distance from residential areas, sensitive receptors, surface water bodies and natural habitats are taken into account and are managed through environmental permitting. Planning process takes them into consideration. Further details on environmental considerations are discussed in Pillar 7 Environmental Permitting.

e.g. Under a Standard Rules Permit in England and Wales[19], a site must be a minimum distance from certain types of sensitive receptors. It cannot be within:

- *200 metres of the nearest receptor as measured from any combustion stack or stacks, unless the stacks are at least 7 metres high and the effective stack height of each stack is greater than 3 metres*
- *250 metres of the nearest sensitive receptor where any further treatment takes place by composting digestate fibre in the open*
- *500 metres of a European site (within the meaning of Regulation 8 of the Conservation of Habitats and Species Regulations 2017) or a Site of Special Scientific Interest, including candidate or proposed sites or a marine conservation zone*
- *a groundwater source protection zone 1 or 2, or if a source protection zone has not been defined then within 50 metres of any well, spring or borehole used for the supply of water for human consumption (including private water supplies)*
- *250 metres of the presence of great crested newts, where it is linked to the breeding ponds of the newts by good habitat*
- *10 metres of any watercourse*
- *50 metres of a Local Nature Reserve, Local Wildlife Site, Ancient Woodland or Scheduled Monument*
- *50 metres of a site that has species or habitats of principle importance (as listed in Section 41 of the Natural Environment and Rural Communities Act 2006) that the Environment Agency considers at risk to this activity*
- *a specified Air Quality Management Area*

[19] https://www.gov.uk/government/publications/sr2021-no-7-anaerobic-digestion-facility-including-use-of-the-resultant-biogas-waste-recovery-operation/sr2021-no-7-anaerobic-digestion-facility-including-use-of-the-resultant-biogas-waste-recovery-operation#:~:text=250%20metres%20of%20the%20nearest,digestate%20fibre%20in%20the%20open

8.8.2 Ensure good access and transport links

The availability of transport networks should be included in planning for different activities depending on their need to move goods or people. Biogas plants may require transport of feedstocks, digestate and possibly, biomethane in heavy vehicles to and from the premises. This means that adequate road access is required to handle these vehicle movements safely.

A planning permission should require a Planning or Design and Access Statement giving details how the site will be serviced. In areas where the highway network is sensitive due to being close to areas with narrow roads, a routing plan may be required showing the permitted routes for heavy traffic servicing the application site.

e.g. An example of such as statement for the Colwick AD facility in Nottingham[20] and Coleshill Anaerobic Digestion Facility in Warwickshire[21].

8.8.3 Take into account local history

A planning system should be accountable to local residents who will have a good understanding of the issues affecting land, the historic constraints of a site and how it relates to the wider region.

Local knowledge of the flooding history or archaeological attributes of a site should be taken into account when development proposals are agreed. Consultation with local communities and statutory authorities that can feed in this relevant information should be carried out before development proposals are confirmed and delivered in order to bring forward the best quality development that does not harm the environment or suffer impacts such as flooding or landslides.

e.g. A flood risk assessment will often be needed such as the one for a development in Spalding, England[22] and the risk of flooding around low-lying areas should be fully examined[23].

8.8.4 Proximity to residential and sensitive receptors

Biogas plants also need to be sited in locations that are sufficiently distant from residential properties and other sensitive receptors so as not to cause conflict during the operation of the facility. It needs to be recognised that biogas facilities can generate odours and particulates, even when they are well run and therefore rural locations or sites on industrial estates are appropriate locations for these types of facilities.

e.g. Examples of AD plants in the UK that are located in industrial estates include the Biodynamic plant at the Colwick Industrial Estate in Nottingham[24] and the Ellough AD plant in Beccles, Suffolk[25]

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20 https://www.nottinghamshire.gov.uk/planningsearch/DisplayImage.aspx?doc=cmVjb3JkX251bWJlcj01ODMxJmZpbGVuYW1lPVxcZW52aXJvXGFwcHNcZGxnc1xwbGFuc1xwbGFubmluZ1xmLTI4NjNcYXBwZW5kaXggYy5wZGYmaW1hZ2VfbnVtYmVyPTMmaW1hZ2VfdHlwZT1wbGFubmluZyZsYXN0X21vZGlmaWVkX2Zyb21fZGlzaz0zMC8wNy8yMDEzIDExOjE0OjE2

21 https://planning.warwickshire.gov.uk/swiftlg/MediaTemp/8125-20310.pdf

22 https://planning.sholland.gov.uk/OcellaWeb/viewDocument?file=dv_pl_files%5CH16-1096-23%5CFRA+231218+Naylor+Farm+Rangell+Gate+Spalding.pdf&module=pl

23 https://www.bbc.co.uk/news/articles/cp30nz3e355o

24 About Us – BioDynamic (biodynamicuk.com)

25 https://www.privilege.finance/case-studies/ellough/

These plants are located on the edge of industrial estates which are not near any residential properties or other sensitive receptors.

e.g. An example of a poor choice of location is the Deal Farm AD plant which is located in a rural area with poor highway access[26]. The planning application for this plant has been very controversial and subject to a number of different planning applications and appeals. This adds significant cost and time delay to the delivery of a facility and creates an adversarial situation with neighbouring residents.

8.8.5 Minimise impacts on neighbours

Competing priorities can create tensions when some activities create impacts on neighbours or the wider environment. Activities associated with operation of a biogas plant can be noisy or emit dust or odours.

Organic feedstock and digestate can produce odours and particulates which can be unpleasant for neighbouring occupiers to experience. The heavy machinery used for sorting or crushing waste can be noisy. Combined with the impact of delivery vehicles, operation of biogas plant is therefore often a use that conflicts with residential or recreation uses. Sites for biogas plants must be carefully identified and selected in order to prevent adverse impacts on other land users. Adequate measures should also be implemented to manage and control these impacts.

e.g. Regulatory requirements for odour management on on-farm AD in Ontario, Canada[27] and England and Wales[28] are available along with guidance on how to reduce risk, assess impact and monitor impact of odour, and address concerns of neighbours.

e.g. Best available techniques for prevention and control of odour and diffuse/fugitive emissions to air are available in Section 2.3.5 of EU-BAT reference document for waste and for noise in Section 2.3.10[29]

e.g. An example of an odour management plan for an AD facility in Wiltshire, UK is available for reference[30]

e.g. An example of a noise management plan for an AD facility in Winchester, UK is available for reference[31]

8.8.6 Incorporate local setting into design

Biogas plants are typically located in agricultural or industrial settings. High chimneys, stacks or tanks can, however, look unsightly and may not be appropriate for all locations. Sometimes these facilities can be carefully designed to give industrial buildings an appropriate visual appearance that fits in

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[26] Planning - Deal Farm Biogas

[27] https://www.ontario.ca/page/odour-guidance-farm-anaerobic-digestion

[28] https://www.gov.uk/guidance/control-and-monitor-emissions-for-your-environmental-permit

[29] https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/JRC113018_WT_Bref.pdf

[30] https://consult.environment-agency.gov.uk/psc/sn16-0ht-charlton-park-biogas-limited/supporting_documents/Application%20Bespoke%20%20EPRB03Odour_Management_Plan_v1.0%20%2012082021.pdf

[31] https://consult.environment-agency.gov.uk/psc/so21-2qg-acorn-bioenergy-operations-limited-a001/supporting_documents/Application%20Bespoke%20%20NDM%20Response%20%20Noise%20Management%20Plan%20Final%20V1.0%20with%20apps%2003072024%201.pdf

with the locality. This can either be a traditional appearance that is consistent with other buildings, or a modern and unique design that creates an interesting addition to the landscape.

Putting careful thought into the design of biogas facilities can result in a development that adds to the landscape and becomes an accepted part of the visual environment rather than an intrusion. The visual impact of buildings should be taken into account in planning permissions, especially when the local landscape is a sensitive one.

e.g. An example of an assessment of visual impact from an AD proposal can be seen in the planning application documents for AD plant in Bandon, Ireland[32]

8.8.7 Vary reasonably for micro-scale biogas generation

Size of biogas digesters may vary anything from a micro-scale of few cubic meters to mega-scale of 25 MW of installed energy generation capacity. Different approaches are, therefore, needed for different scales of biogas development, and planning for these should be carried out at the appropriate scale. Some very small-scale household biogas plants are so small that their impact on the surrounding environment is minimal, therefore, planning permission may not be required.

These very small-scale household biogas plants may be considered permitted development. However, care needs to be taken that storage of food waste does not bring a nuisance in the form of odours and vermin. Outlets for the disposal of liquid and solid digestate will also need to be identified either within proximity or through the use of vehicles that do not have any significant impact on the environment.

Conditions on when planning permission are not required, such as size, treatment capacity, location, or feedstock, should be defined and published.

e.g. Examples of these domestic-scale biogas technologies are Home Biogas[33]*, Waste Transformers*[34] *and Qube Renewables' BioQube*[35]*. These small-scale plants can be installed in residential settings or at commercial sites under Permitted Development Rights in the UK*[36]

8.9 Consult and engage with local communities

Planning policy and permitting should be designed to find a balance between national interests and local needs and impacts. While strategic planning should be undertaken at the national level, local concerns should be gathered through a consultation process. These should be addressed, to the extent possible, through planning, design, technology and operational measures at the facility.

To gain public acceptance of a scheme, it is always recommended that detailed, honest and early consultation is carried out with the local community. Individuals who may be particularly impacted by a scheme, either from visual intrusion, traffic movements or odours, should be approached early and sympathetically and efforts made to address any genuine concerns they may have. Ensuring that

[32] https://epawebapp.epa.ie/licences/lic_eDMS/090151b2804be3b0.pdf
[33] https://www.homebiogas.com/eu/
[34] https://www.thewastetransformers.com/
[35] https://www.quberenewables.co.uk/

[36] https://www.legislation.gov.uk/uksi/2015/596/schedule/2/made

members of the local community are aware and side with a project at the start can avoid difficulties at a later stage.

The advantages of a proposed facility for the local economy should also be discussed as part of the consultation process. These include employment opportunities both at the plant and in supplying feedstock and managing off-takes as well as the advantages of generating renewable energy and managing wastes sustainably.

Consultations should be conducted based on the following principles[37]:

- **Integrity** - The Applicant/Local Authority must be willing to listen to the views advanced by the community and experts and be prepared to be influenced when making subsequent decisions.
- **Visibility** – All stakeholders should be made aware of the consultation and given sufficient time to respond.
- **Accessibility** – Wide variety of online (such as social media and websites) and off-line (notices, newspapers, community groups and meetings meetings) channels should be used. These must be appropriate for the intended audience and should cater for the special needs of 'seldom heard' groups and others with special requirements.
- **Transparency** – In a public consultation, stakeholder invitation lists, consultee responses and consultation results be published. These should, however, be done with consent from the respondents. On the same lines, the decision-making process and decisions which follow the consultation should be openly communicated.
- **Disclosure Obligations** - For consultation to succeed, and to encourage a measure of trust between the developer and local community, it is important to provide for reasonable disclosure of relevant information.
- **Fair Interpretation** - Information and viewpoints gathered through Consultation should be analysed and interpreted promptly and objectively by, preferably a third party not involved in the decision-making process.
- **Publication** – Both the output and outcome of the consultation should be shared with stakeholders.

e.g. Best practice guides on public consultations are available from the Planning Officers Society[38] and the UK government[39]

8.10 Collect and use data in waste planning

To deliver an optimal network of waste management infrastructure, it is important to understand what waste requires treatment. Data is required for both quantities and types of materials that are being discarded. Different types of waste materials need to be managed with different facilities and so composition analysis is required to provide information on the type of material arising.

[37] The-Consultation-Charter-2017-edition.pdf (consultationinstitute.org)
[38] Microsoft Word - POS_PRE_PLANNING_APPLICATION_CONSULTATION_BEST_PRACTICE_UPDATE.docx (planningofficers.org.uk)
[39] https://www.gov.uk/guidance/consultation-and-pre-decision-matters

Organic materials typically make up approximately 50% of food and green waste and this material is best managed using anaerobic digestion[40]. Understanding how much suitable organic feedstock is arising and therefore available for treatment using this technology is therefore essential.

Reliable systems for measuring waste quantities should be set up using weighbridges at waste management centres. The data from each centre then should be collected and collated in a transparent manner. Data can then be manipulated to understand how much waste of what type comes from different types of residential or commercial area and where it is taken for treatment.

Ideally refuse collection vehicles should have weighing systems on board so that the amount collected from each collection round, and ideally each bin lift, can be recorded. The data obtained from vehicle weighing systems can be used to identify participation rates in schemes such as food waste collection. Waste composition studies will provide crucial information on how much of what materials are arising in an area

The map of feedstock arisings from food waste would closely relate to the major centres of population and so sites could be identified on the edge of conurbations.

e.g. Zero Waste Scotland compiled estimates from physical analysis of composition of household waste collected in 2021-23.[41]

8.11 Understand national/regional waste mass balance

At a national/regional level, it is important to understand the journey of materials from production/import and use to disposal/recovery. This will be delivered in real time throughout the economy and is intended to help businesses and government move towards a circular economy by better understanding the amount and type of waste being produced and where it ends up.

This can further support the effective regulation of waste so that enforcement can be carried out more swiftly and effectively. Illegal activity such as the misclassification of waste, fly-tipping, operation of illegal waste sites and the illegal export of waste will be easier to identify and tackle when adequate data on material flow become available.

e.g. Digital Waste Tracking is being developed by the UK Government[42]

8.12 Looking forward

Planning plays a key role in pulling together a number of national priorities including land use, environmental protection, economic development, waste management and energy generation. To support the biogas industry, governments must integrate it into all spatial and strategic policies such that the projects developed fulfil both national interests and meet local needs.

[40] Trends in Solid Waste Management (worldbank.org)
[41] https://www.zerowastescotland.org.uk/resources/household-waste-composition-analysis
[42] https://www.gov.uk/government/publications/digital-waste-tracking-service/mandatory-digital-waste-tracking