Strategic assessment for the future need for energy from waste capacity in the three economic regions of Wales

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Purpose

This strategic assessment provides information to be used by developers, Local Planning Authorities and the Planning Inspectorate Wales when considering need for new, or variations of, planning permissions for energy from waste facilities and energy facilities using waste as a fuel. It replaces the strategic assessment for the need for new energy from waste capacity provided in section 2.3.4 of the Collections, Infrastructure and Markets Sector Plan published in 2012.

Policy background

Waste policy is laid out in the waste management plan for Wales as required under regulations 7 and 8, and Schedule 1, of the Waste (England and Wales) Regulations 2011 (as amended). The waste plan consists of a series of documents that include 'Beyond Recycling' - the circular economy strategy for Wales[1] (2021), Towards Zero Waste (2010), the Collections, Infrastructure and Markets (CIM) Sector Plan (2012), Planning Policy Wales[2] (2021), TAN 21:Waste[3], other Sector Plans covering specific major waste streams, and the Waste Prevention Programme.

National planning policy on waste is set out in Planning Policy Wales (PPW) and Technical Advice Note (TAN) 21 Waste. PPW lays out the planning system's role in facilitating sustainable waste management. It provides a framework for decision making which recognises the social, economic and environmental benefits which can be realised from the management of waste as a resource to meet the needs of society and businesses, whilst at the same time minimising adverse environmental impacts and avoiding risks to human health, protecting areas of designated landscape and nature conservation from inappropriate development, and protecting the amenity of residents, of other land uses and users affected by existing or proposed waste management facilities.

In respect of new facilities to manage waste, PPW applies, as key decision making principles, the waste hierarchy, proximity (nearest appropriate installation) and self-sufficiency in terms of developing integrated and adequate network facilities for the management of mixed residual municipal waste. It requires planning authorities to support the provision and suitable location of a wide ranging and diverse waste infrastructure, which includes facilities for the recovery of mixed municipal waste. It may also include disposal facilities for any residual waste which cannot be dealt with higher up the waste hierarchy. The extent to which a proposal demonstrates a contribution to the waste management objectives, policy, targets and assessments contained in national waste policy will be a material planning consideration.

[1] https://gov.wales/beyond-recycling
[2] https://gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf
[3] https://gov.wales/technical-advice-note-tan-21-waste

Decisions on applications for planning permission for waste facilities must take into account planning guidance TAN21: Waste. The TAN restates the legal requirement for mixed municipal to be disposed of or recovered in one of the nearest appropriate installations, whilst ensuring a high level of protection for the environment and human health. There are several reasons why it is important to manage such waste close to where it arises. This includes reducing the detrimental environmental impacts associated with the transportation of waste and retaining the intrinsic value of waste as a resource in line with the need to secure greater resource efficiency. The proximity of a waste disposal or a mixed municipal waste recovery installation will depend upon the quantities and types of arisings at local, regional and national levels.

Moving towards the aim of self-sufficiency in waste recovery and disposal through the provision of an integrated and adequate network is a key principle in TAN 21. The TAN recognises in order to reach the goal of zero waste, there is a difficult balance to be struck between making sure we have sufficient capacity to deal with our waste arisings in the short term (to avoid environmental impacts) and doing so in a way which does not impede the achievement of longer term goals post 2024/25 (which include zero waste and net zero carbon for 2050). In order to achieve an increase in the quantity of waste material being diverted from landfill to preferred management methods, early delivery of mixed municipal waste treatment infrastructure is considered essential.

The TAN identifies the role of the CIM Sector Plan in setting out the need for sufficient capacity for the recovery of residual mixed wastes which are incapable of being recycled, in the short to medium term, as a means to reduce disposal by landfill. However, the TAN further states this has to be complementary to the overall aim of driving the treatment of all waste further up the waste hierarchy. The TAN identifies the CIM Sector Plan models a set of forecast scenarios for mixed municipal waste quantities for 2024/25 and presents these at a regional level.

The TAN makes it clear the CIM Sector Plan represents the starting point for the determination of need for future capacity. It also states where planning permissions already exist in an area (region) they should be taken into account in determining the level of need. In practice it will also be useful to differentiate between existing operational and proposed capacity. The significance which can be attached to proposed capacity in determining the level of need will vary depending on the likelihood of facilities being built. Evidence to consider will include whether facilities are in the process of being built, whether they have been commissioned, whether pre-commencement conditions have been discharged and whether an environmental permit is in place. In the interests of increasing certainty, planning authorities should actively engage with applicants on the submission of any information needed to approve pre-commencement conditions. Local planning authorities are not required to repeat the assessment contained in the CIM Sector Plan, but regional monitoring arrangements are in place to ensure an up to date position on progress towards an adequate provision of facilities is available to inform decision making.

The TAN requires applicants to clearly justify why a proposal is necessary. Where it cannot be clearly demonstrated there is a need for the proposal it may be appropriate for the planning authority to consider refusing planning permission. This is likely to be the case where the level of provision exceeds the upper range identified in the CIM Sector Plan for any given region.

The CIM Sector Plan

Sub-section 2.3.4 of the CIM Sector Plan (published in July 2012) focuses on the collection and management of the "residual" fraction of waste that is predominantly collected in a mixed form separately from single waste material streams. It is commonly collected in bags, bins and/or skips, and is then sent for final recovery (termed "other recovery" under the Waste Hierarchy) or disposal (e.g. landfilled). Sometimes the residual waste is treated prior to final recovery or landfill (for example by mechanical biological treatment/MBT or mechanical heat treatment/MHT).

This sub-section on residual waste was intended specifically to help inform decision making in Wales in relation to two key drivers which to some extent conflict with each other:

- The legal requirement to take appropriate measures to establish an integrated and adequate network of waste disposal installations and of installations for the recovery of mixed local authority collected municipal waste.
- The legal requirement to apply the waste hierarchy which is driving a move away from landfill and other recovery, and more towards prevention, preparation for reuse and recycling.

The sub-section supports the aim to establish enough facilities to ensure an integrated and adequate network (which must also take account of spatial needs) whilst at the same time avoiding over provision (which then has the potential to undermine the waste hierarchy).

In the CIM Sector Plan, Table 22 identifies the estimated regional arising and management of residual waste in Wales based on waste data available at the time (2010 for local authority collected municipal waste, and 2007 of industrial and commercial waste and construction and demolition waste). Table 23 shows the permitted capacity of operational residual waste treatment and other recovery facilities by facility type and region in Wales, recognising the figures should not be taken as actual operational capacity, as in many cases it will be less than the capacity consented in the permit, sometimes considerably so. Table 25 shows the estimated maximum additional capacity with planning permission of residual mixed waste treatment (other recovery) facilities by facility type and region in Wales. The table identifies the capacity of plants that have received planning permission, but had not yet been built or were not operational. Table 26 identifies the estimated capacity of residual municipal waste treatment that is being, or will be, procured across Wales by consortia of Local Authorities, broken down by region (as of March 2012).

Table 31 set out the predicted annual production of non-hazardous, non inert residual waste for 2024-25 and 2049-50, based on a number of different scenarios related to whether waste prevention and recycling targets set in Towards Zero Waste were met or not. Table 32 shows projected estimates of the amount of residual mixed waste that may be produced in the regions of Wales in the first Towards Zero Waste milestone of 2024-25 according to different scenarios in respect of the achievement of recycling and waste prevention targets. Table 33 shows predicted estimates of the ranges of existing capacity, required capacity and capacity gap for the other recovery of residual mixed waste for 2024-25, for each region of Wales and for Wales as a whole.

The need to update the assessment in the CIM Sector Plan

Tables 22, 23, 25, 26, and 31-33 covering the treatment of residual municipal waste rely on waste data available for the production of the CIM Sector Plan and rely on policies, targets and assumptions relevant at the time. They also provide information for the three waste planning regions for Wales existing in 2012, which do not exactly match the current economic regions for Wales.

There have been a number of significant changes since the publication of the CIM Sector Plan 2012. These include the publication of *Beyond Recycling*, the Circular Economy Strategy for Wales in March 2021 and new data for Local Authority collected waste (2019/20), industrial and commercial waste (2018) and construction and demolition waste (2012). Whilst retaining the core waste policies, targets and goals in Towards Zero Waste, *Beyond Recycling* outlines in more detail the approaches to be taken beyond the key 2025 milestone laid out in Towards Zero Waste. It reinforces the need to continue the trajectory on recycling from 2025 (with a 70% target) to the ultimate goal of zero non-recycled residual waste by 2050. This trajectory leads to a recycling level of around 80% within the mid 2030s. The waste prevention targets to 2050 laid out in Annex 1 of Towards Zero Waste and in the Sector Plans remain in place.

Since 2012 fifteen out of the twenty two Local Authorities in Wales have entered into long term contracts for the management of the residual municipal wastes they collect. As a result, there are now two energy from waste plants operating in Wales, one in Deeside and one in Cardiff. These have additional capacity to manage other residual wastes generated by businesses and the public sector that are not collected by Local Authorities.

Importantly, *Beyond Recycling* contains an action for Welsh Ministers to put in place a moratorium on any future large scale energy from waste developments, as the increase in recycling and reduction in waste already seen means that we will not need any new large scale energy from waste infrastructure to deal with the residual waste generated in Wales.

The moratorium was put into immediate effect in a Ministerial Written Statement issued on 24 March 2021. This moratorium means the Welsh Government does not consider there to be a need for any new large scale energy from waste plants of 10MW or greater. Small scale energy from waste plants of less than 10MW will only be allowable if the applicant can demonstrate need for such a facility for the non-recyclable wastes produced in the region. Any new small scale facilities must also supply heat, and where feasible, be carbon capture and storage enabled or ready. This would therefore mean a small scale plant would not be allowable if waste is to be imported from outside of the proposed region (unless in close proximity to a region), in order to also avoid locking in transport emissions and associated pollution.

New strategic assessment for the need for energy from waste facilities in each region

The following new assessment updates and replaces Tables 22, 23, 25, 26, and 31-33 in the CIM Sector Plan. This information should be used by both applicants and the local planning authority when making the case for and assessing the need for a new small scale (<10MW) energy from waste facility. The information will be a material consideration in the wholly exceptional circumstances where large scale energy from waste proposals of 10MW or greater have, or may, come forward.

This assessment does not include the need for small scale energy from waste plants to deal with specialist waste streams such as clinical waste. Applicants will need to provide their own assessment of need, drawing upon the data available.

A Waste Flow Model has been developed for the three economic regions of Wales for two future scenarios using the latest Local Authority, industrial and commercial and construction and demolition waste data available. Both scenarios include the 70% recycling target set in Towards Zero Waste and the commitment made in *Beyond Recycling* that recycling levels will need to increase beyond 2025 on a trajectory consistent with meeting the zero waste goal set for 2050. Scenario 1 – 'Recycling and Waste Minimisation Targets Met' uses the annual waste arising prevention targets contained within Annex 1 of Towards Zero Waste. For Scenario 2 - 'Recycling Targets Met, No Waste Reduction' waste reduction has been set to zero. In future years, both scenarios assume waste has been diverted from landfill into energy from waste to ensure that landfill caps set in Towards Zero Waste are not breached. A more detailed description of the calculation methodology applied to the latest industrial and commercial waste data can be provided on request.

The two scenarios are explained in more detail in Table 1.

Table 1: Description of the two scenarios

Variable	Scenario 1	Scenario 2
Household Waste quantities	Reduction to match Towards Zero Waste Annex 1 tonnages in target years	No change.
Non-Household waste quantities	Same reduction as commercial waste	No growth
Commercial waste quantities	Figures used from Annex 1 of TZW for each year modelled.	No growth
Industrial waste quantities	Figures used from Annex 1 of TZW for each year modelled.	No growth
Construction & demolition (C&D) waste quantities	No change assumed as already below profile in Annex 1 TZW	No growth
Rate of growth of Households / Population	Not used	Not used

Variable	Scenario 1	Scenario 2
Recycling Target for 2024/25 for municipal waste	70% per Welsh Government definition driven by Eunomia capture rates.	70% per Welsh Government definition driven by Eunomia capture rates
Recycling Target for 2033/34 for municipal waste	80% per Welsh Government definition driven by Eunomia capture rates.	80% per Welsh Government definition driven by Eunomia capture rates
AHP capture rates	60% capture for all local authorities	60% capture for all local authorities
Recycling Target for 2024/25 for industrial & commercial (I&C) waste	70% per Welsh Government definition	70% per Welsh Government definition
Recycling Target for 2024/25and 2033/34 for C&D waste	90% per Welsh Government definition	90% per Welsh Government definition
Recycling Targets for 2034/35 for I&C waste	80% per Welsh Government definition	80% per Welsh Government definition

The need for new energy from waste capacity according to the two scenarios is presented in Tables 2 - 5. Quantities of residual waste suitable energy recovery are identified for 2019/20 using the most up-to-date data available (and are of course the same for each scenario). Forecasts of quantities of residual wastes suitable for energy recovery are then made for the two scenarios for 2024/25 and 2034/35 for the three economic regions of Wales (Tables 2 and 4) and Wales as a whole (Tables 3 and 5). Existing energy from waste facility capacity and any likely shortfall or excess capacity are identified for each region and for Wales as a whole.

Table 2: Current levels and future projections for non-inert residual waste that can be managed in energy from waste facilities in each economic region of Wales for Scenario 1.

Item	Estimated residual waste suitable for EfW by year and economic region (1,000s tonnes)								
	North			South East			Mid & South West		
	19/20	24/25	34/35	19/20	24/25	34/35	19/20	24/25	34/35
Household	125	70	45	260	180	85	125	70	50
Non-Household	20	20	20	35	35	25	10	15	15
Commercial	90	65	50	165	145	115	105	100	75
Industrial	45	30	25	65	40	30	40	25	20
C&D	10	5	5	25	15	15	20	10	10
Total residual	290	190	145	550	415	270	300	220	170
Available operating capacity	200	200	200	425	425	425	0	0	0
Capacity gap against operational	-90	10	55	-125	10	155	-300	-220	-170

Table 3: Table 2: Current levels and future projections for non-inert residual waste that can be managed in energy from waste facilities in Wales for Scenario 1.

Item	Estimated residual waste suitable for EfW by year (1,000s tonnes)		
	19/20	24/25	34/35
Household	510	320	180
Non-Household	65	70	60
Commercial	360	310	240
Industrial	150	95	75
C&D	55	30	30
Total residual	1,140	825	585
Available operating capacity	625	625	625
Capacity gap against operational	-515	-200	40

Table 4: Current levels and future projections for non-inert residual waste that can be managed in energy from waste facilities in each economic region of Wales for Scenario 2.

Item	Estimated residual waste suitable for EfW by year and economic region (1,000s tonnes)								
	North			South East			Mid & South West		
	19/20	24/25	34/35	19/20	24/25	34/35	19/20	24/25	34/35
Household	125	80	70	260	210	130	125	85	70
Non-Household	20	20	25	35	40	35	10	15	15
Commercial	90	75	70	165	160	150	105	105	100
Industrial	45	30	30	65	40	40	40	25	25
C&D	10	5	5	25	15	15	20	10	10
Total residual	290	210	200	550	465	370	300	240	220
Available operating capacity	200	200	200	425	425	425	0	0	0
Capacity gap against operational	-90	-10	0	-125	-40	55	-300	-240	-220

Table 5: Current levels and future projections for non-inert residual waste that can be managed in energy from waste facilities in Wales for Scenario 2.

Item	Estimated residual waste suitable for EfW by year (1,000s tonnes)		
	19/20	24/25	34/35
Household	510	375	270
Non-Household	65	75	75
Commercial	360	340	320
Industrial	150	95	95
C&D	55	30	30
Total residual	1,140	915	790
Available operating capacity	625	625	625
Capacity gap against operational	-515	-290	-165

The two modelling scenarios for Wales as a whole predict a clear downward trend in the quantity of residual waste suitable for energy recovery from 1,140 thousand tonnes in 2019/20 to 825-915 thousand tonnes in 2024/25 to 585-790 thousand tonnes in 2034/25 (Tables 3 and 5).

The two modelling scenarios for the regions of Wales for 2034-35 (Tables 2 and 4) show the following range of projected quantities of residual waste suitable for energy recovery:

- **North Wales**: 145-200 thousand tonnes per annum.
- **South East Wales**: 270-370 thousand tonnes per annum.
- **Mid & South West Wales**: 170-220 thousand tonnes per annum.

The tables shows predicted estimates of the ranges of existing capacity, required capacity and the capacity gap for energy recovery of residual mixed waste for 2024-25 and 2034/35, for each region of Wales and for Wales as a whole. In this analysis, only existing operational capacity is taken into account, as this is a known guarantee. The table also omits the permitted refuse derived fuel (RDF) capacity at the two cement kilns in Wales, because for technical and operational reasons these facilities cannot currently be relied upon to form part of a residual waste treatment solution for Wales and it is considered unlikely under present circumstances that this situation will change. However, the situation will be kept under review and should this capacity become more utilisable then the Welsh Government will publish revised figures accordingly.

The range of estimated capacity gaps for residual waste suitable for energy recovery by each region for 2034-35 is as follows:

- **North Wales**: 0 thousand tonnes per annum of under/over-capacity to 55 thousand tonnes per annum of over-capacity.
- **South East Wales**: 55 to 155 thousand tonnes per annum of over-capacity.
- **Mid & South West Wales**: 170 to 220 thousand tonnes per annum of under-capacity.
- **Wales** total: 40 thousand tonnes per annum of over-capacity to 165 thousand tonnes per annum of under-capacity.

The capacity gap figures provided herein reflect the current status of operational capacity of energy from waste plants in Wales. The figures will naturally change if any of the sites with existing planning permission translate this into on the ground operational capacity. As stated earlier, TAN 21 makes it clear the capacity assessments in the CIM Sector Plan (which this paper replaces for energy from waste capacity) represents the starting point for the determination of need for future capacity. It also states where planning permissions already exist in an area (region) they should be taken into account in determining the level of need. The significance which can be attached to proposed (planned) capacity in determining the level of need will vary depending on the likelihood of facilities being built. Evidence to consider will include whether there is evidence of contracts in place to manage residual waste, whether facilities are in the process of being built, whether they have been commissioned, whether pre-commencement conditions have been discharged and whether an environmental permit is in place. In the interests of increasing certainty, planning authorities should actively engage with applicants on the submission of any information needed to approve pre-commencement conditions.

TAN 21 requires applicants to clearly justify why a proposal is necessary and where it cannot be clearly demonstrated there is a need for the proposal it may be appropriate for the planning authority to consider refusing planning permission. This is likely to be the case where the level of provision exceeds the upper range identified in this strategic assessment for any given region.

As stated above, the moratorium on large scale energy from waste was put into immediate effect in a Ministerial Written Statement issued on 24 March 2021. This moratorium means the Welsh Government does not consider there to be a need for any new large scale energy from waste plants of 10MW or greater. Small scale energy from waste plants of less than 10MW will only be allowable if the applicant can demonstrate need for such a facility for the non-recyclable wastes produced in the region. Any new small scale facilities must also supply heat, and where feasible, be carbon capture and storage enabled or ready. This would therefore mean a small scale plant would not be allowable if waste is to be imported from outside of the proposed region (unless in close proximity to a region), in order to also avoid locking in transport emissions and associated pollution.