

Hertfordshire County Council

Waste Facilities Design Guide SPD

A Supplementary Planning Document (SPD) providing guidance for new waste developments



Waste Local Plan
January 2021 Draft Document

WITHDRAWN
14 DECEMBER 2021

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1. Introduction

- 1.1. Hertfordshire County Council has produced this Supplementary Planning Document (SPD) covering recommendations to be given on the design of new waste management facilities. This SPD covers the same plan period as the emerging Hertfordshire Waste Local Plan and has been written in accordance with it.
- 1.2. The purpose of this SPD is to provide planning guidance into the aspects of design of waste management facilities and the expectations of **Strategic Policy 15** of the emerging Waste Local Plan and should be used by applicants wishing to develop such facilities.
- 1.3. The guidance outlines the key design principles for waste management facilities and lists a number of general key planning issues and detailed assessments that may be required at the planning application stage and supplements policies in the emerging Waste Local Plan relating to the location and design of waste management facilities.
- 1.4. Good design is a key aspect of sustainable development and helps to create better places in which to live and work.
- 1.5. The guidance within this document will be applied to all waste development proposals within Hertfordshire. It is based on the premise that good quality sustainable design is beneficial to developers, residents and the community as a whole.
- 1.6. In general, well-designed places will be¹:
 - ∇ based on a sound understanding of the features of the site and the surrounding context, using baseline studies as a starting point for design;
 - ∇ integrated into their surroundings so they relate well to them;
 - ∇ influenced by and influence their context positively; and
 - ∇ responsive to local history, culture and heritage.

¹ As defined in the National Design Guide



2. Policy Context

Status of the Supplementary Planning Document

- 2.1. This document is a draft Supplementary Planning Document (SPD). Part 5 of the Town and Country Planning (Local Planning) (England) Regulations 2012 (as amended) sets out the procedure for the production of SPDs and Regulations 11 to 16 set out the consultation requirements. This version of the SPD constitutes the consultation version required to be carried out under Regulation 12.
- 2.2. Unlike a development plan document (DPD), SPDs do not have to be submitted to the Secretary of State for examination, but do need to be consulted upon in accordance with the regulations. This document will be available for public consultation in compliance with the regulations and the county council's Statement of Community Involvement.
- 2.3. This SPD is linked to the emerging Waste Local Plan Policies, specifically **Strategic Policy 15: Sustainable Design and Resource Efficiency**. The SPD supplements this policy by providing more detailed advice and guidance on issues of design of waste management facilities. The scope of this SPD seeks to cover important matters such as the location and design of various waste management facilities and local community facilities, including Household Waste Recycling Centres.
- 2.4. As the emerging Waste Local Plan progresses towards adoption it is likely to undergo various amendments and therefore the specific wording of Strategic Policy 15 is likely to change. This SPD will be updated in-line with the with the adoption of the emerging Waste Local Plan.
- 2.5. This SPD does not form part of the development plan and does not introduce new planning policies, however it is a material planning consideration in decision-making alongside relevant policies within the emerging Waste Local Plan, district/borough development plan documents, the National Planning Policy Framework and the National Planning Policy for Waste. Therefore, this SPD should be read in conjunction with these documents.



- 2.6. Unlike Local Plans, SPDs do not need to be subjected to a Sustainability Appraisal, but may require in exceptional circumstances a Strategic Environmental Assessment (SEA) if they are likely to have significant environmental effects that have not already have been assessed during the preparation of the Local Plan.
- 2.7. A SEA screening of the SPD was carried out (September 2020) which identifies that a SEA is not required.

National Policy

- 2.8. The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England. Sustainable development and the creation of high quality places is a fundamental ambition of the NPPF for the planning and development process. The NPPF establishes that good design is a critical element of sustainability with the ultimate goal of making places better for people.

- 2.9. The definition of an SPD, which is stated in Annex 2 of the NPPF, is:

'Documents which add further detail to the policies in the development plan. They can be used to provide further guidance for development on specific sites, or on particular issues, such as design. Supplementary planning documents are capable of being a material consideration in planning decisions but are not part of the development plan.'

NPPF (2019) – Annex 2

- 2.10. The NPPF highlights that good design for all types of development is supported by an underlying need to promote innovation, create a sense of place and respond to local character and history.
- 2.11. Fundamental to the planning and development process is to ensure that high quality buildings and places are created. Where development proposals show poor design, the NPPF states the following:

'Permission should be refused for development of poor design that fails to take the opportunities available for improving the character and quality of an area and the way it functions, taking into account any local design standards or style guides in plans or supplementary planning documents. Conversely, where the design of a development accords with clear



expectations in plan policies, design should not be used by the decision-maker as a valid reason to object to development...'

NPPF (2019) – Paragraph 130

- 2.12. This SPD is intended to assist potential developers and waste planning authorities to aid consideration of important design matters for new waste management facilities. The National Planning Policy for Waste (NPPW) states that when determining waste planning applications, waste planning authorities should:

'ensure that waste management facilities in themselves are well-designed, so that they contribute positively to the character and quality of the area in which they are located'

NPPW (2014) – Section 7

- 2.13. Furthermore, this SPD will provide accessible, clear guidance to encourage high quality and sustainable design that will be consistent with National and Local policy.

National Guidance

- 2.14. The National Planning Practice Guidance (NPPG) was launched online in March 2014 to provide additional detail to the NPPF and NPPW. The NPPG provides a regularly updated repository of supporting guidance on numerous categories setting out how the government's planning policies for England are expected to be applied.
- 2.15. The Design category of the NPPG² sets out how well-designed places and design quality can be achieved through policy and decision making, the use of tools and processes such as design review, assessment frameworks and design codes, and the effective engagement of communities in shaping the design of their neighbourhoods.
- 2.16. The NPPG also states how local design standards in SPDs alongside the National Design Guide (2018) can be used by all those involved in shaping places to take opportunities available for improving the character and quality of an area and the way it functions.

² <https://www.gov.uk/guidance/design>



- 2.17. The National Design Guide forms part of the Government's collection of planning practice guidance and addresses the question of how we recognise well-designed places, by outlining and illustrating the Government's priorities for well-designed places in the form of ten characteristics (Figure 12). This guide has been used as a basis for the production of this SPD.

Circular Economy

- 2.18. In December 2018 the Government published its Resources and Waste Strategy for England; a 25 year strategy to enable the Government to deliver its pledge of leaving the environment in a better condition for the next generation and to protect our dwindling natural capital.
- 2.19. The Resource and Waste Strategy set out the government's determination to help local authorities and waste management companies act in the most sustainable and resource-efficient way possible and their desire to promote UK-based recycling; exporting less waste to be processed abroad.
- 2.20. For this to be achieved new, innovative and well-designed waste management facilities must be developed to support and enhance resource efficiency and help support the move towards a more circular economy.
- 2.21. A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.³

³ <http://www.wrap.org.uk/about-us/about/wrap-and-circular-economy>



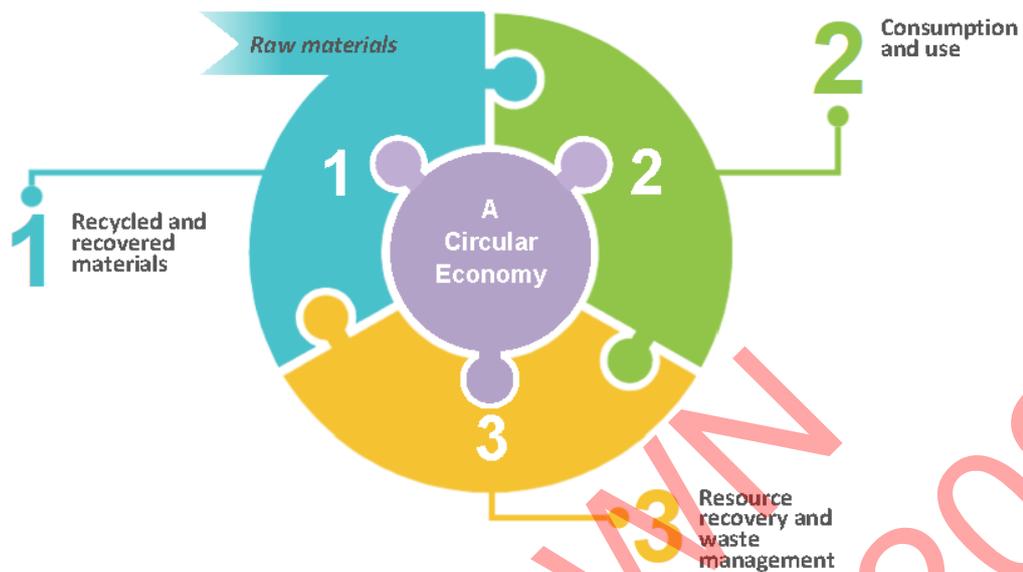


Figure 1 – Circular Economy

- 2.22. Waste management facilities which enable waste to be recovered and used as a resource are essential to enabling a circular economy. To achieve a circular economy the planning system needs to be capable of delivering new waste management facilities with flexibility to the industry to allow adaptation to changing and evolving business environments moving towards more sustainable practices.

Local Policy

- 2.23. The Hertfordshire Waste Local Plan currently comprises the Waste Core Strategy & Development Management Policies document (adopted November 2012) and the Waste Site Allocations document (adopted July 2014). These documents set out the county council's policies in relation to waste development in the county and the criteria against which waste management proposals are assessed.
- 2.24. A review of the Waste Local Plan commenced in 2017 and the emerging Waste Local Plan has currently reached draft stage and is undergoing public consultation in accordance with Regulation 18 of the Town and Country Planning (Local Planning) (England) Regulations 2012 (as amended). As such, it does not have any formal status in development management (decision making) terms, does not form part of the Development Plan for Hertfordshire and only limited weight may be applied to the policies included.

- 2.25. This SPD is linked to the emerging Waste Local Plan **Strategic Policy 15: Sustainable Design and Resource Efficiency**. The policy states the following:

Strategic Policy 15: Sustainable Design and Resource Efficiency

New and existing developments, including waste management facilities, must be of good design and contribute to resource efficiency. As a minimum, all new development proposals will be required to demonstrate how the principles of sustainability (Hertfordshire Sustainable Design Guide) have been addressed by submitting supporting evidence incorporating the following:

- i) Construction and demolition methods that minimise waste generation and facilitate the re-use/recycling of materials and buildings, as far as practicable on site;
- ii) Design principles and construction methods that minimise the use of primary aggregates and encourage the use of high quality building materials made from local recycled and secondary resources;
- iii) Good and innovative design with layout principles that allow effective sorting, recycling, composting and collection of waste within the site.

Local Planning Authorities should include waste prevention and reduction policies in their local plans.

All new development proposals must demonstrate in supporting evidence how the principles of sustainable development, covering economic, social and environmental aspects, as set out in the Hertfordshire Sustainable Design Guide, have been addressed.

Development proposals must be supported by a comprehensive Circular Economy Statement which includes details of the management of waste at all stages of development (construction, demolition and subsequent occupation). The Waste Planning Authority should be consulted on the content of Circular Economy Statements prior to approval.



- 2.26. The application of this policy is inclusive of waste management facilities but is also applicable to all types of development. The policy makes direct reference to the principles of the [Hertfordshire Sustainable Design Toolkit](#), which has also been used as a basis in the preparation of this document.

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3. *Scope of Guidance*

3.1. This SPD has been produced with the following aims:

- ∇ to respond to the climate change agenda;
- ∇ to set expectations for high quality place making;
- ∇ to outline sustainable design and construction expectations;
- ∇ to supplement national and local planning policy and guidance; and
- ∇ to outline design standards in waste management

3.2. The guidance provided is intended for proposals for new waste management facilities in relation to design and location criteria that should be considered to satisfy relevant policies within the emerging Waste Local Plan. The guide touches on 'high level' design issues associated with waste management facilitates and focuses on the non-functional aspects. The technical or process related design components are not within the scope of this guidance.

3.3. Further matters not covered within this guidance are: development costs, detailed technical specifications of buildings, or matters relating to building regulations/construction, and associated requirements relating to health and safety.

3.4. This SPD additionally provides guidance on how new waste developments can adapt to the changing climate; through provision of trees, maximising biodiversity creation, considering layouts of buildings to improve energy efficiency, and promoting more modern and resourceful forms of construction.

3.5. Where appropriate, specific design aspects of facilities are highlighted but no particular types of waste management facilities or technologies are promoted or endorsed within this document.



Hertfordshire Design Review Service

- 3.6. The Hertfordshire Design Review Service⁴ provides an independent and impartial process for evaluating the design quality and sustainability of development proposals in Hertfordshire.
- 3.7. This service is available for all types of developments (residential, commercial and industrial) and aims to help local planning authorities, project teams and their clients avoid the cost of poor design, and realise the full potential of proposals, creating high quality sustainable places to live, work, and enjoy.
- 3.8. The service offers advice across a variety of development types, scales and contexts, from single dwellings in the countryside to large-scale mixed-use urban extensions, and provides expertise in relation to architecture, landscape architecture and urban design, spatial planning and masterplanning, transport, sustainable building, the natural and historic built environment, and other sustainable development matters.
- 3.9. New waste development proposals are encouraged to submit for design review, as early as possible in the planning and design process, to ensure that positive action can be taken in response to the panel's advice and recommendations.
- 3.10. A [Sustainable Design Toolkit](#) is also freely available to help those who prepare and assess development proposals in Hertfordshire. It helps to better understand the principles of sustainable design and construction and to consider how best these principles can be applied to specific schemes and sites.

⁴ The Service is part of the 'Building Futures' sustainable development initiative, a partnership of Hertfordshire local authorities, led by Hertfordshire County Council.



4. Base Principles

- 4.1. Good design looks beyond project boundaries to consider the wider benefits that can be brought forward. The principles within this section should be adhered to by all proposals for new waste management facilities in order to meet the overarching objectives of the emerging Waste Local Plan.

Waste Hierarchy

- 4.2. Regulation 12 of the Waste (England and Wales) Regulations 2011 requires that businesses which import or produce, collect, transport, recover or dispose of waste, or who operate as dealers and brokers, must take all reasonable measures to apply the waste hierarchy when the waste is transferred.
- 4.3. All proposals for the development of waste management facilities within the County should conform to the principle of the waste hierarchy. The waste hierarchy aims to ensure that waste is driven as far up the hierarchy as possible by giving highest priority to preventing waste in the first place. When waste is created, ordered priority is then given to preparing it for re-use, then recycling, recovery, and lastly disposal (e.g. landfill or incineration).

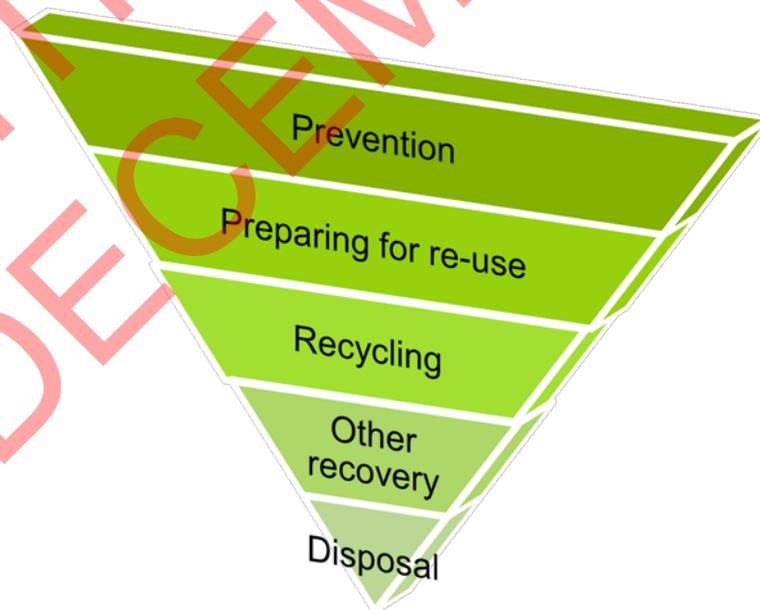


Figure 2 – Waste Hierarchy



- 4.4. To achieve sustainable waste management the county aims to ensure the provision of an integrated and adequate network of waste facilities which will enable the aspirations of the waste hierarchy to be delivered in practice by means of the most appropriate methods and technologies.

Net Self-Sufficiency

- 4.5. Hertfordshire County Council is committed to achieving net self-sufficiency, which means it will have sufficient waste management capacity to manage the equivalent of Hertfordshire's waste arisings. The term net self-sufficiency applies to all waste streams.
- 4.6. The county council's approach to waste planning aims to achieve net self-sufficiency by the end of the plan period of the emerging Waste Local Plan by planning to deal with the equivalent amount of waste which is created in the county. The county council seeks to maximise recycling, recovery and processing of waste to minimise the amount of residual waste requiring final disposal.
- 4.7. All proposals for the development of waste management facilities will be expected to assist in the aim of moving towards self-sufficiency in waste management, although it is not necessary for all districts within Hertfordshire to have the complete range of waste facilities that may be needed.

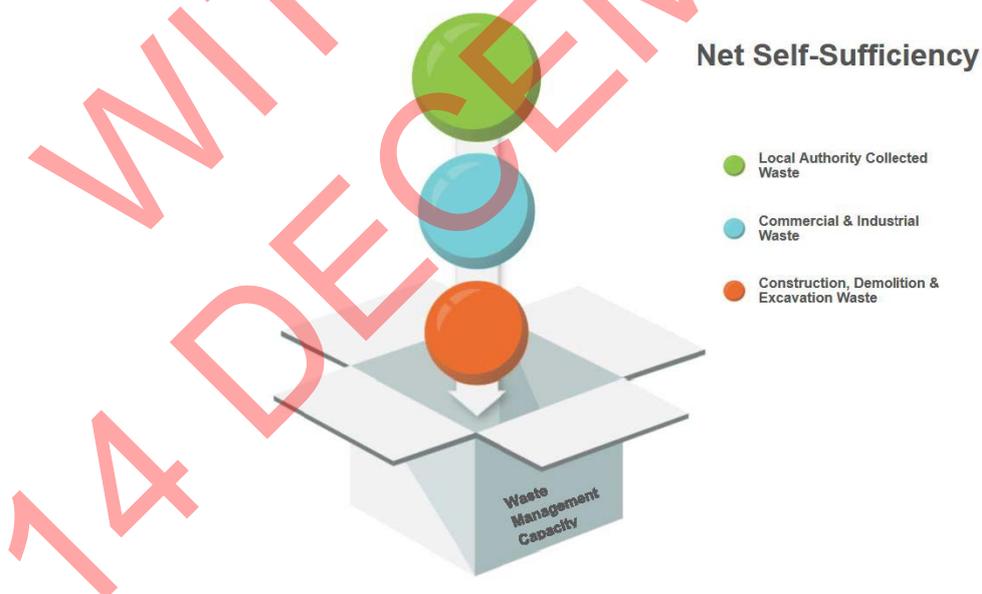


Figure 3 – Net Self-Sufficiency



- 4.8. Planning for net self-sufficiency does not prevent the importation and exportation of waste, but seeks to reduce the *need* to export waste great distances and ensure that the region as a whole can manage its own waste.

Proximity Principle

- 4.9. The principles of self-sufficiency and proximity (commonly referred to as the 'proximity principle') are set out in Article 16 of the [Waste Framework Directive](#). The Directive was transposed under [regulation 18 of the Waste \(England and Wales\) 2011 Regulations](#) which requires Local planning Authorities or Waste Planning Authorities (WPAs) to have regard to these requirements when exercising their planning functions relating to waste management.
- 4.10. The Proximity Principle highlights a need to treat and/or dispose of waste as close to where it arises as practicable. This aims to minimise the environmental impact and cost of the transportation of waste. As WPA of Hertfordshire, the county council are required to fulfil the county's waste planning functions.
- 4.11. This principle is established in waste planning by the aim of Waste Planning Authorities (WPAs) to achieve net self-sufficiency. This means that individual WPAs should plan to provide sufficient waste management capacity to manage a quantity of waste equivalent to their own arisings. This does not prevent the inter-authority transportation of waste and improves the likelihood that the wider region will be able to manage its own waste without having to transport material further afield.
- 4.12. Waste should be disposed of or recovered in one of the nearest appropriate installations, whilst ensuring that the environment and human health are protected. In order to achieve this, it is important that a broad range of waste management facilities are available, so that waste can be managed as close to where it arises as possible.
- 4.13. All proposals for the development of waste management facilities should consider the proximity principle when assessing the suitability of sites for development.



Climate Change

- 4.14. Climate change is the long-term shift in average weather patterns across the world. Since the mid-1800s, humans have contributed to the release of carbon dioxide and other greenhouse gases into the air. This causes global temperatures to rise, resulting in long-term changes to the climate.⁵
- 4.15. Climate change is a serious threat to our environment, society and economy. Tackling climate change is an international priority and one which the UK Government are leading the way on.
- 4.16. Measures to tackle climate change nationally were introduced through the Climate Change Act (2008) which set a legally binding target to cut UK emissions by 34% by 2020 and by at least 80% by 2050. On 27 June 2019 the UK government amended the Climate Change Act and set a legally binding target to achieve net zero greenhouse gas emissions from across the UK economy by 2050.
- 4.17. Hertfordshire County Council declared a climate emergency on 16 July 2019 with commitment to developing a Sustainable Hertfordshire Strategy that will set out the policies, strategies and implementation plans needed to embed sustainability across all the county council's operations and services.
- 4.18. Two key aspects of climate change are most relevant to waste planning:
- ∇ Reducing carbon emissions to minimise future climate change; and
 - ∇ Preparing for the effects of climate change by increasing the resilience of a location to any climatic changes.
- 4.19. Planning can help increase resilience to climate change impact through the location, mix and design of development.
- 4.20. Waste recycling and recovery facilities contribute to addressing climate change by diverting materials from being sent for final disposal and reducing demand for virgin resources. However, waste facilities could contribute further by carefully considering and tailoring their design and operating regimes. In considering proposals for new waste development regard will be had to how proposals can contribute towards achieving a low-carbon economy, and how well adapted they are for the effects of climate change.

⁵ <https://www.metoffice.gov.uk/weather/climate-change/what-is-climate-change>



- 4.21. All proposals for the development of waste management facilities will need to demonstrate resilience to climate change impacts and explore appropriate mitigation measures including minimising the carbon and ecological footprint of any buildings and their construction.
- 4.22. The county council will expect applicants to submit innovative proposals that combine different measures where appropriate. Applicants should submit a Climate Change Statement which explains how measures to minimise and mitigate against climate change have been considered and the reasoning for either including or omitting measures in the proposed development. The applicant should also detail how they intend to continue to review their performance with regards to climate change impacts throughout the duration of the development.

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5. Types of Waste Management Facilities

- 5.1. There are a wide range of waste management facilities that can be provided to deal with the county's waste arisings, and each has its own characteristics and relevant locational and design criteria. However, many issues are also common to a range of facilities. This section details the general purpose and operations of particular types of facilities.
- 5.2. It should be noted that waste management is a constantly evolving field which adapts to industry and technological advancements. Thus, new types of facilities are likely to arise during the Plan period and the facilities outlined below are therefore not exhaustive. Furthermore, specialist facilities may also be required to recycle specific waste types (e.g. batteries, electric vehicle parts). The facilities outlined below will deal with a range of waste streams including local authority collected waste (LACW), commercial and industrial (C & I), inert, and hazardous/clinical waste.

Household Waste Recycling Centres

- 5.3. Waste Disposal Authorities (WDAs) have a statutory duty to provide places where residents may deposit their household waste free of charge. These are known as Household Waste Recycling Centres (HWRCs).
- 5.4. HWRCs provide a valuable service to local residents, providing additional waste management services and facilitating recycling by the public. HWRCs can accept significant tonnages of waste and achieve high recycling rates (typically over 70%).

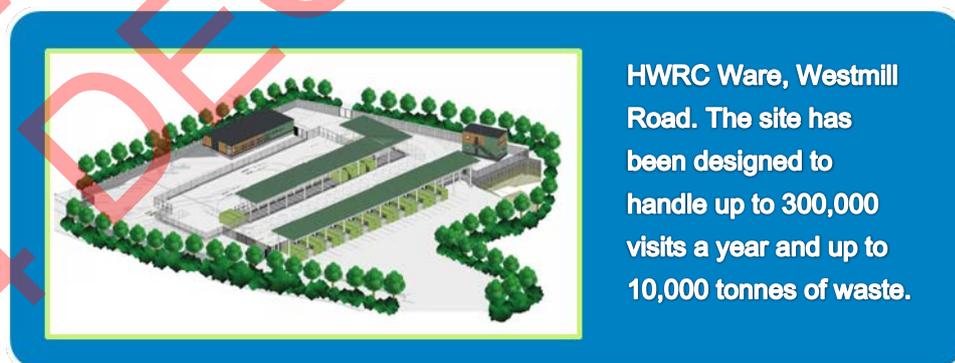


Figure 4 – Example of a HWRC

- 5.5. HWRCs also have a separate function as Designated Collection Facilities (DCFs) under the terms of the Waste Electrical and Electronic Equipment (WEEE) Regulations. DCFs are places where waste household electrical items are collected before being sent for treatment, reuse and recycling.
- 5.6. HWRCs are typically located within short drive times from a high proportion of local residents in order to form an easily accessible network serving the local population. The number and layout of parking spaces plays a central role in the efficient throughput of waste processed at a HWRC.

Inert Waste Recycling

- 5.7. Construction, Demolition and Excavation waste (C, D & E) often consists of waste bricks, concrete, soils and stones arising from built development. C, D & E includes inert waste (e.g. concrete, wood, rubble and masonry), plastics and hazardous materials (e.g. lead, asbestos and liquid paints).
- 5.8. A number of processes are utilised at inert waste recycling centres. Processes vary depending on the nature of material, desired recycled product and quality of recycled product.
- 5.9. Recovery generally involves a combination of periodic crushing, mechanical screening and washing operations to reprocess materials such as soils, concrete and rubble, for re-use.

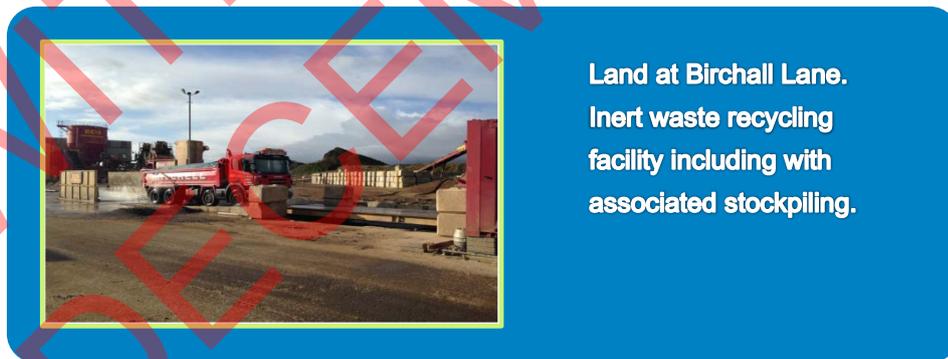


Figure 5 – Example of an Inert Waste Recycling facility

- 5.10. Screening is the process of separating materials into different sizes/grades and removing unwanted/contaminated materials (i.e. metals, plastics, paper).



- 5.11. Crushing is used to process hard inert materials. Once crushed, material is then screened to produce secondary aggregates.
- 5.12. A washing process is also used to remove fine cohesive materials. Material produced can be used for asphalt and concrete production.

Composting

- 5.13. Composting is a biological process in which micro-organisms convert biodegradable matter into a stabilised residue known as compost. The majority of waste composted in the UK is garden type waste; however food waste is also suitable for composting. There are two separate types of composting which are utilised by composting waste facilities.
- 5.14. Windrow: This type of composting involves the shredding of waste which is then placed in open air or inside a container or chamber through which air is forced. The windrows are turned on a regular basis to improve oxygen content, distribute heat to regulate temperature and to distribute moisture. The windrows are turned multiple times during the composting process, which takes on average sixteen weeks, depending on maturity requirements.
- 5.15. The resultant product is then screened to remove contaminants such as plastics and metals, and to also grade the compost for various end uses. Oversized materials are also removed and can be put back through the whole process until they have composted down sufficiently.
- 5.16. In-Vessel: This involves the composting process inside a vessel where conditions are optimised for breakdown of materials. After the initial enclosed process the compost is matured in a part open air process. The process is quicker than windrow composting and allows a higher degree of process control and can accommodate a mixture of both green waste some paper and food waste. Installations need to meet the stringent requirements of the Animal By-Products Order (ABPO) in respect of inputs, process control and outputs when food waste is being composted.





Cumberlow Green Farm, Buntingford. Waste being loaded for in-vessel composting. Sanitised waste will then be placed on maturation pads.

Figure 6 – In-vessel composting

- 5.17. Composted waste is then graded via a screening process for various uses including agricultural and horticultural. Products are graded to between 0mm and 40mm particles which can then be used as soil improver, mulch, topsoil constituent, turf dressing, and growing medium.

Anaerobic Digesters

- 5.18. Anaerobic digesters (ADs) can operate in various ways. For example, material may be fed into a digester in distinct batches, or in a continuous flow.
- 5.19. ADs operate through the biological treatment of biodegradable organic waste in the absence of oxygen, utilising microbial activity to break down the waste in a controlled environment. Anaerobic digestion results in the generation of:
- ∇ Biogas, which is rich in methane and can be used to generate heat and/or electricity.
 - ∇ Fibre, (or digestate) which is nutrient rich and can potentially be used as a soil conditioner.
 - ∇ Liquor, which can potentially be used as a liquid fertiliser.



AD at Rattys Lane, Hoddesdon. A 2.76 acre Anaerobic Digestion Plant which provides energy from household waste.

Figure 7 – Anaerobic Digestion Plant



- 5.20. The process begins with pre-treatment of feedstock to ensure it is at the right consistency and has been screened to remove contaminants such as plastic and grits. The feedstock is then fed into a digester (a sealed, oxygen-free tank) where a slow mixing process helps to facilitate digestion and resultant biogas is collected.
- 5.21. Digestate is then stored within the tank and can be separated into liquid and solid fractions for various uses.

Material Recovery Facilities

- 5.22. Materials Recovery Facilities (MRFs) play an important role in waste management through the provision of quality secondary raw materials to industry. In general, MRFs are designed to separate co-mingled recyclables into their individual material streams and prepare them to be supplied for re-use, however some MRFs are only designed to accept pre-sorted materials.
- 5.23. MRFs utilise separation technology as well as manual separation to recover materials including: paper and card, drinks cans and steel cans, aluminium, glass, plastic and wood, which are then supplied to manufacturers to use in the production of recycled products.
- 5.24. Some MRFs specifically process construction and demolition waste which generally involves processing aggregates for separation and re-use and extraction and processing of wood into biomass fuel. Residues from MRFs are usually identified as residual waste and are diverted to land disposal, incineration or energy recovery.



The tipping floor at a MRF. Incoming materials are received and stored here prior to processing. Tipping floors should be covered to prevent leachate into groundwater and contamination of water supply.

Figure 8 – Typical storage within an MRF⁶

⁶ Figure source: [Recovering value from MRFs, Wrap](#)

Metal Recycling Sites

- 5.25. Metal Recycling Sites (MRSs) form a central part of the scrap and metal recycling industry by processing ferrous and non-ferrous metal scrap into vital secondary raw material for the smelting of new metals.
- 5.26. Some specialised MRSs include End of Life Vehicle (ELV) sites which de-pollute scrap cars and Waste Electrical and Electronic Equipment (WEEE) recycling sites which deal with various types of appliances and equipment. Sites which accept a variety of mixed metals are generally referred to as mixed MRSs.
- 5.27. The process of mixed MRSs generally follows sorting, separation, compacting and other processes of ferrous metals or alloys and non-ferrous metals for recycling and recovery. The waste accepted can arise from a number of sources including: steel structures, railway tracks, ships, farm equipment, and consumer scrap. The main challenge for mixed MRS's is achieving a high recycling rate due to many products containing a high mix of different metals (e.g.. a mobile phone) and the challenge of extracting each.



Metal recycling site at Kings Langley. A scrap metal dealer which process ferrous (iron) and non-ferrous (aluminium, copper, brass, zinc, lead, stainless steel) metals for recycling.

Figure 9 – Metal recycling site

Advanced Thermal Treatment / Energy from Waste

- 5.28. Advanced Thermal Treatment (ATT), also commonly referred to as Energy from Waste (EfW), refers to a range of technologies designed to recover energy (in the form of heat, electricity or fuel) from wastes which cannot be re-used, recycled, composted or digested.

- 5.29. Although thermal treatment of waste through incineration will usually involve some form of energy recovery, incineration is not considered as Advanced Thermal Treatment and is not supported in the drive towards better, higher-efficiency energy from waste solutions.
- 5.30. EfW is supported by the waste hierarchy as a means of recovering the value of the energy embedded in residual waste; the fractions of waste remaining after all practicable efforts to extract materials for reuse and recycling. It should be recognised that even the sustainable material flows advocated by the Circular Economy model will produce a residual waste stream (see Figure 1).
- 5.31. ATTs which utilise pyrolysis (the thermal degradation of a substance in the absence of oxygen) require an external heat source to maintain the temperature required. Typically, lower temperatures of between 300°C to 850°C are used during pyrolysis of materials such as Local Authority Collected Waste (LACW). Raw municipal waste is usually not appropriate for pyrolysis and typically would require some mechanical preparation and separation of glass, metals and inert materials (such as rubble) prior to processing the remaining waste. The products produced from pyrolysing materials are a solid residue and a synthesis gas (syngas).
- 5.32. Gasification involves the partial oxidation of a substance, whereby oxygen is added but the amounts are not sufficient to allow the fuel to be completely oxidised and full combustion to occur. The temperatures employed are typically above 650°C and the main product from the process is syngas. Raw municipal waste is usually not appropriate for gasification and typically would require some mechanical preparation and separation of glass, metals and inert materials (such as rubble) prior to processing the remaining waste.



ATT at Rattys Lane, Hoddesdon.
The facility utilises gasification technology to treat Refuse Derived Fuel (RDF) with capability to produce up to 10MW of power for the National Grid.

Figure 10 – Advance Thermal Treatment facility

Waste Transfer Stations

- 5.33. Waste Transfer Stations (WTSs) are facilities which are designed for waste collection vehicles to deposit various waste streams to be stored and/or sorted before being transported to appropriate waste facilities for disposal or treatment in more suitable and economical haulage vehicles.
- 5.34. WTSs receive waste from kerbside collections or commercial sources and bulk them up for onward transfer and processing. Facilities are located within buildings and vary in size. Facilities are sometimes co located with household recycling centres or processing facilities to maximise synergies and minimise transport costs.
- 5.35. Typical activities at these facilities involves the unloading of trucks, pre-screening, and removal of inappropriate items, and then transfer onto larger vehicles or trains or barges as a way to minimise the cost of transport and reduce environmental impacts as well as potential traffic.



Figure 11 – Waste Transfer Station



6. Locational Criteria

- 6.1. The eWLP recognises that as society moves away from waste disposal by landfill and shifts towards waste management practices higher up the waste hierarchy, waste will increasingly be managed and treated in buildings. As a result of more enclosed facilities and rigorous controls, waste management can be accommodated in a range of locations.
- 6.2. **Strategic Policy 1: Waste Management Facilities in Hertfordshire** of the eWLP identifies the locations where waste development proposals are considered acceptable in principle.
- 6.3. Careful site selection, siting and innovative and high quality sustainable design will be expected for all waste proposals. The type and size of a proposed facility will dictate its best location and in turn it should make an appropriate design response to the site and its context. Small to medium-sized facilities may possibly be located near more sensitive land uses, whereas large scale facilities will need to be buffered to minimise the physical effects on other land uses, including through vehicular movement.
- 6.4. Certain sensitive land uses (e.g. ancient woodland) will always require a minimum buffer distance to any development irrespective of its size.
- 6.5. This section outlines some of the locational criteria that should be considered when carefully identifying an appropriate site for development proposals of waste management facilities.

Water Quality and Flood Risk

- 6.6. **Non-strategic Policy 13: Water Management** of the eWLP requires proposals to take account of the potential impact on water supply, water quality and flood risk proposals in order to conserve and enhance the water environment.
- 6.7. The NPPW states that:

‘Considerations will include the proximity of vulnerable surface and groundwater or aquifers. For landfill or land-raising, geological conditions and the behaviour of surface water and groundwater



should be assessed both for the site under consideration and the surrounding area. The suitability of locations subject to flooding, with consequent issues relating to the management of potential risk posed to water quality from waste contamination, will also need particular care.'

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- 6.8. Potential effects on surface and ground water resources are a material planning consideration. Planning conditions will be imposed to ensure that there is no possibility of run-off, spillage or leachate pollution of surface or ground waters. Waste management facilities proposed in areas that are regularly or potentially subject to flooding are unlikely to be acceptable without demonstration of effective mitigation measures. In areas where flooding is possible, the potential pollution of surface or ground water will be taken into account.

Land Instability

- 6.9. Land stability must be considered when identifying locations to help ensure that development does not occur in unstable locations or without appropriate precautions. Opportunities to bring unstable land, wherever possible, back into productive use should also be given ample consideration.
- 6.10. In regard to land instability, the NPPW states that:

'Locations, and/or the environs of locations, that are liable to be affected by land instability, will not normally be suitable for waste management facilities.'

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- 6.11. Development proposals on sites where subsidence, landslides and ground compression and swelling is known or suspected should generally be avoided, however if land stability could be an issue, developers should seek appropriate technical and environmental expert advice to assess the likely consequences.
- 6.12. The stability of proposed waste sites should be investigated and facilities designed accordingly. Any new landform resulting from landfilling or land



raising should be stable and should be designed to fit in with the scale and nature of the surrounding topology.

- 6.13. A preliminary assessment of ground instability should be carried out at the earliest possible stage before a detailed planning application is prepared. Applicants should ensure that any necessary investigations are undertaken to ascertain that their sites are and will remain stable or can be made so as part of the development of the site.

Landscape and Visual Effects

- 6.14. Hertfordshire comprises a rich variety of landscapes and settlements, each with its own distinct character and 'sense of place'.
- 6.15. Waste development proposals should seek to demonstrate how they conserve and enhance local character. A suite of landscape and townscape character assessments identify, describe and evaluate the strength of character and quality of character areas across the County, and provide a strategy and guidelines for managing positive change.
- 6.16. **Non-Strategic Policy 12: Landscape and Green Infrastructure** of the eWLP requires all waste development proposals to provide an assessment of landscape and visual effects, and demonstrate how any adverse effects will be effectively mitigated, for example screening measures may be required. 'Landscape and Visual Impact Assessment' or landscape and/or visual appraisals should be carried out in line with industry good practice 'Guidelines for Landscape and Visual Impact Assessment Third edition,' (Landscape Institute and Institute of Environmental Management and Assessment).
- 6.17. In terms of landscape considerations, the NPPW states that:

'Considerations will include (i) the potential for design-led solutions to produce acceptable development which respects landscape character; (ii) the need to protect landscapes or designated areas of national importance (National Parks, the Broads, Areas of Outstanding Natural Beauty and Heritage Coasts) (iii) localised height restrictions.'

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- 6.18. The area around a proposed development can provide great opportunities for providing an appropriate setting as well as enhancing biodiversity. It is likely that the approach taken to soft and hard landscape issues will differ depending on the character of the site and its wider context.

Natural Environment

- 6.19. The county of Hertfordshire enjoys a high quality natural environment, a large expanse of Green Belt and many important habitats protected under legislation and local policy, which include the Chilterns Area of Outstanding Natural Beauty; three sites of international importance; 43 Sites of Special Scientific Interest (SSSIs); 36 Nature Reserves; and 44 Local Nature Reserves. In addition, there are nearly 2,000 non-statutory Local Wildlife Sites and Regionally Important Geological /Geomorphological Sites recognised for their significant contribution to the biodiversity within Hertfordshire.
- 6.20. Under **Non-Strategic Policy 11: Biodiversity** of the eWLP, waste developments should consider Hertfordshire's Local Nature Partnership (LNP) Guiding Principles for planning for biodiversity and the natural environment when identifying appropriate locations for waste developments. The guiding principles are to:
- ▽ Recognise the value of the natural environment and the range of benefits and services it provides;
 - ▽ Protect and enhance existing biodiversity assets;
 - ▽ Seek opportunities to improve habitat connectivity;
 - ▽ Integrate biodiversity opportunities within new development;
 - ▽ Make decisions informed by the best available ecological information and data;
 - ▽ Secure the long-term management of existing and new habitats/sites.
- 6.21. When identifying locations for proposed waste developments, applicants should consider where biodiversity net-gains can be realised. Where any ecological interest is known or suspected to be significant on or adjacent to proposed development sites, an ecological/geological/soil survey should be undertaken to ensure the site can be demonstrated as acceptable for the proposed waste development.
- 6.22. Facilities should not have an adverse impact on areas or sites designated for protection. These sites are listed in the NPPW as follows:



'Considerations will include any adverse effect on a site of international importance for nature conservation (Special Protection Areas, Special Areas of Conservation and RAMSAR Sites), a site with a nationally recognised designation (Sites of Special Scientific Interest, National Nature Reserves), Nature Improvement Areas and ecological networks and protected species.'

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Historic Environment

- 6.23. Hertfordshire's environment contains an interesting variety of archaeology, buildings and structures, areas of historic landscape, conservation areas and historic parks and gardens (including Registered Parks and Gardens). Like any other development proposal, waste developments must respect the historic environment and character of their proposed setting.
- 6.24. **Non-strategic Policy 14: Historic Environment** of the eWLP aims to conserve and enhance the physical structure, setting and features of historic interest and puts provisions in place for their protection as well as the recording, interpretation and publication of findings where the potential impact on a feature necessitates its removal from site.
- 6.25. In relation to the Historic Environment, the NPPW state the following:
- 'Considerations will include the potential effects on the significance of heritage assets, whether designated or not, including any contribution made by their setting.'*

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- 6.26. Locations for proposed waste developments should ensure they can sit sensitively in the wider historic context of the area in a way that would be sympathetic to local character/ local history. Siting should not be harmful to the character, appearance, and setting of the historic environment and specific historic assets. Consideration should also be given to the potential effect on sites of archaeological importance.



Traffic and Access

- 6.27. Waste management can generate heavy lorry traffic in and around a waste facility which can have a significant adverse impact on the highways network in some locations of the county. Consideration must be given to the traffic likely to be generated by the proposal when identifying suitable locations.
- 6.28. In considering possible transport issues related to new waste developments, applicants must adhere to the policies of Hertfordshire's Local Transport Plan (LTP).
- 6.29. Sites should ideally be well located in terms of the primary road network, or in close proximity to alternative modes of transport⁷. Locations where the existing road network is incapable of supporting the additional vehicle movements likely to be generated, or if the cumulative traffic impact on local communities is unacceptable and cannot be mitigated, should be avoided.
- 6.30. **Strategic Policy 7: Strategic Transport** of the eWLP seeks to require waste development proposals to be located in close proximity to the primary route network along with using sustainable transport as a priority.
- 6.31. Consideration should also be given to transport of waste by rail or water when these options are practical in line with Strategic Policy 7: Strategic Transport of the Waste Local Plan and to support the aspirations of the LTP.
- 6.32. The NPPW also gives reference to this in the following:

'Considerations will include the suitability of the road network and the extent to which access would require reliance on local roads, the rail network and transport links to ports.'

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- 6.33. Site access can be a complex issue and can relate to several different aspects including sight lines and turning circles. Access to a good road network is important and facilities should be located to avoid HGV's having to travel through residential areas.
- 6.34. Opportunities for siting that maximises use of sustainable forms of transport (public transport, cycling and walking) for staff are encouraged.

⁷ Refer to Policies 1, 5 and 16 of the [LTP](#)



- 6.35. There are also economic and operational benefits arising from co-location with other waste processing facilities, as well as transport benefits from a location close to the waste source. These benefits arise when haulage distances can be reduced, and there are operational benefits of locating waste reception and reprocessing close together.

Air Quality

- 6.36. There are currently 31 Air Quality Management Areas (AQMAs) across Hertfordshire, 10 of which are located on major roads and fall under the responsibility of Highways England. The remaining AQMAs are managed by the District and Borough Authorities and monitor mainly nitrogen dioxide (NO₂), with some also monitoring particulate matter (PM₁₀).
- 6.37. Waste management facilities located within AQMAs are unlikely to be deemed acceptable. The NPPW states the following in relation to air quality concerns:

‘Considerations will include the proximity of sensitive receptors, including ecological as well as human receptors, and the extent to which adverse emissions can be controlled through the use of appropriate and well-maintained and managed equipment and vehicles.’

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- 6.38. Atmospheric emissions have the potential to cause public concern and air quality issues can be a material planning consideration. Transport related emissions will contribute to any air quality issues associated with waste management activities. As such, waste developments should be well located in terms of the primary road network and located close to the waste source where appropriate in order to reduce transport related emissions.
- 6.39. Dust has the potential to represent a nuisance. Applicants must consider measures to suppress dust emissions from susceptible operations.

Odours

- 6.40. Waste facilities can produce unpleasant odours which will need to be given full consideration at the planning application stage. Applicants must ensure that odour suppression techniques are used for highly vulnerable operations.



- 6.41. In regards to odours from waste facilities, the NPPW states the following:

‘Considerations will include the proximity of sensitive receptors and the extent to which adverse odours can be controlled through the use of appropriate and well-maintained and managed equipment.’

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- 6.42. Waste facilities that are not entirely enclosed (e.g. waste transfer stations and composting facilities) are the most vulnerable to odour issues as the temperature increases. Waste facilities which are vulnerable to odour issues should not be located close to sensitive land uses (e.g. ancient woodland, schools, residential developments) unless an adequate buffer is provided.
- 6.43. Waste facilities which are highly likely to suffer from odour issues may be more appropriately located in rural rather than urban locations.

Pests

- 6.44. Waste management sites can attract both birds and vermin. Vermin can present a potential health hazard. Congregating birds can be a nuisance to residential communities living near facilities, but can also cause a significant hazard to aviation safety. All applications for waste developments with areas where waste is temporarily stored outdoors should avoid locations near to sensitive receptors.
- 6.45. Applications involving landfill, sewage disposal and restoration schemes with major tree planting or nature reserves which would be attractive to birds falling within 13 kilometres of Civil Airports and Ministry of Defence Airfields will need to be accompanied by details of appropriate bird control measures to reduce the risk of birdstrike to aircraft.
- 6.46. In relation to the risk from birds and vermin, the NPPW states that:

‘Considerations will include the proximity of sensitive receptors. Some waste management facilities, especially landfills which accept putrescible waste, can attract vermin and birds. The numbers, and movements of some species of birds, may be influenced by the distribution of landfill sites. Where birds congregate in large numbers, they may be a major nuisance to people living nearby. They can also provide a hazard to aircraft at locations close to aerodromes or low flying areas. As part of the aerodrome safeguarding procedure (ODPM Circular 1/20035) local



planning authorities are required to consult aerodrome operators on proposed developments likely to attract birds. Consultation arrangements apply within safeguarded areas (which should be shown on the policies map in the Local Plan).

The primary aim is to guard against new or increased hazards caused by development. The most important types of development in this respect include facilities intended for the handling, compaction, treatment or disposal of household or commercial wastes.'

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- 6.47. All developers are advised to include measures in their schemes to deal with pests. Locating the proposals inside buildings allows a high degree of control against vermin, including rodents and birds. Such matters are regulated by the Environment Agency who should be approached for advice in design.

Noise, Light and Vibration

- 6.48. The eWLP seeks to protect sensitive receptors from amenity impacts, such as light, noise, and air pollution (e.g. dust) which may be caused as a result of a waste development.
- 6.49. When identifying suitable locations for proposed waste management facilities the environmental impacts of the site need to be considered alongside the possibilities to minimise as far as possible the effects of noise and light pollution. New waste facilities should seek to be located to complement rather than conflict with neighbouring uses in terms of noise and light.
- 6.50. Equipment, vehicles and operations used in waste management are likely to generate noise and cause vibration. Regular maintenance of plant and equipment will reduce vibration and noise and optimise energy efficiency.
- 6.51. Consideration will be given to the impact of waste proposals on residential development and other noise sensitive receptors. Planning conditions are likely to be imposed to limit the amount of noise and restrict the time of operation.
- 6.52. The NPPW states the following in this regard:



'Considerations will include the proximity of sensitive receptors. The operation of large waste management facilities in particular can produce noise affecting both the inside and outside of buildings, including noise and vibration from goods vehicle traffic movements to and from a site. Intermittent and sustained operating noise may be a problem if not properly managed particularly if night-time working is involved. Potential light pollution aspects will also need to be considered.'

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- 6.53. Sites should allow for adequate positioning so that noise generating activities and areas, for example building services and areas with a lot of vehicular activity, can face away from sensitive properties and opening windows.
- 6.54. The potential impact caused by noise can be reduced by the careful selection of materials and the sensible location of certain elements of machinery.
- 6.55. Internal and external lighting will likely be required for to ensure security and safety at waste management facilities, specifically around key pedestrian routes, car parks and access roads. Light pollution is a significant environmental concern and so developments should seek to minimise external lighting and seek innovative solutions.
- 6.56. Lighting which creates unacceptable light spill can be a source of annoyance to people, harmful to wildlife and undermine enjoyment of the countryside or the night sky, especially in areas with intrinsically dark landscapes.
- 6.57. Lamps which avoid light spill and have full horizontal cut off lamps-shades will be acceptable. Lights should also only be lit when required, and only direct light where needed.⁸

Litter

- 6.58. Landfill sites, waste transfer stations and civic amenity sites can potentially cause problems in terms of litter. Operating plans and procedures should be used to reduce the impact of this issue.

⁸ Further guidance on lighting can be found from The Institute of Lighting Professionals <https://theilp.org.uk/> and the Campaign for Dark Skies (CfDS).



6.59. The NPPW recognises that:

'Litter can be a concern at some waste management facilities.'

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6.60. Modern household waste recycling centres can be located within buildings to minimise potential noise and litter problems. This may be appropriate in an urban or village location, or within an urban edge/ major new development location as HWRCs should be easily accessible for members of the public.

6.61. For waste facilities which are likely to generate litter methods of alleviation can include using net barriers and fences, or natural vegetation barriers to contain the litter, and provide wind breaks. Litter picking regimes can also be used.

6.62. When identifying locations for new waste facilities which accept separated household waste including paper and plastics or where double handling of waste takes places, consideration should be given to avoiding the potential result in the release of litter through perimeter fencing/landscaped areas which may be used to trap litter before it leaves the site.

Potential Land Use Conflict

6.63. Conflicts surrounding public perception and waste management facilities originate in part from the fact that waste facilities were traditionally constructed with pure function in mind and were regarded as low quality developments with limited regard for their integration within the local setting.

6.64. Waste management facilities which are proposed to be located within urban areas can result in conflict between waste activities and incompatible sensitive uses such as housing, schools and hospitals.

6.65. The NPPW places responsibility on new waste facility proposals to consider the suitability of the identified site:

'Likely proposed development in the vicinity of the location under consideration should be taken into account in considering site suitability and the envisaged waste management facility.'

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- 6.66. Some waste facilities are acceptable within residential or mixed use areas, including new development areas, providing transport and amenity impacts such as noise and litter are controlled and design issues carefully considered. This can also contribute to efficient waste management by having facilities located close to the origin of waste.
- 6.67. In general, safeguards are in place to minimise conflict with neighbouring land uses. However, there is a generic risk of conflict due to operational failure, particularly with regards to odour for anaerobic digestion plants.

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7. Design Criteria

- 7.1. National policy and guidance establish the overall principles and incentives for achieving well-design places, making it clear that it is fundamental to the planning and development process and key to sustainable development. Chapter 12 of the NPPF sets out broad aspirations for innovative and sustainable design whilst the National Design Guide outlines key components of good design with much deeper context.
- 7.2. A well-designed place is unlikely to be achieved by focusing only on the appearance, materials and detailing of buildings. The specific components which contribute to good design are:
- ∇ the layout (or masterplan);
 - ∇ the form and scale of buildings;
 - ∇ their appearance;
 - ∇ landscape;
 - ∇ materials; and
 - ∇ their detailing.
- 7.3. The National Design Guide sets out ten characteristics of good design:



Figure 12 – Ten characteristics of well-designed places, National Design Guide

- 7.4. These ten characteristics should be considered in all new developments, whether or not for waste facilities. Considering these together will help contribute towards the themes for good design set out in the National Planning Policy Framework.
- 7.5. New waste facilities should not only be as attractive and/or unobtrusive as possible but should also exemplify a deeper understanding of sustainable design issues in the round. How a proposed waste facility considers space is crucial to creating a quality design solution for the site and placement in the wider area.
- 7.6. It should be noted that some of the established industrial areas within Hertfordshire do not have a particularly good standard of existing design or a defined style, however this context does not mean that new waste facilities will not be expected to raise the bar in terms of standards in reflection of Local and Central Government policy aspirations.
- 7.7. In attaining sustainable design and construction, one of the most important issues is to establish adaptable long-term facilities, that can function over a long period of time. Furthermore, the development of waste facilities should be seen as a potential opportunity to reduce carbon emissions and adapt to and mitigate the effects of climate change.
- 7.8. For a wider and more comprehensive list of sustainable design considerations, applicants should refer to Hertfordshire's [Building Futures Sustainable Design Toolkit](#).

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Scale

- 7.9. The likelihood of significant effects from new waste management facilities will generally depend upon the scale of the development and the nature of the potential impact in terms of discharges, emissions or odour. Waste collection and disposal strategies will have important implications for the size, distribution and management options of new facilities that must be considered.
- 7.10. Scale can be defined as the height, width and length of each building proposed within a development in relation to its surroundings. The size and massing of individual buildings and spaces should be considered in relation to their surroundings and the overall scale.
- 7.11. Scale can affect how a space is perceived and experienced. How the dimensions of different components of a building relate will define its proportions.
- 7.12. For new waste facilities, the scale and size of sites/buildings will be influenced by the volume of wastes requiring processing and the type of process. Additionally, suitable access by HGVs will also influence the scale of a site.
- 7.13. In most rural locations the design of the facilities should reflect the scale and design of agricultural buildings where appropriate whilst in urban locations facilities should complement the existing or planned scale and built form of the surrounding area. However, there may be instances where more innovative designs will be appropriate in either setting, for example where a proposed development involves mixed uses alongside waste management.
- 7.14. One common determining factor for most waste facilities is that the internal space and vehicular door openings need to accommodate the height of a raised tipper lorry. Innovative designs of buildings and technologies should be developed in order to circumvent this requirement and reduce the overall bulk of waste facilities in order to fit in with the local setting.



Built Form

- 7.15. Built form can be defined as the three-dimensional pattern or arrangement of developments, streets, buildings and open spaces. When these elements complement each other, well-designed places will develop which contribute to the character and sense of place of a locality. Buildings and spaces can take many forms, depending upon their:
- ∇ size and shape in plan;
 - ∇ height;
 - ∇ bulk - their volume; and
 - ∇ massing - how the bulk is shaped into a form.
- 7.16. In the case of spaces, their form is influenced by the buildings around them. The form of a building or a space has a relationship with the uses and activities it accommodates, and also with the form of the wider place where it is sited.
- 7.17. Proposals for new waste developments must be carefully sited and designed based on an understanding of the existing situation and patterns of built form. Local precedents for routes and spaces and the built form around them will need to inform the layout, form and scale.
- 7.18. In approaching built form, consideration should be given to the scale and massing within the setting. Visual interest could be provided by varying heights and sizes of different parts of a building as well as incorporating green and brown roofs. The overall size of the building footprint, and associated built works, should be minimised to avoid potential adverse impacts on landscape.
- 7.19. Built form needs to be considered within local context and setting. Rural locations for new waste facilities may need to reflect the built form of agricultural buildings. Whilst this may mean that simple portal frame buildings, with metal or timber cladding would be appropriate, more imaginative schemes should be considered that incorporate a high degree of sustainability.
- 7.20. Developments within an urban or urban edge setting can provide more imaginative and innovative approaches towards built form and design. Buildings for waste facilities tend to be large in scale and are likely to comprise of metal frame struts with cladding. Innovative design through the



use of alternative sustainable materials should be considered where appropriate. Similarly, roofs can divert from the typical simple portal frames and adopt curved or monopitch roofs or a combination of styles.

Layout & Access

- 7.21. A layout (or masterplan) is used to show how routes and blocks of development are arranged and relate to one another to create streets, open spaces and buildings. It defines:
- ▽ the structure or settlement pattern;
 - ▽ the grain, or the pattern of development blocks and plots; and
 - ▽ the broad distribution of different uses, and their densities or building heights.
- 7.22. Good layout is essential to ensuring adequate access to and on-site. Access arrangements will need to be designed to minimise impact on the environment and nearby surrounding uses, including residential property.
- 7.23. When designing the layout of sites all spaces within the site need to have a distinctive purpose. Focus should not principally be placed on the siting of buildings, resulting in layouts with 'left-over' spaces which do not add value to the whole.
- 7.24. External spaces should be designed positively with clear functional and non-functional demarcations. Building shapes should be linked with hard and soft landscaping in order to provide cohesion with the overall site layout. Good and innovative design will incorporate layout principles that allow effective sorting, recycling, composting and collection of waste within the site.
- 7.25. For all waste developments access to a good transport network is essential. For HWRCs access sites will need to be safely and easily accessible by sustainable forms of transport. Access, circulation and parking should be integral to the design for new HWRCs.
- 7.26. Access roads should be hard surfaced to avoid both access and local roads becoming dirty, dusty or contaminated and to also facilitate the use of mechanised cleaning machines.
- 7.27. Considerations for layout can include locating operational areas where noise and visual impact will be minimised, for example, behind buildings or appropriate landscape areas.



- 7.28. In some instances there will be the need to make highway improvements as part of a waste development to ensure safety of access to and from the site and free flowing movement of traffic on the highway for all users.

Appearance

- 7.29. The appearance of a site can broadly be defined as the aspects of a building or space of a development which determine the visual impression it makes, including the external built form of the development, its architecture, materials, decoration, lighting, colour and texture. In the case of a space, its landscape also influences its appearance.
- 7.30. Any design process should start with a detailed analysis of the site and its setting in order to inform the development of appropriate design concepts and ultimately the final appearance. Appearances can be enhanced by adding interest through shapes, detailing and patterns.
- 7.31. Detailing of individual components of a building can either be decorative or functional features and will affect the appearance of a facility and how it is experienced. Details should be considered as an important part of the building and not as an add-on. Corners, roof lines and how a building meets the ground should be well thought-out as they have a significant effect on the overall impression of the building.
- 7.32. Consideration should also be given to items such as doors, windows, porches, lighting, flues and ventilation, gutters, pipes and other rain water details, ironmongery and decorative features.
- 7.33. External elements of the appearance such as cladding could be profiled metal or metal panels and any ventilation or extractor grills and service pipes should be sensitively incorporated into the design of the facades. Office facilities could be either stand-alone or incorporated within the main building of the facility.
- 7.34. Climate change considerations are likely to stimulate design considerations such as the use of robust external finishes on the facade which can reflect or reduce the absorption of solar energy (e.g. white render and light paint colours). Green roofs or walls may also be used to reduce the cooling load of a building and should be sympathetic to the overall appearance.



- 7.35. In rural settings simple, attractive well-designed buildings featuring quality detailing can be used to adhere to the rural context without relying on unnatural earth bunds to completely screen the site.

Landscape & Biodiversity

- 7.36. Landscape design can be defined as the treatment of land (other than buildings) for the purpose of enhancing and/or protecting the amenities of a site, the local area and natural environment. Landscape considerations broadly includes landform and drainage, hard landscape (e.g. surfacing), boundary treatments, street furniture, lighting and soft landscape (e.g. planting).
- 7.37. Landscaping should be incorporated into early design stages and not be an afterthought for undefined areas with no specific use. Ecological surveys should be undertaken to inform the design, phasing and construction management of the development. Surveys will identify the ecological characteristics and what mitigation and enhancement solutions will be required to maintain or improve the ecological value of the site and surrounding area.
- 7.38. The implementation of a landscape strategy for a site is integral to creating a well-designed place. The strategy should include a landscape survey and analysis to identify existing landscape features and views within the site and the wider context that should be protected, conserved and enhanced. A hard and soft landscape scheme will also be required with an accompanying management plan.
- 7.39. The local landscape character (both natural and built environment) must be taken into consideration for all landscape proposals and boundary treatments with existing features being made use of where appropriate. Proposals should also protect existing habitats and features of value to enable the development to fit seamlessly within the local surroundings whilst reinforcing essential characteristics of the locality.
- 7.40. Landscape and boundary treatment can be used effectively to screen low level activity within a facility reducing the visibility. It can also be used to enhance biodiversity value. Rural settings can offer great opportunity for beneficial landscaping proposals and certain waste facilities will only be appropriate in rural locations (e.g. windrow composting).



- 7.41. Landscape mitigation measures can be used to screen external storage areas, gatehouses and weighbridges in order to avoid creating industrial appearances within rural settings.
- 7.42. Small sites within urban or urban-edge locations used for single use waste facilities (e.g. HWRCs, transfer depots etc) may not be sufficient to provide effective mitigation, and therefore may not be acceptable in planning terms. However small, mixed composition, vertically complex and well sited soft landscaping schemes can create valuable habitat and biodiversity gains.
- 7.43. For medium to large sites sufficient space should be allowed for a quality landscape treatment, and planting between roads and buildings.
- 7.44. Where required, secure boundary treatments should be visually sympathetic as well as practical and fit within the overall design. All gates should match the adjacent fencing and be appropriately colour coated.
- 7.45. Land mounds, whilst discouraged, may, in very exceptional cases, be suitable for boundary treatment where it has been carefully considered in order to reduce low level visual and noise impacts of operations. Mounds should allow for low level planting and establish adequate space with gentle slopes. Where mounds are proposed, there should be no adverse impacts on local land drainage and flood defences as a result.

Materials

- 7.46. The materials used for a building or landscape play an important role in achieving sustainable development which functions well and lasts over time. Materials will influence how a development relates to its surroundings and the overall experience. The materials which will be appropriate in construction will be influenced by the scale, form and appearance planned for a building. The chosen materials should fit harmoniously with the surroundings and be practical, durable, affordable and attractive.
- 7.47. Sustainable developments should strive to adhere to the responsible use of natural resources and appropriate management of the building stock that will contribute in the long-term to saving of scarce resources; reducing energy consumption; and improving environmental quality.
- 7.48. Sustainable development is essential to good design and no new development can be considered well designed if it does not contribute to



environmental, social and economic sustainability. Waste facilities are typically built for long-term use and adaptability will be crucial to their sustained use.

- 7.49. When new facilities are being proposed they will need to consider how the reduction of materials needed for construction can be achieved through the design of the structure and use of recycled materials where possible.
- 7.50. The chosen materials do not have to match each other exactly, but should make effective use of colour, texture, grain and reflectivity in order to provide a harmonious appearance. Existing options for building and open space materials are numerous with new products constantly in development. Innovative and sustainable construction materials and techniques should be considered to help achieve well designed places.
- 7.51. Modern methods of construction are becoming more common, whether in the form of mass production for modular construction, or offsite bespoke construction and should be used where appropriate to improve resource efficiency. Offsite manufactured components, such as Structurally Insulated Panels, or modular construction can reduce construction time and waste but should be considered alongside other environmental impacts, such as road miles, if they are not manufactured locally.
- 7.52. Wherever possible, materials used should be designed for longevity, adaptability, disassembly and comprise of elements which can be re-used and recycled. Materials should be utilised from local supply options in order to minimise 'road miles' and reflect local character and heritage. Opportunities to use standard sizes and accurate estimates of materials to minimise off-cuts and waste should be followed.
- 7.53. PVC is an inherently unsustainable material and therefore the use of PVC should be minimised. Construction materials should be low maintenance and durable. Consideration should also be given to eventual decommissions of facilities, and re-use of materials. For example, steel could be bolted together rather than welded.
- 7.54. The choice of construction materials will also have important implications in terms of noise, odour and visual impacts which should be considered early on.

Energy & Climate Change

- 7.55. Well-designed places and buildings conserve natural resources including land, water, energy and materials. Their design responds to the impacts of climate change through mitigation and adaptation. New developments should use land efficiently to help adaptation by increasing the ability for CO₂ absorption, sustaining natural ecosystems, minimising flood risk and the potential impact of flooding, and reducing overheating and air pollution.
- 7.56. This can be achieved by establishing a layout, form and mix of uses that reduces resource requirement, including for land, energy and water. Waste facilities should be fit for purpose and adaptable over time, reducing the need for redevelopment, and use materials and technologies which help minimise environmental impacts.
- 7.57. There are a variety of techniques and renewable energy infrastructures which waste facilities can adopt to improve energy efficiency and maximise the contributions of natural resources such as sun, ground and wind, and include passive measures for light, temperature, ventilation and heat. This will have the benefits of reducing demand for non-sustainable energy sources and minimising running costs.
- 7.58. Sustainable adaptations which can be utilised by new waste developments to mitigate the effects of climate change include: Solar Thermal Panels, Solar Photovoltaic Panels, Ground Source Heat Pumps, Air Source Heat Pumps, Biomass Boilers and Combined Heat and Power (CHP). Passive solar gain and natural lighting can also be balanced with appropriate solar shading and cooling to avoid overheating during the summer.
- 7.59. Solar thermal panels can be either freestanding or integrated, attached to roofs and walls, where appropriate in order to provide renewable heat whilst Solar photovoltaic panels can be employed to reduce reliance on non-sustainable energy sources. Panels can also be designed to match the appearance of roof materials.
- 7.60. Ground source heat pumps and air source heat pumps could be incorporated in various ways to provide further sustainable heating through the capture of thermal energy for space heating and hot water. An example of how this could be incorporated would be through a ground source heat pump locating under car parking.



- 7.61. Biomass boilers can be used appropriately alongside Refuse Derived Fuel (RDF) and Solid Recovered Fuel (SRF), integrating with waste facilities which recover these fuel sources. Biomass boilers are considered to be carbon neutral. Provision of storage space and suitable access would need to be considered carefully if the technology is to be appropriate and sustainable. The appliance will need to meet the requirements of any designated smoke control zone.
- 7.62. Combined Heat and Power (CHP) makes use of natural gas or biomass to provide heating, hot water or electricity. Integrating CHP within waste facilities will require significant space and fuel storage if using biomass. Heat generated during periods of low demand would need to be exported to other users to avoid 'dumping' it into the external environment and contributing to external overheating.
- 7.63. Green roofs are a further adaptation which can be used to provide biodiversity habitat, reduce the visual impact of a building and reduce the cooling load of a building by effecting heat retention. Green roofs should be used to add architectural interest and sympathetic to the overall appearance and local setting.
- 7.64. For more comprehensive advice and guidance of solutions to reducing energy demand and improving resilience to climate change, please refer to the [Building Futures Sustainable Design Toolkit](#).⁹

Water Management

- 7.65. Well-designed places will need to incorporate sustainable drainage systems wherever possible to manage surface water, flood risk and significant changes in rainfall. 'Green' sustainable drainage systems and natural flood resilience will need to be incorporated in urban locations where possible and buildings should integrate flood resistance and resilience measures along with water conservation and rainfall harnessing for re-use on-site where necessary.
- 7.66. All waste developments will be required to include measures to ensure water quality and efficiency is maximised where possible. Waste developments which require large areas of hard surfacing (yards, storage areas, vehicle

⁹ <https://www.hertfordshire.gov.uk/microsites/building-futures/a-sustainable-design-toolkit/sustainable-design-toolkit.aspx>



parking, etc.) can improve and enhance water management through the use of permeable hard surfacing and soft landscaping (e.g. grass strips, gravel or permeable tarmac). Permeable surfaces can provide natural drainage and deter soil erosion whilst also providing additional amenity and aesthetic value to the development.

- 7.67. Rainwater harvesting can also be utilised to manage water flow to drains as well as offsetting mains water demand. Minimising water resources through the potential use of grey water recycling systems for flushing and other uses, such as wheel cleaning facilities, should be adopted where possible.
- 7.68. Green roofs can also play a role in water management by assisting attenuate run-off, whilst also benefiting biodiversity, reducing urban heat island effects, and adding architectural interest to commercial and industrial buildings.
- 7.69. Extensive roof areas and guttering will provide opportunities for green roofs and rainwater harvesting to supply free water for flushing, washing and irrigation.
- 7.70. Resilience measures against climate change could involve directing operations away from areas of the site with highest risk of flooding or designing the site to increase the capacity of the floodplain.
- 7.71. Where a Sustainable Drainage System (SuDS) has been determined to be incorporated into the design of the development this will need to meet the National and Local principles and the requirements of the Lead Local Flood Authority (LLFA).

Noise

- 7.72. Operations from waste facilities will likely carry potential noise impacts which will need to be reduced and mitigated against. This can generally be achieved through the design of buildings with acoustic features such as sound proofing. Building orientation, location of operational areas and acoustic fencing are further measures which should be consider within the design of any proposed development.
- 7.73. Technology such as silencers should be considered in order to minimise noise from plant and machinery. Thicker, heavier doors and double or triple-glazed windows can also be used to provide greater noise insulation.



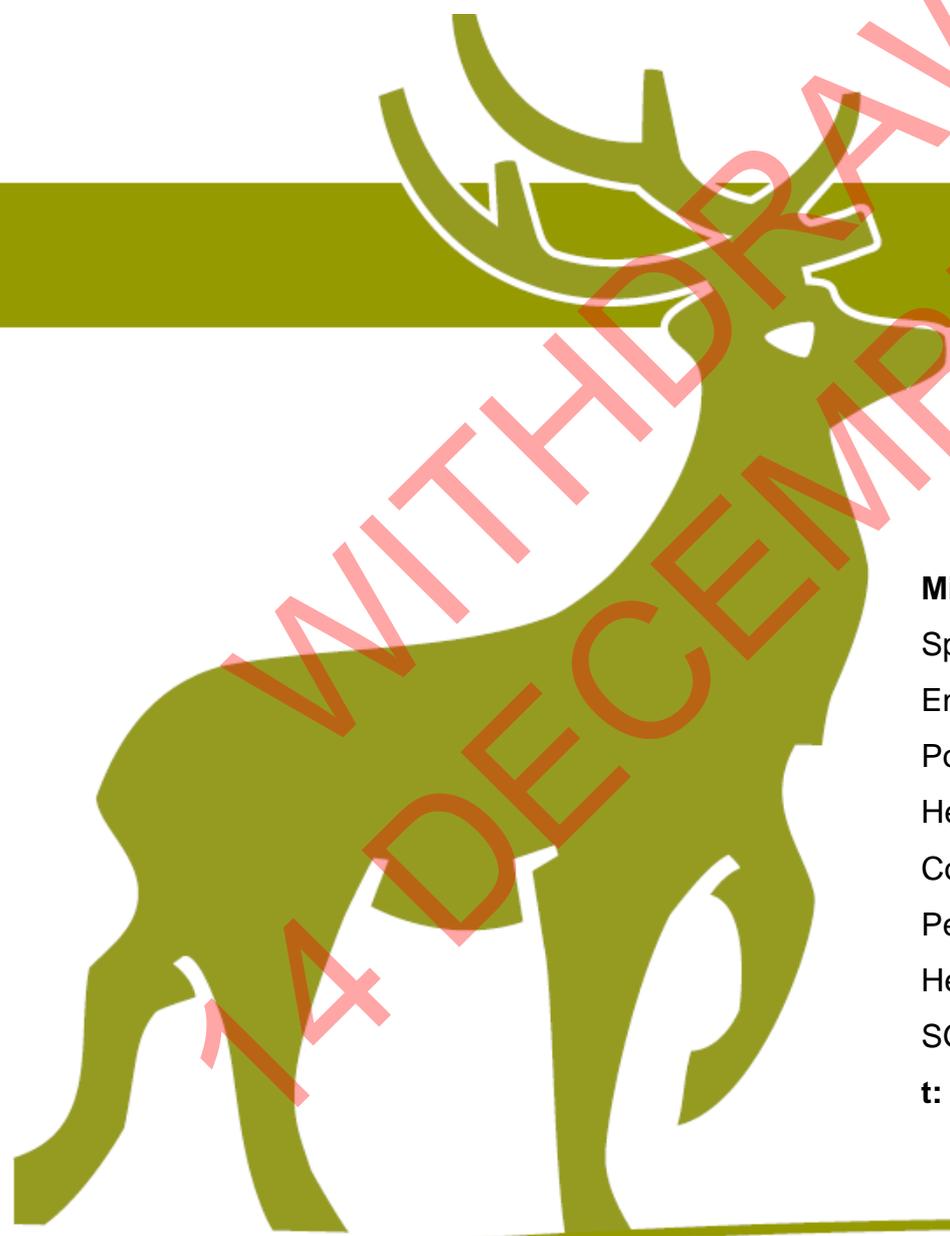
- 7.74. Positioning buildings or rooms which are less sensitive to noise can be used as a way to act as screens or baffles between noise sources and quiet areas. Additionally, noise generating activities and areas should be positioned away from sensitive properties and opening windows. This may be effective in areas which are likely to have high vehicular activity.
- 7.75. Landscaping, through the use of soil bunds, and planting can also be utilised to effectively buffer and screen waste developments from noise sensitive land uses close by. However, unnatural earth bunds and blocks of trees must not be used to completely screen the site.
- 7.76. Additional advice and guidance of solutions can be found in the [Building Futures Sustainable Design Toolkit](#).¹⁰

Odour

- 7.77. Given that temperatures are predicted to continue rising as a result of climate change, proposals for new waste facilities will need to consider measures to prevent odour issues developing in relation to unenclosed waste causing odour issues due to temperature increases. Those waste facilities which are most vulnerable to odour issues includes: waste transfer stations, HWRCs and composting facilities.
- 7.78. Design solutions such as enclosing waste storage areas or alternative environmental abatement techniques will need to be considered in order to provide resilience to climate change.
- 7.79. Further solutions can include maintaining a negative pressure environment within receptor halls to help prevent the emission of untreated air thereby minimising nuisance odour emissions. Odour issues could be overcome through the incorporation of odour suppression, air extraction systems or biofilters to mitigate impacts. All proposals for waste developments should include measures to conserve air quality with dust and odour being managed to an acceptable level.

¹⁰ <https://www.hertfordshire.gov.uk/microsites/building-futures/a-sustainable-design-toolkit/sustainable-design-toolkit.aspx>





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