Gloucestershire Waste Management Need & Infrastructure Capacity Assessment 2023 (WMNICA)

Capacity Requirement for the Management of Waste in Gloucestershire to 2041

Report: Final Issue

Version: v2.1

Issued: June 2024

BPP Consulting Document Control

Project: Gloucestershire Waste Management Need & Infrastructure Capacity Assessment 2023

Report: Capacity Requirement for the Management of Waste in Gloucestershire to 2041

Version Description: Final Issue v2

Version No: v2.1

Date: 28.06.2024

Version No.	Version Description	Author	Date	Reviewed	Date
1.0	Draft for Client review	Alan Potter (Partner)	24.05.2023	*Lorraine Brooks (Client Reviewer)*	13.06.2023
1.5	Post Client review	Alan Potter (Partner)	23.02.2024	*Lorraine Brooks (Client Reviewer)*	03.06.2024
2.0	Final Issue	Alan Potter (Partner)	05.06.2024	*Lorraine Brooks (Client Reviewer)*	19.06.2024
2.1	Final Issue v2	Ella Mills (Data Analyst)	28.06.2024	Alan Potter (Partner)	28.06.2024

Document Control Sheet

Version No.	Version Description	Change Made
1.1	Post Client review	Changes made in response to advice from GCC in email dated 13.06.2023
1.2	Post Client review	Changes made in response to advice from GCC regarding sites for inert waste management in email dated 04.01.2024
1.3	Post Client review	Changes made in response to advice from GCC regarding sites for inert waste management in email dated 05.01.2024
1.4	Post Client review	Changes regarding sites for inert waste management made in response to receipt of Permits and Waste Recovery Plans from the Environment Agency.
1.5	Post Client review	Changes made in response to advice re HWRC capacities (Table 4) and targets query from GCC in emails dated 27.02.2024 and 28.02.2023
2.0	Final Issue	Table 20 entries amended in light of further information received from GCC about specific recovery to land sites
2.1	Final Issue v.2	Footnote added to Page 3 at GCC request Clarification added on Page 19 in relation to Bromsberrow being an application relating to a ROMP review of minerals permission.

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Glossary of Terms

Agricultural Waste	Waste produced on a 'farm' in the course of 'farming'. Agricultural waste takes both 'natural' (or organic) and 'non- natural' forms e.g. plastics and metal.
Anaerobic Digestion	A process to manage organic matter including green waste and food waste broken down by bacteria in the absence of air, producing a gas (biogas) and nutrient rich solid or liquid (digestate). The biogas can be used to generate energy either in a furnace, gas engine, turbine or to power vehicles, and digestate can be applied to land as a fertiliser.
Biowaste	Waste that can break down over time due to natural biological action/processes, such as food, garden waste and paper.
Commercial Waste	Waste from factories or premises used for the purpose of trade or business, sport, recreation or entertainment.
Composting	A process in which biodegradable waste (such as green waste and kitchen waste) is broken down in aerobic conditions by naturally occurring micro-organisms to produce a material suitable for use as a soil improver.
Construction, Demolition & Excavation Waste	Waste arising from the building process comprising demolition and site clearance waste and builders' waste from the construction/demolition of buildings and infrastructure. Includes masonry, rubble and timber.
Defra	The UK Government department responsible for developing national waste management policy.
Energy from Waste	The conversion of the calorific value of waste into energy, normally heat or electricity through applying thermal treatment of some sort. May also include the production of gas that can be used to generate energy.
Environment Agency	The body responsible for the regulation of waste management activities through issuing permits to control activities that handle or produce waste. It also provides up-to-date information on waste management matters and deals with other matters such as water issues including flood protection.
Exemptions	Certain activities exempt from the need to obtain an Environmental Permit. Each exemption has specific limits and conditions that must be complied with to remain valid. Exemptions must be registered with the Environment Agency. Each registration lasts 3 years.
Green waste	Biodegradable plant waste from gardens and parks such as grass and hedge trimmings, from domestic and commercial sources suitable for composting.
Hazardous Waste Landfill	Sites where hazardous waste may be disposed by landfill. This can be a dedicated site or a single cell within a non-hazardous landfill, which has been specifically designed and designated for depositing hazardous waste.
Hazardous Waste	Waste requiring special management under the Hazardous Waste Regulations 2005 due to posing potential risk to public health or the environment (when improperly treated, stored, transported or disposed). This can be due to the quantity, concentration, or characteristics of the waste.
Household Waste	Waste from households collected through kerbside rounds, bulky items collected from households and waste delivered by householders to household waste recycling centres and "bring recycling sites". along with waste from street sweepings, and public litter bins.
Incineration	The controlled combustion of waste. Energy may also be recovered in the form of heat (see Energy from Waste).
Industrial Waste	Waste arising from any factory and from any premises occupied by an industry (excluding mines and quarries).
Inert Landfill	Landfill site permitted to only accept inert waste for disposal.
In Vessel Composting (IVC)	Composting materials within a closed system. Can be used to treat food and garden waste.
Landfill (including land raising)	The permanent disposal of waste to land, by the filling of voids or similar features, or the construction of landforms above ground level (land-raising).
Landfill Directive	European Union requirements restricting the landfilling of biodegradable municipal waste and requiring pre-treatment of all waste to be landfilled and separate disposal of hazardous, and non-hazardous and inert wastes.
Local Aggregate Assessment (LAA)	Annual local aggregate supply and demand assessment conducted by Mineral Planning Authorities which includes a survey of recycled aggregate producers within their particular Plan area.

Local Authority Collected Waste	Waste collected by or on behalf of a local authority. Includes household waste and business waste were collected by a local authority and non-municipal fractions such as construction and demolition waste delivered to HWRCs. LACW is the definition used in statistical publications, which previously referred to municipal waste.
Mass Balance	Method of assessing the quantity of waste that may be converted to recycled aggregate by comparing inputs and outputs for sites reporting through the WDI.
Materials Recycling Facility (MRF)	A facility for sorting recyclable materials from the incoming waste stream.
Mechanical Biological Treatment (MBT)	A waste facility that combines a sorting facility with a form of biological treatment such as composting or anaerobic digestion.
Municipal Solid Waste (MSW)	Household waste and any other waste collected by a waste collection authority such as municipal parks and gardens waste and waste resulting from the clearance of fly-tipped materials.
Non-Hazardous Waste Landfill	A landfill permitted to accept non-inert (biodegradable) wastes e.g. municipal and commercial and industrial waste and other non-hazardous (including inert) wastes. May only accept hazardous waste if a special cell is constructed.
Open Windrow Composting	A process in which biodegradable waste (such as green waste and kitchen waste) is broken down in an open-air environment (aerobic conditions) by naturally occurring micro-organisms to produce a material suitable for use as a soil improver.
Recovery	Subjecting waste to processes that recover value including recycling, composting or thermal treatment to recover energy.
Recycling	The reprocessing of materials extracted from the waste stream either into the same product or a different one.
Refuse Derived Fuel	A fuel produced to a contract specification by processing the combustible fraction of waste.
Residual Waste	Waste remaining after materials for re-use, recycling and composting/organic waste treatment e.g. anaerobic digestion has been removed.
The Plan area	The area subject to the Waste Local Plan to which this study relates. In this case the county of Gloucestershire.
Waste Collection Authority (WCA)	A local authority that has a duty to collect household waste. They also have a duty to collect commercial waste if requested to do so and may also collect industrial waste.
Waste Disposal Authority (WDA)	A local authority responsible for managing the waste collected by councils acting as waste collection authorities and the provision of household waste recycling centres. In this case Gloucestershire County Council.
Waste Planning Authority	The authority responsible for planning for waste within a specific administrative area. In this case Gloucestershire County Council.
Waste Transfer Station	A site to which waste is delivered for sorting or baling prior to transfer to another place for recycling, treatment or disposal.

Executive Summary

This report presents the outcomes of a Waste Management Needs and Infrastructure Capacity Assessment (WMNICA) undertaken by BPP Consulting LLP in 2022/23. This WMNICA was produced as part of the evidence base supporting the preparation of an updated Waste Local Plan for Gloucestershire to 2041. The WMNICA seeks to identify the future need for additional waste management capacity in Gloucestershire. Future need is assessed by quantifying and characterising the principal waste streams arising in Gloucestershire and forecasting the amount of waste that needs to be managed over the Plan period, whilst taking into account the potential contribution of the existing capacity within Gloucestershire.

This report brings together the findings of six topic specific reports.

The WMNICA found that in 2021 a total of over one and a half million tonnes of controlled waste arose within Gloucestershire. The quantities of principal categories of waste arising are shown in Figure 1 below:

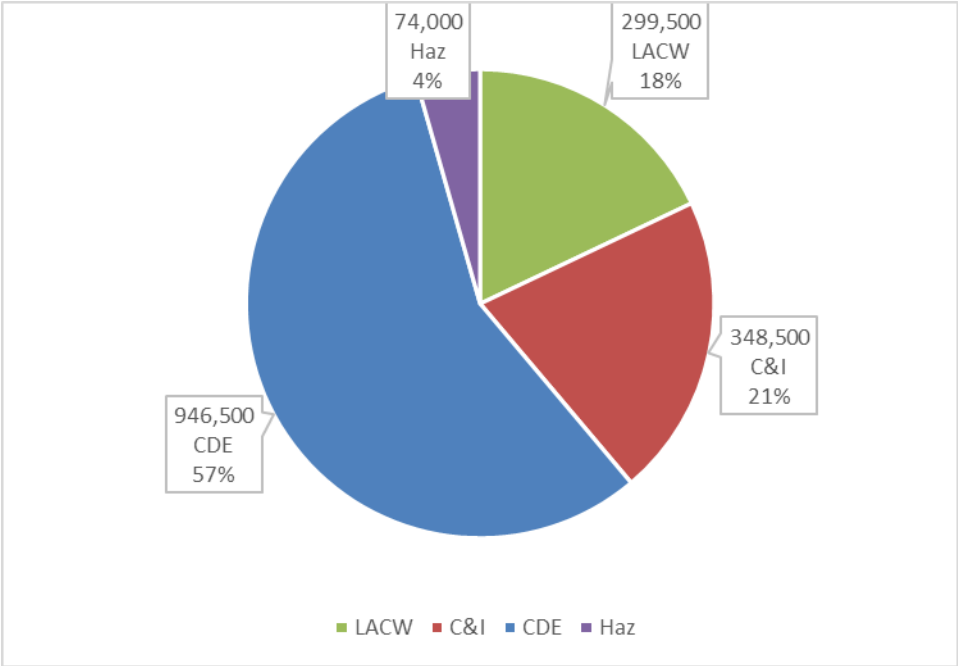


Figure 1: Quantities of Principal Waste Types Arising in Gloucestershire 2021 (tonnes)

The WMNICA found that there appears to be sufficient existing consented capacity to meet the projected management requirements for all waste streams through to 2041, although a potential shortfall in inert waste recovery capacity was found to emerge in 2034. This is not considering the capacity offered by the recovery to land sites with live planning applications (at the time of writing) and the potential capacity offered by Wingmoor West non-inert waste landfill were it to be completed using inert waste. Therefore, the shortfall may not materialise, and is not considered sufficient to justify specific allocations.

1 Purpose

This report presents the outcome of a comprehensive Waste Management Needs and Infrastructure Capacity Assessment (WMNICA) undertaken by BPP Consulting on behalf of Gloucestershire County Council (GCC).

The WMNICA is intended to identify possible shortfalls in waste management capacity that may emerge over the projected Plan period (to 2041) that a local plan ought to provide for. The WMNICA estimates the amount of waste requiring management over the projected Plan period (to 2041), whilst taking into account the contribution existing waste management capacity in Gloucestershire can be expected to make, to identity possible future gaps in capacity that may need to be provided for.

This involves first quantifying and characterising the principal waste streams arising in Gloucestershire. This work is undertaken in the context of the policy contained in National Planning Policy for Waste (NPPW) and the guidance contained in national Planning Practice Guidance (nPPG), which expects that:

> "*Planned provision of new capacity and its spatial distribution should be based on robust analysis of best available data.*" (nPPG Para 035).

To achieve this the following steps have been followed:

1. Scope the key waste streams to be targeted for assessment;
2. Generate robust baseline waste arisings values;
3. Generate realistic forecasts of future waste arisings;
4. Define appropriate (relevant to the Plan area) targets for the management of each waste stream (to ensure that waste is managed in accordance with the waste hierarchy);
5. Assess current consented management capacity in Gloucestershire;
6. Quantify future capacity needs accounting for cross boundary movements of waste;
7. Establish any associated future gaps in waste management capacity.

The WMNICA consists of the following reports:

1. Local Authority Collected Waste - Assessment of Management Requirements to 2041;
2. Commercial & Industrial Waste - Assessment of Management Requirements to 2041;
3. Construction, Demolition & Excavation Waste - Assessment of Management Requirements to 2041;
4. Hazardous Waste - Assessment of Management Requirements to 2041;
5. Scoping Review of Other Waste Streams[1];
6. Review of Strategic Waste Flows; and
7. This Overview Report.

[1] This report concluded there was no capacity needs to be considered further in this WMNICA.

1.1 Principal Data Sources

The principal data sources used to generate this WMNICA are as follows:

Waste Data Interrogator

Operators of all sites subject to environmental permits relating to the management of waste in England are required to submit returns to the Environment Agency setting out the quantities, types and origin of waste received and, where applicable, destination of waste removed. These returns are collated by the Environment Agency and reported in a national database known as the Waste Data Interrogator (WDI). The WDI is released approximately nine months after the end of the calendar year to which the data relates. The 2021 WDI (version 3 released January 2023), consisting of data for the calendar year 2021, is the most current version available at the time the project was initiated[2].

Hazardous Waste Interrogator

In the UK producers and managers of hazardous waste must notify the environment agency for the country in which they are located (in England this is the Environment Agency) of movements of waste classed as hazardous. This data is collated and reported in the Hazardous Waste Interrogator (HWI). Data is currently reported down to the receiving local area (defined by county council or unitary authority) rather than by receiving site. The latest HWI (HWI 2021) was released in September 2022 and includes data for 2021.

WasteDataFlow

WasteDataFlow (WDF) is a web-based data entry portal used by local authorities in England to report on the management of Local Authority Collected Waste (LACW) in their area to central Government (DEFRA) on a quarterly basis. Following independent quality checking the data is used to report on national LACW recycling and landfill diversion performance. While Councils normally report to WDF in financial years, as the Environment Agency WDI reports on a calendar year basis, the data for Gloucestershire within WDF covering the four quarters of 2021 has been accessed to ensure comparability between datasets.

1.2 Quantities of Waste Produced in Gloucestershire

The WMNICA update has found that c1.67 million tonnes of wastes arose within Gloucestershire in 2021. The principal components are:

- Construction, Demolition & Excavation: c946,500 tonnes
- Commercial & Industrial Waste: c348,500 tonnes
- Local Authority Collected Waste: c299,500 tonnes
- Hazardous Waste: c74,000 tonnes

Quantities of waste arising from agriculture, waste water treatment and non-nuclear radioactive waste management were also reviewed as set out in NPPW[3] but not found to arise in sufficient quantities to warrant inclusion in the assessment exercise.

[2] 2022 datasets were released after the substantive body of work had been completed on this report. This data will be considered in a subsequent update to this document to ensure any future plans rely on the best available (as per nPPG).

[3] Paragraph: 031 Reference ID: 28-031-20141016

2 Capacity Assessment Overview

The capacity of waste management facilities in Gloucestershire has been established using data provided by Gloucestershire County Council (GCC) on planning consents combined with a review of the most recent five-years' of waste input data reported through the WDI.

Examination of these datasets indicates that the following capacity types operate within the Gloucestershire:

- Organic waste treatment (e.g. composting and anaerobic digestion);
- Recycling;
- Energy from Waste (EfW);
- Waste Transfer capacity; and
- Landfill.

Facilities where waste recyclate is reprocessed into product, such as glass-furnaces and paper mills, were not included in this assessment as they are not considered to be waste management development and therefore are not planned for in a waste local plan.

2.1 Net Self Sufficiency

Net self sufficiency is a principle used in waste planning to establish how much capacity should be planned for in a Plan area. This follows the polluter pays principle whereby the area that produces the pollution (in this case waste) should take responsibility for managing it. The 'net' in 'net self sufficiency' is applied to recognise that waste does not generally recognise administrative boundaries and so there is no expectation that every tonne of waste produced in Gloucestershire ought to be managed within Gloucestershire, rather that, overall, there should be a balance of provision. The objective of net self sufficiency is therefore to ensure that there is sufficient capacity to manage the tonnage of waste equivalent to that predicted to arise within a Plan area over the time period which a local Plan is intended to cover. (in this case in Gloucestershire over the Plan period i.e. to 2041).

The degree to which Gloucestershire is net self sufficient may be established by comparing the available capacity within Gloucestershire against the projected capacity requirements determined in the separate waste stream specific reports, to ascertain if any gaps exist or may emerge over time.

It should be noted that while the assessment of management requirements has been conducted on a waste stream-specific basis within each report, the assessment of capacity cannot be conducted in such a precise way since the same facility may manage waste from a number of different waste streams. For example, sites receiving C, D & E waste may also receive C&I waste and LACW for transfer. This means it is necessary to interpret between the identified needs in the waste streams reports and the existing available capacity to identify any projected capacity shortfall.

2.2 Sources of Facility Capacity Data

Facility capacity data (other than for permanent deposit sites) has been collated from data provided by GCC (based on planning consents) plus a review of waste input data presented in the WDI over the most recently reported 5-year period 2017-2021 (See Appendix 1). The data provided by GCC had already been separated by basic waste category, i.e., household, industrial and commercial, inert / construction and demolition and hazardous. Any sites reporting inputs in the WDI 2021 not listed in the GCC dataset have been added. The 5-year peak input by basic waste category was then calculated on a site-by-site basis. For any sites that managed a significant amount of hazardous waste (greater than 20% of the total peak amount of waste managed) this was deducted from the preferred capacity value, to ensure that hazardous waste management capacity provided and counted in a separate report was not compromised.

To allow for the possibility that the peak input value is not an absolute limit, a 15% 'freeboard' was added to the peak input values derived from the data provided in the WDI for certain types of intermediate facilities. This adjustment is intended to reflect the maximum realistic throughput of a facility, as opposed to theoretical capacity that may be indicated by, for example, the site's Environmental Permit.

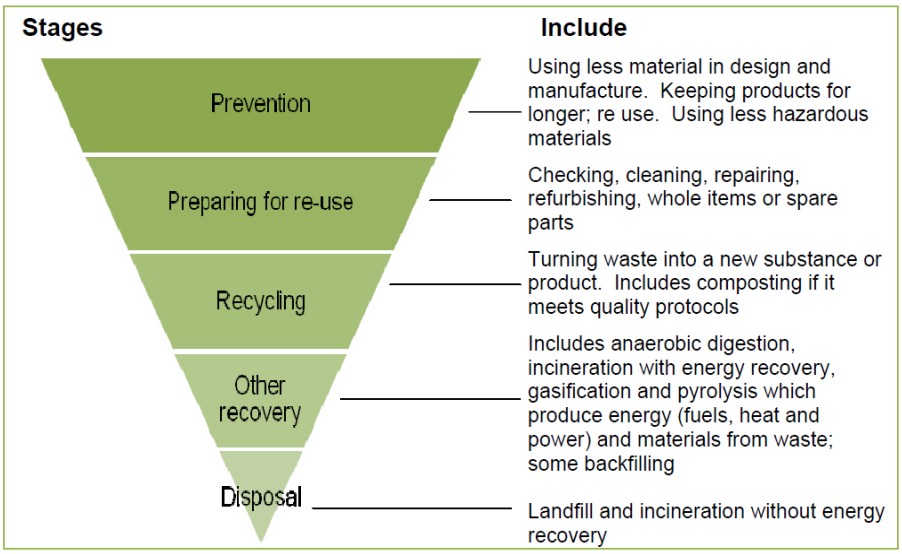
Site capacity based on the planning consent provided by GCC was compared to the peak value +15%. Where a consented capacity value was given, it was used in precedence to the peak value +15%, unless the peak value +15% deviated significantly (+/- 50%) from the consented capacity. In this case, the peak value +15% has been taken as it is considered to provide a more accurate representation of the true operational capacity.

It should be noted that any assessment of the total waste management capacity of an area only presents a snapshot at a particular point in time as the number of waste management facilities in existence, and in operation, is in a state of flux as sites close and new sites are consented and come on stream.

3 Capacity in Gloucestershire by Management Method

3.1 Types of Waste Management Capacity

The waste hierarchy is set out at Article 4 of the revised Waste Framework (Directive 2008/98/EC) and compliance with it is obligatory under *The Waste (England and Wales) (Amendment) Regulations 2012*. The hierarchy sets an order of preference by which waste is to be managed, starting with the preferred option of prevention (Tier 1), followed by preparing waste for re-use (Tier 2), recycling/composting (Tier 3) and 'other recovery' (Tier 4), with disposal (Tier 5) (such as landfill or incineration without energy recovery) as the last resort, as shown in Figure 2 below.



[4]

Figure 2: Diagrammatic representation of the Waste Hierarchy
Source: Guidance on applying the Waste Hierarchy DEFRA June 2011

It should be noted that under the Waste Framework Directive, recycling, composting and 'other recovery' operations such as Energy from Waste and Anaerobic Digestion are all classed as 'recovery' operations. Hence the use of the term 'other recovery', to distinguish between operations that involve recycling and/or composting and those that don't. This includes Energy from Waste (EfW) facilities, where waste is burnt to produce power and/or heat, providing they meet a minimum performance standard set out in a formula known as R1.

Following the waste hierarchy should generally lead to the most resource efficient and environmentally sound approach to managing waste. However, because the 'best' choice can be influenced by the fact that different waste streams have different characteristics (such as calorific value), in some cases departing from the waste hierarchy can lead to better environmental outcomes. When considering whether a departure from the waste hierarchy would be justified, decision-makers are to base their choices on 'life-cycle thinking' as reflected in the findings of Life Cycle Assessments.

[4] Guidance on applying the Waste Hierarchy DEFRA June 2011
www.gov.uk/government/uploads/system/uploads/attachmentdata/ file/69404/pb13529-waste-hierarchy-summary.pdf

The way in which the findings of such assessments are relevant to decision making on the application of the hierarchy to waste management has been summarised by DEFRA[5].

Recycling is taken to include any activity that either results in the separation of materials suitable for use as a raw material and/or its actual conversion to a product (reprocessing). For the purposes of this capacity assessment exercise, recycling capacity does not include capacity where a material such as waste paper is converted into a product such as newsprint, as that is considered to be a manufacturing process outside the scope of waste planning. Plants where such processes take place are generally not classed as waste management facilities and so do not need planning for in Waste Local Plans. Recycling capacity takes various forms, from depots where source separated recyclable materials are bulked up, to facilities where materials may be separated out on delivery e.g. Household Waste Recycling Centres (HWRCs), through to fully fledged Material Recycling Facilities (MRFs) where complete loads of waste are passed through a processing line to extract and separate materials for onward recycling.

Composting, involves the decomposition of biodegradable and putrescible matter by aerobic processes. Composting facilities come in two principal forms, open-air (windrow), or enclosed (In Vessel Composting (IVC)). Open-air composting is only suitable for treating biodegradable waste such as green waste and some cardboard, while IVC can also process putrescible wastes such as cooked kitchen wastes.

Anaerobic Digestion (AD) involves the decomposition of biodegradable and putrescible matter within a vessel to produce biogas. While it is classified in the waste hierarchy as a form of 'other recovery' (Tier 4), life cycle assessment has demonstrated that it is better than composting and other recovery options when it comes to the management of food wastes, and garden waste if the digestate is a product meeting quality protocols for use as a soil conditioner or fertiliser. Given that deviation from compliance with the waste hierarchy may be justified by life cycle thinking, it is therefore appropriate for AD to be considered alongside composting as an organic waste treatment method that can contribute to meeting recycling/composting targets. This is confirmed by the most recent exposition of the waste hierarchy contained in the Environmental Targets evidence base which includes AD in Tier 3 activities.

Kitchen and commercial food waste can only be processed in enclosed systems such as in-vessel composting plant (IVC) and AD facilities to ensure the requirements of the Animal By-Products Regulations are met.

In this report, 'Recycling/composting' is therefore used as a shorthand term for material recycling and organic waste treatment including AD.

[5] Applying the Waste Hierarchy: evidence summary DEFRA June 2011 www.gov.uk/government/uploads/system/uploads/attachment_data/ file/69404/pb13529-waste-hierarchy-summary.pdf

3.2 Recycling Capacity

Table 1 shows the assessment of recycling capacity in Gloucestershire for all non-hazardous waste i.e. inert and non-inert waste.

While the listing provided by GCC classes some sites as 'treatment'[6] these have been counted towards providing recycling capacity and are therefore shown in Table 1. Where the consented capacity was stated in the GCC listing, this has been included along with the peak input over the most recent 5-year period (2017-2021) as reported in the WDI[7]. Any additional sites in the WDI that were not included in the GCC list have also been included in Table 1. It is noted that neither the listing provided by GCC or the WDI identified any sites classed as Material Recycling Facilities (MRFs) as consented or operating in Gloucestershire.

3.3 Other Recycling Capacity

Whilst the WDI 2021 included 12 sites under the transfer site category[8], examination of the inputs and fates of the outputs of these sites revealed separation and processing for recycling takes place at 5 of these sites. 2 were assessed to be converting C, D & E waste to recycled aggregate and have thus been included in Table 6 (that relates to inert waste recycling capacity). The remaining 3 transfer sites found to be undertaking some recycling have been included in Table 1 below, leaving seven sites as true transfer sites assessed in Table 7.

[6] Note that none of the sites are classed as physical-chemical treatment sites.

[7] Note that where the consented capacity was not stated, the peak input has been taken.

[8] Note that one site has not been included in the capacity as it received less than 100 tonnes across the 5-year period.

Table 1: Sites offering Recycling Capacity in Gloucestershire for non-hazardous waste

Site Name & Operator	Principal Waste Type Managed	Facility Type as per EA WDI	Consented capacity provided by GCC (tonnes p.a.)	Peak WDI Input +15% (tonnes p.a.) (Appendix 1)	Preferred Value (tonnes p.a.)
Eastern Avenue Depot (Urbaser Ltd)	C&I	Transfer	-	30,862	30,862
Cinderford Transfer Station (Biffa Municipal Ltd)			6,000	11,910	11,910
Plusterwine Dryer (Mrs A. Hunt, Mr E. Hunt, Mrs P.Hunt, Mr W.Hunt)[9]		Treatment	32,000	14,653	32,000
Commerce House (P W Commercial Company Ltd)			-	37,990	37,990
The Old Saw Mill (SITR Midlands Associates Ltd)			-	10,513	10,513
Toddington Treatment Centre – (Gilder Environmental Ltd)			25,000	37,095	25,000
Waste Transfer Station (Hughes & Salvidge Holdings Ltd)	CDE		70,000	60,331	70,000
Harbour Road (Lydney Land Resources Ltd)			30,500	8,159	8,159
Velhurst Drive (David Skinner Groundworks Ltd)	CDE + C&I		18,500	4,494	4,494
Lydney Industrial Estate (Mr G.Lee & Mr A.Lee)			-	8,669	8,669
Grange Court (P S W England Ltd)		CDE + C&I Treatment	-	3,292	3,292
Cowfield Mill Transfer Station (Smiths (Gloucester) Ltd)		Treatment	25,000	33,078	25,000
				Total capacity	**267,889**

Table 1 shows a total operational recycling capacity in Gloucestershire of **c268,000 t.p.a.**

[9] Paper sludge is dried using heat from an onsite AD plant and is then exported for use as animal bedding.

3.4 Organic Waste Treatment Capacity

Various types of facility for the treatment of organic waste exist in Gloucestershire ranging from open windrow composting to anaerobic digestion (AD). The WDI data for 2021 shows inputs for ten organic waste treatment sites located in Gloucestershire. These are summarised in Table 2, together with an assessment of operational capacity

Table 2: Sites Offering Organic Waste Treatment Capacity in Gloucestershire

Site Name & Operator	Principal Waste Type Managed	Facility Type	Consented capacity provided by GCC (tonnes p.a.)	Peak WDI Input[10] (Appendix 1)	Preferred Value	Notes
Hill Farm (P M F Poultry Ltd)	Farm Waste	AD Facility	-	11,417	11,417	
Homeleaze Farm Pig Unit (H F Ltd)			-	3,984	3,984	
Plusterwine Anaerobic Digester (Plusterwine Biogas Ltd)[11]			-	32,923	32,923	
Smerrill Dairy AD Plant (Kemble Farms Ltd)	C&I + LACW		-	26,186	26,186	
Wingmoor Farm East (Andigestion Ltd)			34,000	30,429	34,000	Capacity from application form
Netheridge Sewerage Treatment Plant – (Severn Trent Water Ltd)	Waste water + C&I + LACW	Biological Treatment	-	134,932[12]	23,000	AD plant that processes sewage sludge and organic wastes –c23,000 tonnes of non-sludge waste in WDI 2021
Stanley's Quarry (Northwich Power Ltd)	C&I	Open Windrow	-	69,192	69,192	
Hempsted Landfill Site (Enovert South Ltd)			30,000	30,201	30,000	
Wingmoor Farm Landfill Site (Enovert South Ltd)			-	36,943	36,943	Composting tied to landfill consent expiring in 2027
Rose Hill Farm (MF Bennion Ltd)	Farm waste, LACW and C&I Waste	AD, IVC and open windrow composting	45,000	57,455	45,000	
				Total capacity	**312,645**	

Table 2 shows a total operational organic waste treatment capacity in Gloucestershire of c312,500 t.p.a. This can be broken down as follows:

- c136,000 t.p.a dedicated to C&I waste;
- c83,000 t.p.a can receive C&I and/or LACW[13];
- c45,000 t.p.a can receive agricultural waste and/or C&I waste and/or LACW; and
- c48,500 t.p.a is dedicated to agricultural waste.

[10] In the case of these facilities, only the peak input has been assessed as the appropriate value for site capacity as such sites are assumed to have a fixed processing capacity due to inherent limitations including residence times giving limited flexibility between consented capacity and actual inputs as shown by the small variation between annual input in Table 2.

[11] The AD plant is fed by 32,000 t.p.a of maize, grass, and rye silage, crop residues, and farm manure in any combination.

[12] Peak input minus sewage sludge (19 08 05) given capacity to manage this has been accounted for in the separate other waste scoping report (BPP Consulting 2022).

[13] Smerrill Dairy AD Plant plus Wingmoor Farm East plus Netheridge Sewerage Treatment Plant.

Therefore, there is at least c**219,500 t.p.a** of capacity that could receive and process C&I and LACW waste exclusively leaving up to c93,500 t.p.a of capacity for treating organic waste of agricultural origin. When combined with the running recycling capacity of c268,000 t.p.a, this gives **a total recycling and composting (aka organic waste treatment) capacity of c487,500 t.p.a.**

3.5 Metal Recycling Capacity

Scrap metal principally comes from industrial sources along with demolition and construction activity. In Gloucestershire there are 12 permitted metal recycling sites (MRS), of these 8 manage predominantly scrap metal and 4 manage a significant tonnage of hazardous waste in the form of End-of-Life Vehicles (ELV) (20% or more). Where more than 20% of the site's capacity had been used for hazardous waste management, the remaining percentage has been applied to the preferred value to determine how much capacity may be available for the management of non-hazardous metal wastes arising within the C&I and/or C, D & E waste stream.

As ELVs are classed as hazardous waste until they have been depolluted, the capacities of sites primarily/ exclusively managing ELVs have not been counted on the basis that they will primarily be managing hazardous waste and so instead their capacity is accounted for in the hazardous waste management requirement assessment[14]. The MRSs and their assessed capacities are shown in Table 3 below.

[14] *Management Requirements for Hazardous waste in Gloucestershire to 2041* BPP Consulting June 2024.

Table 3: Sites Offering Non-Hazardous Metal Recycling Capacity in Gloucestershire

Site Name & Operator	Principal Waste Type Managed	Consented capacity provided by GCC (tonnes p.a.)	Peak WDI Input +15% (tonnes) (Appendix 1)	Preferred Value (tonnes p.a.)	Notes
Abbey Recycling (Abbey Metal Recycling Ltd)	CDE + C&I	7,000	7,325	7,000	
Belfast Apron (Air Salvage International Ltd)	C&I	-	1,204	1,204	
Canal Works (Bendall Metal Recycling Ltd)	CDE + Haz	-	18,166	13,712	75% of the preferred value taken given 25% of the inputs are hazardous
Hayricks Wharf (Burke Bros Cheltenham Ltd)	C&I	-	2,976	2,976	
The Old Airfield, EMR Gloucester (European Metal Recycling Ltd)		-	33,600	33,600	
The Docks, European Metal Recycling Gloucester (European Metal Recycling Ltd)		-	107,813	107,813	
Forest Metals (Kyle Gettings)		-	14,259	1,283	9% of the preferred value taken given 91% of the inputs in 2021 were hazardous
Sudmeadow Road (J G & R Phelps)	C&I + Haz	-	18,829	10,661	59% of the preferred value taken given 41% of the inputs in 2021 were hazardous
Gilders Yard (Joe Gilder Recycling Ltd)	C&I	-	3,112	3,112	
Unit 21/22 Ryeford Industrial Estate (M Burford, M S Burford, M T Burford & M P Burford)	C&I	-	8,136	8,136	
Adsett Trading (D. Warwick)	CDE	-	2,061	2,061	
Cotswold View (H.R. Buckland, H. J.Buckland, H. J. Buckland)	C&I + Haz	-	5,217	2,974	57% of the preferred value taken given 43% of the inputs in 2021 were hazardous
			Total capacity	**194,893**	

Table 3 shows a total operational non-hazardous metal recycling capacity in Gloucestershire of c195,000 t.p.a. When combined with the recycling/composting capacity of c487,500 t.p.a (derived from Tables 1 and 2 above) gives **a total capacity of c682,500 t.p.a.**

3.6 Household Waste Recycling Centres

There are 6 operational household waste recycling centres (HWRCs), 5 are provided by GCC operated under contract by Ubico Ltd and 1 is managed by Cheltenham Borough Council.

HWRCs may be regarded as providing transfer capacity since waste delivered by the public to these sites is bulked and then transported on for onward management. However, as the majority of the inputs (c75%) are segregated on the site to go on for recycling or composting, 75% of the capacity of these sites has been counted as contributing towards the overall recycling capacity in Gloucestershire, with 25% toward transfer (of residual LACW). Their assessed recycling capacities are shown in Table 4.

Table 4: HWRC Capacity in Gloucestershire (tonnes)

Site Name & Operator	Consented capacity provided by GCC	Peak WDI Input +15% (Appendix 1)	Preferred Value
Oak Quarry Household Waste Site (Ubico Ltd)	12,000	10,822	12,000
Pyke Quarry Household Waste Site (Ubico Ltd)	50	20,888	20,888
Wingmoor Farm Household Waste Site (Ubico Ltd)	-	18,414	18,414
Hempsted Household Waste Site (Ubico Ltd)	25,000	22,115	25,000
Fosse Cross (Ubico Ltd)	7,000	6,743	7,000
Swindon Road Recycling Centre (Cheltenham Borough Council)	-	41,615	41,615
		Total Capacity	**83,302**

Applying the assessed recycling (75%) and transfer (25%) capacity to the total capacity in Table 5 gives c62,500 t.p.a recycling and c21,000 t.p.a transfer capacity (for residual waste).

Table 5 shows a total combined recycling/composting capacity of **c744,500 t.p.a** exists in Gloucestershire at the end of 2023.

Table 5: Combined Recycling/Composting Capacity in Gloucestershire

Capacity Type	Assessed capacity (t.p.a)
Recycling (All waste types)	267,889
Organic Waste Treatment (LACW + C&I)	219,321
Metal Recycling (C&I + CDEW	194,893
HWRC (LACW Recycling)	62,477
Total	**744,580**

3.7 Recycled Aggregate Production Sites

There are a number of sites where inert C, D & E waste is recycled into product such as recycled aggregate. Table 6 identifies these sites along with the consented throughput provided by GCC, 5-year peak input +15% and the calculated mass balance from input and output data in the WDI 2021 as set out in the separate C, D & E waste report[15].

Table 6: Recycled Aggregate Production Sites in Gloucestershire
italicised entry indicates temporary permission

Site Name & Operator	Consented capacity provided by GCC (tonnes p.a.)	Calculated mass balance from CDE baseline	Peak WDI Input +15% (Appendix 1)	Preferred value
Naunton Quarry (Breedon Southern Ltd)	75,000	-	14,412	14,412
Budget Waste Management (H T Waste Recycling Ltd)	-	-	49,429	49,429
Valley Trading (Hughes and Salvidge Holdings Ltd)	70,000	-	60,331	70,000
Allstone House, Myers Road (Allstone Sands Gravels Aggregates Trading Co Ltd)	75,000	11,238	45,096	75,000
Allstone House, Myers Road (Allstone Sands Gravels Aggregates Trading Co Ltd)	-	7,215	169,441	169,441
Land Off Sudmeadow Road (Keyway Ltd)	25,000	7,500	10,954	10,954
Moreton Valence Waste Processing Centre (Smiths (Gloucester) Ltd)	240,000[16]	47,263	216,877	240,000
Netherhills Transport Yard (Moreton C Cullimore (Gravels) Ltd)	30,000	5,374	6,883	6,883
Overton Farm (Complete Utilities Ltd)	18,750	12,023	45,649	45,649
Farmington Quarry (Farmington Natural Stone Ltd)	-	11,929	29,793	29,793
Watson Farm (Soils (HS) Ltd)	12,000	2,279	6,008	6,008
Stowfield Quarry Recycling Facility (Tarmac Trading Ltd)	-	-	4,404	4,404
Site with permission due to expire				
Land at Shurdington Road[17] (Elliotts (Cheltenham) Ltd)	*40,000*	*809*	*7,584*	*7,584*
			Total Capacity	**729,557**

Table 6 shows a total assessed operational recycled aggregate production capacity in Gloucestershire of **c729,500 t.p.a.**

[15] *Management Requirements for C,D & E waste in Gloucestershire to 2041* BPP Consulting June 2024.

[16] 40,000 tpa plus 200,000 tpa for a wash plant. Site not subject to any overall limit.

[17] Temporary permission which expires in 2026. This is accounted for in Table 19 capacity calculation.

3.8 Waste Transfer Capacity

Waste transfer refers to the reception and bulking of collected wastes, both residual and separated/co-mingled recyclates (DMR), for subsequent management (waste management or reprocessing). Transfer capacity can be accommodated at dedicated sites or at sites where other waste management activities take place. For example, sites accepting skip waste for recycling may also accept source separated DMR for onwards recycling.

Transfer station capacity that facilitates recycling by providing bulking capacity, as discussed previously, is already accounted for as recycling capacity in Section 3.3. Of the sites on the GCC listing, 7 were determined to be true transfer (i.e. bulking only with no separation and/or storage of recyclate) sites as the outputs were predominantly going to landfill, incineration or being transferred on again. These sites are shown in Table 7, along with a depot classed as a CA site in the WDI but is in fact a transfer station.

Table 7: Transfer Capacity in Gloucestershire

Site Name & Operator	Principal Waste Type Managed	Consented capacity provided by GCC (tonnes p.a.)	Peak Input +15% (Appendix 1)	Preferred Value
Bell Waste (Ian Dubberley)	C&I	-	7,079	7,079
Elliott Road (Enovert South Ltd)		74,999	35,975	35,975
Lydney Waste Transfer Station (Enovert South Ltd)		-	25,664	25,664
Wingmoor Farm (Clinical) Waste Transfer Station (S Grundon (Waste) Ltd)		-	94,161	94,161
Bus Bungalow, Sandhurst Lane (Royles Messrs J, W and D)	C&I + CDE	-	4,645	4,645
Ham Villa Farm (Mr B.Stevens & Mr R.Stevens)		-	14,914	14,914
Vetspeed Ltd (Vetspeed Ltd)	C&I + Haz	1,000	1,238	1,238
Gossington Depot (Ubico Ltd)[18]	LACW	-	15,283	15,283
			Total Capacity	**198,959**

Table 7 shows a total transfer capacity facilitating onward management of waste, other than for recycling, of **c199,000 tonnes**.

[18] This is the Ubico Stroud Depot which manages LACW but not brought in by the public.

3.9 Final Fate Capacity

The types of facilities explored thus far have been 'intermediate' sites where waste is sent before it is transported on for management at its final destination, or 'final fate' management. This section assesses the capacity provided by sites where the waste meets its final fate (other than where waste is converted into useful materials e.g. compost or recyclate). This includes EfW (other recovery), landfill and recovery to land sites.

3.9.1 'Other Recovery' Capacity

There is one consented EfW plant operating in Gloucestershire and this provides 'other recovery' capacity as shown in Table 8 below. The consented capacity value has been taken, as this type of facility has a peak design capacity.

Table 8: 'Other' Recovery Capacity in Gloucestershire

Site Name & Operator	Principal Waste Type Managed	Consented capacity provided by GCC (tonnes p.a.)	Peak WDI Input (Appendix 1)	Preferred Value
Javelin Park (Urbaser Environmental Ltd)	C&I + LACW	190,000	191,228	190,000
			Total capacity	**190,000**

Table 8 shows a total 'other' recovery capacity of **c190,000 tonnes** exists in Gloucestershire.

3.9.2 Landfill Capacity

There are 4 types of permitted landfills operating in Gloucestershire:

- Non-hazardous Waste Landfill
- Non-hazardous Waste Landfill with a Stable Non-Reactive Hazardous Waste (SNRHW) Cell
- Inert Waste Landfill
- Hazardous Waste Landfill

3.9.3 Landfill: Relationship between void space and tonnage

Each landfill's remaining capacity has been determined by reference to the Environment Agency annual remaining landfill void dataset[19]. However, the mass of waste does not necessarily directly correspond to its volume i.e. 1 tonne of waste does not necessarily occupy 1 cubic metre of airspace/void. The assessed landfill void requirement therefore needs to account for the density of different wastes under consideration.

For the purposes of this exercise, it has been assumed that 1.5 tonnes of inert waste can be accommodated within one cubic metre of void, while a single tonne of non-inert residual waste may be accommodated within one cubic metre of void. This latter value is greater than that of 0.85t/m^3 applied in the past, as very little untreated 'black bag' waste is now sent direct to landfill, most if not all will have undergone some pre-treatment (as required by the Landfill Directive), making it denser

[19] The EA permitted remaining void space 2022 has since been released, but at the time of writing 2021 data was the most current version available.

than untreated mixed non-inert waste. It is also assumed that 15% of the input to a non-inert landfill will be inert waste used for operational and restoration purposes as all such sites will have such a requirement and so this is counted towards the value for inert waste management capacity. The tonnage of inert waste used for restoration purposes is taken to be classed as recovery as it involves the use of the waste.

3.9.4 Non-Inert Landfill Capacity

Environment Agency data was primarily used to establish the available non-inert landfill void in Gloucestershire, with supporting information supplied by GCC. Capacity at the operational non-inert landfill sites in Gloucestershire is listed in Table 9.

Table 9: Remaining landfill void space at Non-inert Landfills in Gloucestershire (end 2022)

Site Name	Expiry Date	Facility Type Description	Type of waste (WDI 2020)	EA data end of 2021 permitted Void space (m^3)	End of 2021 capacity (tonnes)	Notes
Wingmoor West Farm Landfill Site (Enovert South Ltd)	None	Non-Haz	CDE + C&I	831,934	645,000 for non-inert (187,000 for inert)	15% of total void (831,934) = 124,790m^3*1.5 = 187,185t inert waste input for restoration.
Wingmoor Quarry East Landfill, (Grundon Waste Management Ltd)	2027	Non-Haz (SNRHW)	CDE + C&I	1,417,905	<1,099,000 for non-inert (319,000 for inert)	15% of total void (1,417,905) =212,686m^3*1.5 = 319,029t of inert waste for restoration. 'Less than' as the site has permission for a SNRHW cell[20].
				Total	**2,249,839**	

Table 9 shows that there is 2,250,000 m^3 of consented void at operational non-inert landfill in Gloucestershire offering the following disposal capacity:

- Non-inert waste: c1,744,000 tonnes
- Inert waste: c506,000 tonnes

[20] Examination of WDI input data shows <100 tonnes hazardous waste inputs over the most recent 5-year period. Given its proximity to a dedicated hazardous waste landfill site (operated by, in effect, the same entity), it is considered unlikely that a SNRHW cell will actually be provided and hence all capacity has been assumed to be available for non-hazardous waste.

3.9.5 Inert Landfill Capacity

Details of the only operational inert landfill site in Gloucestershire are set out in Table 10.

Table 10: Consented/ Operational Inert Waste Landfill in Gloucestershire

Site Name	Expiry Date	Facility Type Description	Type of waste (WDI 2021)	EA data end of 2021 permitted void space (m^3)	End of 2021 capacity (tonnes) (m^3 x 1.5)
Ryton Road (Former Sand Quarry) (Terra Firma (Gloucestershire) Llp)	31st January 2024	Inert Landfill	CDE	5,183,227	7,774,841
			Total	**5,183,227**	**7,774,841**

Table 10 shows that there is c5,183,000m^3 of inert landfill void consented in Gloucestershire offering c7,775,000 tonnes of inert disposal capacity to 31st January 2024. However, given the immediacy of the cessation date, the capacity offered has not been counted.

3.9.6 Hazardous Waste Landfill Capacity

Details of the only operational hazardous waste landfill site in Gloucestershire are set out in Table 11.

Table 11: Consented/Operational Hazardous Waste Landfill in Gloucestershire

Site Name + Operator	Expiry Date	Facility Type Description	Type of waste (WDI 2021)	EA data end of 2021 permitted Void space (m^3)	End of 2021 capacity (tonnes)	Notes
Wingmoor Farm East, S Grundon (Waste) Ltd	2027	Hazardous Landfill	Haz	991,399	876,000 for hazardous (223,000 for inert)	15% of total void (991,399) = 148,710m^3*1.5 = 223,065t inert waste input for restoration 991,399 – 223,065 =768,399 *1.14[21] = 875,975 tonnes for hazardous waste
			Total	**991,399**		

Table 11 shows that there is c991,500m^3 of hazardous waste landfill void consented in Gloucestershire offering the following 'disposal/final fate' capacity to 2027:

- Hazardous waste: c876,000 tonnes
- Inert waste: c223,000 tonnes

[21] The site primarily accepts air pollution control residues (APCr) from incinerators/EfW plants which has a density of 1.14 tonnes per cubic metre.

3.9.7 Recovery to Land Capacity

The WDI 2021 reports that 9 sites in Gloucestershire, permitted as recovery to land operations by the Environment Agency received waste in 2021 these sites are listed in Table 12.

Table 12: Recovery to Land Sites and known void space and expiry dates

Site Name	Operator	Void space (m^3)	Capacity (tonnes)	Expiry
Cotswold Hill Quarry	Smith's Gloucester Ltd	200,000	300,000	2042
Farmington Quarry	Farmington Natural Stone Ltd	60,000	90,000	
Manor Farm Quarry	Aggregate Industries UK Ltd	-	4,674,780	2034
Kineton Thorns Site	Breedon Southern Ltd	-	97,500	2026
Cotswold Hills Golf Course	K W 1000 Ltd	150,000	225,000	Oct-24
Lilley Brook Golf Club	K W Lilleybrook Ltd	101,114	151,671	None
Pike Field	Tetbury Rugby Football Club Ltd	-	90,000	None
Kempsford Quarry	Aggregate Industries UK Ltd	70,000	105,000	None
Whetstone Bridge	Moreton C Cullimore	416,520	624,780	To commence by 2025
		Total	**6,358,731**	

Table 12 shows at the beginning of 2024 there was c6.4M tonnes of consented recovery to land capacity in Gloucestershire. One of the sites did not report inputs in the WDI 2022 but given this site is subject to a permit and this will attract annual subsistence fees payable to the Environment Agency it is considered reasonable to assume that it will commence operation by 2025[22]. Therefore, its capacity has been counted.

At the time of writing there is an undetermined application for which some importation of inert material for restoration purposes dependent upon the final agreed restoration at Stowe Hill. Furthermore, there is another undetermined application for the importation of c675,000 tonnes of inert materials at Bromsberrow Heath North operated by Bromsberrow Sand & Gravel Co. As the proposals are yet to be determined the capacity offered has not been considered further in this assessment.

Furthermore, another site at Down Ampney has permission for the importation of c4.87 M tonnes (up to c200,000 tpa e.g. 24 years). As the permission is yet to be implemented and the site is yet to commence importation, the capacity has not be considered further in this assessment.

[22] GCC DM case officer confirms commencement expected by 2025.

3.10 Infrastructure Capacity Summary

3.10.1 Intermediate Site Capacity

Table 13 shows a summary of operating capacity of the different type of facilities investigated in this section. In 2021 capacity for managing waste at intermediate sites in Gloucestershire totalled **c1.88 Mtpa.**

Table 13: Intermediate Waste Management Capacity in Gloucestershire

Capacity Type	Assessed capacity		
	Non-inert waste		Inert waste
	Recycling	Transfer (without recycling)	Recycling
Other Recycling (Table 1)	267,889	-	-
Organic Waste Treatment (Table 2)	219,321	-	-
Metal Recycling (Table 3)	194,893	-	-
HWRC Recycling (Table 4)	62,477	-	-
HWRC Transfer (Table 4)	-	20,826	-
Recycled Aggregate (Table 6)	-	-	729,557
Waste Transfer (Table 7)	-	198,959	-
Total	**744,580**	**219,785**	**729,557**

3.10.2 Final Fate Capacity

Table 14 sets out a summary of final fate capacity in Gloucestershire.

Table 14: Final Fate Waste Management Capacity in Gloucestershire (tonnes)

N.B. Underlined values are remaining capacity rather than annual capacity

Capacity Type	Assessed capacity			
	Non-inert waste		Inert waste	Hazardous Waste
	Other Recovery	Disposal	Recovery (restoration)	Disposal
EfW	190,000			
Non-hazardous Waste Landfill		1,744,000	506,000	
Hazardous Waste Landfill			223,000	876,000
Recovery to Land			6,358,731	
Total	**190,000**	**1,744,000**	**7,087,731**	**876,000**

4 Assessing the Capacity Gap in Gloucestershire

4.1 Waste Management Requirements

The proposed targets generated in the background waste stream specific assessments, are presented together in Table 15 below.

Table 15: Proposed Targets

		Actuals	Targets at Plan milestone years			
		2021	**2026**	**2031**	**2036**	**2041**
Recycling/Organic Waste Treatment	LACW	*50%*	≥55%	≥60%	≥65%	≥70%
	C&I	75%	≥80%	≥80%	≥80%	≥80%
	CDEW	*11%*	14%	14%	14%	14%
Residual waste Other Recovery	LACW	*47%*	42%	37%	32%	27%
	C&I	10%	10%	14%	16%	18%
Residual waste Non-Inert Landfill	LACW	*3%*	≤3%	≤3%	≤3%	≤3%
	C&I	14%	≤10%	≤6%	≤4%	≤2%
	CDEW	*1%*	≤1%	≤1%	≤1%	0%
Aggregate recycling/ Recovery to Land and Recovery in Landfill	Inert CDE	*88%*	≥85%			

It should be noted that the targets set out above are provided as a basis against which provision of additional capacity may be planned, and are not intended to be binding as such. In the event that the targets (floors and ceilings) are not met, additional management capacity may be required.

The resulting management requirements for waste forecast to be produced in Gloucestershire are set out in Table 16. The progression to the target milestones is compared with baseline value for 2021.

Table 16: Gloucestershire Forecast Waste Management Requirements at Plan Milestone years

		Measured Baseline (Actuals)	Forecast Waste Management Requirements (Tonnes at Plan Milestone)				Peak or Cumulative Capacity (underlined) Requirement (tonnes) rounded
		2021	2026	2031	2036	2041	
Recycling/Organic Waste Treatment	LACW	*150,395*	167,325	185,310	203,757	222,666	**222,666**
	C&I	*262,757*	281,976	284,667	287,384	290,127	**290,127**
	CDEW	*100,161*	133,000	133,000	133,000	133,000	**133,000**
	Total	***513,313***	**582,301**	**602,977**	**624,141**	**645,793**	
Residual waste Other Recovery	LACW	*140,485*	127,775	114,274	100,311	85,886	**127,775**
	C&I	*36,343*	35,247	49,817	53,884	65,278	**65,278**
	Total	***176,828***	**163,022**	**164,091**	**154,195**	**151,164**	
Residual waste Non-Inert Landfill	LACW	*8,724*	9,127	9,265	9,404	9,543	**176,254**
	C&I	*49,375*	35,247	21,350	14,369	7,253	**428,791**
	CDEW	*11,978*	10,000	10,000	10,000	10,000	**155,489**
	Total	***70,077***	**54,374**	**40,615**	**33,773**	**26,796**	**760,537**
Aggregate recycling/ Recovery to Land and Recovery in Landfill	Inert CDE	*834,321*	804,500				804,500

How the waste management capacity requirements identified in Table 16 above might be met is discussed below.

4.2 Recycling & Composting Waste Management

Recycling and organic waste treatment have been taken to sit at the same tier of the waste hierarchy and may therefore be considered interchangeable in terms of the movement of waste up the hierarchy and therefore combined targets are proposed.

When the total assessed management capacity for recycling and composting of c744,500 t.p.a shown in Table 13 is compared with the estimated peak combined recycling and composting requirement of 646,000 t.p.a shown in Table 16, it can be concluded that a surplus of capacity is predicted through to 2041. As Table 17 shows, it is predicted that the capacity available for the management of non-inert waste by recycling/composting will be sufficient providing current capacity is safeguarded from substantial loss throughout the Plan period.

Table 17: Gloucestershire Waste Recycling/Composting Capacity Requirement at Plan Milestone years

Source: Table 13 & 16

	Tonnes at Plan Milestone				Peak Requirement (tonnes)
	2026	**2031**	**2036**	**2041**	
Recycling /Composting Requirement	582,500	603,000	624,000	646,000	646,000
Plan Area Capacity	*744,580*	*744,580*	*744,580*	*744,580*	
Shortfall	**0**	**0**	**0**	**0**	

4.3 Residual Waste Management

4.3.1 Gloucestershire Residual Waste 'Other Recovery' Capacity

When the total assessed management capacity for 'other recovery' of c190,000 tonnes shown in Table 14 is compared with the estimated peak combined 'other recovery' requirement of 163,000 t.p.a shown in Table 16, a surplus of capacity is predicted through the Plan period, as shown in Table 18. This shows that there is sufficient capacity provided in Gloucestershire for the management of non-inert waste through other recovery throughout the Plan period.

Table 18: Gloucestershire Waste 'Other Recovery' Capacity at Plan Milestone years
Source: Table 14 & 16

	Tonnes at Plan Milestone				Peak Requirement (tonnes)
	2026	**2031**	**2036**	**2041**	
Other Recovery	163,000	164,000	154,000	151,000	**164,000**
Plan Area Capacity	*190,000*	*190,000*	*190,000*	*190,000*	
Shortfall	**0**	**0**	**0**	**0**	

4.3.2 Gloucestershire Residual Waste Landfill Capacity

While there is no obligation for Gloucestershire to achieve net self-sufficiency for non-inert waste management alone throughout the Plan period, the disposal or recovery of mixed municipal waste is subject to the proximity principle and hence consideration has been given to the sufficiency of the remaining consented non-inert landfill capacity within Gloucestershire. This approach recognises that the proximity principle encourages each WPA to plan for the management of mixed municipal waste through disposal and energy recovery on a more localised basis[23]. Table 19 below displays the predicted depletion profile of non-inert landfill void in Gloucestershire as the projected combined residual non-inert waste landfill requirement is met. The depletion profile takes account of the expiry of the Wingmoor Quarry East Landfill permission in 2027, with capacity at the Wingmoor West Landfill site continuing for the remainder of the Plan period.

[23] *Waste Management Plan for England* (DEFRA, January 2021)

Table 19: Predicted Depletion of Non-inert Landfill void in Gloucestershire (tonnes)

Source: Tables 14 and 16

NB: Red cell indicates expiry date of current permission

Year	Annual Non-inert Landfill Requirement[24]	Inputs to Wingmoor Quarry East	Inputs to Wingmoor West Landfill	Remaining Capacity for Non-inert	Shortfall
				1,744,000	
2023	63,582	63,582	0[25]	1,680,418	0
2024	60,377	60,377	0	1,620,041	0
2025	57,144	57,144	0	1,562,897	0
2026	53,911	53,911	0	1,508,986	0
2027	51,160	51,160[26]	0	1,457,827	0
2028	48,407	-	48,407	1,409,419	0
2029	45,656	-	45,656	1,363,763	0
2030	42,904	-	42,904	1,320,860	0
2031	40,152	-	40,152	1,280,707	0
2032	38,784	-	38,784	1,241,923	0
2033	37,416	-	37,416	1,204,507	0
2034	36,048	-	36,048	1,168,459	0
2035	34,678	-	34,678	1,133,781	0
2036	33,310	-	33,310	1,100,471	0
2037	30,007	-	30,007	1,070,464	0
2038	26,705	-	26,705	1,043,759	0
2039	23,402	-	23,402	1,020,357	0
2040	20,098	-	20,098	1,000,259	0
2041	16,796	-	16,796	983,463	0

Table 19 shows that there is sufficient non-inert landfill capacity in Gloucestershire to meet the forecast annual requirement over the Plan period. Table 18 shows that it is predicted that there will be a surplus of c983,500 tonnes of non-inert waste landfill capacity remaining at the end of the Plan period.

[24] Includes C&I, C, D & E and LACW residual waste (Table 14)

[25] Given the proximity to Wingmoor Quarry East Landfill Site it is considered possible that Wingmoor West Landfill might not receive any inputs during the limited life of Wingmoor Quarry East.

[26] The site is anticipated to close before reaching full capacity with c358,500 tonnes of capacity remaining unused.

4.3.3 Inert Waste Management

The adopted Gloucestershire Waste Core Strategy (WCS) (2012) does not commit to net-self-sufficiency for the management of inert waste. However, applying the objective of net self-sufficiency is a useful way of establishing the extent to which the provision of capacity may prove to be adequate.

Although the capacity required for inert waste is not specified in the WCS, the following has been considered to determine whether net-self-sufficiency of inert waste is being, and will continue to be, achieved in Gloucestershire.

Inert waste can be recovered through two principal routes depending on its nature/composition - converted to recycled aggregate or soil, or deposited for beneficial purposes on land (backfilling of mineral workings often permitted as inert landfill and recovery to land operations such as acoustic bunds). Inert waste is also used for the restoration of non-inert landfills, and this is considered to be a beneficial use and hence a 'recovery' operation rather than disposal to landfill. The peak quantity of inert waste requiring management through recovery of one form or another has been calculated to be c804,500t as shown in the final row of Table 16.

Table 6 identifies 13 sites within Gloucestershire reported as producing recycled aggregate. These sites have combined calculated capacity of c729,500 t.p.a. This is less than that of the identified combined requirement of c804,500tpa, suggesting an annual capacity shortfall c75,000 tpa. However, this does not take account of capacity provided by facilities providing recovery capacity where the permanent deposit of inert waste to land takes place, as follows:

Recovery to Land: Table 12 identifies recovery to land sites with a total capacity of c6.4Mt[27].

Non-inert Landfill: A total of c729,000 tonnes of capacity for inert waste to complete the restoration of the Wingmoor Farm landfills[28] was identified as shown in Table 14. However, two of these sites have permissions that expire in 2027.

Therefore, total management capacity for inert waste recovery in Gloucestershire is estimated to be c7,817,000 tonnes (729,500 t.p.a recycled aggregate plus c729,000 tonnes non-inert landfill plus c6,358,500 tonnes recovery to land). Table 20 displays the predicted depletion of sites offering inert capacity in Gloucestershire with deduction of the projected inert waste requiring management. The depletion profile accounts for the expiration date at the Wingmoor Quarry East and Wingmoor Farm East Landfill sites. The depletion profile for each site has been calculated by dividing the remaining capacity by the number of years until the expiration of the permission, where known. Where there is no expiration date, the capacity has been divided by 18 (to the end of 2041).

[27] Actual remaining capacity will be less than stated given some of the sites have commenced importation of inert waste. To determine the remaining capacity the WDI has been used to deduct reported inputs from the permitted tonnage.

[28] Non-hazardous, non-hazardous with SNRHW cell and hazardous landfill sites

Table 20: Predicted Inert Waste Management Capacity in Gloucestershire (tonnes)

Source: Tables 13 and 14

NB: Red cells indicates expiry date of current permission amber indicates possible capacity gap

Year	Annual Inert Waste Management Requirement	Recycled Aggregate	Inputs to Wingmoor Quarry East Landfill Site	Wingmoor Farm East Hazardous Waste Landfill	Inputs to Wingmoor West Landfill at 15% of non-inert inputs[29] (Table 17)	Cotswold Hill Quarry	Cotswold Hills Golf Course	Farmington Quarry	Manor Farm Quarry	Kineton Thorns Site	Pike Field	Kempsford Quarry	Whetstone Bridge	Lilley Brook Golf Club	Surplus or Shortfall	Cumulative Deficit
Remaining Capacity[30]			**319,000**	**223,000**	**187,000**	**111,763**	**75,920**	**54,617**	**4,343,196**	**97,500**	**24,813**	**105,000**	**624,780**	**36,826**		
2024	804,500	685,000	59,750	59,750	0[31]	105,554	0	51,582	3,908,876	48,750	23,435	99,167	624,780	34,780	638,657	0
2025	804,500	685,000	59,750	59,750	0	99,345		48,548	3,474,557	0	22,056	93,333	588,028	32,734	599,489	0
2026	804,500	685,000	59,750	59,750	0	93,136		45,514	3,040,237		20,678	87,500	551,276	30,688	570,489	0
2027	804,500	677,500[32]	63,500	43,750[33]	19,750	86,927		42,480	2,605,917		19,299	81,667	514,525	28,642	413,322	0
2028	804,500	677,500	76,250[34]		50,750	80,718		39,445	2,171,598		17,921	75,833	477,773	26,597	373,464	0
2029	804,500	677,500			10,892	74,509		36,411	1,737,278		16,542	70,000	441,021	24,551	372,845	0
2030	804,500	677,500			10,273	68,300		33,377	1,302,959		15,164	64,167	404,269	22,505	372,225	0
2031	804,500	677,500			9,653	62,091		30,343	868,639		13,785	58,333	367,518	20,459	371,606	0
2032	804,500	677,500			9,034	55,882		27,308	434,320		12,407	52,500	330,766	18,413	371,298	0
2033	804,500	677,500			8,726	49,673		24,274	0		11,028	46,667	294,014	16,367	370,991	0
2034	804,500	677,500			8,419	43,463		21,240			9,650	40,833	257,262	14,321	-63,636	-63,636

[29] Multiplied by 1.5 factor to convert to inert waste.

[30] Recovery to Land remaining capacity calculated using the total permitted capacity minus WDI inputs.

[31] Given the proximity to Wingmoor Quarry East Landfill Site it is considered possible that Wingmoor West might not receive any inputs during the limited life of Wingmoor Quarry East.

[32] Accounts for the expiry of temporary permission at Shurdington recycled aggregate site in 2026.

[33] The site is anticipated to have reached full capacity by its closure date.

[34] The site is anticipated to have reached full capacity by its closure date. This assumes c876,000 tonnes of hazardous waste is landfilled by the end of 2027.

2035	804,500	677,500			8,111	37,254		18,206			8,271	35,000	220,511	12,275	-63,944	-127,580
2036	804,500	677,500			7,803	31,045		15,171			6,893	29,167	183,759	10,229	-64,252	-191,833
2037	804,500	677,500			7,495	24,836		12,137			5,514	23,333	147,007	8,184	-64,995	-256,828
2038	804,500	677,500			6,752	18,627		9,103			4,136	17,500	110,255	6,138	-65,738	-322,566
2039	804,500	677,500			6,009	12,418		6,069			2,757	11,667	73,504	4,092	-66,481	-389,047
2040	804,500	677,500			5,266	6,209		3,034			1,379	5,833	36,752	2,046	-67,225	-456,272
2041	804,500	677,500			4,522	0		0			0	0	0	0	-67,968	-524,240

Table 20 shows that an annual shortfall in inert waste recovery capacity of c63,500 tonnes is predicted to emerge at 2034 rising to c68,000 t.p.a at the end of the Plan period as capacity at sites where the permanent deposit to land occurs, is depleted. This results in a cumulative capacity requirement of c524,000 tonnes at 2041. However, the depletion profile does not consider the further two live applications relating to the restoration of two mineral workings sites referred to under Table 12. Moreover, given there will be predicted non-inert landfill capacity remaining at the Wingmoor West non-inert landfill at the end of the Plan period of c983,500 tonnes, this could also provide capacity to accommodate the predicted deficit for inert waste arising in Gloucestershire (equating to c1,475,500 inert waste capacity)[35]. Given the potential sources of additional capacity available in the Plan area it is considered that the modelled shortfall may not actually materialise.

4.4 Hazardous Waste Management

The separate hazardous waste report prepared as part of this WMNICA[36], found that combined capacity offered by facilities within Gloucestershire dedicated to managing hazardous waste equates to at least c67,500 tonnes per annum, and this is a reasonable match with the c73,500 tonnes hazardous waste that arose in Gloucestershire in 2021 and that forecast to 2041 (declining forecast). In addition, Gloucestershire has a number of landfill sites offering treatment and disposal capacity for certain hazardous wastes to 2027. These meet a need beyond Gloucestershire and may be regarded as regionally significant facilities.

The separate hazardous waste report concluded that the continued availability of capacity to 2041 (the projected Plan period) at those facilities outside Gloucestershire identified as managing strategically significant quantities of hazardous waste should be confirmed through contact with the host WPAs listed in Table 10 of that report. This exercise is necessary to demonstrate that the future management of hazardous waste arising in Gloucestershire is properly planned for.

[35] It does however raise the question of whether importation additional to the 15% allocated for restoration use would be classed as 'other recovery', or if it would be classed as disposal.

[36] BPP Consulting Gloucestershire WMINCA Hazardous Waste Final Version v1.2 05.06.2024.

5 Capacity Gap Summary

The findings from the preceding discussion on potential future waste management capacity gaps in Gloucestershire are summarised in Table 21 below.

Table 21: Gloucestershire combined Capacity Assessment & Annual Capacity Gap Analysis
Amber indicates possible capacity gap

Capacity Type	Waste Management Capacity Gap (Tonnes at Plan Milestones)				
	2021	2026	2031	2036	2041
Recycling & Composting (Table 17)	0	0	0	0	0
Other Recovery (Table 18)	0	0	0	0	0
Non-inert Landfill (Table 19)	0	0	0	0	0
Inert Waste Recovery (Table 20)	0	0	0	-64,252	-67,968

Table 21 shows that currently sufficient consented capacity exists to meet the projected management requirements of all types of waste arising in Gloucestershire for the duration of the Plan period except for the predicted shortfall in inert waste recovery capacity from 2034 (pre the 2036 milestone) to the end of the Plan period. However, this does not take account of the capacity offered at the recovery to land sites with live applications (as mentioned under Table 12). It should also be noted that if the planning permission expiry date related to the Wingmoor Quarry East Landfill permission was to be extended beyond 2027, then that too would offer some further additional inert waste management capacity.

6 Capacity Assessment Conclusion

This Waste Management Needs and Infrastructure Capacity Assessment (WMNICA) consists of the following documents:

1. Local Authority Collected Waste Assessment of Management Requirements to 2041;
2. Commercial & Industrial Waste Assessment of Management Requirements to 2041;
3. Construction, Demolition & Excavation Waste Assessment of Management Requirements to 2041;
4. Hazardous Waste Assessment of Management Requirements to 2041;
5. Scoping Review of Other Waste which concluded there was no requirement for the capacity needs of these streams to be considered further in this WMNICA; and,
6. Review of Significant Waste Flows.

The combined consideration of the reports above has found that the existing consented capacity operational within Gloucestershire is likely to be sufficient to enable the County Council in meeting its objectives of:

- Seeking to assure that waste produced in Gloucestershire is managed in accordance with the Waste Hierarchy in priority order by setting ambitious recycling and landfill targets; and,
- Achieving net self sufficiency for the Plan period through to 2041.

To ensure that these objectives are met it will be necessary to:

- Safeguard capacity at existing facilities in Gloucestershire; and,
- Ensure that capacity at facilities outside Gloucestershire that manage hazardous waste arising in Gloucestershire in particular will remain available for the Plan period.

While a shortfall for inert waste recovery capacity is predicted from 2034 to the end of the Plan period, this does not account for the additional inert capacity offered by the recovery to land sites with live applications and potential capacity offered by Wingmoor West non-inert landfill to manage additional inert waste plus other capacity likely to be consented, means that a capacity gap for the management of inert waste is unlikely to emerge.

Appendix 1: Gloucestershire Intermediate Site Throughput over 5 years reported through WDI tonnes (peak year identified by green cell)

Site Name	Operator	Site Category	Inputs 2017	Inputs 2018	Inputs 2019	Inputs 2020	Inputs 2021	5-year Peak Input	Plus 15% 'freeboard'
Eastern Avenue Depot	Urbaser Ltd	C&I Recycling	15,401	17,394	17,920	17,377	26,836	**26,836**	30,862
Cinderford Transfer Station	Biffa Municipal Ltd		9,521	9,428	9,422	10,350	10,231	**10,350**	11,903
Plusterwine Dryer	Mrs Alice Hunt, Mr Eric Hunt, Mrs Patricia Hunt, Mr William Hunt		9,382	11,675	7,233	12,066	12,742	**12,742**	14,653
Printwaste Recycling and Shredding	P W Commercial Company Ltd		33,035	28,803	22,010	15,506	26,907	**33,035**	37,990
The Old Saw Mill	S I T R Midlands Associates Ltd		7,578	8,019	9,142	968	7,774	**9,142**	10,513
Huntsman Quarry Waste Treatment Site	Breedon Southern Ltd	CDE Recycling	2,100	100	12,532	0	0	**12,532**	14,412
Waste Transfer Station	Hughes and Salvidge Holdings Ltd		46,103	49,560	1,062	47,095	41,574	**49,560**	56,994
Harbour Road	Lydney Land Resources Ltd		7,095	0	0	0	0	**7,095**	8,159
Dave Skinner Groundworks Ltd	David Skinner Groundworks Ltd	CDE + C&I Recycling	3,655	3,596	3,552	3,215	2,122	**3,655**	4,203
Lydney Skip Hire	Mr Graham Lee & Mr Adrian Lee		2,119	4,197	4,783	5,095	6,471	**6,471**	7,441
Grange Court	P S W England Ltd		2,015	1,603	1,570	867	1,259	**2,015**	2,317
Cowfield Mill Transfer Station	Smiths (Gloucester) Ltd		28,760	20,737	13,326	19,521	19,801	**28,760**	33,074
Hill Farm	P M F Poultry Ltd	AD Facility	11,200	10,876	11,407	11,417	10,656	**11,417**	-
Homeleaze Farm Pig Unit	H F Ltd		3,984	600	933	424	284	**3,984**	-
Plusterwine Anaerobic Digester	Plusterwine Biogas Ltd		30,935	31,966	32,923	29,447	30,479	**32,923**	-

Smerrill Dairy A D Plant	Kemble Farms Ltd		21,599	26,186	26,126	24,362	25,072	**26,186**	-
Wingmoor Farm East	Andigestion Ltd		26,594	27,213	26,422	30,429	29,605	**30,429**	-
Netheridge Sewerage Treatment Plant	Severn Trent Water Ltd	Biological Treatment	95,737	70,891	124,250	134,932	39,204	**134,932**	-
Stanley's Quarry	Northwich Power Ltd		0	0	68,585	69,173	16,355	**69,173**	-
Toddinton Treatment Centre	Gilder Environmental Ltd		29,164	34,729	36,412	34,188	27,139	**36,412**	-
Hempsted Landfill Site	Enovert South Ltd	Open Windrow	16,955	27,541	30,201	27,416	14,509	**30,201**	-
Wingmoor Farm Landfill Site	Enovert South Ltd		36,456	25,089	26,975	20,924	15,607	**36,456**	-
Rose Hill Farm	MF Bennion Ltd	IVC	48,516	57,455	49,966	38,145	35,280	**57,455**	-
Abbey Recycling	Abbey Metal Recycling Ltd	Metal Recycling	5,742	3,531	5,978	1,957	2,157	**5,978**	6,874
Belfast Apron	Air Salvage International Ltd		1,022	464	543	220	541	**1,022**	1,175
Canal Works	Bendall Metal Recycling Ltd		9,803	10,942	12,925	12,686	15,797	**15,797**	18,166
Hayricks Wharf	Burke Bros Cheltenham Ltd		2,588	2,501	2,413	1,920	2,196	**2,588**	2,976
EMR Gloucester	European Metal Recycling Ltd		87,332	91,790	77,901	67,182	69,806	**91,790**	105,559
European Metal Recycling Ltd – Gloucester	European Metal Recycling Ltd		14,252	28,732	28,452	4,673	6,901	**28,732**	33,041
Forest Metals	Kyle Gettings		0	896	12,399	1,580	0	**12,399**	14,259
Phelps Brothers	J G & R Phelps		15,958	8,298	7,260	7,826	8,108	**15,958**	18,351
Gilders Yard	Joe Gilder Recycling Ltd		1,786	1,361	1,286	1,331	1,966	**1,966**	2,261

Burfords	M Burford, M S Burford, M T Burford & M P Burford		6,589	6,645	6,135	4,046	5,277	**6,645**	7,642
Adsett Trading	Derrick Warwick		1,130	1,246	1,125	1,550	1,720	**1,720**	1,979
Cotswold View	Henry Raymond Buckland, Henry James Buckland, Harry James Buckland		0	0	0	0	4,537	**4,537**	5,217
Oak Quarry Household Waste Site	Ubico Ltd	HWRC	9,410	8,782	7,763	5,626	7,322	**9,410**	10,822
Pyke Quarry Household Waste Site	Ubico Ltd		18,163	16,271	15,015	9,219	10,957	**18,163**	20,888
Wingmoor Farm Household Waste Site	Ubico Ltd		13,575	13,339	16,012	7,955	15,352	**16,012**	18,414
Hempsted Household Waste Site	Ubico Ltd		16,710	19,230	15,904	10,931	11,371	**19,230**	22,115
Swindon Road Recycling Centre	Cheltenham Borough Council		16,204	18,540	16,048	36,187	18,192	**36,187**	41,615
Fosse Cross (Ubico Ltd)	Ubico Ltd		5,863	5,708	5,491	4,932	5,053	**5,863**	6,743
Gossington Depot (Ubico Ltd)	Ubico Ltd		8,012	6,076	11,606	13,290	12,866	**13,290**	15,283
Naunton Quarry	Breedon Southern Ltd	Recycled Aggregate	82,891	104,396	0	0	0	**104,396**	120,055
Budget Skip Hire	H T Waste Recycling Ltd		36,983	28,161	29,196	29,692	33,966	**36,983**	42,530
Valley Trading	Hugest and Salvidge Holdings Ltd		46,103	49,560	1,062	47,095	41,574	**49,560**	56,994
Allstone Sands Gravels Aggregates Trading Co Ltd	Allstone Sands Gravels Aggregates Trading Co Ltd		39,214	35,150	19,350	15,710	15,222	**39,214**	45,096
Allstone Sands Gravels Aggregates Trading Co Ltd	Allstone Sands Gravels Aggregates Trading Co Ltd		80,852	85,741	76,835	0	72,572	**85,741**	98,602
Land Off Sudmeadow Road	Keyway Ltd		0	3,224	7,707	8,550	9,525	**9,525**	10,954
Moreton Valence Waste Processing Centre	Smiths (Gloucester) Ltd		137,418	162,330	172,249	165,403	181,775	**181,775**	209,041

Netherhills Transport Yard	Moreton C Cullimore (Gravels) Ltd		107	5,364	0	5,356	5,985	**5,985**	6,883
Land at Shurdington Road	Elliotts (Cheltenham) Ltd		5,345	5,820	6,050	4,248	6,595	**6,595**	7,584
Overton Farm	Complete Utilities Ltd		39,694	25,888	37,710	32,687	26,750	**39,694**	45,649
Farmington Quarry	Farmington Natural Stone Ltd		0	0	0	5,886	25,907	**25,907**	29,793
Watson Farm	Soils (HS) Ltd		0	0	0	1,014	5,224	**5,224**	6,008
Stowfield Quarry Recycling Facility	Tarmac Trading Ltd		428	1,253	3,829	0	0	**3,829**	4,404
Javelin Park	Urbaser Environmental Ltd	EfW	0	0	73,137	182,717	191,228	**191,228**	-
Bell Waste	Ian Dubberley	Transfer	2,605	631	418	6,156	0	**6,156**	7,079
Elliott Road	Enovert South Ltd		30,794	30,947	31,282	18,616	16,601	**31,282**	35,975
Lydney Waste Transfer Station	Enovert South Ltd		21,307	20,765	22,274	17,871	18,129	**22,274**	25,615
Wingmoor Farm Clinical Waste Transfer Station			9,219	11,067	20,404	46,268	81,879	**81,879**	94,161
Royles	Royles Messrs Juke, Wayne and David		2,217	1,558	1,591	2,109	1,090	**2,217**	2,549
Ham Villa Farm	Mr Barry Stevens & Mr Robert Stevens		9,789	8,483	9,598	5,808	9,357	**9,789**	11,258
Vetspeed Ltd	Vetspeed Ltd		484	547	842	815	1,077	**1,077**	1,238