Leicester City Council

Waste Needs Assessment

June 2021

Contents

Executive summary

Leicester City currently[1] produces around 0.750 million tonnes per annum (Mtpa) of various types of waste, this includes: 0.140 million tonnes (Mt) of municipal waste (19%); 0.238 Mt of commercial and industrial (C&I) waste (32%); 0.363 Mt of construction, demolition, and excavation (CD&E) waste[2] (49%); and 0.007Mt of hazardous waste (1%). Forecasts indicate that waste arisings could increase to just over 1 Mtpa by 2036.

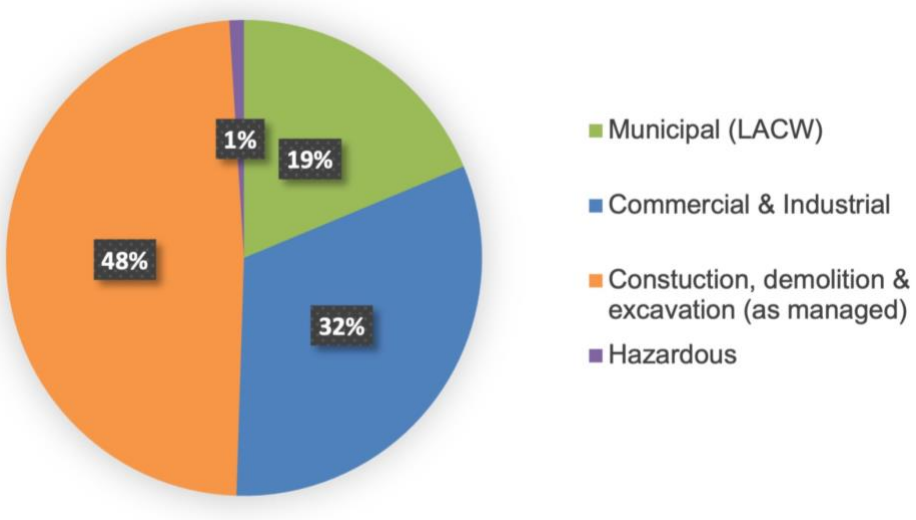


Figure ES1: Estimated waste arisings for Leicester City 2019

Non-hazardous waste produced in Leicester City is currently managed via a range of management methods, achieving a total recovery rate of around 86%. Management methods and approximate rates include: processing of waste in preparation for reuse or recycling (including inert recycling) 33%; treatment and energy recovery 22%; soil treatment 5%; inert recovery 25%; inert landfill <1%; non-hazardous landfill (including stable non-reactive hazardous waste, SNRHW) 15%; incineration with no energy recovery <1%; hazardous recycling and recovery 1%; and hazardous landfill <1%. Forecasts indicate that Leicester City could achieve a total recovery rate of over 90% by 2030, and 94% by 2036.

Leicester City does not produce low-level radioactive waste (LLW) from the nuclear industry. A very small amount of LLW is produced from the non-nuclear

1 Refers to 2019 data.
2 CD&E waste shown are as managed. A significant proportion of total arisings managed on-site or at exempt sites.

industry from Leicester City[3]. In addition, agricultural waste and wastewater are also produced.

Of total waste arising[4] attributed directly to Leicester City, just under 0.200 Mt was exported to other Waste Planning Authorities (WPAs). The vast majority of which was received at facilities for processing in preparation for reuse and recycling (including composting and inert recycling), and other forms of treatment and recovery. The remainder was disposed of to non-hazardous (including SNRHW) landfill, hazardous landfill, and via incineration (no energy recovery).

Waste management facilities within Leicester City reported receiving a significant amount of waste imported from other WPAs; over twice that exported from Leicester City, meaning that Leicester City is a net importer of waste. All of which was subject to some form of materials recycling or soil treatment. Not all waste can be managed within the boundary of the WPA from within which it arises due to contractual arrangements and other factors. There will normally be some movement of waste into and out of WPAs; this is reflected by the position of seeking net self-sufficiency. With a broader movement of WPAs also seeking to increase their waste management capacity in line with net self-sufficiency movements are expected to reduce in the future, although some movements will still occur.

Waste arisings forecast up to 2036 and future needs (incorporating relevant targets) are summarised in Table ES1 and Figure ES2. In addition, some residual waste will be produced as an output from waste treatment processes. This means that some disposal to landfill, albeit the least preferred option, will continue to be necessary where such residues cannot be reused or recycled.

Overall, Leicester City is making reasonable progress towards achieving net self-sufficiency for waste management, having more than sufficient capacity with regards to net self-sufficiency for facilities for processing in preparation for reuse and recycling and inert recycling over the reporting period. When viewed in terms of total arisings and existing capacity Leicester City currently provides waste management equivalent to around two-thirds of its total arisings; however, this capacity is associated only with facilities for processing in preparation for reuse and recycling (including inert recycling), and soil treatment.

Capacity gaps have been identified for composting, other treatment and energy recovery, soil treatment, inert recovery, and non-hazardous landfill as well as hazardous recovery and treatment, and hazardous landfill.

3 A survey undertaken by the Department of Energy and Climate Change (DECC) in 2008, Data Collection on Solid Low Level Radioactive Waste from the Nonnuclear Sector, indicated that Leicester City produced 60.56m^3 of LALLW from the non-nuclear industry.
4 Total waste arisings = waste received to facilities within Leicester City (i.e. arising from Leicester City and managed within Leicester City) + waste removed from Leicester City (i.e. arising from Leicester City exported to other WPA's for management).

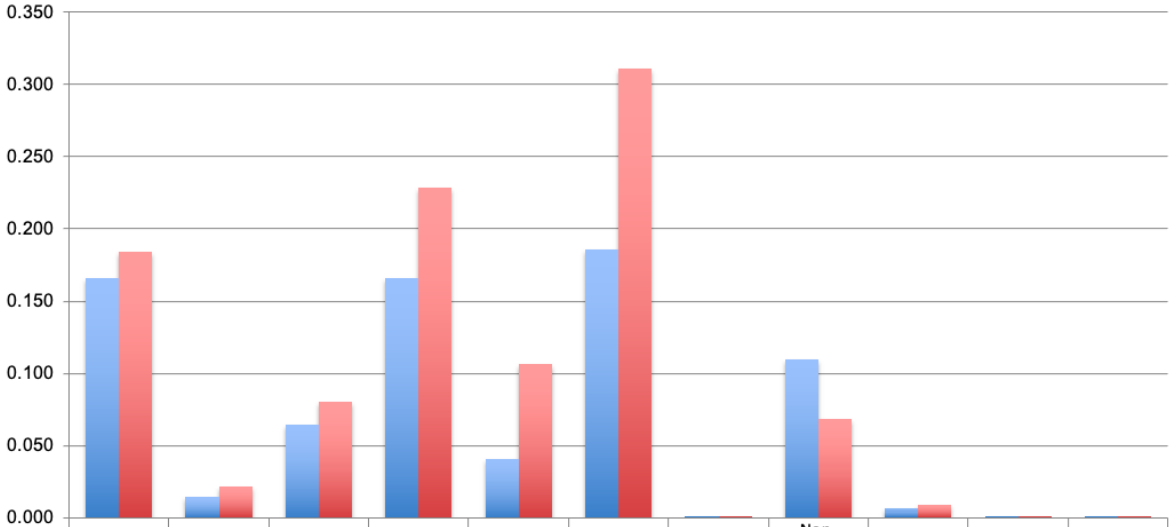
There is a potential, dependant on the scale of the individual facilities and processes employed, for the following facilities to be provided within the WPA area: composting (small scale), other treatment and energy recovery, and soil treatment.

Given the land use constraints and planning context influencing Leicester City, not least because it is a tightly bounded urban authority, it is not appropriate for the WPA to accommodate inert recovery, non-hazardous landfill, hazardous recovery and treatment, and hazardous landfill facilities. There are also very limited location options for facilities that are more suited to rural locations. It is assumed that future needs for such capacity will continue to be met at facilities outside of the WPA area, i.e. though the continued export of waste to other WPA areas. No strategic or DtC matters have been identified in relation to the principle or continuation of such movements. Ongoing monitoring of waste movements particularly for disposal to non-hazardous landfill (including residues), and continued working with relevant WPAs regarding strategic waste planning matters will be necessary to ensure that wastes are managed, and that any necessary capacity planned for, appropriately.

Table ES1: Summary of waste arisings and future needs up to 2036

			Indicative total waste management capacity needs			
			2021	2026	2031	2036
Non-hazardous waste management						
Preparing for reuse and recycling	Materials recycling	Forecast arisings	0.138	0.167	0.179	0.184
		Existing capacity	0.249	0.249	0.249	0.249
		Capacity gap	+0.111	+0.081	+0.070	+0.065
	Composting	Forecast arisings	0.017	0.019	0.021	0.022
		Existing capacity	0.000	0.000	0.000	0.000
		Capacity gap	-0.017	-0.019	-0.021	-0.022
	Inert recycling	Forecast arisings	0.049	0.080	0.080	0.080
		Existing capacity	0.241	0.241	0.241	0.241
		Capacity gap	+0.192	+0.161	+0.161	+0.161
Treatment and other forms of recovery	Treatment and energy recovery[A]	Forecast arisings	0.166	0.196	0.220	0.228
		Existing capacity	0.000	0.000	0.000	0.000
		Capacity gap	-0.166	-0.196	-0.220	-0.228
	Soil treatment	Forecast arisings	0.066	0.105	0.106	0.107
		Existing capacity	0.043	0.043	0.043	0.043
		Capacity gap	-0.023	-0.062	-0.063	-0.064
Other recovery	Inert recovery[B]	Forecast arisings	0.191	0.310	0.310	0.311
		Existing capacity	0.000	0.000	0.000	0.000
		Capacity gap	-0.191	-0.310	-0.310	-0.311
Non-hazardous waste disposal (no existing capacity within WPA[C])						
Disposal - Non-hazardous landfill (incl. SNRHW)		Forecast arising	0.103	0.088	0.067	0.068
Hazardous waste management (no existing capacity within WPA[C])						
Recovery and treatment		Forecast arising	0.008	0.008	0.008	0.009
Disposal (landfill)		Forecast arising	0.001	0.001	0.001	0.001

A - Treatment and energy recovery refer to AD, EfW, wood waste EfW, and other physical/chemical treatment processes.
B - Available data indicates that, within Leicester City, inert waste that may elsewhere be disposed of to inert landfill is recovered through deposit of inert waste to land for beneficial purposes such as restoration of mineral extraction sites with extant planning permission.
C - Capacity gap is equal to forecast arisings as there is no existing capacity within the WPA.



	Preparing for reuse & recycling	Compost	Inert recycling	Other treatment & recovery	Soil treatment	Inert recovery	Inert landfill	Non-hazardous landfill (incl SNRHW)	Hazardous recovery & treatment	Hazardous landfill	Incineration (no energy recovery)
2019	0.166	0.015	0.064	0.166	0.040	0.186	0.000	0.110	0.007	0.000	0.000
2036	0.184	0.022	0.080	0.228	0.107	0.311	0.000	0.068	0.009	0.001	0.000

Figure ES2: Comparison of management methods for waste arisings from within Leicester City 2019 and 2036 (million tonnes)

Waste planning context

National and European policy

1. The National Planning Policy Framework (NPPF) was published March 2020 and although it does not specifically address waste matters, it does influence waste planning and related matters. Detailed waste planning policies are set out in the National Planning Policy for Waste (NPPW), published in October 2014. The NPPW is to be read in conjunction with the NPPF, the National Waste Management Plan for England, and National Policy Statements (NPS) for wastewater and hazardous waste. Our Waste, Our Resources: A Strategy For England was published in December 2019 and sets out the national strategy for continuing to make step-changes towards achieving sustainable waste management by preserving material resources through the minimisation of waste, promoting resource efficiency and moving towards a circular economy.

2. In relation to the preparation of plans the NPPW requires Waste Planning Authorities (WPAs) to ensure that the planned provision of new capacity and its spatial distribution is based on robust analysis of best available data and information, and an appraisal of options. Spurious precision should be avoided. In addition, Local Plans should identify sufficient opportunities to meet the identified needs of their area for the management of waste streams and in doing so:

    - drive waste management up the waste hierarchy;
    - recognise the need for a mix of types and scale of facilities, and that adequate provision must be made for waste disposal (including for residues from treated wastes);
    - identify tonnages and percentages of waste requiring different types of management over the reporting period;
    - consider the extent to which existing operational facilities would satisfy any identified need;
    - consider wider waste management needs; and
    - work collaboratively (with other WPA's through the Duty to Cooperate) to provide a suitable network of facilities to deliver sustainable waste management.

3. Local Plans, should also identify sites and/or areas for waste management facilities and in doing so:

    - identify the broad type(s) of facility that would be appropriate;
    - take account of the proximity principle (particularly regarding disposal and the recovery of municipal waste) and recognise the role of catchment areas in securing economic viability;
    - consider opportunities for on-site waste management;
    - consider a broad range of locations including industrial sites, and consider opportunities to co-locate waste management facilities together and with complementary activities; and

- give priority to the reuse of previously-developed land, sites identified for employment uses, and redundant agricultural and forestry buildings and their curtilages.

4. The NPPW also sets out criteria against which the identification of sites/areas for waste management facilities should be assessed.

5. In relation to the wider policy context the Waste Framework Directive (WFD) (2008/98/EC) sets out the concept of the waste hierarchy (prevention, preparation for reuse, recycling, other recovery e.g. energy recovery, and disposal), proximity principle and self-sufficiency. It also requires that waste is recovered or disposed of without endangering human health or causing harm to the environment. Article 28 of the WFD, concerning Waste Management Plans, requires an assessment of how the current waste management (including treatment and disposal) capacities will shift over time in response to the closure of existing waste management facilities and the need for additional waste installation infrastructure.

6. The UK Waste Regulations 2011 transposes the WFD to UK law.

7. The Landfill Directive (99/31/EEC) aims to prevent or reduce as far as possible negative effects on the environment from the landfilling of waste, and setting targets for the reduction of biodegradable municipal waste going to landfill.

Leicester City Waste Planning Context

8. Leicester City Council (LCC) is the WPA for the administrative area of Leicester City[5]. The existing Minerals and Waste Core Strategy was prepared jointly with Leicestershire County Council and was adopted in 2009; this document covers the period up to 2021.

9. The NPPF requires Local Plans to be kept up-to-date, the National Planning Policy Guidance (NPPG) states that most Local Plans are likely to require updating in whole or in part at least every five years. Leicester City is preparing a new Local Plan for adoption in 2021 (plan period up to 2036) and a new Minerals and Waste Local Plan (MWLP) to be adopted 2023. The replacement of the Local Plan covers the issues of minerals and waste that will allow planning permission for new waste uses and mineral uses if they should arise.

10. The waste arisings and future capacity needs identified through the existing MWLP were based on the best available data and methodology, policy requirements, and targets relevant at the time of production. Rolling the adopted MWLP waste forecasts forward would be unlikely to be found sound as these do not capture recently released data and other information, may not comply with current policy requirements (including targets), and do not reflect changes in local circumstance and emerging trends.

11. Preparation of the new MWLP will require an updated evidence base to inform and support the plan-making process, including a Waste Needs Assessment (WNA). The WNA will form one of the key evidence documents to support the review and

5 Herein referred to as Leicester City or the WPA area.

will be updated as necessary through the plan-making process in order to reflect any updated or new data/information (as relevant). Other elements of the adopted Minerals and Waste Core Strategy and associated evidence base documents will also be reviewed and updated to reflect local circumstance and emerging trends, and to more closely align with national policy, guidance, and strategies.

12. Leicester City does not currently have an adopted Municipal Waste Management Strategy (MWMS), however a new MWMS is in the initial stages of preparation.

Waste Needs Assessment

13. The purpose of this WNA is to:

- provide an up-to-date picture for Leicester City of – the amount of waste currently generated (arisings), the amount of waste anticipated to arise over the reporting period (up to 2036) and existing waste management capacity;
- identify Leicester City's future management needs (and the extent to which existing capacity satisfy identified future needs) and identify the broad type(s) of facility(ies) that may be required to manage waste appropriately and facilitate delivery of net self-sufficiency;
- give consideration to wider waste management needs (where relevant); and
- identify and discussing strategic waste movements and any potential Duty-to-Cooperate matters that should be addressed throughout plan-preparation.

14. WPAs should plan for the sustainable management of waste produced within their administrative area including: municipal waste (also referred to as Local Authority Collected Waste, LACW); commercial and industrial (C&I) waste; construction, demolition, and excavation (CD&E) waste; hazardous waste; radioactive wastes; agricultural waste; and wastewater.

15. The format and broad matters addressed through this report are outlined below:

- Current waste arisings – Identifies current waste arisings for waste streams, including methodology and data sources.
- Forecasting waste arisings over the reporting period – Identifies waste forecasts for waste streams by management method over the reporting period (up to 2036) incorporating relevant targets. Methodology and data sources used will also be identified.
- Waste management capacity – Identifies the existing waste management capacity and the capacity required to manage waste appropriately to achieve relevant targets and deliver net self-sufficiency (including future needs). Methodology and data sources used will also be identified.
- Waste movements – Identifies waste movements into and out of the WPA area as well as those considered strategic in nature and the identification of any Duty to Co-operate (DtC) matters. Consideration of wider waste management needs. Methodology and data sources used will also be identified.
- Conclusion – Overview of the assessment outcomes and summary tables for waste arisings, forecasts and capacity needs.

16. This WNA was prepared for Leicester City by the Minerals and Waste Planning Services for Northamptonshire.

Regional Waste Technical Advisory Board

17. Leicester City is located within the East Midlands region, the regional Waste Technical Advisory Body (WTAB) is not active. Leicester is by local authority area the largest population in the East Midlands. However, its urban area, which extends beyond the city council boundary, has a population of over half a million; the second highest population in the region after the Nottingham urban area. Leicester as an economic centre dominates Leicestershire and it has a significant influence beyond the county boundary to its south and west. Nottingham to the north, and to a lesser extent Derby, significantly dilute Leicester's influence as you reach the edge of the county. Although there are motorway and fast inter-city rail links to London, there are no particularly significant relationships between Leicester and London and the wider south-east. The Midlands Engine and Midlands Connect initiatives are bringing (most of) the East and West Midlands regions together and in the medium to longer term will strengthen Leicester's relationships westwards into the West Midlands region.

18. In line with national policy and guidance[6], and current practice of WTABs and WPAs throughout England, this WNA will seek to identify the indicative future capacity needs based on the principle of net self-sufficiency. Wider waste management needs and strategic movements will also be taken into consideration as appropriate.

Methodology

19. This WNA has been prepared in line with the requirements set out in the NPPW and national guidance. The NPPG sets out guidance regarding how WPAs should identify the need for new waste management facilities, assess existing waste management capacity, forecast waste arisings over the reporting period, data sources, and monitoring and planning for London's waste (refer NPPG, Waste, paragraphs 022 to 044 www.gov.uk/guidance/waste).

20. Detail regarding the methodology applied to this WNA and how national guidance has been taken into account is set out under relevant sections of this report.

21. This WNA examines waste arisings, forecasts, and future waste management needs for the major waste streams of municipal, C&I, CD&E, and hazardous wastes. Consideration will also be given to radioactive waste, agricultural waste, and wastewater to the extent possible.

6 NPPG, Waste: Do the self-sufficiency and proximity principles require each waste planning authority to manage all of its own waste? Though this should be the aim, there is no expectation that each local planning authority should deal solely with its own waste to meet the requirements of the self-sufficiency and proximity principles. Paragraph: 007 Reference ID: 28-007-20141016
What should Local Plans deliver? The Local Plan relating to waste should identify sufficient opportunities to meet the identified needs of an area for the management of waste. Paragraph: 011 Reference ID: 28-011-20141016

Reporting period, data sources and reporting

22. The reporting period for this WNA is from 01 January 2019 to 31 December 2036.

23. Data sources for each waste stream are set out under relevant sections of this report with a reference list in Appendix 1.

24. The common baseline used for all waste streams is 2019. It should be noted that where data for 2019 was not available the most recent data was used (particularly in the case of radioactive and agricultural waste), and where possible extrapolated forward to provide an estimate of arising's as at 2019.

25. Periods for data reported through this WNA are based on calendar years. Data for municipal waste is reported for financial years, whereas data reported through industry returns and surveys for other waste streams are generally for calendar years. For the purpose of this WNA the data will be taken to be on calendar year basis, that is data for the year 2019/20 will be taken as 2019; doing so will not significantly alter the results as three-quarters of the 2019/20 dataset is captured in 2019.

26. Data is reported in million tonnes (Mt) or million tonnes per annum (Mtpa), rounded to the nearest 1,000 tonnes to avoid spurious precision. The exception being hazardous wastes which is rounded to the nearest 500 tonnes as these wastes are produced in lesser amounts. For this reason, there may be some minor discrepancies where figures in text and tables of the report are totalled (i.e. numbers may not add exactly to totals shown or to 100%).

27. Forecasts of waste arisings and capacity needs (including management methods) for the major waste streams and for total waste arisings are reported over the reporting period at five-year intervals.

Current waste arisings

Municipal waste

28. Municipal waste is also referred to as Local Authority Collected Waste (LACW), and generally consists of household waste and any other wastes collected from Household Recycling Centres (HRCs)[7], commercial or industrial premises, and waste resulting from the clearance of fly-tipped materials and litter. Household waste makes up the majority of municipal waste, for Leicester City household waste accounts for 93% of municipal waste.

29. Data for municipal waste is collected and reported by waste collection and disposal authorities (being Leicester City Council as a Unitary Authority). This data is collated nationally through the Waste Data Flow database which is maintained by the Department for Environment, Food, and Rural Affairs (Defra). Defra also publish

7 Also referred to as civic amenity sites.

this information through the data.gov.uk website, refer to LACW Management Statistics[8]. Data for this waste stream is up-to-date and accurate.

30. This method accords with the national policy and guidance[9] and is generally reflective of methodology applied to recent WNAs in surrounding regional and WPA areas.

31. Municipal waste generated within Leicester City and current management methods are summarised in the table below.

Table 1: Municipal waste arisings and management, 2019 (million tonnes)

Total municipal waste		**0.140**
Preparation for reuse and recycling	Materials recycling	0.032 (23%)
	Composting	0.007 (5%)
Treatment and other forms of recovery		0.069 (49%)
Disposal to non-hazardous landfill (including SNRHW)		0.032 (23%)

32. Management of municipal waste is undertaken through a Private Finance Initiative (PFI) contract with Biffa Leicester Limited (BLL) that expires in May 2028; no extension option and currently no future contract commitments beyond 2028. The contract is a fully integrated collection and disposal contract predominantly for management of household waste. Management processes provided under the contract include processing in preparation for reuse and recycling (including composting), and a Mechanical Biological Treatment (MBT) system across two sites. Bursom recycling centre separates wastes into organic waste, floc material, ferrous and non-ferrous metals and residues. The floc material is intended for energy recovery, whilst the organic waste is treated at the Wanlip Anaerobic Digestion (AD) plant to produce compost (waste treated at the Wanlip AD plant is captured in the above table under “treatment and other forms of recovery” as the AD plant includes energy recovery).

33. A very small amount (less than 1%) of municipal waste (asbestos) was disposed of at non-hazardous (SNRHW) landfill, as such all waste disposed of has been captured as non-hazardous landfill (including SNRHW).

34. Management methods were derived from the Defra LACW Management Statistics, Waste Data Flow database, and council contract information and records.

Commercial and industrial waste

35. C&I waste is defined as “waste from premises used mainly for trade, business, sport, recreation or entertainment” (Environmental Protection Act 1990 s5.75(7)). It will generally consist of a wide range of wastes (such as mixed wastes, mineral wastes, chemical wastes, metals, discarded equipment, animal, and vegetable waste including food waste, healthcare waste, and others) and contains a high proportion of recyclable materials.

8 LACW Management Statistics

9 NPPG, Waste, What are the potential sources of information of waste data to inform the preparation of Local Plans? Paragraph: 035 Reference ID: 28-035-20141016

Environment Agency waste operator return databases

36. Waste collected from businesses is subject to commercial contracts, and although waste collection companies collect data for their own operational purposes, this information is not available to WPAs. Waste operator returns are submitted to the EA through the Duty of Care system with the information collated through the Waste Data Interrogator (WDI) and Incinerator Returns databases, maintained by the EA[10].

37. C&I waste is reported through the EA databases under Basic waste category: "household, industrial, and commercial (HIC) waste". HIC data originating from Leicester City[11] was extracted from the EA databases reporting on industry returns for the most recent three years (i.e. 2017 to 2019[12]). Up to, and including 2018, the WDI and Incinerator Returns databases were separate. Waste captured as arising from Leicester City from both the WDI and Incinerator Returns databases were added together for 2017 and 2018. The 2019 WDI includes waste received at facilities previously captured through the Incinerator Returns database.

38. Total arisings derived from the EA databases are often referred to 'as managed' indicating that the databases capture only that part of the waste arisings that are managed through permitted waste management facilities. However, with respect to informing the preparation of Local Plans the as managed waste arisings provide a good indication of the waste management capacity that needs to be provided for when considering waste planning matters; as such the use of as managed figures derived from the EA databases is fit-for-purpose.

39. Each consignment includes a descriptor of the type of waste using the European Waste Code (EWC), these codes were used to filter the returns from the WDI to identify C&I waste. The following waste types were removed from the WDI dataset extracted for Leicester City: mining and quarrying wastes (Chapter 01), construction and demolition wastes (Chapter 17) – these wastes are accounted for through CD&E waste; municipal wastes (Chapter 20) – accounted for through municipal waste; digestate from AD that can be used as soil conditioner (EWC 190604 and 190606); landfill leachate (EWC 190703) – treated on-site/specialist waste water plant; sludges from treatment of urban waste water – accounted for through waste water studies and is treated as sludge treatment centres operated by the relevant utilities companies (EWC 190805); and outputs from waste management processes that are unlikely to undergo further treatment or that are an output product such as Refuse Derived Fuels (RDF) (refer EWC Chapter 19[13]) – accounted for through residual waste estimates, discussed further below.

10 These databases are referred to as the EA waste operator return databases, or EA databases.
11 Total 'as managed' arisings (from the EA databases) are derived by adding together the waste received to facilities within Leicester City (identified as originating from Leicester City), and waste received at facilities within other WPA's (identified as originating from Leicester City) – i.e. wastes arising from and managed within Leicester City plus waste arising from Leicester City exported for management elsewhere. Results can then be filtered or cleansed as necessary.
12 Referred to as WDI 2017/2018/2019 according to the year that returns were reported.
13 Analysis of EWC Chapter 19 wastes were undertaken for each year with around 0.035Mt identified as residual waste that are unlikely to undergo further treatment and so were removed from the dataset.

40. Outputs from waste management processes that are likely to be further treated include EWC sub-chapter 1912 (e.g. 191201 paper and cardboard, 191202 ferrous metals, etc.). These wastes were retained as they are most likely waste that has been processed through an intermediate (transfer) facility or MRF and re-classified according to the specific waste type. Such wastes may be suitable for treatment rather than going for disposal and so should be scoped in. Trommel fines directly attributed to Leicester City, classified as EWC 191212, account for an average (2016 to 2019) of 0.036Mtpa. A significant amount of this (89%) was recovered in 2019, predominantly via materials recycling facilities. Although some of this waste was disposed of to landfill this demonstrates that there is the potential for further recovery of this waste type. The required capacity to manage such wastes may not have previously been captured and so these are retained in order to ensure that the scope of the waste arisings and indicative figure waste management capacity needs is broadly representative.

41. Residual outputs from waste management processes and output products such as Refuse Derived Fuels (RDF) that were identified as potentially originating from Leicester City were removed (i.e. those that are unlikely to undergo further treatment). Retaining these wastes would result in compounding overestimation of the indicative future capacity needs. Residual waste arisings are discussed in more detail in this WNA refer to ‘Estimating residual waste arisings’.

42. Waste consignments entered into the EA databases also include information on the type of facility type and site waste operation permits. Waste management methods were determined by filtering the data by facility and permit types.

43. There is potential for overestimation where waste is handled at intermediate facilities such as transfer stations. Waste recorded through intermediate facilities (including clinical, non-hazardous, and hazardous waste transfer stations) was removed from the dataset. The reasoning for removing these consignments is that waste recorded at intermediate facilities is then transferred onto another facility for further processing and/or treatment and is then captured again when received at this facility, potentially resulting in double counting. Where waste is transferred outside of Leicester City it is reasoned that this waste should be captured under the field “WPA origin” when received at the facility for further treatment. Where waste has been recorded through intermediate facilities, either identified as transfer/treatment in the WDI or permitted for transfer and materials recycling by the WPA, such consignments were captured under materials recycling at a rate of 25% of the recorded consignment tonnage (to reflect that the facility involves both transfer and some form of preparation for reuse and/or recycling).

44. Management rates were determined by identifying the amount of waste recorded against facilities sorted by facility and permit type, this information was then cross-referenced (for waste received to facilities within Leicester City) against the Councils permitted sites database. Rates for non-hazardous and non-hazardous (SNRHW) landfill were determined by identifying the amount of waste recorded as being disposed of at facilities identified (by permit type) as non-hazardous and non-hazardous (SNRHW) landfill.

45. It is important to acknowledge that the WDI database may contain errors due to data entry and particularly in relation to omissions in information fields on the returns, including waste origin. Data for waste consignments originating from Leicester City have historically been collated under the Leicestershire sub-region. This means that there is the possibility that some arisings from Leicester City are incorrectly recorded as Leicestershire (where waste consignment records show Leicestershire for the Recorded Origin and Origin WPA fields). C&I waste arisings directly attributed to Leicester City (waste consignment records show Leicester City in the Origin WPA field) fluctuate significantly over the three-year period (2017 to 2019). This taken with the historic sub-regional reporting indicate that it is highly likely that a portion of waste recorded under the generic Leicestershire group could be attributed to Leicester City. As the waste consignments have been entered under the generic Leicestershire group with no further breakdown it is not possible to determine which individual consignments should be attributed to Leicester City. It was therefore necessary to estimate how much of this waste may be attributed to Leicester City.

46. NOMIS employee counts for C&I sectors are reported on an annual basis and provide a view of economic and industry activity within an area. A percentage breakdown (for Leicester City and Leicestershire County) was derived as a factor of the total employee count for both WPAs (Leicester City and Leicestershire County). This resulted in a three-year average of 36% for Leicester City and 64% for Leicestershire County (2017 to 2019). Applying a rate of 36% to wastes reported under Leicestershire and adding this to the wastes reported under Leicester City results gives a three-year average figure of 0.187Mt.

47. It is also possible that some C&I waste arisings are recorded under EWC Chapter 20 municipal. As noted above, some of Leicester City waste arisings may be captured under the generic Leicestershire group, as such the total municipal waste arisings (Defra LACW Management Statistics) for both WPAs were subtracted from the total Chapter 20 municipal waste identified as originating from both WPAs[14] (i.e. Total EWC Chapter 20 – Total municipal/LACW). As for C&I wastes, 36% of the surplus EWC Chapter 20 municipal wastes were apportioned to Leicester City and added onto the total C&I waste. Management methods could not be determined as it was not possible to identify the individual consignments that make up this potential component of C&I arisings. The total tonnes were simply added onto the total C&I waste arisings for the relevant year and it was assumed that the management methods identified continue to apply (refer paragraph 42). The three-year average for this potential component of C&I arisings was around 0.030Mtpa.

48. The total C&I arisings (including potential C&I captured under Chapter 20 municipal wastes) derived from the EA databases indicate arisings of 0.220Mt for 2019 or a three-year average of around 0.217Mtpa for Leicester City.

14 EWC Chapter 20 wastes recorded through intermediate facilities were treated in the same manner as outline in the paragraph 43 to avoid double counting.

Defra 2020 UK Statistics on Waste

49. The UK Statistics on Waste was released in March 2020 (published by Defra), this included updated estimates for C&I waste for 2010 to 2017. The updated C&I estimate are derived from application of the revised 'reconcile' methodology to calculate C&I waste generated in England. The methodology revisions note sets out how the method was revised, refer Defra 2019 C&I waste arising's methodology revisions for England. It should be noted that the Defra 2020 report clearly acknowledges that C&I waste generation remains extremely difficult to estimate owing to data limitations and data gaps. As a result, C&I estimates for England have a much higher level of uncertainty than municipal waste.

50. The latest estimates for C&I waste arisings indicate that a total of 37.2Mt was produced England in 2018 (Defra 2020 Report, Table 6). Local estimates were produced by apportioning the total C&I waste for England to a local level by applying the percentage total employee count represented within Leicester City (of England) (0.71% for 2016 and 0.66% for 2017, and 0.65% for 2018, NOMIS) producing estimates of 0.235Mt for 2016, 0.238Mt for 2017 and 0.242Mt for 2018 with a three-year average of 0.238Mt. The dataset accompanying the Defra 2020 UK Statistics on Waste splits total generation of waste for England by NACE[15] economic activities and EWC, in addition it can be filtered based on hazardous and non-hazardous waste (Defra 2020, Table 5.1). Removing NACE economic activities that are not relevant to the C&I waste stream or to Leicester City may help to provide a better estimate. NACE economic activity fields that were removed included: mining and quarrying, and manufacture of coke and refined petroleum products (such activities are not undertaken within the WPA); water collection, treatment and supply, sewerage, remediation activities, and other waste management services; construction; and household. The dataset was also filtered to remove hazardous wastes. It is assumed that these are captured under the relevant waste streams and that retaining these wastes within the dataset would likely produce an overestimate for C&I wastes. It should be noted that this dataset applies to 2016 waste generation, not 2019. This resulted in a total estimated C&I waste for England for 2016 of 28.9Mt (reduced from 33.1Mt refer Defra 2020 Report Table 6). Applying the percentage employee count (for the broad industry sectors) represented within Leicester City (of England) for 2016 results in a figure of 0.204Mt. An alternate method is to analyse the total generation of waste split by NACE economic activity and EWC waste material (Defra 2020, Table 5.1) and apportion this based on representation of the broad industry sectors (NOMIC employee count) within Leicester City; resulting in a figure of 0.237Mt. This demonstrates that the unfiltered Defra data may not pick up on local variances in the sectors present within the individual WPA area.

51. In order to compare the filtered Defra 2016 estimate to current as managed arisings both employee number projections and the total Gross Value Added (GVA) by authority area (CE 2020) growth profiles were applied to extrapolate the data

15 The Statistical classification of economic activities in the European Community, abbreviated as NACE (Nomenclature statistique des activités économiques dans la Communauté européenne).

forward and identify estimated arisings for 2017 to 2019. It should be noted that the Defra 2020 dataset was not intended to be drilled down to WPA area levels and so results derived using this method are acknowledged to represent an estimate only. This produced results ranging from 0.220Mt to 0.245Mt for 2019.

Identifying a local estimate

52. Estimated waste arisings derived from EA databases and Defra 2020 were compared for the purpose of sensitivity testing. Estimated arisings ranged between 0.220Mt and 0.245Mt. In line with avoiding spurious accuracy and to reflect that WDI data is 'as managed' (and as such may form a minimum) and that the Defra national arising estimates are not designed to be drilled-down to WPA area levels (and so may not be an accurate local representation) the average of the estimates has been taken as the estimated total C&I waste arisings to inform this WNA; producing a figure of 0.238Mt for 2019.

53. This method accords with the national policy and guidance[16] and is generally reflective of methodology applied to recent WNAs in surrounding regions and WPA areas.

54. C&I waste generated within Leicester City and management methods are summarised in the table below.

Table 2: C&I waste arisings and management, 2019 (million tonnes)

Total C&I waste		**0.238**
Preparation for reuse and recycling	Materials recycling	0.078 (33%)
	Composting	0.007 (3%)
Treatment and other forms of recovery		0.096 (40%)
Disposal to non-hazardous landfill (including SNRHW)		0.056 (24%)
Disposal via incineration – no energy recovery		<0.001 (0.01%)

55. Management methods were derived from the three-year averages determined from the EA databases. Although there was some fluctuation in management method rates over the three-year period the average is likely to indicate emerging trends and best reflect local circumstance.

56. Due to the potential for some waste consignments to have been incorrectly recorded under the generic Leicestershire group it was not possible to determine the proportion of C&I waste disposed of at non-hazardous and non-hazardous (SNRHW) landfill, as such all waste disposed of has been captured as non-hazardous landfill (including SNRHW).

Construction, demolition, and excavation waste

57. CD&E waste means waste materials that arise from the construction or demolition of buildings and/or civil engineering infrastructure, including hard construction and demolition waste, and excavation waste (and soils). Hard construction and

16 NPPG, Waste, What are the potential sources of information of waste data to inform the preparation of Local Plans? Paragraph: 035 Reference ID: 28-035-20141016

demolition waste may include concrete, bricks, tiles, bituminous mixtures, and railway ballast and mixtures of the various components. Excavation waste may include clean and contaminated soil, stone and rocks arising from land levelling, filling, and/or general foundations. The majority of this type of waste is made from inert materials such as concrete, rubble, and soils. A small proportion of CD&E waste is non-inert materials such as wood, metals, and plastic that can be managed via non-hazardous waste treatment facilities. CD&E waste may also include hazardous waste materials such as lead, asbestos, liquid paints, oils, etc. CD&E waste contains a high proportion of recyclable materials.

Environment Agency waste operator return databases

58. As previously discussed in relation to C&I waste, waste operator returns are available through the EA WDI and Incinerator Returns databases. It is widely acknowledged that a significant proportion of total CD&E waste arisings are reused on site or at exempt site; this unseen capacity is not captured through the EA databases.

59. Inert waste is reported through the EA databases under Basic waste category: Inert/C&D. Inert wastes predominately include Chapter 17 construction and demolition wastes (including excavated soil from construction sites). Data for inert waste originating from Leicester City (both received at facilities within Leicester City and other WPAs) was extracted from the EA databases reporting on industry returns for the most recent three years (i.e. 2017 to 2019). Any CD&E wastes identified from analysis of other waste streams were carried across to the CD&E arisings dataset for the relevant reporting year (e.g. EWC Chapter 01 wastes from mining and quarrying, and Chapter 19 and 20 soils, sand and stones). As per the method applied to C&I waste arising (refer paragraph 43), waste recorded through intermediate facilities were removed with waste recorded through transfer/treatment facilities captured under materials recycling at a rate of 25% of the recorded consignment tonnage.

60. Waste captured as arising from Leicester City from both the WDI and Incinerator Returns databases were added together (for 2017 and 2018). Waste management methods were determined in the same manner applied to C&I wastes (refer paragraph 44).

61. As with C&I wastes, some arisings from Leicester City may be captured under the generic Leicestershire group due to historic sub-regional reporting (refer paragraph 45). Dwelling stock completion figures are reported by the Ministry of Housing, Communities, and Local Government (MHCLG) and provide a view of construction activity within an area. A percentage breakdown (for Leicester City and Leicestershire County) was derived as a factor of the total dwelling stock completions for both WPAs (Leicester City and Leicestershire County). This resulted in a three-year average of 28% for Leicester City and 72% for Leicestershire County (2017 to 2019). The rate of 28% was applied to wastes reported under the generic Leicestershire group and added onto wastes reported under Leicester City to produce an estimate of as managed CD&E wastes.

62. The estimated as managed CD&E arisings derived from the EA databases indicate a three-year average of around 0.363Mtpa for Leicester City. Of this around a third was identified as wastes other than EWC 170504 non-hazardous soils and stones with the majority (90%) being recovered.

Defra 2020 UK statistics on waste

63. The Defra 2020 UK statistics on waste sets out estimates of CD&E waste (including dredging) for England of 116.8Mt for 2014 and 120.3Mt for 2016. Removing dredging spoils from the total CD&E produces estimates of 106.4Mt for 2014 and 111.6Mt for 2016 (Defra 2020, Report Table 7, and dataset Table 5.1) for total CD&E waste arisings. Local estimates were determined be applying the percentage of construction activity (dwelling completions MHCLG) attributed to Leicester City (of England) (0.7%) to the total estimated CD&E arisings for England. This produced estimates for total CD&E waste arisings of 0.719Mt for 2014 and 0.796Mt for 2016.

WRAP 2010 CD&E generation estimate

64. The WRAP 2010 CD&E waste generation estimate for England estimates total CD&E arisings of 77.38Mt for 2010. A local estimate was determined as above using construction activity (dwelling completions MHCLG) attributed to Leicester City for 2010 (1%), producing an estimate of 0.748Mt for 2010. This figure was extrapolated forward using a growth profile based on annual dwelling completions (2010 to 2016) for comparison purposes with the Defra estimates (refer paragraph 63). This produced estimates for total CD&E arisings of 0.656Mt for 2014 and 0.878Mt for 2016.

Identifying a local estimate

65. Estimated waste arisings derived from EA databases, Defra 2020, and WRAP 2010 were compared for the purpose of sensitivity testing. National CD&E waste arising reports (Defra 2020 and WRAP 2010) acknowledge that a significant percentage of construction and demolition waste arisings are managed or reused on-site, or at exempt sites, and that this management capacity is unseen; this is also acknowledged in the NPPG[17]. This may go some way to explaining the variance between estimated as managed and total CD&E arisings reported through surveys and the EA databases; with that reported through the EA databases forming the portion managed at permitted waste management facilities and the remainder being the portion managed or reused on-site, or at exempt sites.

66. As such, and in the absence of any more accurate local data, the figures derived from the EA databases are taken to form the best available data regarding CD&E waste requiring management at permitted facilities for which Leicester City, as WPAs, is responsible for. The average of Defra 2020 and WRAP 2010 estimates are taken to form the estimated total CD&E waste arisings. The difference between

17 NPPG, Waste, How should waste planning authorities forecast future construction and demolition waste arisings? " … a sizeable proportion of construction and demolition waste arisings are managed or reused on-site, or exempt sites, so it is critical that some provision is made for unseen capacity in this way … " Paragraph: 033 Reference ID: 28-033-20141016

the estimated total CD&E waste arisings and the actual as managed arisings is assumed to make up the unseen arisings managed either on site or at exempt sites; this accounts for around a third of the estimated total CD&E arisings. The method applied reflects that the national CD&E arising estimates are not designed to be drilled-down to a local level and helps to avoid spurious accuracy.

67. The national estimates (Defra 2020 and WRAP 2010) were extrapolated forward (2016 to 2019) using a growth profile based annual dwelling completions which is considered to reflect construction output. The average of the national estimates has been taken as the estimated total CD&E waste arisings to inform this WNA; producing a figure of 0.580Mt for 2019. The figure derived from the EA database is taken to form the as managed portion, being 0.363Mt for 2019.

68. This method accords with national policy and guidance[18] and is generally reflective of methodology applied to recent WNAs in surrounding regional and WPA areas.

69. CD&E waste generated within Leicester City and management methods are summarised in the table below.

Table 3: CD&E waste arisings and management, 2019 (million tonnes)

Total CD&E waste		**0.580**
CD&E as managed		**0.363**
Preparation for reuse and recycling	Materials recycling	0.055 (15%)
	Composting	<0.001 (<1%)
	Inert recycling	0.064 (18%)
Other treatment and recovery	Treatment and energy recovery	<0.001 (<1%)
	Soil treatment	0.036 (10%)
	Inert recovery (includes deposit of inert waste associated with the restoration of permitted mineral extraction sites)	0.186 (51%)
Disposal	Disposal to inert landfill	<0.001 (<1%)
	Disposal to non-hazardous landfill (including SNRHW)	0.022 (6%)

70. Management rates for 2019 are based on returns reported through the EA databases (2019).

71. The majority of waste disposed of to non-hazardous landfill (including SNRHW), comprised minerals, soil, stones, and other inert fill that may be being used for deposited at these sites for engineering and restoration purposes. This may give the impression of higher disposal rates.

72. Due to the potential for some waste consignments to have been incorrectly recorded under the generic Leicestershire group it was not possible to determine the proportion of CD&E waste disposed of at non-hazardous and non-hazardous (SNRHW) landfill, as such all waste disposed of has been captured as non-hazardous landfill (including SNRHW).

18 NPPG, Waste, What are the potential sources of information of waste data to inform the preparation of Local Plans? Paragraph: 035 Reference ID: 28-035-20141016

Hazardous waste

73. Hazardous waste has historically been considered material that poses the greatest risk to human health or the environment, including materials such as asbestos, oils, solvents, and chemical wastes. The Landfill Directive refers to some wastes as 'hazardous', rather than 'special', broadening the definition to include everyday items such as fluorescent tubes, monitors, and televisions that have reached the end of their lives. Hazardous materials are subject to strict controls on carriage, treatment, and disposal. Even so, as hazardous waste is generated from such a wide array of uses and operations (from households, healthcare/medical, and industry) the way that it is recorded is not the same; this may result in data omissions or anomalies.

EA Hazardous Waste Data Interrogator

74. The most accurate data available on hazardous waste arisings is from the EA Hazardous Waste Data Interrogator (HWDI) database. Data held on the HWDI is derived from waste operator returns submitted to the EA, who maintain the HWDI.

75. Data extracted for all consignments arising from Leicester City from the HWDI databases indicate a three-year average for hazardous waste arisings[19] of around 0.009Mt. As with data extracted from the WDI, waste recorded through intermediate facilities (recorded as Transfer R and Transfer D) were removed from the hazardous waste dataset. Hazardous waste consignments reported through the HWDI indicate total arisings of 0.007Mt for 2019.

76. This method accords with national policy and guidance[20] and is generally reflective of methodology applied to recent WNAs in surrounding regional and WPA areas.

77. Hazardous waste generated within Leicester City and current management methods are summarised in the table below.

Table 4: Hazardous waste arisings and management, 2019 (million tonnes)

Total hazardous waste		**0.007**
Recycling, recovery, and other treatment	Recovery (includes preparation for reuse and recycling)	0.005 (66%)
	Treatment and other recovery (includes incineration with energy recovery)	0.002 (27%)
Disposal	Disposal via incineration - no energy recovery	<0.001 (<1%)
	Disposal to hazardous landfill	<0.001 (7%)

78. Management rates for 2019 are based on returns reported through the HWDI (2019).

19 Total of consignments arisings from Leicester City minus Transfer (R) and Transfer (D). Large inputs of hazardous were recorded as disposed of to landfill – further investigation of consignments reported through the WDI indicate that the majority of this was waste output materials/residual wastes and/or attributed to other WPAs.

20 NPPG, Waste, What are the potential sources of information of waste data to inform the preparation of Local Plans? Paragraph: 035 Reference ID: 28-035-20141016

Radioactive waste

79. It is essential that all radioactive waste and materials be safely and appropriately managed in ways that pose no unacceptable risks to people or the environment. The decommissioning of nuclear power reactors produces the majority of radioactive waste in the UK, with other sources including the generation of electricity in nuclear power stations and from the associated production and processing of the nuclear fuel, use of radioactive materials in industry, medicine and research, extraction of materials which include some naturally occurring radioactive materials, and from military nuclear programmes.

80. Radioactive waste is divided into categories according to how much radioactivity it contains and the heat that this radioactivity produces, the main categories including high, intermediate, and low level waste. Low level radioactive waste (LLW) may comprise building rubble, soil, and steel items arising from the decommissioning and clean-up of nuclear reactors, facilities, and sites as well as paper, plastics, and scrap metal items from the operation of nuclear facilities. Very low level waste (VLLW) is a sub-category of LLW.

81. According to the Nuclear Decommissioning Authority (NDA) UK Radioactive Waste Inventory 2019[21], LLW (including VLLW) makes up the majority (more than 94%) of the UK's total volume of radioactive waste – but contains less than 0.1% of the total radioactivity.

82. Application of the waste hierarchy has resulted in new approaches for the management of LLW in more sustainable ways, with 76% of LLW projected for disposed in 2019, compared with 78% in 2015, and 95% in 2009[22].

83. LLW can be disposed of at near surface facilities. Waste at the lower activity range (of LLW) may not require the level of engineering and containment provided by the LLWR facility and could undergo treatment (e.g. incineration or metals recycling) or be disposed of via alternative routes, such as disposal to existing landfill including non-hazardous landfill (where permitted for such activities). The majority of LLW forecast to arise over the period 2019 to 2024 are expected to diverted away from disposal at the LLW Repository (LLWR) facility near Drigg, Cumbria; waste is to be disposed of at off-site landfill facilities and the Dounreay LLW facility in Caithness. The diversion of significant amounts of waste away from disposal at the LLWR facility has extended its projected operating life to 2130.

84. The NDA 2019 Inventory does not identify any radioactive waste produced within Leicester City. The Inventory is updated every three years as such the 2019 Inventory forms the best available information.

85. The data collection on solid low-level waste from the non-nuclear sector, Department of Energy and Climate Change (DECC) 2008 provides an overall view of the waste arisings and disposals from the non-nuclear sector, which identifies

21 UK Radioactive Waste Inventory, NDA 2019 , referred to as the NDA 2019 Inventory
22 Refer pages 58 and 55 of the 2019 and 2016 Inventory Reports respectively (2019 Inventory Report, 2016 Inventory Report)

estimates of LLW arisings by WPA. Estimates of LLW from the non-nuclear industry (DECC 2008, Table 3) indicate arisings of 60.56m^3 for Leicester City (0.12% of the total non-nuclear arisings reported through the survey for England, Scotland, and Wales) for the reporting year 2007. Though dated this is the best available information on radioactive waste arisings from the non-nuclear industry.

86. Arisings of radioactive waste from both nuclear and non-nuclear industries within Leicester City are very low; the WPA area is not a significant producer of radioactive wastes.

Other wastes

87. Agricultural waste and wastewater are also generated within Leicester City. There are no national or local targets for the management of such wastes, however these wastes have been taken into consideration at an appropriate level (outlined below).

Agricultural waste

88. Agricultural waste is waste material that is generated from agricultural premises; the majority of agricultural waste is not classified as controlled wastes. The majority of agricultural wastes are bulk materials such as animal manure and waste slurries. Non-natural agricultural wastes include discarded pesticide containers, plastics, bags and sheets, tyres, batteries, clinical waste, old machinery, oil, packaging waste, etc. The WFD captures non-natural components of this waste stream, which account for a very small amount[23] (<1%) and are thought to be managed via the use of HRCs and transfer to others (contractors). The EA 2000 Strategic Waste Management Assessment: East Midlands (Table 2.7) estimated total agricultural arisings of 0.0001Mt for Leicestershire (including Leicester City); of which less than 1% was made up of non-natural waste (vegetable/plant waste and animal matter making up the majority). Very little data is available on waste arisings within the agricultural sector, particularly at a local level. As such the WNA assumes that the non-natural component of agricultural waste is captured under either trade waste received at HRCs or within the C&I waste stream.

89. The EA databases may capture some agricultural wastes under EWC Sub-chapter 0201 (Wastes from agriculture, horticulture, aquaculture, forestry, hunting, and fishing). A total of 29 tonnes of waste was reported under EWC Sub-chapter 0201 originating from Leicester City in 2019. There are limited agricultural holdings within Leicester City with agricultural land use making up just 17% of the total land area.

Water supply, sewage and wastewater

90. Within Leicester City water supply, sewage and wastewater is managed by Severn Trent Water, who prepare an operational Water Resource Management Plan and a 25-year strategy Focus on Water. Leicester City Council has prepared a Strategic Flood Risk Assessment, Local Flood Risk Management Strategy, Surface Water Management Plan, and Water Cycle Study in order to identify major issues

23 EA 2001 Towards sustainable agricultural waste management (R&D Technical Report P1-399/1) indicated arisings of non-natural components for 2000 of 0.5Mt for the UK.
Figures for agricultural waste cannot account for wastes stockpiled on site (at farms).

associated with the planned growth for the area such as sewage treatment, water quality, supply and efficiency, flood risk management, and sustainable drainage systems. Although the MWLP will have a role to play in relation to development control and management, its scope (relating to demand and future needs for water supply, sewage and wastewater) is somewhat limited as these matters are addressed through the plans produced by Severn Trent Water. The scope of the MWLP should include policies that are generally supportive of an increase in sewage treatment capacity where required to serve existing or planned development in accordance with the Development Plan.

Forecasting waste arisings over the reporting period

91. In order to plan for provision of new capacity it is first necessary to forecast waste arisings over the reporting period. This has been done separately for each of the waste streams (municipal, C&I, CD&E, and hazardous waste) due to the different factors that drive waste arisings and affect growth. Waste arising forecasts for individual streams are detailed below.

Municipal waste

92. Municipal waste management is subject to commercial contracts that determine current and future management methods and rates. As previously outlined (paragraph 31), the management of municipal waste is undertaken through a PFI contract with BLL that expires in May 2028; no extension option and currently no future contract commitments beyond 2028. The contract is a fully integrated collection and disposal contract. Targets for the management of municipal waste are captured under the existing PFI contractual performance targets, with the PFI contract acting in place of a MWMS. Leicester City is in the initial stages of preparation of a new MWMS. In preparing this WNA officers have liaised with the municipal waste management team for Leicester City in order to reflect future intent regarding municipal waste management at an appropriate level and to ensure that the WNA satisfies the WFD targets. The existing waste management contracts have been incorporated into targets and forecasts to the fullest extent possible based on information supplied. Current rates for recycling (including composting) and total recovery sit at 28% and 77%.

93. For the purpose of the WNA the following targets are proposed, set out in the table below. The proposed targets are based on overall recovery and disposal rates as this approach is considered to allow for flexibility, including potential changes to contracts.

Table 5: Municipal waste targets

Waste hierarchy level	Target
Total recovery	Over 90% by 2030 onwards
Disposal Non-hazardous landfill	Maximum 10% from 2030 onwards

Note that there is no block to exceeding the total recovery targets and further reducing landfill/disposal rates.

94. The following assumptions were made in preparing the municipal waste forecasts:

- Current recycling, composting, and recovery rates will not decrease.
- Rates (%) applied to determine household and trade components of total municipal waste and management methods are based on an average of figures over recent years (the most recent three-year period) with data sourced from Defra LACW statistics, Waste Data Flow, and council contract information and records.
- Application of targets was achieved by applying an even graduation from current rates (2019) up to the full target rate (applied at the target year e.g. 2030).

95. Municipal waste arisings for the year 2019 (of 0.140Mt) were forecast from 2020 up to 2036 based on an annual increase of 0.8% per annum reflecting the PFI contract modelling.

96. This methodology accords with national policy and guidance[24].

97. Forecast municipal waste arising and management methods over the reporting period (at five year intervals) are detailed in the table below.

Table 6: Municipal waste forecast by management method up to 2036 (million tonnes)

	2021	2026	2031	2036
Total municipal waste	0.142	0.148	0.154	0.161
Waste hierarchy level and broad management method				
Preparation for reuse and recycling				
Materials recycling	0.033	0.038	0.042	0.044
Composting	0.009	0.009	0.010	0.011
Treatment and other forms of recovery				
Treatment and energy recovery	0.065	0.076	0.086	0.090
Disposal				
Non-hazardous landfill (including SNRHW)	0.035	0.025	0.015	0.016

98. Insufficient data was available to determine proportion of municipal waste forecast to be disposed of at non-hazardous and non-hazardous (SNRHW) landfill, as such all waste disposed of has been captured as non-hazardous landfill (including SNRHW).

24 NPPG, Waste, How should waste planning authorities forecast future municipal waste arisings? Paragraph: 029 Reference ID: 28-029-20141016

99. Other biological waste management processes, such as AD, may take up compost capacity where the waste composition input into the facility captures the same waste type.

Commercial and industrial waste

100. C&I waste management is subject to commercial contracts that determine current and future management methods and rates. Information regarding individual contracts is not available to the council and the council is not able to exert direct influence over such matters. However, a range of legislative and market drivers exist (e.g. landfill tax, targets and producer responsibility measures) that are driving change and seeing more waste diverted from landfill.

101. Targets for C&I waste, are limited to packaging recycling and recovery targets as set out in the Packaging and Packaging Waste Directive 94/62/EC. Packaging waste targets have recently been reviewed by Defra with updated targets including 75% of packaging waste recycled and 82% recovered (in total) by 2020. Operator returns (2019) indicate that of packaging waste (EWC Chapter 15) attributed to Leicester City 100% was recovered; of that attributed to Leicester City and Leicestershire around 98% is recovered.

102. For the purpose of the WNA targets of 90% recovery and a maximum 10% disposal to landfill by 2030 for all C&I waste are proposed. The proposed targets are based on overall recovery and disposal rates as this approach is considered to allow for flexibility regarding market demands and commercial contracts. Current management method rates for arisings indicate a total recovery rate of around 76%. The WDI dataset also indicates that of the wastes currently sent for disposal the majority of this is potentially recoverable. Note that there is no block to exceeding the total recovery targets and further reducing disposal rates.

103. As previously outlined, estimates for current arisings for Leicester City were determined as a product of local as managed arisings (EA datasets) and as a percentage of the total arisings from the national estimate (Defra 2020), refer paragraphs 45-51. Figures derived from the national estimate were taken forward to 2019 to enable comparison with the total as managed arisings derived from the EA databases. Growth profiles applied included both employee number projections and the total GVA annual increase (CE 2019). These growth profiles were applied to local as managed arisings and national estimates over the reporting period to forecast arisings up to 2036. In order to avoid spurious accuracy and to reflect limitations of the datasets applied (refer paragraph 52), the average of the estimates has been taken to form the current arisings estimate. This methodology accords with national policy and guidance[25].

104. During preparation of this WNA the Covid-19 virus pandemic affected the global economy. The most recent quarterly reports on economic statistics available from the ONS were used to inform growth profiles (2020 Quarter 3 July to September)[26].

25 NPPG, Waste, How can waste planning authorities forecast future commercial and industrial waste arisings? Paragraph: 032 Reference ID: 28-032-20141016
26 https://www.ons.gov.uk/economy

It is difficult to determine the true impacts of the pandemic on the economy, and what recovery might look like, at this early stage. Reduced employment and economic activity experienced during the pandemic will have an impact on waste arisings. In order to provide some outlook ONS statistics for Gross Domestic Product (GDP) and employment figures during 2015 to 2020 were taken into consideration, as were the impacts of the Global Financial Crisis (GFC) being a recent global economic crisis in order to provide context. Growth profiles for employee numbers and total GVA annual increase were subsequently decreased for the period 2020 to 2025 to reflect reported decreases (e.g. 2020 employee numbers decreased to 97.3% of 2019 ONS early estimates of payrolled employees, and GVA decreased to 96.6% of 2019). Growth figures were then increased incrementally over the five-year period up to the original CE 2019 growth profile rates. This situation should be monitored and the WNA model updated in line with updated data and forecasts from the ONS.

105. Management methods applied to forecasts were derived from the three-year average of EA databases (2017 to 2019) management rates. Although there was some fluctuation in management method rates over the three-year period the average is likely to indicate emerging trends and best reflect local circumstance. Rates for management methods have been applied and increased incrementally to achieve targets as relevant.

106. The following assumptions were made in preparing the C&I waste forecasts:

- Growth in C&I waste arisings is a direct factor of economic growth.
- Impact of, and recovery from, Covid-19 will see a decrease in economic activity, gradually recovering over a period of 5+ years.
- Current recycling, composting, and recovery rates will not decrease.
- Application of targets was achieved by applying an even graduation from current rates (2019) up to the full target rate (applied at the target year e.g. 2030).
- The proportion of waste types attributed to business sectors identified through the Defra 2020 dataset is transferable to Leicester City.
- Waste recorded at intermediate facilities (i.e. waste transfer stations) is subsequently managed, and accounted for, at other waste management facilities (e.g. MRF, treatment, landfill, etc.).
- Waste recorded through intermediate facilities identified as transfer/treatment (either in the WDI or permitted by the WPA for transfer and materials recycling), has been captured under materials recycling at a rate of 25% (unless stated otherwise and informed by site-specific information) of the recorded consignment tonnage in order to reflect that the facility involves some form of preparation for reuse and/or recycling.

Table 7: C&I waste forecast by management method up to 2036 (million tonnes)

	2021	2026	2031	2036
Total C&I waste	0.230	0.238	0.248	0.258
Waste hierarchy level and broad management method				
Preparation for reuse and recycling				
Materials recycling	0.076	0.083	0.091	0.094
Composting	0.007	0.008	0.009	0.009
Treatment and other forms of recovery				
Treatment and energy recovery	0.094	0.109	0.124	0.129
Disposal				
Non-hazardous landfill (incl. SNRHW)	0.051	0.037	0.025	0.026
Disposal via incineration – no energy recovery	<0.001	<0.001	<0.001	<0.001

107. Insufficient data was available to determine proportion of C&I waste forecast to be disposed of at non-hazardous and non-hazardous (SNRHW) landfill, as such all waste disposed of has been captured as non-hazardous landfill (including SNRHW).

Construction, demolition, and excavation waste

108. CD&E waste management is also subject to commercial contracts that determine current and future management methods and rates. As with C&I waste this information is not available to the council and the ability of the council to directly influence such matters is limited, however a similar range of legislative and market drivers (including the Aggregates Levy) are acting on operators to divert waste from landfill.

109. Targets for CD&E waste are limited to that set out in the WFD requiring recovery of at least 70% of C&D wastes by 2020 (excluding naturally occurring material defined in category EWC 170504 – non-hazardous soils and stones), including backfilling operations using waste to substitute other materials. Current as managed arisings indicate that 170504 wastes account for around two-thirds of CD&E waste as managed. Of other CD&E wastes the majority is processed for reuse and recycling or otherwise recovered[27] achieving a total recovery of around 90%; exceeding the WFD target. The WDI dataset also indicates that of the wastes (scoped in, i.e. other than 170504) currently sent for disposal to landfill some of this is potentially recoverable. The Management of Non-Aggregate Waste Report (WRAP 2016) estimates that up to 5% of CD&E apportioned to landfill could be managed through energy recovery processes. Applying this to Leicester City CD&E as managed waste arisings disposed of to non-hazardous landfill (not including 170504) produces a figure of less than 0.001Mt. Total as managed wood waste arisings are around 0.010Mt for Leicester City and Leicestershire, all of which is either processed for reuse and recycling or otherwise recovered. It is possible that some

27 Other recovery includes soil treatment and inert recovery (including deposit of inert waste to land associated with the restoration of permitted mineral extraction sites) as well as other forms of treatment and recovery (including energy from waste processes).

wood waste is mixed with other wastes and disposed of to landfill however the extent of this cannot be determined. Subsequently there may be potential for capacity greater than that of identified arisings for wood waste reuse, recycling and other recovery.

110. There are several permitted inert and non-hazardous (including SNRHW) landfills within the wider Leicestershire area with permissions expiring between 2025 and 2044. Inert waste (in particular EWC 170504) is deposited at these sites for engineering purposes and for restoration in line with planned closures. EWC 170504 wastes are highly recoverable and there is normally a preference for such material to be directed to permitted mineral extraction sites to support restoration, if not otherwise recovered.

111. For the purpose of the WNA the following targets for CD&E waste have been identified: for EWC 170504 - 95%[28] recovery and a maximum 5% disposal to landfill by 2030; and for other wastes (excluding 170504 wastes) - 90% recovery and a maximum 10% disposal to landfill by 2030, this target builds on the existing WFD target. The proposed targets are based on overall recovery and disposal rates as this approach is considered to allow for flexibility regarding market demands and commercial contracts. The target for 170504 wastes takes into account the highly recoverable nature of this waste, and that as more waste is recovered (from all streams) the need for non-hazardous (including SNRHW) landfill will reduce subsequently reducing the requirement for inert waste for engineering and restoration purposes in the long-term. Note that there is no block to exceeding the total recovery targets and further reducing landfill/disposal rates.

112. As previously outlined, and in line with the national guidance, estimates for as managed arisings of CD&E waste were determined as a product of local as managed arisings (EA datasets), refer paragraphs 61-66. The as managed arisings are those wastes that require management through facilities for which the WPA is responsible for. The total arisings were derived from national estimates and were taken forward to 2019 to enable comparison with the total as managed arisings derived from the EA databases, refer paragraph 67. The growth profile, was based on dwelling stock forecasts (forming a more conservative approach), and was applied to both the as managed and total arisings figures over the reporting period to forecast arisings up to 2036. The difference between the as managed and total representing waste that is reused or managed on-site or at exempt sites.

113. As with C&I waste, potential impacts from the Covid-19 virus pandemic have been built into the growth profile. The ONS reported[29] that total construction output decreased by 12.5% in 2020 compared with 2019. The Construction Products Association (CPA) reported an estimated decrease of 14.3% in 2020 and forecast recovery of 14% increase in 2021 and 4.9% in 2022. Growth profiles were adjusted to reflect the CPA figures for the period 2020 to 2025, i.e. reduced by 14.3% on 2019 levels and then increasing by 14% in 2021, 4.9% in 2022 and incrementally

28 Current rates exceed 95% and so the current rate will be maintained.
29 ONS February 2021 Constrcution output in Great Britain

between 2023 to 2025 up to original rates. This situation should be monitored and the WNA model updated in line with updated data and forecasts where available.

114. It should be noted that generation of CD&E waste is different from other waste streams in that the generation of waste is tied to construction and/or demolition projects (e.g. redevelopment, housing construction, infrastructure projects, etc.) and so does not grow year-on-year. Where the annual increase forecast for dwelling stocks remains steady (i.e. the same year-on-year) no growth was forecast however where the forecast indicated an increase or decrease the percentage increase or decrease was applied to the CD&E forecast. This reflects that CD&E waste is not subject to a compounding growth profile. Forecasts for dwelling stock were sourced from the emerging Local Plan evidence base (LCC, Living in Leicester, 2020). The forecasts indicate that there may be some fluctuations but overall the arisings remain much the same over the reporting period.

115. There are no specific significant planned regeneration or major infrastructure projects identified within the WPA area as per the National Infrastructure Delivery Plan (NIDP) 2016 to 2021 that would result in a significant increase in waste generation (not accounted for through dwelling stock forecasts).

116. The approach applied to forecasting arisings for CD&E strikes a balance between reflecting growth patterns and forecasting waste arisings where the waste stream is acknowledged not to be subject to a compounding growth profile. This methodology accords with national policy and guidance[30].

117. Management methods were derived from the three-year average of management rates as per the EA databases (2017 to 2019). Although there was some fluctuation in management method rates over the three-year period the average is likely to indicate emerging trends and best reflect local circumstance. Rates for management methods have been applied and increased incrementally to achieve targets as relevant.

118. The following assumptions were made in preparing the CD&E waste forecasts:

- Growth in CD&E waste is tied to construction and/or demolition projects and so does not continually grow year-on-year.
- Dwelling stock forecasts indicate general construction activity likely to take place and waste generation.
- Impact of, and recovery from, Covid-19 will see a decrease in construction output (including associated waste arisings), gradually recovering over a period of 5+ years.
- Current recycling and recovery rates will not decrease.
- Application of targets was achieved by applying an even graduation from current rates (2019) up to the full target rate (applied at the target year e.g. 2030).
- There is a significant quantity of CD&E waste that is reused on-site or at exempt sites and this will continue to be the case.

30 NPPG, Waste, How should waste planning authorities forecast future construction and demolition waste arisings? Paragraph: 033 Reference ID: 28-033-20141016

- Waste recorded at intermediate facilities (i.e. waste transfer stations) is subsequently managed, and accounted for, at other waste management facilities (e.g. MRF, treatment, landfill, etc.).
- Waste recorded through intermediate facilities identified as transfer/treatment (either in the WDI or permitted by the WPA for transfer and materials recycling), has been captured under materials recycling at a rate of 25% (unless stated otherwise and informed by site-specific information) of the recorded consignment tonnage in order to reflect that the facility involves some form of preparation for reuse and/or recycling.

Table 8: As managed CD&E waste forecast by management method up to 2036 (million tonnes)

	2021	2026	2031	2036
Total as managed CD&E waste	0.355	0.576	0.576	0.576
Waste hierarchy level and broad management method				
Preparation for reuse and recycling				
Materials recycling	0.028	0.046	0.046	0.046
Composting	0.001	0.002	0.002	0.002
Inert recycling	0.049	0.080	0.080	0.080
Treatment and other forms of recovery				
Treatment and energy recovery	0.006	0.010	0.010	0.010
Soil treatment	0.062	0.100	0.100	0.100
Inert recovery^	0.191	0.310	0.310	0.310
Disposal				
Inert landfill	0.000	0.000	0.000	0.000
Non-hazardous landfill (incl. SNRHW)	0.016	0.026	0.026	0.026

^ *Inert recovery includes deposit of inert waste associated with the restoration of permitted mineral extraction sites.*

119. Insufficient data was available to determine proportion of CD&E waste forecast to be disposed of at non-hazardous and non-hazardous (SNRHW) landfill, as such all waste disposed of has been captured as non-hazardous landfill (including SNRHW).

Hazardous waste

120. There are no targets for the management of hazardous wastes. Hazardous wastes are generated from a wide array of uses and operations (from households, healthcare/medical, and industry); as such the drivers that act on municipal, C&I, and CD&E wastes also influence the generation and management of hazardous waste. Time series data for hazardous waste arisings was extracted from the HWDI for the last three years (2017 to 2019). The HWDI as managed data indicates that hazardous waste fluctuates slightly year-on-year but has averaged around 0.009Mt; this average has been applied as the estimated arisings for 2020 from which forecasts have been made over the reporting period.

121. C&I business sector operations are thought to account for a large proportion of hazardous wastes generated. As such the growth profile applied to C&I waste was also applied to hazardous waste. This growth profile was applied to the 2019 estimated arisings figure. As there are no targets for hazardous waste the management methods were derived from the three-year average of the HWDI (2017 to 2019). Although there was some fluctuation in management method rates over the three-year period the average is likely to indicate emerging trends and best reflect local circumstance and trends. This method accords with national policy and guidance.[31]

122. The following assumptions were made in preparing the hazardous waste forecasts:

- Growth in hazardous waste reflects that of C&I waste.
- Current recycling and recovery rates will not decrease.
- Waste recorded at intermediate facilities (i.e. waste transfer stations) is subsequently managed, and accounted for, at other waste management facilities (e.g. MRF, treatment, landfill, etc.), as indicated in the HWDI (e.g. consignments recorded under Transfer (D) and (R) indicates waste transfer prior to disposal and recovery respectively).

Table 9: Hazardous waste forecast by management method up to 2036 (million tonnes)

	2021	2026	2031	2036
Total hazardous waste	0.009	0.009	0.009	0.010
Waste hierarchy level and broad management method				
Recovery				
Recovery and treatment	0.008	0.008	0.008	0.009
Disposal				
Hazardous landfill	0.001	0.001	0.001	0.001
Disposal via incineration – no energy recovery	0.000	0.000	0.000	0.000

Residual waste arisings

123. Waste outputs are also produced as a result of waste treatment processes. Increasing the diversion of waste from landfill and driving waste up the waste management hierarchy will result in an increase in waste outputs from treatment processes, also referred to as residual waste. Potential residual waste arisings have been calculated to provide a broad guide to possible arisings over the reporting period, however the application of such figures is heavily caveated. Estimated residue output rates are derived from a limited range of technologies that may not reflect the final technologies that come on stream during the reporting period. This is due to the dynamic nature of the waste management industry and emerging technologies. Hence it is recognised that, although it is necessary to acknowledge the potential future capacity requirements for waste management facilities including final disposal, forecasts for residual arisings cannot be determined with any level of certainty.

31 NPPG, Waste, How should waste planning authorities forecast future hazardous waste arisings? Paragraph: 034 Reference ID: 28-034-20141016

124. Some residual waste from treatment processes as per the current management methods and rates are captured through the EA datasets and include EWC Chapter 19 wastes[32]. Outputs from waste management processes that are likely to be further treated (e.g. EWC sub-chapter 1912) were retained as these might not necessarily be a waste residue from treatment processes, but rather waste that has been processed through an intermediate (transfer) facility or MRF and re-classified according to the specific waste type (e.g. 191201 paper and cardboard, 191202 ferrous metals, etc.).

125. A recent EA study[33] into trommel fines (classified as EWC 191212 other wastes - including mixtures of materials - from mechanical treatment of wastes other than those mentioned in 191211), indicate that some of this waste may be being incorrectly classified as non-hazardous, i.e. should be classified as EWC 191211 (other wastes - including mixtures of materials - from mechanical treatment of waste containing dangerous substances – i.e. a hazardous waste). Wider issues encountered whilst undertaking the study (Covid-19) affected the sample size and analysis meaning that the study is not representative across England and so a blanket approach (of the findings) cannot be applied. The study is useful though, as it does highlight the need for improved analysis and monitoring of these specific "mirror" waste types – by operators and the EA.

126. The EA WDI 2019 reported around 0.208 Mt[34] of EWC 191212 and <0.001Mt of EWC 191211 for the Leicester City and Leicestershire area. An additional 0.012Mt of other residual wastes from treatment processes were also identified (but not included in waste arising estimates), including wastes from composting, soil remediation, and other treatment processes (including RDF and SRF). If it is assumed that a third of residues received to management facilities (i.e. not intermediate facilities) is attributed to Leicester City, current residual waste arisings sit at around 0.065Mt. Unfortunately, there is no definitive way of knowing how much of such wastes can be directly attributed to Leicester City as they are the output of facilities that receive wastes from other WPAs as well as Leicester City. Estimates of residual waste arisings are discussed in more detail below.

127. Currently the majority of EWC 191212 is disposed of to landfill, however, some of this waste was received at other waste management facilities for further treatment including MRFs, physical treatment, metal and other recycling, AD, and EfW facilities, or captured under transfer or storage. The majority of EWC 191211 was received at management facilities for physical-chemical treatment or captured under transfer or storage.

[32] Note that EWC sub-chapter 1912 (waste from the mechanical treatment of waste (e.g. sorting, crushing, compacting, pellatising) not otherwise specified) includes many wastes that can be clearly identified (e.g. plastic, glass, paper, wood, etc.) that, for the purpose of the plan-making process, are not captured under residual wastes as these are wastes that have been sorted into specific streams with the intention of being transferred onto treatment facilities (or that could be).

[33] EA Trommel fines: Chemical analysis and waste classification, June 2020

[34] It is possible that some of this made up of outputs generated from waste imported into the plan area and processed at treatment facilities within the plan area.

128. Recently published guidance from the EA on excavated waste from utilities installation and repair[35] will result in unassessed waste from utilities excavations being classified as hazardous from 31 October 2020; previously classified as non-hazardous. Utility providers and operators were advised by the EA to prepare and implement protocols for the classification and assessment of excavated wastes to allow for correct classification of wastes. Again, this guidance highlights the need for improved analysis and monitoring of specific waste types – by operators and the EA.

129. From a waste planning perspective, these examples highlight the need to consider residual arisings and ensure that such wastes are managed and pushed up the waste hierarchy, with disposal being the least preferred option.

Taking account of residual arisings

130. Residue output rates (per one tonne of waste input) applied to determine potential arisings are: processing of recyclables 15%; composting 15%; and treatment and energy recovery 20%. Small amounts of hazardous residual waste may also be produced from thermal treatment processes at a rate of 3%. Outputs vary widely and are dependent on the technology employed, scale of facility, waste composition, type of waste input, quality of waste input (e.g. contaminant level and calorific value), and operational efficiency of the individual plant/facility. Not all of this material needs be disposed of to landfill; it can be reused within the operational cycle, further treated using other technologies, recycled or used in construction[36].

131. Due to the uncertainties associated with obtaining estimates for waste arisings for Leicester City as well as residues themselves (refer paragraphs 45-47 and 126), such wastes have not been incorporated into the waste arisings, forecasts, and future capacity needs. Of the estimated residual waste arisings (0.065Mt, refer paragraph 126) that may be attributed to Leicester City just over half (0.035Mt) is currently disposed of to landfill, some of which could undergo further treatment.

132. Applying the residue output rates to the estimated waste arisings and management methods for 2019 produces an estimate for residues of around 0.070Mt. It is estimated that non-hazardous waste residues could account for just under 0.100Mtpa by 2036, of which it is possible that more than two-thirds could be diverted from landfill. In addition, hazardous waste residues could account for around 0.006 Mtpa by 2036.

133. In order to provide general guidance the estimated residual arisings and potential additional future waste management capacity needs for Leicester City have been identified through this WNA (refer paragraph 179). These figures have not been included in the indicative future needs (refer Table 12). Due to the uncertainty associated with the figures caution should be taken in applying these figures.

35 EA Guidance - Excavated waste from utilities installation and repair: Regulatory Position Statement (RPS) 211, April 2020

36 Mineral Products Association 2019 Contribution of recycled and secondary materials to total aggregates supply in Great Britain indicates that 86% of Incinerator Bottom Ash (IBA) can be reused as aggregate.

Monitoring future arisings

134. Where possible, future arisings (actuals and estimates) and existing operational capacity of waste management facilities within the WPA area will be monitored from the best available information sources as part of the annual monitoring report.

Low Level Radioactive Waste

135. Local forecasts for LLW have not been prepared as part of this WNA given the very low arisings previously recorded.

136. The NDA 2019 Inventory estimates that nationally the total amount of radioactive waste currently held in stores at 01 April 2019 and forecast in the future up to 2135 would occupy a volume of about 4.47 million m^3 (final volume after all wastes have been packaged). Of this LLW (and VLLW) account for 3.97 million m^3 (89%).

137. The Strategy for the Management of Solid LLW from the Non-nuclear Industry in the UK (DECC 2012)[37] estimates that total UK arisings from the non-nuclear industry are very unlikely to exceed 100,000m^3 per year. Survey results suggest that the majority of this can be attributed to the medical and research sectors. Management methods (reported through the survey) for LLW from the non-nuclear industry include disposal to landfill and via incineration. Naturally Occurring Radioactive Material waste arising from the oil and gas industries (e.g. from the decommissioning of oil and gas rigs) is currently not quantified but could arise for disposal in the future.

Management and disposal of LLW

138. As previously noted, application of the waste hierarchy has resulted in diversion of LLW from the LLWR facility. Management options available include incineration, metal recycling and alternative disposal. The Policy for the Long Term Management of Solid Low Level Radioactive Waste in the United Kingdom (Defra 2007)[38] allows for the disposal of some types of LLW to existing landfill, including: controlled burials of LLW and high volume VLLW. Such landfills could include non-inert landfill; the disposal of LLW generally does not require the same level of engineering as a hazardous landfill. The disposal of such waste to existing landfill is regulated by the EA under the Environmental Permitting Regulations. This policy direction is reflected through the UK Strategy for the Management of Solid Low Level Radioactive Waste from the Nuclear Industry (DECC 2016)[39], which states that LLW producers and managers should develop a LLW Management Plan to take account of current and future arisings of LLW with particular emphasis on application of the waste hierarchy and Best Available Techniques (BAT). The proximity principal and waste transport issues should also be given appropriate consideration. The Policy and the UK Strategy also require appropriate engagement

37 Strategy for the Management of Solid LLW from the Non-nuclear Industry in the UK, DECC 2012
38 Policy for the Long Term Management of Solid Low Level Radioactive Waste in the United Kingdom, Defra 2007
39 UK Strategy for the Management of Solid Low Level Radioactive Waste from the Nuclear Industry, DECC 2016

with stakeholders, including communities that may be affected (including those in the vicinity of disposal sites), and must meet the needs of the regulators.

Waste movements

139. Not all waste can be managed within the boundary of the WPA from within which it arises. This is due to contractual arrangements, operational networks and capacity requirements, as well as geographical convenience and other factors. There will normally be some movement of waste into and out of WPAs; this is reflected by the position of seeking net self-sufficiency.

140. Waste movements have been determined by analysing data extracted from the EA databases for the 2019 reporting period based on waste[40] received at facilities within Leicester City (imports) and waste received at facilities within other WPAs (exports)[41], refer to the table below. Detail regarding origin and destination of imports and exports is set out in the following section.

Table 10: Waste movements 2019 Leicester City (million tonnes)

Waste stream	Imports (from other WPAs to Leicester City)	Exports (from Leicester City to other WPAs)	Balance (imports minus exports)
HIC (Municipal and C&I)	0.232	0.151	+0.081
Inerts (CD&E)	0.186	0.038	+0.148
Hazardous	Transfer only	0.007	-0.007
Total	0.418	0.196	+0.222

141. Data attributed directly to Leicester City indicates that overall the WPA is a net importer of waste, in total importing just over twice the amount of waste exported. However, the scale of exports may be skewed by some waste consignments being incorrectly recorded under the generic Leicestershire group. There is no way of determining the extent to which this affects the data.

Waste imports and exports

Waste imported from other WPAs

142. Waste management facilities located within Leicester City include facilities for processing in preparation for reuse and recycling and soil treatment (as well as intermediate facilities such as CA and transfer sites). As such all waste received to facilities within Leicester City were subject to some form of materials recycling or soil treatment.

143. HIC waste imported into Leicester City (2019) was predominantly from the East Midlands (60%) with the remainder mainly from the West Midlands and the South East regions. Small amounts were also received from the East of England region

40 Excludes intermediate facilities or wastes outside the scope of the WNA (e.g. sewage and waste water, including sludges).
41 Derived from the excel extract of the WDI and Incinerator Returns.

and Wales and less again from the South West and Yorks and Humber regions. A very small amount (<50 tonnes) of HIC waste was received from London.

144. Almost all of the inert waste imported into Leicester City (2019) was received from the East Midlands with less than 1% received from the West Midlands region and Wales.

145. Hazardous waste received to facilities within Leicester City were for transfer only and totalled less than 50 tonnes (2019).

Waste exported to other WPAs

146. Of HIC waste exported from Leicester City (2019) around half was received at facilities within the East Midlands, around a quarter to Yorks and Humber, and small amounts (<10% each) to East of England, South East, and West Midlands regions.

147. Of inert waste exported from Leicester City (2019) around half was received at facilities within the East Midlands, around a third to East of England, and a quarter to West Midlands with small amounts (<5% each) to the north East, South East, South West, and Yorks and Humber regions.

148. Information regarding management of waste exported may not be reflective of actual management methods due to some waste consignments being incorrectly recorded under the generic Leicestershire group. Broad management methods reported through the EA databases for exports indicate that: for HIC waste - around half was received at facilities for processing in preparation for reuse and recycling (including composting) with a quarter undergoing treatment and energy recovery, and the remainder identified as being in storage or disposed of to non-hazardous landfill; and for inert waste – the majority was received at facilities for processing in preparation for reuse and recycling (including inert recycling), soil treatment or inert recovery (to land) with around 15% disposed of to non-hazardous landfill.

149. Over half of all hazardous waste exported from Leicester City (2019) was received at facilities in the West Midlands, with a fifth to both the East Midlands and East of England, and the remainder (<5% each) to the North West, Yorks and Humber, North East, South East, South West, and London. Around two-thirds was recovered, just over a quarter was subject to treatment, and the remainder disposed of to landfill or via incineration without energy recovery.

Identification of strategic movements and the Duty to Cooperate

150. The following matters are typically considered to be of a strategic[42] nature (of relevant to waste planning) that could potentially affect another authority and therefore could form a DtC matter: indicative waste management capacity needs, the spatial strategy for waste development (particularly non-hazardous disposal to landfill), and the proposed allocations/designations for waste development. It is only where the movement of waste is of a particularly large volume or of a specialised

42 It is for the authority of Leicester City to determine what is a strategic matter (in line with Zurich Assurance Ltd v Winchester CC and South Downs NPA 2014 that how the authority goes about deciding what is a strategic matter is a matter for their judgement).

nature (e.g. hazardous or radioactive waste) that this could be considered a strategic issue and therefore become relevant to the identified DtC matters.

151. A survey of WPAs was undertaken in January 2021 in line with the DtC regarding strategic waste movements. Movements were identified using the EA databases reporting on returns for the three-year period from 2017 to 2019. Potentially strategic movements were identified by use of the following thresholds:

- HIC and inert waste - any movement (i.e. import or export) of >10,000 tonnes from an individual WPA to an individual waste management site, and
- Hazardous waste - any movement (i.e. import or export) of >300 tonnes from one WPA to another WPA for a specific waste management type (e.g. recovery, landfill, treatment, etc.). Note that available records indicate that there is no import of hazardous waste into Leicester City (other than a very small amount received at intermediate facilities, i.e. transfer).

152. In order to identify thresholds relative to Leicester City WPA, the quantum of waste arising from Leicester City was taken into consideration. The identified thresholds represent less than 5% of the estimated arisings for the relevant waste streams (HIC, inert, and hazardous). This indicates that the thresholds are not set too high, if a 5% significance level were applied to estimated arisings the thresholds would be HIC 19,500 tonnes, inerts 35,000 tonnes, and hazardous 375 tonnes. These thresholds allow for a more focussed view to be taken regarding strategic movements and identification of potential DtC matters.

153. The reasoning for the above thresholds is that movements below these levels would seem to indicate once-off or ad-hoc arrangements that are by their nature not strategic, or are smaller quantities that may be able to be accommodated at another facility. Hazardous waste arisings and movements tend to be of a reduced scale when compared with other waste streams and so the threshold is lower, in addition facilities for the management of hazardous waste tend to involve more specialised processes and as such have a much wider catchment area.

154. Waste movements identified as being above the thresholds over the three-year period from 2017 to 2019 from the EA datasets are reported in Appendix 3 and summarised below (HIC and inerts rounded to 1,000’s and hazardous rounded to 100’s).

155. The last three years (2017 to 2019) operator waste returns were analysed in order to identify any potential DtC and strategic waste movements and matters with relevant WPAs. With regards to imports, the main WPAs from which waste was received to facilities within Leicester City included: HIC waste - Buckinghamshire, Cardiff UA, Derby and Derbyshire, Leicestershire, Northamptonshire, Oxfordshire, Vale of Glamorgan UA, Walsall, and Wolverhampton; and for inert waste – Leicestershire. All waste imported into Leicester City was received at facilities for processing in preparation for reuse and recycling (including inert recycling) and soil treatment. With regards to exports the main WPAs that received waste from Leicester City included: HIC waste - Coventry, Doncaster, Kent, Leicestershire, Norfolk, Nottingham City, and Wakefield; inert waste - Leicestershire, Thurrock, and Warwickshire; and for hazardous waste - Cambridgeshire, Leicestershire, Norfolk,

Nottingham City, Nottinghamshire, Sandwell, Staffordshire, and Walsall. Most of the above listed waste movements were not consistently above the thresholds for the three-year period. The only waste movements that were consistently above the thresholds included HIC from Derby and Derbyshire, Leicestershire and Walsall to Casepak MRF, and inert waste from Leicestershire to AR Aggregates recycling and soil treatment. Note that waste received from Leicestershire may include some waste arising from Leicester City due to some waste consignments being incorrectly recorded under the generic Leicestershire group.

Duty to Cooperate matters

156. Following identification of waste movements, relevant WPAs were surveyed, the purpose of which was to: confirm the general scale of movements; gain an understanding of what other WPAs considered as strategic movements; identify any DtC matters; and identify if there were any planning restrictions or other consideration regarding the continuation of movements.

157. Authorities that responded to the DtC survey regarding waste movements included: Cambridgeshire and Peterborough, Derbyshire, Doncaster, Coventry, Leicestershire, Norfolk, Northamptonshire, Nottinghamshire, Oxfordshire, Staffordshire, Wakefield, and Warwickshire.

158. Overall, responses received agreed with the occurrence and quantum of waste movements as well as the use of the thresholds. Some variance in data was noted, this may be as a result of differences in databases queries and scope (i.e. EWCs including those for sewage sludges, and intermediate facilities). Overall the general the scale of movements was reflected and agreed upon. Some respondents noted that other WPAs and WTABs had agreed lower thresholds, whilst others stated that the thresholds were considered reasonable and suitable and noted that the approach of comparing waste arisings with movements to ensure thresholds were locally relevant was an appropriate method. Whilst Leicester City agree that the thresholds agreed in other regions provide for a useful starting point, such matters should be considered relative to the WPA. This is because smaller authorities, who generate less waste, would consider lesser quantities significant, whereas this would not be the case for larger authorities or those that accommodate facilities with sub-regional or wider catchment areas. As such it is for each WPA to determine if such thresholds reflect local circumstances and would therefore provide a view to actual strategic movements and DtC matters.

159. No DtC issues or general planning policy considerations that would affect movements over the reporting period were identified, however it was noted that, in line with national policy, WPAs are seeking to achieve net self-sufficiency and so movements may reduce as treatment capacity increases; however, some movements will still occur due to commercial contracts and operational arrangements. The following responses were of note:

- Waste currently received to the Casepak MRF facility in Leicester City from Walsall and Rugby is anticipated to be diverted to the new Coventry MRF (being built as part of the partnership between Coventry and the five Warwickshire authorities) with construction to be completed by Summer 2023.

- Waste received from Leicester City to the Palm Paper Ltd facility in Norfolk, which has permanent planning permission, are likely to have taken place in previous years but would not have been published as paper and pulp reprocessing facilities were only included in the EA WDI in 2019.
- Restoration of Huncote Quarry in Leicestershire is anticipated to be finalised by 31 December 2021, thereafter no waste will be imported onto the site.
- Ferrybridge Multifuel Plant (EfW) in Wakefiled is a national electricity generating station, so is likely to continue to be operating for the foreseeable future.

160. Leicester City will continue to work with relevant authorities in relation to waste movements and any strategic waste planning matters as appropriate. It is important to note that commercial contracts are largely outside the WPAs remit, however the Council is committed to planning positively and work with industry to develop the additional capacity to address the WPA areas future needs, and wider needs as appropriate.

Wider waste management needs – London's waste

161. The Draft London Plan, July 2019[43] reports that in 2015 London produced just under 18Mt of waste. A total of 11.4Mt of waste was exported in 2015 with household and C&I waste accounting for 3.449Mt with the remainder (7.9Mt) being CD&E waste. Although the Draft London Plan is not an adopted plan this summary provides a useful and consistent basis from which to project future needs on.

162. The adopted London Plan includes the intent to achieve greater net self-sufficiency in London and these are reflected in the Draft London Plan (Policies S17 and S18) including targets to manage as much of London's waste within London as practicable, work towards managing the equivalent of 100% of London's waste within London by 2026, zero biodegradable or recyclable waste sent to landfill by 2026, and recycle/recover 95% of CD&E waste. It also seeks to reduce the proportion of household and C&I waste exported from the capital over time – from 3.449Mt in 2015 to 1.725Mt in 2021 and zero by 2026.

163. The majority of waste exported from London in 2015 went to WPAs in the East of England and the South East regions. The East Midlands received a total of 0.156Mt with a very small amount, 130 tonnes, received in Leicester City. In 2019 just 80 tonnes of London's non-apportioned household and C&I waste was received in Leicester City (to recycling and AD facilities). Import of non-apportioned household and C&I waste from London has not been identified as a strategic matter for Leicester City. Furthermore, the potential for waste displacement resulting from waste exported from London received to other WPAs (that receive significant amounts of London's non-apportioned HIC waste) affecting Leicester City is considered low, evidenced by the scale of identified waste movements.

43 Draft London Plan, July 2019. Refer paragraphs 9.7.2 and 9.8.1, and Table 9.3.

Waste management capacity

Estimated existing capacity

164. Existing waste sites operating within the WPA area already contribute towards supporting sustainable communities and meeting future needs. The majority of these facilities are expected to continue to operate throughout the reporting period. The estimated existing waste management capacity is set out in the tables below and is made up from a variety of facilities located throughout the WPA area. Details of waste commitments are set out in Appendix 1.

165. The capacity estimates only capture the capacity of existing sites with extant planning permission.

166. The existing capacity was determined by collating information from several existing sources including council planning application and permission records, operator returns and reports, EA databases (2015 to 2019), EA waste licence and permit registers, and the EA Waste Infrastructure Inventory 2010 as well as officer estimates[44] where necessary. Where available, returns for individual sites were collated from EA databases for the period 2015 to 2019. The highest capacity over this five-year period has been taken to be the estimated existing capacity for the site (figures rounded to nearest 100 tonnes) and applied over the remaining period (2020 to 2036), unless other available information suggested otherwise (e.g. grant of recent planning permission, planned closure or rationalisation of operator assets).

167. The WDI waste received datasets were imported into a Geographic Information System (GIS) software in order to detect any outliers or anomalies, i.e. sites recorded as being located within Leicester City that are actually within another WPA. Anomalies that were identified within the WDI dataset included inert recycling at Asfordby Business Park (E Synergy Developments Ltd) Leicestershire LE14 3JL, HIC transfer/treatment Leicestershire Highways Depot at Billesdon (Leicestershire County Council) Leicestershire LE7 9BH, and Wanlip AD facility (Biffa Leicester Ltd) Leicestershire LE7 4PF. All consignments received to such sites were removed.

168. No planning permissions have recently been granted, and there are none that have not been implemented for a waste use. In addition, the Council is not aware of any planned closures that would need to be incorporated into capacity projections. Planning permission end dates have been applied where applicable.

169. Not all of the estimated existing capacity is utilised year-on-year; this is evidenced by operator returns, which report reduced (or zero) throughput for some years for some sites. However, this capacity is assumed to be available to be utilised or brought online for future years. Estimated capacity may fluctuate over the reporting

44 Officer estimates of capacity are derived from previous experience with the individual site and/or similar sites as well as pers. comm. with the operator.

period in response to planned closures and expiry of planning permission where relevant.

170. The information collated on existing capacity and void space fed into determining future needs (the capacity gap) over the reporting period.

Table 11: Estimated existing waste management capacity (million tonnes per annum)

Waste hierarchy level	Waste stream	Waste management facility	Estimated capacity
Preparing for reuse and recycling	Mixed	Materials recycling	0.235
	Mixed	Metal recycling and End of life vehicles	0.014
	CD&E	Inert recycling	0.241
Treatment and other forms of recovery	CD&E	Soil treatment	0.043

Note that where facilities have been identified as transfer stations that also include materials recycling processes 25% of their capacity has been assumed to contribute towards capacity for materials recycling.

Future needs

171. In order to ascertain future needs the capacity gap must be identified, this is the difference between the existing estimated capacity and the management capacity resulting from forecasts. The future needs represent the capacity required to manage waste appropriately to achieve relevant targets and deliver net self-sufficiency over the reporting period. These should be taken as indicative figures.

172. The indicative future needs (i.e. that needed in addition to the existing estimated capacity) over the reporting period are set out in the tables below.

Table 12: Summary of waste arisings and future needs up to 2036

			Indicative total waste management capacity needs			
			2021	2026	2031	2036
Non-hazardous waste management						
Preparing for reuse and recycling	Materials recycling	Forecast arisings	0.138	0.167	0.179	0.184
		Existing capacity	0.249	0.249	0.249	0.249
		Capacity gap	+0.111	+0.081	+0.070	+0.065
	Composting	Forecast arisings	0.017	0.019	0.021	0.022
		Existing capacity	0.000	0.000	0.000	0.000
		Capacity gap	-0.017	-0.019	-0.021	-0.022
	Inert recycling	Forecast arisings	0.049	0.080	0.080	0.080
		Existing capacity	0.241	0.241	0.241	0.241
		Capacity gap	+0.192	+0.161	+0.161	+0.161
Treatment and other forms of recovery	Treatment and energy recovery[A]	Forecast arisings	0.166	0.196	0.220	0.228
		Existing capacity	0.000	0.000	0.000	0.000
		Capacity gap	-0.166	-0.196	-0.220	-0.228
	Soil treatment	Forecast arisings	0.066	0.105	0.106	0.107
		Existing capacity	0.043	0.043	0.043	0.043
		Capacity gap	-0.023	-0.062	-0.063	-0.064
Other recovery	Inert recovery[B]	Forecast arisings	0.191	0.310	0.310	0.311
		Existing capacity	0.000	0.000	0.000	0.000
		Capacity gap	-0.191	-0.310	-0.310	-0.311
Non-hazardous waste disposal (no existing capacity within WPA[C])						
Disposal - Non-hazardous landfill (incl. SNRHW)		Forecast arising	0.103	0.088	0.067	0.068
Hazardous waste management (no existing capacity within WPA[C])						
Recovery and treatment		Forecast arising	0.008	0.008	0.008	0.009
Disposal (landfill)		Forecast arising	0.001	0.001	0.001	0.001

A - Treatment and energy recovery refer to AD, EfW, wood waste EfW, and other physical/chemical treatment processes.
B - Available data indicates that, within Leicester City, inert waste that may elsewhere be disposed of to inert landfill is recovered through deposit of inert waste to land for beneficial purposes such as restoration of mineral extraction sites with extant planning permission.
C - Capacity gap is equal to forecast arisings as there is no existing capacity within the WPA.

173. Overall, Leicester City is making reasonable progress towards achieving net self-sufficiency for waste management, having more than sufficient capacity with regards to net self-sufficiency for processing in preparation for reuse and recycling and inert recycling over the reporting period. When viewed in terms of total arisings and existing capacity Leicester City currently provides waste management equivalent to around two-thirds of its total arisings; however, this capacity is associated only with facilities for processing in preparation for reuse and recycling (including inert recycling), and soil treatment.

Addressing the capacity gaps and potential need for facilities

174. Capacity gaps have been identified for composting, other treatment and energy recovery, soil treatment, inert recovery, and non-hazardous landfill as well as hazardous recovery and treatment, and hazardous landfill.

175. Based on the indicative future waste management capacity needs identified in the table above, there is a potential, dependant on the scale of the individual facilities and processes employed, for the following facilities to be provided within the WPA area: composting (small scale), other treatment and energy recovery, and soil treatment.

176. Given the land use constraints and planning context influencing Leicester City, not least because it is a tightly bounded urban authority, it is not appropriate for the WPA to accommodate inert recovery, non-hazardous landfill, hazardous recovery and treatment, and hazardous landfill facilities. There are also very limited location options for facilities that are more suited to rural locations, such as composting and AD plants. Furthermore, regarding hazardous wastes, such waste tends to be managed at a regional to national scale due to commercial contracts, economies of scale associated with waste treatment, and transportation costs as well as the fact that such wastes are generated in significantly lower quantities. As such it is not possible for every WPA to achieve net self-sufficiency with respect to hazardous wastes.

177. The estimated total future needs (void space) for deposit to land and disposal from 2020 to 2036 for waste arisings are:

- inert recovery (deposit of inert waste to land) 4.797 Mt,
- non-hazardous (including SNRHW) landfill 1.382 Mt, and
- hazardous landfill 0.016 Mt.

178. It is assumed that, given the land use constraints affecting Leicester City, future needs for deposit of inert waste to land, non-hazardous landfill, and hazardous waste management will continue to be met at facilities outside of the WPA area, i.e. though export of waste to other WPA areas. This may also apply to other management methods such as composting and other treatment and energy recovery given land use constraints including limited availability of land to accommodate development of waste management facilities. No strategic or DtC matters have been identified in relation to the principle or continuation of such movements.

180. Estimated additional capacity needs resulting from residual waste arisings[45] from waste treatment processes (of waste arising from within the WPA area) that may require further treatment and/or disposal over the period 2020 to 2036 are estimated below:

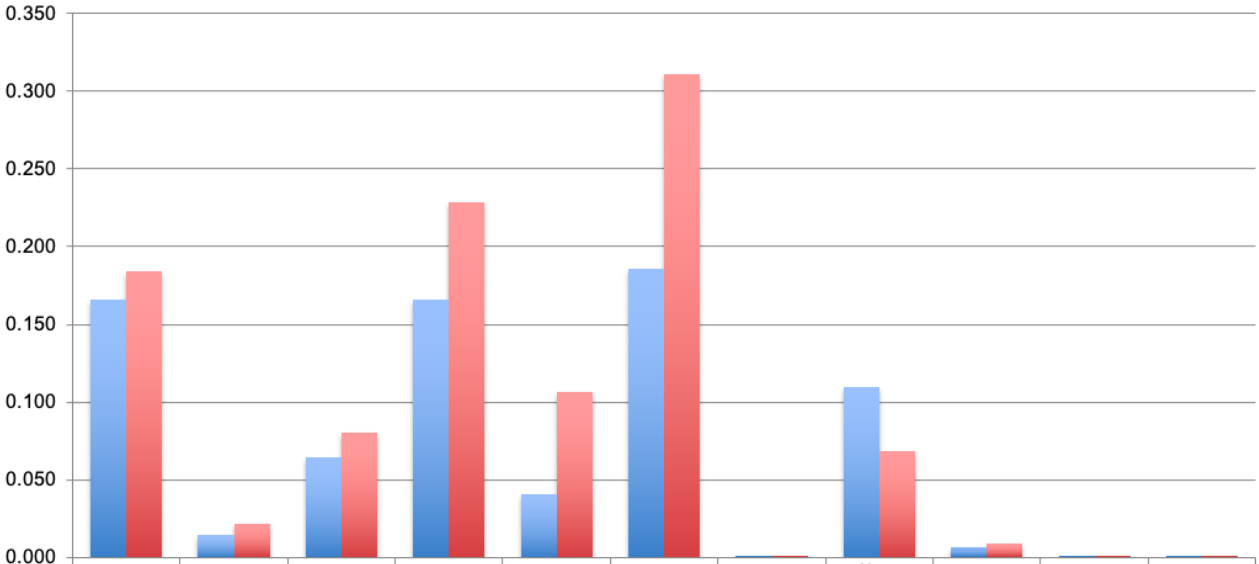
- treatment and other forms of recovery 0.015 Mtpa at 2021 increasing up to 0.021 Mtpa by 2036,
- IBA processing 0.019 Mtpa at 2021 increasing up to 0.027 Mtpa by 2036,
- metal recycling 0.002 Mtpa at 2021 increasing up to 0.003 Mtpa by 2036,
- inert recovery/disposal of up to 0.330 Mt,
- non-hazardous landfill total of up to 0.400 Mt, and
- hazardous landfill total of up to 0.100 Mt.

181. It is recognised that future disposal requirements will be significantly different to that of the past, with new technologies and processes diverting more waste and reducing the need for residual wastes to be disposed of to landfill. This creates somewhat of a moving target and highlights the need for continual monitoring of disposal, including disposal of residues, to ensure that wastes are managed, and any necessary capacity planned for appropriately.

[45] Such arisings are heavily dependent on future waste management trends and methods, operational efficiencies, and other market factors.

Conclusion

182. Current waste arisings[46] for Leicester City are estimated to total around 0.750 Mt; this includes municipal, C&I, CD&E, and hazardous wastes. Forecasts indicate that waste arisings could increase to just over 1 Mt by the end of the reporting period (2036). Current management methods achieve overall rates of around 85% for total recovery and 15% for disposal. Forecasts indicate future management rates of just under 95% for total recovery. In addition, residual wastes, occurring as outputs from waste treatment processes, will continue to arise and require management.



	Preparing for reuse & recycling	Compost	Inert recycling	Other treatment & recovery	Soil treatment	Inert recovery	Inert landfill	Non-hazardous landfill (incl SNRHW)	Hazardous recovery & treatment	Hazardous landfill	Incineration (no energy recovery)
2019	0.166	0.015	0.064	0.166	0.040	0.186	0.000	0.110	0.007	0.000	0.000
2036	0.184	0.022	0.080	0.228	0.107	0.311	0.000	0.068	0.009	0.001	0.000

Figure 1: Waste arisings and management methods in 2019 compared to that in 2036 (million tonnes per annum)

183. Overall, Leicester City is making reasonable progress towards achieving net self-sufficiency for waste management, having more than sufficient capacity with regards to net self-sufficiency for processing in preparation for reuse and recycling, and inert recycling over the reporting period. When viewed in terms of total arisings and existing capacity Leicester City currently provides waste management equivalent to around two-thirds of its total arisings; however, this capacity is associated only with facilities for processing in preparation for reuse and recycling (including inert recycling), and soil treatment.

184. Capacity gaps have been identified for composting, other treatment and energy recovery, soil treatment, inert recovery, and non-hazardous landfill as well as hazardous recovery and treatment, and hazardous landfill. There is a potential,

[46] Refers to as managed waste arisings.

dependant on the scale of the individual facilities and processes employed, for further facilities to be provided within the WPA area, such as composting (small scale), other treatment and energy recovery, and soil treatment.

185. Given the land use constraints and planning context influencing Leicester City, not least because it is a tightly bounded urban authority, it is not appropriate for the WPA to accommodate inert recovery, non-hazardous landfill, hazardous recovery and treatment, and hazardous landfill facilities. There are also very limited location options for facilities that are more suited to rural locations, such as composting (larger scale) and AD plants.

186. It is assumed that future needs for such capacity will continue to be met at facilities outside of the WPA area, i.e. though export of waste to other WPA areas. No strategic or DtC matters have been identified in relation to the principle or continuation of such movements.

187. Ongoing monitoring of waste movements particularly for disposal to non-hazardous landfill (including residues), and continued working with relevant WPAs regarding strategic waste planning matters will be necessary to ensure that wastes are managed, and that any necessary capacity planned for, appropriately.

Appendix 1: Waste management sites with extant planning permission

Table A1.1: Waste management sites with extant planning permission

Site	Operator	Location / Address	Planning permission ref. and end date *(where available)*
Materials recycling facilities			
Casepak Material Recycling Facility	G A E Smith (Holdings) Ltd	60 Sunningdale Road, Braunstone Frith Ind Est, Leicester, LE3 1UX	20100280 (Permanent)
A E Burgess & Sons Ltd	A E Burgess & Sons Ltd	Ulvercroft Road, Leicester, LE4 6BY	20160817
City Highways	Leicester City Council	Castle Park Depot, 90 Leycroft Road, Leicester, LE4 1BZ	20001279 (Permanent)
Enva Wesley Street Recycling and Resource Recovery Facility	Enva England Limited	Land / Premises At, Wesley Steet, Leicester, LE4 5PZ	20072327 (Permanent)
Leicester Transfer Station	T Watts Waste Limited	Barkby Road, Troon Ind Est, Leicester, LE4 7LG	19861616 (Permanent)
Metal recycling, End of Life Vehicles, and car breakers			
Griffin Stringer Ltd	Griffin Stringer Ltd	Sunningdale Road, Leicester, LE3 1UX	19931474 (Permanent)
A S Autos	Mr Amin Sidat & Mrs Shehnaz Sidat	Tithe Street, Leicester, LE5 4BN	19940640 (Permanent)
Attock Metal & L P G Ltd	Attock Metals & L P G Ltd	248 Humberstone Road, Leicester, LE5 0EG	20110897 (Permanent)
Belgrave Autos Ltd	Bant Singh	129 Barkby Road, Leicester, LE4 9LG	
Howkins Motor Spares	Howkins Mr. Shaun	56 Thurcaston Road, Leicester, LE4 5PF,	20081177 (Permanent)
T K V Motors	Amin, Mr Aram Awat	Clarendon Business Park, Unit 4 Knighton Junction Lane, Leicester, LE2 6AR	
Bridge Road		LE5 3LB	20170432 (Permanent)
Inert recycling			
A R Aggregates Urban Quarry	A R Aggregates Limited	92 Syston Street East, Leicester, LE1 2JW	20192187, 20191359 (Permanent)
Bursom Waste Treatment Facility	Biffa Waste Services Limited	Hoods Close, Thurcaston Road, Bursom Industrial Estate, Mowmacre, LE4 2BN	20022140 (Permanent)

Site	Operator	Location / Address	Planning permission ref. and end date *(where available)*
Bennion Road Compound	Leicester City Council	Bennion Road, Beaumont Leys, Leicester, LE4 1DY	
Soil treatment			
Enva Aggregate Recycling Facility	Enva England Limited	Sunningdale Road, Braunstone, Leicester, LE3 1UX	20060255 (Permanent)

Note that the above does not include intermediate facilities that do not include materials recycling processes/capacity, i.e. are for transfer only.

Appendix 2: Existing waste management capacity up to 2036

The following figures illustrate the existing capacity of facilities permitted for the treatment of waste and how this capacity may fluctuate over the reporting period.

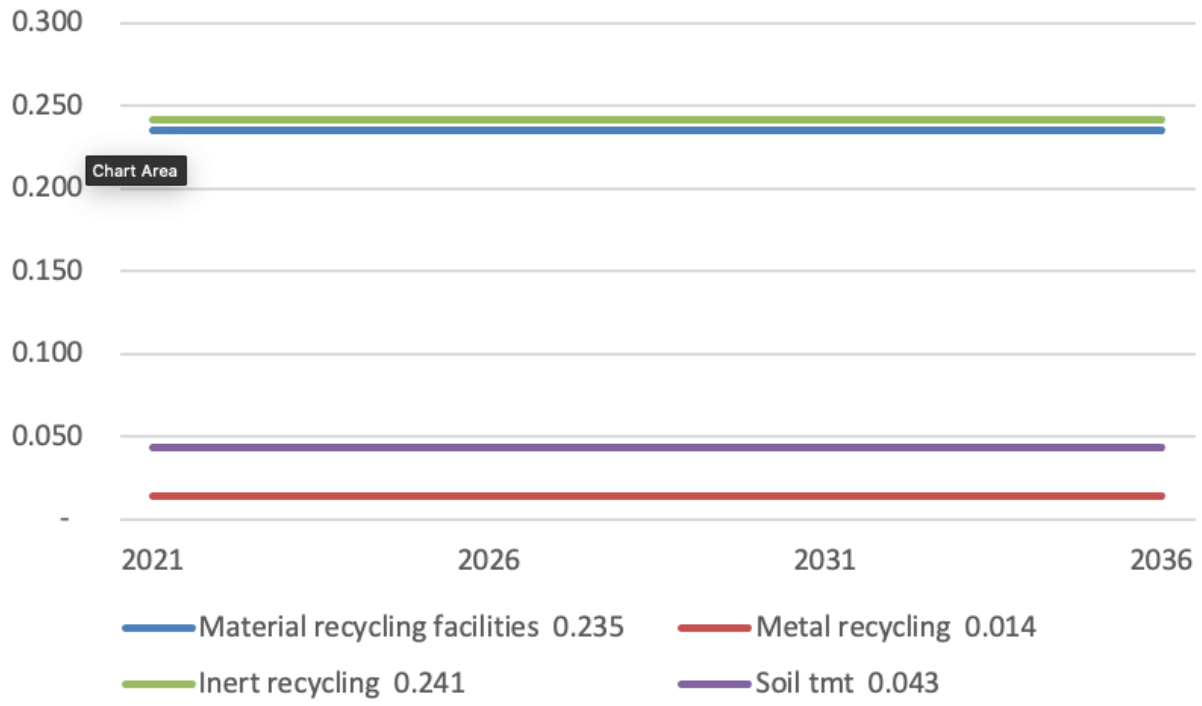


Figure A2.1: Existing estimated capacity for waste management up to 2036 (million tonnes)

Appendix 3: Waste movements

Table A3.1: Import of waste from other WPAs to facilities within Leicester City WPA

Waste type	Origin WPA	Site name	Operator	Facility type	Tonnes received		
					2017	2018	2019
HIC	Buckinghamshire	Casepak Material Recycling Facility	GAE Smith (Holdings) Ltd	Material Recycling Facility			19,000
HIC	Cardiff UA	Casepak Material Recycling Facility	GAE Smith (Holdings) Ltd	Material Recycling Facility	10,000	11,000	
HIC	Derby and Derbyshire	Casepak Material Recycling Facility	GAE Smith (Holdings) Ltd	Material Recycling Facility	12,000	10,000	10,000
HIC	Leicestershire	AR Aggregates Urban Quarry	AR Aggregates Limited	Physical treatment (Treatment of waste to produce soil)		11,000	
HIC	Leicestershire	Bursom Waste Treatment Facility	Biffa Waste Services Ltd	Physical Treatment (Inert recycling)		56,000	27,000
HIC	Leicestershire	Casepak Material Recycling Facility	GAE Smith (Holdings) Ltd	Material Recycling Facility	38,000	48,000	56,000
HIC	Northamptonshire	Casepak Material Recycling Facility	GAE Smith (Holdings) Ltd	Material Recycling Facility		15,000	10,000
HIC	Oxfordshire	Casepak Material Recycling Facility	GAE Smith (Holdings) Ltd	Material Recycling Facility		10,000	11,000
HIC	Vale of Glamorgan UA	Casepak Material Recycling Facility	GAE Smith (Holdings) Ltd	Material Recycling Facility	13,000	13,000	
HIC	Walsall	Casepak Material Recycling Facility	GAE Smith (Holdings) Ltd	Material Recycling Facility	21,000	20,000	22,000
HIC	Wolverhampton	Casepak Material Recycling Facility	GAE Smith (Holdings) Ltd	Material Recycling Facility	18,000		
Inert	Leicestershire	AR Aggregates Urban Quarry	AR Aggregates Limited	Physical treatment (Inert recycling and treatment of waste to produce soil)	118,000	131,000	118,000

Waste type	Origin WPA	Site name	Operator	Facility type	Tonnes received		
					2017	2018	2019
Inert	Leicestershire	Enva Aggregate Recycling Facility	Enva England Limited	Physical treatment (Treatment of waste to produce soil)			33,000

Note: It is possible that consignments reported as originating from Leicestershire include waste from Leicester City, as such the actual movements reported for Leicestershire may be lower however there is no way of disaggregating the data.

Table A3.2: Export of waste from Leicester City to facilities within other WPA

Waste type	Destination WPA	Site name	Operator	Facility type	Tonnes received		
					2017	2018	2019
HIC	Coventry	Bubbenhall landfill	Waste Recycling Group (Central) Limited	Non-hazardous landfill	19,000	11,000	
HIC	Doncaster	Bankwood Lane Industrial Estate	Attero Recycling Limited / EcoPower Environmental Limited	Metal recycling	14,000	15,000	
HIC	Kent	Kemsley Paper Mill EPR/BJ7468IC	DS Smith Paper Limited	Paper recycling			12,000
HIC	Leicestershire	Granite Close South	Bakers Waste Services Ltd	Non-hazardous waste transfer / treatment			33,000
HIC	Norfolk	Saddlebow Paper Mill	Palm Paper Limited	Paper and pulp reprocessing			11,000
HIC	Nottingham City	Harrimans Lane	Sims Group UK Limited	Metal recycling	10,000		
HIC	Wakefield	Ferrybridge Multifuel Plant	Ferrybridge MFE Limited	Municipal Waste Incinerator (Energy from Waste)			16,000
Inert	Leicestershire	Huncote Quarry	Acresford Sand and Gravel Limited	Inert landfill*		17,000	
Inert	Leicestershire	Granite Close treatment and transfer facility	Midland Rock Recycling Limited	Non-hazardous waste transfer / treatment			20,000

Waste type	Destination WPA	Site name	Operator	Facility type	Tonnes received		
					2017	2018	2019
Inert	Thurrock	Shed 46, Port of Tilbury	URM (UK) Limited	Material Recycling Facility		13,000	14,000
Inert	Warwickshire	High Cross Quarry, Copston Magna	Direct Contracts Limited	Physical treatment (Treatment of waste to produce soil)		17,000	
Haz	Cambridgeshire	Unknown	Unknown	Recovery		3,600	1,100
Haz	Leicestershire	Unknown	Unknown	Landfill	1,000	400	
Haz	Norfolk	Unknown	Unknown	Recovery		300	
Haz	Nottingham City	Unknown	Unknown	Recovery	300	300	
Haz	Nottinghamshire	Unknown	Unknown	Recovery	400	400	
Haz	Sandwell	Unknown	Unknown	Treatment	800	400	
Haz	Staffordshire	Unknown	Unknown	Recovery	400	600	
Haz	Staffordshire	Unknown	Unknown	Treatment	500		
Haz	Walsall	Unknown	Unknown	Recovery	600	600	
Haz	Walsall	Unknown	Unknown	Treatment	1,200	1,200	

* Inert landfill – Where this is the deposit of inert waste to restore a permitted quarry this may be inert recovery and not disposal.

Appendix 4: Reference list

A list of references used in preparing the WNA is provided below with links to websites where available. References are grouped under the broad areas that the information/dataset was used to inform preparation of the WNA.

Planning policy and local context

Landfill Directive

London Plan, March 2016

London Plan (Draft), November 2017

National Infrastructure Delivery Plan 2016 to 2021

National Planning Policy Framework

National Planning Policy Guidance

National Planning Policy for Waste

National Waste Management Plan for England

National Policy Statements

Our waste, our resources: A strategy for England

Packaging and Packaging Waste Directive

Shaping the future of England's strategic roads

UK Waste Regulations 2011

Waste Framework Directive

Identify historic and current arisings and management methods

DECC Data collection on solid low-level waste from the non-nuclear sector November 2008

Defra 2019 Digest of waste and resource statistics

Defra 2019 Digest of waste and resource statistics

Defra 2020 UK statistics on waste

Defra Local authority collected waste: annual results tables

EA Incinerator returns 2013 to 2019

EA Towards sustainable agricultural waste management, 2001

EA Strategic Waste Management Assessment: East Midlands, 2000 -

Available for download from Leicester City MWLP evidence base library

EA Waste Data Interrogator and Hazardous Waste Data Interrogator database 2013 to 2019

Greater London Authority, London Plan Waste Forecasts and Apportionments 2017

NDA 2016 and 2019 Inventory

NDA 2016 Inventory Site Data

NDA 2016 Radioactive Waste Inventory Report

NDA 2019 Inventory

NDA 2019 Inventory Site Data

Waste DataFlow database

WRAP 2010 Construction, Demolition and Excavation waste generation estimate for England

Identifying growth factors and apportioning waste arisings to authority levels and sectors/activity

Cambridge Econometrics East of England Forecasting Model 2019 baseline forecasts August 2020

Leicester City Council – Living in Leicester 2020

Leicester Shire Rutland Statistics and Research

MHCLG Housing supply: Net additional dwellings 2001-02 to 2018-19

Office of National Statistics Mid-year population estimates

Office for National Statistics NOMIS

Identifying waste management capacity

EA Incinerator returns 2013 to 2019

EA Environmental Permitting Regulations - Waste sites

EA Environmental Permitting Regulations - Waste operations

EA Environmental Permitting Regulations - Landfill sites

EA Register of waste exemptions

EA Remaining landfill capacity

EA Waste Data Interrogator and Hazardous Waste Data Interrogator database 2013 to 2019

EA Waste infrastructure inventory, 2010

EA Waste infrastructure inventory, 2010

Leicester City Council – Previous minerals and waste decisions