Surrey Waste Capacity Needs Assessment 2022

Management Requirements for Hazardous Waste in Surrey to 2042

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Abbreviations

Abbreviations	Definition
APCr	Air Pollution Control residues
C & I	Commercial & Industrial Waste
C, D & E	Construction, Demolition & Excavation Waste
CFC	Chlorofluorocarbon (gases)
CRC	Community Recycling Centre
DEFRA	Department for Environment, Food and Rural Affairs
EA	Environment Agency
ELVs	End of Life Vehicles
EWC	European Waste Catalogue
HWI	Hazardous Waste Interrogator
LACW	Local Authority Collected Waste
MRS	Metal Recycling Sites
PPG	Planning Practice Guidance
PI	Pollution Inventory
SNRHW	Stable Non-Reactive Hazardous Waste
WDF	WasteDataFlow
WCNA	Waste Capacity Needs Assessment
WDI	Waste Data Interrogator
WEEE	Waste Electrical & Electronic Equipment
WPA	Waste Planning Authority
WTS	Waste Transfer Station

Glossary of Terms

Term	Definition
Commercial Waste	Waste from factories or premises used for the purpose of trade or business, sport, recreation or entertainment.
Community Recycling Centre	A facility that is available to the public to deposit waste not collected through kerbside collection (otherwise known as a civic amenity site or Household Waste Recycling Centre (HWRC)).
Construction, Demolition & Excavation Waste	Waste arising from construction and demolition activities, including excavation during construction, mainly consisting of inert materials such as soils, stone, concrete, and brick. This waste stream also contains non-inert elements such as wood, metals, plastics, cardboard and plasterboard
DEFRA	The UK Government department responsible for developing national waste management policy.
Duty to Cooperate	The Duty to Cooperate is a legal test that requires cooperation between local planning authorities and other public bodies to maximise the effectiveness of policies for strategic matters in Local Plan making.
End of Life Vehicles	Vehicles classed as waste having been declared as no longer usable and for which a Certificate of Destruction has been issued by DVLA. Deemed hazardous until hazardous components removed via depollution processes.
Environment Agency	The body responsible for the regulation of waste management activities through issuing Environmental Permits to control activities that handle or produce waste. It also provides up-to-date information on waste management matters and deals with other matters such as water issues including flood protection advice.
European Waste Catalogue (EWC)	Comprehensive listing of wastes divided into 20 chapters, most of which are industry-based, although some are based on materials and processes. Each waste type is assigned a unique six-digit code. Otherwise referred to as List of Waste (LoW).
Hazardous Waste Landfill	Sites where hazardous waste may be disposed by landfill. This can be a dedicated site or a single cell within a non-hazardous landfill, which has been specifically designed and designated for depositing hazardous waste.
Hazardous Waste	Waste requiring special management under the Hazardous Waste Regulations 2005 due to it posing potential risk to public health or the environment (when improperly treated, stored, transported or disposed). This can be due to the quantity, concentration, or its characteristics.
Household Waste	Waste from households collected through kerbside rounds, bulky items collected from households and waste delivered by householders to household waste recycling centres and "bring recycling sites". along with waste from street sweepings, and public litter bins- referred to as Local Authority Collected Waste (LACW).
Incineration	The controlled combustion of waste. Energy may also be recovered in the form of heat (see Energy from Waste).
Industrial Waste	Waste arising from any factory and from any premises occupied by an industry (excluding mines and quarries).
Landfill (including land raising)	The permanent disposal of waste to land, by the filling of voids or similar features, or the construction of landforms above ground level (land-raising).

Term	Definition
Other Recovery	Subjecting waste to processes that recover value by means other than recycling and composting – mainly thermal treatment to recover energy.
Recovery	Subjecting waste to processes that recover value including recycling, composting or thermal treatment to recover energy.
Recycling	The sorting and separate storage of materials extracted from the waste stream for reprocessing either into the same product or a different one.
Stable Non-Reactive Hazardous Waste (SNRHW)	Type of hazardous waste that may be accepted at a Non-Hazardous waste landfill providing that it is placed in a separate dedicated cell.
Vehicle depollution	Removal of hazardous components from End of Life vehicles. May only take place at authorised facilities permitted to do so.
Waste Planning Authority (WPA)	The local authority responsible for waste development planning and control. In this case Surrey Council.
Waste Transfer Station	A site to which waste is delivered for bulking prior to transfer to another place for further processing or disposal.
Waste Electrical and Electronic Equipment (WEEE)	Waste from electrical and electronic equipment which includes a large range of devices such as computers, fridges and mobile phones at the end of their life.

1. Introduction

Surrey County Council has contracted BPP Consulting to produce the Surrey Waste Capacity Needs Assessment (WCNA) that underpins the preparation of its Minerals and Waste Local Plan.

The WCNA consists of the following documents:

1. Review of Management Requirements for Local Authority Collected Waste;
2. Review of Management Requirements for Commercial & Industrial Waste;
3. Review of Management Requirements for Construction, Demolition & Excavation Waste;
4. Review of Management Requirements for Hazardous Waste;
5. Scoping Review of Management Requirements for Other Waste;
6. Review of waste flows.

This report is concerned with updating the hazardous waste baseline for 2021 and assessing its projected management requirements to 2042. Due to the variable nature of hazardous waste and differing management requirements, forecasts have been generated on a waste type basis.

1.1 Definitions

The term 'hazardous waste' is used to describe waste that possesses properties considered to pose a threat to human health and/or the environment such as toxicity, flammability, corrosiveness and carcinogenicity. Hazardous waste arises from different sources so does not occur as a discrete waste stream, being more a collection of different materials that occur in different streams, which are generally collected separately and then managed according to their differing hazardous properties. For example, fridges containing CFC gases and cathode ray tubes used in TV and computer monitor screens are classed as hazardous and arise in LACW, while oily water, interceptor wastes and undepolluted scrap ('End of Life') vehicles arise principally in the C&I waste stream. Each of these waste types often require management by distinctly different methods and hence provision of different types of management capacity regardless of their origin. Hence, the hazardous component of each of the main origin streams i.e. C, D & E, Commercial and Industrial (C&I) and LACW are considered together in this report, and to avoid double counting the quantity arising in each has been deducted from the estimate of the origin stream arisings reported elsewhere

2. Calculating a Baseline Arisings Estimate

To generate a baseline estimate of hazardous waste arising in Surrey the following datasets have been accessed:

1. The Environment Agency (EA) Hazardous Waste Interrogator (HWI) 2021[1] - movements.
2. The EA Waste Data Interrogator (WDI) 2021[2] – inputs to permitted management sites.
3. The EA Waste Data Interrogator 2021 – outputs from permitted management sites.
4. The EA Pollution Inventory Site outputs 2021 - waste from significant industrial sites.

Notably while the HWI always specifies the waste origin and destination by Waste Planning Authority (WPA) it does not identify the specific facility at which the waste has been managed, whereas the WDI may only report by originating region but does report inputs and outputs by facility. Hence both datasets have been accessed to generate a comprehensive picture of fates of Surrey's hazardous waste.

The relationships between the datasets are illustrated in Figure 1 and the findings derived from each dataset are considered below.

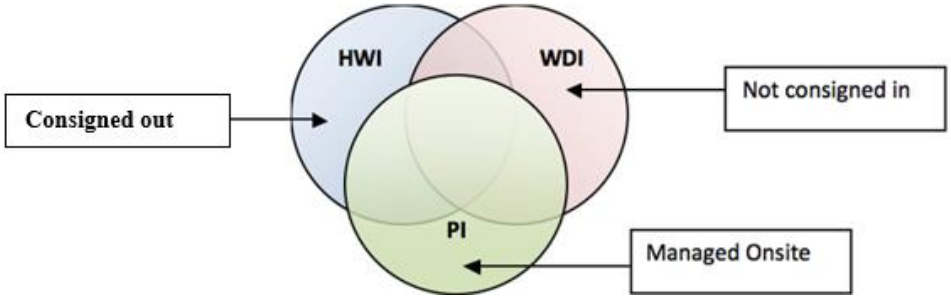

Figure 1: Relationship between Datasets for Hazardous Waste

2.1 The EA Hazardous Waste Interrogator (HWI) 2021

Legislation requires that the relevant waste regulation authority[3] be notified when hazardous waste is moved. The notification takes the form of a consignment note that details the quantities and destination of the waste. This means that the following movements of hazardous waste are recorded and reported to the relevant regulatory body:

- From producer sites directly to disposal/treatment facilities;
- from producer sites to transfer facilities for bulking up and onward management; and,
- from treatment facilities to final disposal sites.

This data is then aggregated by the Environment Agency and made available in the HWI that is published on an annual basis with a delay of c9 months.

[1] This reports data for 2020 but was published in 2021 and is the latest data available

[2] As in footnote 1

[3] For England this is the Environment Agency.

The reporting method means that the HWI dataset may be incomplete for the following reasons:

- Consignment notes are not issued when hazardous waste is managed on the site of its production by the producer or same operator.
- Where the producer of hazardous waste is a householder the requirement to consign does not apply. Therefore, where the receiving site operates under an Environmental Permit, (and reports through the WDI[4]), waste will only either be recorded on arrival, or when it is removed. For example, undepolluted End of Life Vehicles, which are classed as hazardous waste, will often not be consigned from their origin when being scrapped because the owner of a vehicle is not required to do so and hence this initial movement is not recorded in the HWI. However, it should be recorded as hazardous waste on arrival at the vehicle de-pollution site by the permit holder, as an input of waste to a site with an Environmental Permit, and it is then reported through the WDI. Another example is any hazardous waste such as a lead acid batteries brought to a community recycling centre (CRCs) will not be consigned in, but will normally be consigned out by the operator/permit holder.

Both of the above circumstances can result in under-reporting of hazardous waste arisings through the HWI. However, this may be balanced by aspects of the hazardous waste consignment process that allows for the possibility of over-reporting. For example, if waste is moved to an intermediate management site within Surrey and then moved on to a further site it will be consigned twice, when leaving its origin and then when leaving the intermediate site, and so double counted. Also, the person consigning hazardous waste may not have facilities to precisely measure the quantity of waste they are passing on and so may estimate the amount per load. This may result in a discrepancy between the quantity recorded as having been consigned from the source e.g. a half-full drum may be recorded by the drum's total capacity, and the quantity actually recorded as having been received at the waste management site which would normally have a reliable measurement method such as a weighbridge.

The Agency HWI 2021 indicates the following:

- In 2021 32,445 tonnes of hazardous waste (of all types) were produced in Surrey;
- Of this, 2,865 tonnes were managed in Surrey; with the difference (29,579 tonnes) managed outside Surrey i.e. exported.
- Conversely 77,631 tonnes of hazardous waste were imported to Surrey for management.

To address the limitations associated with the HWI outlined above, and ensure use of the best available data as required by national Planning Practice Guidance (PPG), data from the WDI and the Pollution Inventory (PI) has also been consulted.

[4] Some permitting exemptions allow the receipt of certain hazardous wastes, and these sites do not report through the WDI.

2.2 The EA Waste Data Interrogator (WDI) 2021

While one might expect the values for inputs to permitted intermediate sites as reported through the WDI to correspond to outputs from those sites, there can be discrepancies. These can be attributed to the fact that some incoming hazardous wastes get rendered non-hazardous while processed at an intermediate site. For example, End of Life Vehicles (ELVs) are classed as hazardous by virtue of the presence of oils, fluids and batteries within them. Once ELVs received at vehicle depollution sites are depolluted the ELV shell ceases to be hazardous but the extracted hazardous components (essentially fluids and batteries) will leave the depollution site as hazardous waste for onward management. Those components that arise from depollution sites operating in Surrey will be reported as hazardous waste arising in Surrey. This is illustrated in Figure 2.

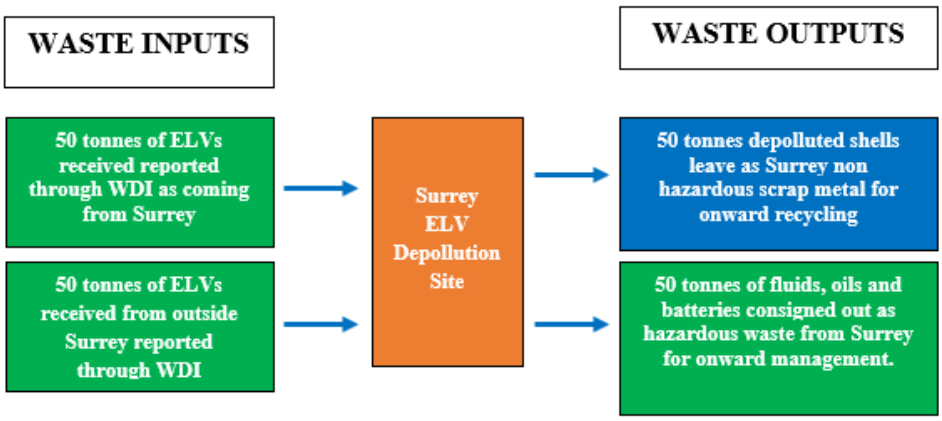

Figure 2: Illustrative Schematic of flows of ELV's to, and resulting from, an ELV depollution site

Inputs from Surrey to permitted sites reporting through WDI

The WDI 2021 indicates the following:

- In 2021 33,281 tonnes of hazardous waste reported as having been managed at permitted sites (both within and beyond Surrey) were attributed to Surrey as its source;
- of this, 9,032 tonnes were managed in Surrey with the difference (24,249 tonnes) being managed outside Surrey; and,
- 64,454 tonnes were imported for management in Surrey.

Outputs from Surrey to permitted sites reporting in the WDI

Outputs of hazardous waste from Surrey permitted sites reporting through the WDI will be identified as arising within Surrey (regardless of its original source) and hence may be counted towards the quantity of waste to be planned for in the Surrey Waste Local Plan. Comparing the WDI output value with the input value can reveal, for the same type of hazardous waste, output values are greater than input values. In these cases, the output value may be capturing a more complete picture and hence result in a more accurate estimate of arisings. This is considered below.

The WDI 2021 indicates that 16,282 tonnes of hazardous waste were removed from permitted sites operating within Surrey.

2.3 The Pollution Inventory (PI) 2021

The EA Pollution Inventory captures data on waste arising from certain industrial installations, regulated under the Industrial Emissions Directive (IED)[5] permitting regime. Such installations may manage their waste onsite or send their waste for offsite management. This dataset is considered for the following reasons:

1. As previously stated, the HWI may not capture all hazardous waste arisings as waste managed on the site of production through onsite treatment doesn't need to be consigned and it may be managed onsite by a method that is recorded in the Pollution Inventory;
2. As noted above, both the WDI input and output datasets can be prone to underreporting by the lack of attribution of waste down to WPA level. The Pollution Inventory does record sources of inputs and so allows for a cross check of the WDI.

A check has therefore been made of hazardous waste data for non-waste installations that report through the Pollution Inventory. However, this dataset did not indicate any significant tonnage of hazardous waste produced by such installations operating in Surrey reporting through this route in 2021 not already reported already in the WDI or HWI. Therefore, no value was taken forward.

2.4 Summary of Headline Data

The data from the HWI and WDI shows that:

- HWI: Movements of hazardous waste arising in Surrey: 32,445 tonnes.
- WDI: Input of hazardous waste arising in Surrey to all sites: 33,321 tonnes.

The management import/export balance as indicated by the WDI and HWI is displayed in Table 1.

Table 1: Surrey Hazardous Waste Arisings & Management Data
Blue indicates values contributing to arisings, pink indicates Surrey management capacity
Source: HWI 2021 and WDI 2021

	Surrey Hazardous Waste Arisings (tonnes)	Surrey Hazardous Waste Arisings (tonnes)	Hazardous Waste Managed in Surrey (tonnes)	Hazardous Waste Managed in Surrey (tonnes)	Hazardous Waste Managed in Surrey (tonnes)
Data source	**Quantity Managed Attributed to Surrey**	**Of which Quantity Managed outside Surrey (exports)**	**Quantity Managed in Surrey Attributed to Surrey**	**Quantity Managed in Surrey from outside (imports)**	**Total Managed**
HWI	32,445	29,579	2,865	77,631	80,497
WDI (inputs from Surrey to all facilities including that coming from Surrey facilities)	33,281	24,249	9,032	64,454	73,486
WDI (outputs from Surrey facilities)	16,282	9,931	6,351	N/A	N/A

[5] Retained EU legislation

Table 1 shows that more hazardous waste is recorded as arising in Surrey in the WDI than the HWI (c33,500 vs c32,500 tonnes). The total amount of hazardous waste managed within Surrey is greater according to the HWI than is reported in the WDI (c80,500 vs c73,500 tonnes).

The HWI may be underreporting arisings due to a number of reasons. As HWI entries are not site specific, to understand the possible source of this discrepancy better it is necessary to assess the tonnages by waste code and fate. The outcome and findings of the comparison exercise for WPAs receiving 500 tonnes or more is shown in Table 2 below.

Table 2: Destination of Surrey Hazardous Waste by WPA (inc Surrey) (500t or more in either dataset)

Source: WDI and HWI 2021

Deposit WPA	WDI Total (tonnes)	HWI Total (tonnes)	Hazardous Waste Management Detail
Berkshire	0	1,642	Clinical Waste for treatment
Bexley	270	628	Clinical waste for incineration
Cambridgeshire	219	694	Soils for treatment
Derbyshire	916	752	Solid wastes from gas treatment for treatment
East Sussex	1,958	1,721	ELVs for treatment
Essex	701	700	Construction materials containing asbestos for transfer
Greenwich	0	639	ELV oils for transfer
Hammersmith and Fulham	0	939	Equipment containing chlorofluorocarbons for recovery
Hampshire	2,571	3,090	Drilling muds for transfer
Hertfordshire	1,405	1,209	Wastes from grit chambers and oil/water separators for treatment
Kent	5,130	3,256	Bituminous waste for recovery, WEEE for treatment and oily water from oil/water separators for recovery.
Medway	883	947	ELV oil for treatment
Merton	28	537	ELVs for recovery
Newham	98	1,229	Hazardous soil and stones for recovery
Northamptonshire	874	1,120	Hazardous soil and stones for treatment
Staffordshire	833	866	Absorbents, filter materials, wiping cloths, protective clothing for treatment
Stoke-on-Trent City	8	1,092	Track ballast for recovery
Surrey	9,032	2,865	Soil and stones for treatment at Patteson Court landfill. Bottom ash and slag and asbestos waste to landfill.
Tameside	698	100	WEEE for treatment
Walsall	114	974	Lead batteries for transfer
West Sussex	638	681	Clinical waste for treatment
Wiltshire	103	531	Asbestos waste to landfill
Wokingham	1,800	0	Clinical waste for treatment
Wolverhampton	1,231	1,095	Asbestos for transfer

Deposit WPA	WDI Total (tonnes)	HWI Total (tonnes)	Hazardous Waste Management Detail
Total	29,508	27,310	

Table 2 indicates that inputs recorded as coming from Surrey in the WDI are not always being attributed to Surrey in the HWI. The underreport in the HWI for Surrey inputs can be attributed mainly to waste reported as managed in Surrey itself with c6,000 tonnes discrepancy between the HWI and WDI. This discrepancy could be due to the fact that the non-hazardous waste landfill with a stable non-reactive hazardous waste cell (SNRHW[6]) at Patteson Court (Patterson Court) also operates a soil treatment facility where hazardous soils may be treated before further management/use /disposal in the landfill and not consigned when moved from the soil treatment facility to the landfill.

It is also noted that Table 2 also indicates an underreport in the WDI in a few cases. This may be attributed to inputs in the WDI not being coded below regional level.

The outcome of this exercise confirms that the WDI dataset for Surrey's hazardous waste arising appears to be the most comprehensive for 2021 and hence represents the 'best available' data for the purposes of forward planning for this waste stream in Surrey.

2.5 Conclusions

Surrey Hazardous Waste Arisings

Hazardous waste arisings attributable to Surrey for 2021 have been found to be c33,500 tonnes, according to the WDI 2021. This compares with c53,000 [7]tonnes in 2017 found in the previous WNA.

This assessment also found that in 2021 the quantity of hazardous waste managed within Surrey exceeded the quantity of hazardous waste arising within Surrey, by a significant margin – c73,500 tonnes managed vs c33,500 tonnes produced according to the WDI.

While there is no expectation in national policy that hazardous waste as a stream should be provided for on a exclusive local basis, reliance of some waste types on management capacity in other Plan areas can make it a 'larger than local' strategic issue under the Duty to Cooperate. This is considered in more detail in Section 5 of this report.

[6] Hazardous waste that may be accepted at a non-hazardous waste landfill providing it is placed in a separate cell.

[7] Based on HWI data

3. Forecasting Future Hazardous Waste Arisings

3.1 National Policy

The 2013 National Policy Statement for Hazardous Waste[8] remains the most current review of hazardous waste arisings in England. It states that arisings of hazardous waste are expected to increase for the following reasons:

- Continuing consumer demand for consumer durables containing hazardous materials.
- Increasing use of producer responsibility schemes, such as those provided for Waste Electrical and Electronic Equipment (WEEE) which require the separate collection of WEEE resulting in more hazardous items being removed from the mixed municipal waste stream, being collected separately as hazardous waste.
- Changes to the list of hazardous properties in the revised Waste Framework Directive and changes to the European Waste List, leading to increases in the amount of waste classed as 'hazardous'. There are still uses in which components that become hazardous waste may be unavoidable for the foreseeable future. For example, the use of oil in internal combustion engines.

It should also be noted that the identification of persistent organic pollutant (POPs) bearing materials such as furniture may also lead to an increase in reported hazardous arisings. See for example, the Environment Agency's recent determination on furniture that might contain POPs being unsuitable for landfilling.[9]

3.2 Defining Growth Factors for Hazardous Waste arising in Surrey

While nPPG advises that future hazardous waste arisings be estimated by extrapolating time series data from the HWI, reliance on historical data to establish possible future trends is not considered to be robust due to frequent changes in the definition of hazardous waste and refinement of regulatory guidance which has tended towards increasing the range and quantity of waste being classed as hazardous and thereby 'artificially boosting' quantities of arisings. That is to say the dataset for 2017 would capture a more limited range of wastes than the 2021 dataset, so if the value shown by the more recent dataset is greater this is not necessarily because quantities of the waste arising in 2017 actually increased. For example bituminous materials i.e. tarmac has been classed as hazardous in recent years.

Given the initial exercise identified the WDI as the more comprehensive dataset for Surrey this has been preferred as the data source to extrapolate from.

[8] National Policy Statement for Hazardous Waste: A framework document for planning decisions on nationally significant hazardous waste infrastructure Defra June 2013

[9] Environment Agency on GOV.UK website: Identify and dispose of waste containing persistent organic pollutants March 2015

Table 3: Hazardous Waste Arising in Surrey Over the Past 5-data years
Source: WDI

Year	Indicated arisings
2017	35,836
2018	35,425
2019	38,563
2020	41,647
2021	33,281

These values are plotted in Figure 3 along with a trendline.

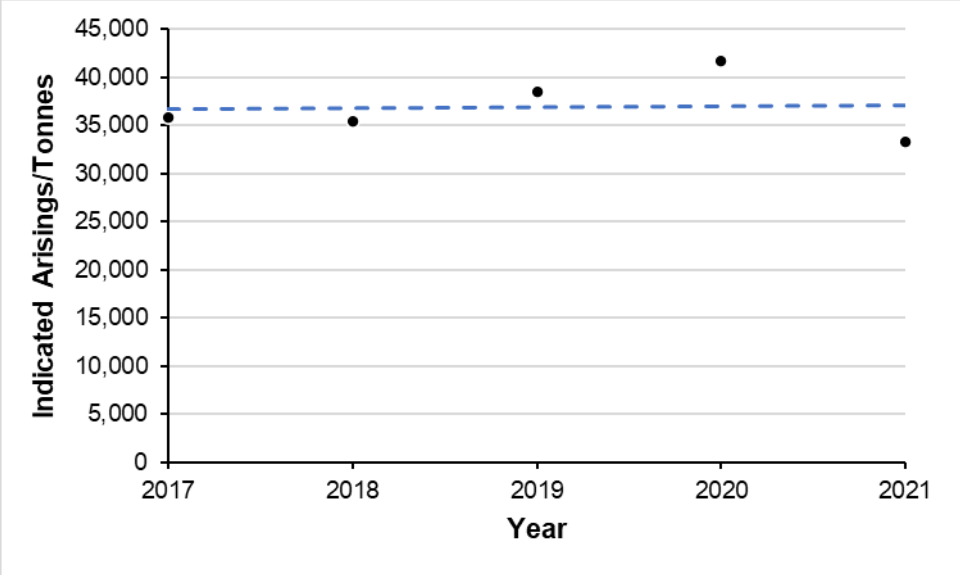

Figure 3: Hazardous Waste arising (tonnes) in Surrey as recorded by the WDI (2017-2021) Trendline shown by the blue dashed line

The blue dashed trend line in Figure 3 is based on hazardous waste arising in Surrey over a 5-year period as reported through the WDI. This indicates that arisings have remained relatively constant over the period, with the average growth rate over this period is minus 1.1% per annum.

The composition of arisings has been considered to determine any trends on a waste type basis.

3.3 Composition of Surrey Hazardous Waste

Table 4 below presents the principal arisings of hazardous waste in Surrey for 2021 based on the WDI dataset. Hazardous waste types arising in a quantity greater than 500 tonnes account for nearly 76% of arisings, and these have been aggregated into the nine categories in Table 4.

Table 4: Principal Hazardous Waste Types arising in Surrey in 2021 (>500 tonnes)
Source: WDI 2021

Hazardous Waste Type/Source	Total
Vehicle Maintenance inc ELV components	6,875
C, D & E Waste	6,289
WEEE	5,840
Oil/Water Separator Waste	2,442
Infectious Clinical Waste	2,304
Packaging, Absorbents, Wiping Cloths	932
Drilling Wastes	724
Total	25,406

- Vehicle maintenance including ELV components was ranked first amongst the nine hazardous waste types. This includes ELVs (16 01 04) at c6,000 tonnes and engine gear and lubricating oils (13 02 05) at c1,000.
- C, D & E waste consist of contaminated soil (17 05 03) at c3,000 tonnes and asbestos contaminated waste (17 06 05 and 17 06 01) at c3,00 tonnes.
- WEEE (20 01 35) at c5,000 and equipment containing CFCs (20 01 23) at c500.
- Oil/water separator waste consists of oily water from oil/water separators (13 05 07) at c1,500 and wastes from grit chambers and oil/water separators (13 05 08) at c1,000 tonnes.
- Infectious Clinical waste (18 01 03) at c2,500 tonnes.
- Contaminated absorbents, filter materials, wiping cloths, and PPE (15 02 02) c1,000 tonnes.
- Drilling wastes containing dangerous substances (01 05 06) at c500 tonnes.

3.4 Forecasting Arisings of Surrey Hazardous Waste by Type

To discern possible trends the data for hazardous waste arisings >500 tonnes over the past 5 years reported through the WDI has been reviewed and are presented in Figure 4.

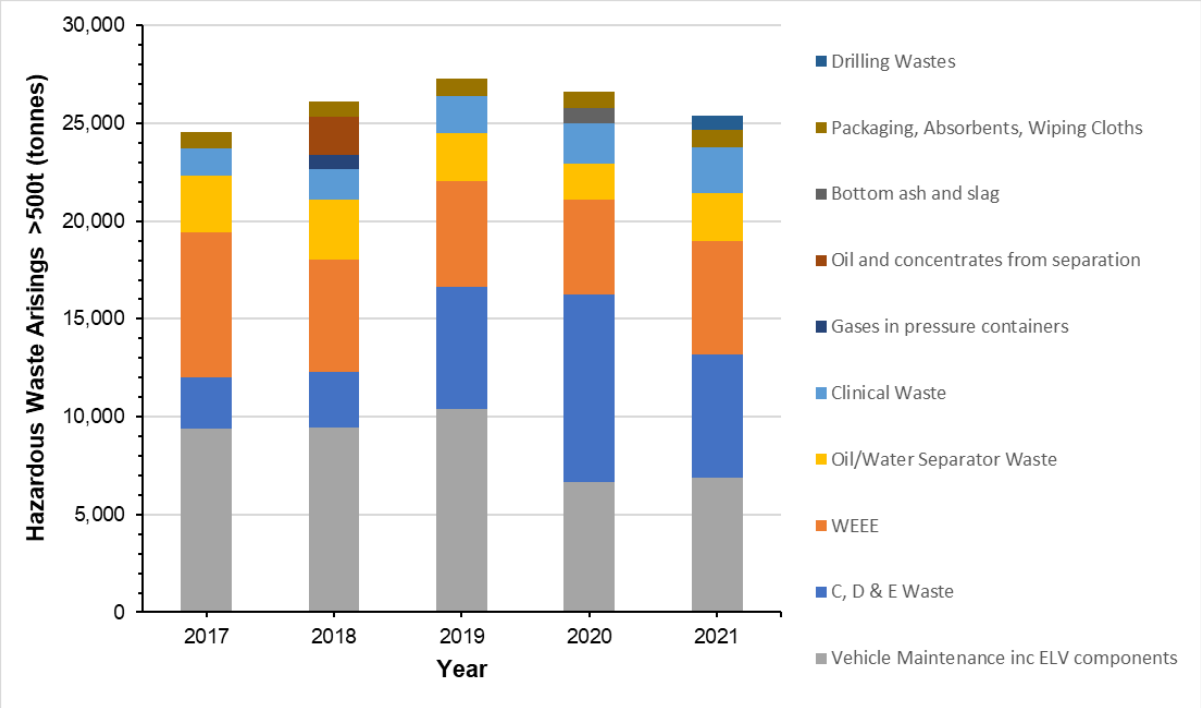

Figure 4: Principal Hazardous Waste Component Arisings in Surrey 2017-2021
Source: WDI

Figure 5 shows that the largest three principal waste streams arise from vehicle maintenance, C, D & E waste and WEEE. C, D & E waste shows annual fluctuations across the 5-year period, increasing from c2,500 tonnes in 2017 to a peak of c9,500 tonnes in 2020. Vehicle maintenance waste has also fluctuated in this period with c10,500 tonnes in 2019 reducing to c6,500 in 2020. The other seven waste streams including WEEE, show less variations across this period. The transition to electric vehicles (EV) is likely to affect vehicle maintenance waste production in the long-term. Surrey County Council are supporting the transition from conventional vehicles to EV, outlined in their recent Local Transport Plan (LTP4) 2022. However, in the short-term, it is considered that due to the COVID-19 pandemic lockdowns, a reduced number of people were on the roads and as a result, fewer people were having their vehicles serviced and hence, less vehicle maintenance waste was produced.

4. Future waste arisings

As discussed in Section 3, while the 2013 National Policy Statement for Hazardous Waste[10] considers that arisings of particular hazardous waste are expected to increase, it is considered that production of the principal hazardous wastes produced in Surrey will stabilise if not decline over time for the following reasons:

1. Regulations banning the use hazardous materials and components in consumer products mean that over time the quantity of hazardous material in WEEE should decline.
2. Hazardous materials such as asbestos and chromate treated wood bound up in the building stock will reduce as the elements are replaced.
3. The incidence of land contamination by industrial use will reduce due to more stringent regulatory controls meaning that contaminated soil will only arise as a result of legacy sites which will decline over time.
4. Electric vehicles are expected to account for 20% of car sales at 2025, with a ban on sales of new conventional vehicles by 2035 now proposed by Government.

Given the high variability between arisings each year and the National Policy Statement for Hazardous Waste advice that hazardous waste is expected to increase in the short-term but based on the assumptions above hazardous waste can be expected to stabilise over time, the following growth forecast is suggested on a waste stream basis:

- Vehicle maintenance waste inc ELV components can be expected to fall with the transition to electric vehicles. While some of the current conventional vehicle stock will remain in use beyond 2035 the gradual shift can be expected to depress any growth in arisings in this sector. Therefore, a minus 1.1% (as per historical average declining trend) growth has been applied.
- Hazardous C, D & E waste held constant up to 2031 before applying decline of minus 1.1% per annum with the expectation that over time arisings will reduce as historical land contamination (source of contaminated soils) is remediated and legacy asbestos present in the building stock is removed;
- WEEE waste held constant over the Plan period given little fluctuation in historical waste arisings.

The remaining other wastes have been held constant given the little variability in arisings seen historically. The growth forecasts based on these assumptions are presented in Table 5.

[10] 3.2.2 The total amounts of hazardous waste remain significant and are expected to increase – National Policy Statement for Hazardous Waste, 2013

Table 5: Forecast Hazardous Waste Arisings in Surrey
Source: Baseline Arising plus discussion above

Hazardous Waste Type/Source	Plan Milestone Year	Plan Milestone Year	Plan Milestone Year	Plan Milestone Year	Plan Milestone Year
	2021	**2026**	**2031**	**2036**	**2042**
Vehicle Maintenance inc ELV	6,875	6,498	6,143	5,806	5,425
Construction, Demolition & Excavation	6,289	6,289	5,944	5,619	5,249
WEEE	5,840	5,840	5,840	5,840	5,840
Subtotal	*19,003*	*18,627*	*17,926*	*17,265*	*16,514*
Other wastes	14,277	14,277	14,277	14,277	14,277
Total Projected Arisings	**33,281**	**32,904**	**32,204**	**31,542**	**30,791**

4.1 Conclusion

The forecast assumptions result in a fall in the quantity of hazardous waste forecast to arise in Surrey from the 2021 baseline arising value of **c33,500 tonnes** to **c31,000 tonnes** in 2042. This compares with c53,000 tonnes in 2017 as reported in the previous WNA (2019)[11]. This reflects the best available data combined with an understanding of factors likely to affect arisings as set out above. These values have therefore been used to project capacity requirements based on an assessment of existing capacity within Surrey and management routes followed, in Section 5.

[11] The previous WNA (2019) found the HWI value to be greater and hence relied on this source when calculating the previous hazardous waste arisings baseline.

5. Hazardous Waste Management Capacity in Surrey

This section considers the availability of capacity within Surrey for managing hazardous waste based on the latest data available i.e. 2021. It provides the basis on which the quantum of existing hazardous waste management capacity may be established and, subsequently, from which specific management capacity requirements might be identified.

5.1 Management Capacity at Intermediate Sites in Surrey

Quantities of hazardous waste inputs to sites recorded in the WDI across 3-years along and have been compared with 2019 WNA and consented capacity as provided by SCC have been reviewed to establish each site's capacity most representative capacity i.e., the notional capacity. This is shown in Table 6. The sites identified as non-hazardous waste transfer stations have been ignored as hazardous inputs will only be accepted on an incidental basis, as well as any CRCs on the basis that they will be principally accepting other waste streams, particularly LACW.

Table 6: Notional Capacity of Facilities Permitted to Manage Hazardous Waste in Surrey (>100 tonnes)

Source: WDI + Data provided by SCC

Facility Type	Facility Name + Operator	WDI 3 yr peak	Consented Capacity provided by SCC	2019 WNA	Preferred Value (tonnes)
Vehicle Depollution Facility	Brickhouse Farm, David Wingham	2,258	2,000	-	2,258
Vehicle Depollution Facility	Clearmount, Chobham Car Spares Ltd	613	-	1,061	613
Vehicle Depollution Facility	L J C Auto Spares, Caroline Lee James	1,988	-	-	1,988
Vehicle Depollution Facility	Land At Chapel Farm, Gordon John Boulden	1,601	30,000	2,039	1,601
Hazardous Waste Transfer	Dunsfold Park, Green World Trading Ltd	3,021	-	1,345	3,021
Hazardous Waste Transfer	Infinet House, European Asbestos Services Ltd	187	350	-	350
Physical Treatment	The Storage Depot, Autoparts Precious Metals (UK) Ltd	175	-	-	175
Physical Treatment	Unit 11, Enlightened Lamp	-	1,000	-	1,000
				Total Tonnes	**11,006**

5.2 Management Capacity at Patteson Court Landfill

Two different facilities operate alongside the non-hazardous landfill at Patteson Court that may manage hazardous waste as follows:

- a stable non-reactive hazardous waste (SNRHW) cell and;
- a soil treatment facility.

To assess the amount of management capacity these facilities may offer for the future management of hazardous waste, a number of calculations have been undertaken using the Agency's dataset on remaining landfill void space and WDI 2021 waste received and waste removed datasets.

Actual Inputs in 2021

The WDI 2021 data reports that the following tonnages of waste classed under one of three waste streams were accepted at Patteson Court Landfill:

- non-hazardous (c450,000 tonnes)
- hazardous (c62,000 tonnes)
- inert waste (c105,000 tonnes)

The WDI 2021 assigns this waste to the following three activity (Recovery and Disposal) codes:

- **R05: Inorganic substance recycling/reclamation** - (e.g., reprocessing of construction and demolition waste) c26,000 tonnes of waste coded under EWC 19 13 02 (non-hazardous waste) and c29,000 tonnes of waste coded under for EWC code 17 05 04 (inert waste). This waste is taken to have gone to the soil treatment facility. Although the permit allows, no hazardous waste was reported as being accepted at the soil treatment facility in 2021.
- **R10: Landspreading** - Land treatment for agricultural or ecological improvement (For example the use of sewage sludge in agriculture in compliance with the Sewage Sludge Directive) at c51,500 tonnes of waste coded under EWC 17 05 04 (inert waste). This waste is taken as being used for site restoration.
- **D05: Engineered Landfill** - Specially engineered landfill (e.g., engineered into lined, discrete cells which are capped and isolated from one another and the environment) c62,000 tonnes (hazardous waste), c424,000 tonnes (non-hazardous waste) including 19 13 02 (remediated soils) and c25,000 tonnes including 17 05 04 (inert waste). Hazardous waste is taken to have been disposed of in the SNRHW cell, non-hazardous waste disposed of in the non-hazardous waste landfill and inert waste used for site restoration alongside the tonnage reported as having been land spread.

The Agency's dataset on remaining landfill void shows there was 2,211,470m3 of void space in total remaining at Patteson Court Landfill at the end of 2021. In order to assess how much of this capacity might be available for the disposal of hazardous waste in the future it is necessary to apportion the remaining void space between the three principal waste types. However, because the soil treatment

facility operates and reports under the overarching landfill permit, it is not clear whether inputs to the soil treatment facility are then also counted and reported as inputs to the landfill (as outputs going for land spreading). This poses a risk of double counting of total inputs when relying on the WDI dataset.

Reallocating Tonnage that has undergone Soil Treatment

The total tonnage of waste managed at the soil treatment facility (activity code R05), as reported in the WDI 2021, of c55,000 tonnes was broken down as follows:

- c26,000 tonnes of 19 13 02 (remediated soils) counted under the total inputs of non-hazardous waste and;
- c29,000 tonnes of 17 05 04 (soil and stones) counted under the total inputs of inert waste.

As stated above, it was uncertain whether outputs from the soil treatment facility are then counted as inputs to the landfill. Therefore, these tonnages were subtracted from the non-hazardous and inert waste totals reported and set out in section 1.

The tonnage of inert waste used for restoration (under activity code R10) was c51,500 of 17 05 04 (soils and stones). Given the relatively close correspondence between the c55,000 tonnes of waste subject to soil treatment and c51,500 tonnes of waste used for site restoration, it has been assumed that the waste used for site restoration was in fact the output of the soil treatment facility with the difference being disposed of to the landfill. Therefore, the total tonnage of waste received at the soil treatment facility (c55,000 tonnes) has been deducted from the respective overall input tonnages to the site (non-hazardous and inert).

Assessing Future Capacity

The remaining part of this document sets out the calculations performed to estimate the amount of management capacity that the void at Patteson Court landfill may offer for the future management of hazardous waste. This is reported firstly as a volume (m^3) and secondly, the number of years of capacity the remaining void might offer. This is assumed to operate alongside the soil treatment facility which offers hazardous waste treatment capacity of up to 80,000 tpa[12], which is assumed to continue to operate to the end of the landfill's life at the end of 2030.

Using the revised tonnages of waste received by the three waste types following the reallocation process in section 2, the following steps were applied:

- factors to convert weight (tonnage) into volume (void occupied) were applied (1:1 for non-hazardous and hazardous waste and 1.5:1 for inert waste); and
- the proportion of void occupied by each waste category was then estimated in m^3; and
- this was then converted into a percentage of the total void occupied by each waste type.

Applying these calculated percentages to the remaining void space value of 2,211,470m^3, a volume of the void remaining attributable to each waste type was estimated as follows:

- Non-Hazardous = 1,747,061m^3
- **SNRHW Cell = 265,376m^3**

[12] Soil Treatment Facility annual stated in 'Notice of Variation of Environmental Permit BU8126IY/V009 (22.08.2012)

- Inert = 199,032m^3

Waste Codes Accepted at Patteson Court from Environmental Permit

The tables in the Environmental Permit show that a total of 144 different hazardous waste codes might be accepted at either the SNRHW cell and/or the soil treatment facility. Appendix 1 compares these for each activity, applying colour-coding of green (may be accepted) and red (may not be accepted). The WDI data from 2019-2021 was then checked to see how many of the permitted 144 hazardous waste codes had actually been received across this period. This shows that only waste classed under 35 of the permitted 144 hazardous waste codes had actually been accepted over this period.

Using WDI 2021 Data after comparing with the Environmental Permit

Of the permitted hazardous waste codes/descriptions that may be accepted at Patteson Court Landfill SNRHW cell and/or soil treatment facility, a total amount of c10,500 tonnes was produced in Surrey in 2021. If all this tonnage was to be managed at Patteson Court Landfill, the permitted waste code listing shows that c8,500 tonnes could only go to the SNRHW cell, with the remaining c3,000 tonnes of 17 05 03* going to either the SNRHW cell or the soil treatment facility. As there was no basis to allocate tonnages of waste coded 17 05 03* between the two, this was all assigned to the SNRHW cell on a conservative basis and included in the subsequent void space fill rate calculation. The remaining c2,000 tonnes were taken to go to the soil treatment facility and hence excluded from the void space calculation.

Dividing the calculated void taken to be occupied by hazardous waste in the SNRHW cell of 265,376m^3 (section 3 above) by the c8,500 tonnes of hazardous waste produced in Surrey that might go to the SNRHW cell gives an estimated life of 32 years were the permission not to end in December 2030. Under the current permission the site offers 59,500 tonnes of capacity to 2030. If the life of the permission was to be extended to 2042 or beyond then the capacity would last for the time period of the revised Plan.

5.3 Management Capacity Conclusion

Surrey hosts a number of facilities that manage hazardous waste including vehicle depollution sites, hazardous waste transfer sites and a physical treatment site. The combined notional capacity offered by these intermediate facilities within Surrey to manage hazardous waste equates to around c11,000 tonnes per annum. Patteson Court landfill SNRHW cell offers a further 59,500 tonnes under its current permission and a total of 265,376 tonnes of capacity were the life of the permission to be extended till it was fully depleted at 2053.

It is important to ensure that each type of hazardous waste produced within Surrey in significant quantities will be adequately catered for throughout the Plan period. For this reason, the role of facilities beyond Surrey in the management of certain types of hazardous waste arising in Surrey is considered in the following section.

6. Management Routes Followed by Surrey Hazardous Waste

This section assesses the management routes followed by hazardous waste that arises in Surrey but is managed elsewhere. This exercise is important to identify WPAs hosting receiving facilities with whom the County Council should engage under the Duty to Co-operate to establish if the current patterns of management can continue for the Plan period. If such engagement suggests that certain types of waste cannot continue to be managed at certain facilities in future, then this may require Surrey to plan for the management of that waste type within its own boundaries.

Of the c33,500 tonnes of hazardous waste produced in Surrey in 2021, c24,000 tonnes left Surrey for management. Table 9 shows the recipient WPAs ranked by quantity of waste received and fate. A significance threshold, whereby WPAs receiving 100 tonnes of hazardous waste or more has been applied in line with SEWPAG advice. Additional WPAs in Table 2 to which movements of less than 100 tonnes appear in the WDI but were reported as receiving more than 100 tonnes in the HWI have also been included for comprehensiveness but it has not been possible to include site-specific details in Table 10 as the HWI does not attribute tonnages to specific sites.

Table 9: WPAs Receiving over 100 tonnes of Hazardous Waste from Surrey (in rank order) with inputs by single fate exceeding 100t highlighted

Source: WDI 2021

	Waste Fate	Waste Fate	Waste Fate	Waste Fate	Waste Fate	
Receiving WPA	**Incineration**	**Landfill**	**MRS**	**Transfer**	**Treatment**	**Total**
Kent	<100	0	<100	277	4,785	5,130
Hampshire	<100	0	<100	1,379	1,085	2,571
East Sussex	0	0	119	<100	1,832	1,958
Wokingham	<100	0	167	0	1,632	1,800
Hertfordshire	0	0	0	<100	1,394	1,405
Wolverhampton	0	0	0	0	1,231	1,231
Derbyshire	0	0	0	276	640	916
Medway	0	0	0	221	661	883
Northamptonshire	0	0	0	<100	869	874
Staffordshire	0	0	0	<100	819	833
Essex	0	0	<100	639	<100	701
Tameside	0	0	0	0	698	698
West Sussex	0	0	129	<100	498	638
Bexley	0	0	0	263	<100	270
Cambridgeshire	0	<100	0	<100	141	219
Walsall	0	0	0	100	<100	114
Wiltshire	0	<100	0	<100	0	103
Total	**91**	**94**	**499**	**3,290**	**16,356**	**20,341**

This shows that Kent is the principal recipient (c5,000 tonnes), followed by Hampshire (c2,500 tonnes) and East Sussex (c2,000 tonnes). These WPAs together account for 41% of reported exports in 2021.

Table 10 identifies site specific information and principal wastes received related to the host WPA for the purposes of Duty to Cooperate (DtC) that requires site specific information when contacting host WPAs.

Table 10: WPAs receiving over 100 tonnes of Hazardous Waste from Surrey in 2021 and the permitted site it is managed at

Source: WDI & HWI 2021

Planning Region	WPA	Principal Waste Description	Input (tonnes)	Site Name
North West	Tameside	hazardous components removed from discarded equipment	669	Sims Group U K, Stalybridge
West Midlands	Staffordshire	absorbents, filter materials, wiping cloths, protective clothing contaminated by dangerous substances	776	Cannock Hazardous Waste Treatment Site
West Midlands	Stoke-on-Trent City	track ballast containing dangerous substances	1,080	Site Details Unknown
West Midlands	Walsall	combination of other waste types (sub 100 tonnes)	100	Brownhills Environmental Management Facility
West Midlands	Wolverhampton	C, D & E waste containing asbestos	1,231	Horseley Field Waste Treatment Facility
East Midlands	Derbyshire	solid waste from gas treatment	640	Ilkeston Waste Treatment and Transfer Facility
East Midlands	Derbyshire	absorbents, filter materials, wiping cloths, protective clothing contaminated by dangerous substances	276	Unit 4, Watford Bridge Industrial Estate
East Midlands	Northamptonshire	soil and stones containing dangerous substances	649	East Northants RM Facility
East Midlands	Northamptonshire	ELV components	206	New Duston Oil & Solvent Reclamation Works
East of England	Cambridgeshire	soil and stones containing dangerous substances	107	Mepal Soil And Waste Treatment Centre
East of England	Essex	combination of other waste types (sub 100 tonnes)	103	Asbestos Collection Services
East of England	Essex	C, D & E waste containing asbestos	414	Cohart Asbestos Disposal Limited
East of England	Hertfordshire	mixtures of wastes from grit chambers and oil/water separators	1,013	Redbournbury Treatment Plant
East of England	Hertfordshire	oily water from oil/water separators	325	Welwyn Garden City Hazardous Waste Treatment and Transfer
London	Bexley	lead batteries	270	Albion Yard
London	Greenwich	ELV components	639	Site Details Unknown

Planning Region	WPA	Principal Waste Description	Input (tonnes)	Site Name
London	Hammersmith and Fulham	equipment containing chlorofluorocarbons	939	Site Details Unknown
London	Merton	ELVs	537	Site Details Unknown
London	Newham	soil and stones containing dangerous substances	1,229	Site Details Unknown
South East	Berkshire	Clinical waste	1,642	Site Details Unknown
South East	East Sussex	ELVs	1,698	Greystone Quarry Waste Facility
South East	East Sussex	WEEE	103	M D J Light Bros (SP)
South East	Hampshire	oily water from oil/water separators	983	CSG Botley Treatment Plant
South East	Hampshire	ELVs	544	The Waste Transfer Yard, Liphook
South East	Kent	mixtures of wastes from grit chambers and oil/water separators	894	CSG Aylesford Treatment Plant
South East	Kent	combination of other waste types (sub 100 tonnes)	104	Oakwood Yard Hazardous Waste Transfer Station
South East	Kent	WEEE	3,840	Sweeep Kuusakoski Ltd
South East	Medway	ELV components	661	Kingsnorth Oil TP
South East	Medway	Clinical waste	170	Rochester Clinical Waste Treatment Facility
South East	West Sussex	ELVs	129	Adversane Lane, Billingshurst
South East	West Sussex	Clinical waste	491	Unit A, Fort Road.
South East	Wokingham	Clinical waste	1,621	Star Works Treatment Plant
South East	Wokingham	ELVs	167	Wokingham Metal Recycling

6.1 Conclusion on Surrey's Hazardous Waste Management Capacity Requirements

The updated hazardous waste baseline for 2021 is c33,500 tonnes. The capacity assessment indicates that the combined notional capacity of the principal sites receiving hazardous waste in Surrey is c11,000 tpa. The capacity at Patteson Court's SNRHW cell offers c59,500 tonnes of capacity until 2030 with the current permission and 265,376m^3 of void space which at the current (2021) fill rate, could provide capacity until 2043 if the permission was to be extended. It is recommended that the principal sites be safeguarded through policy whereby potential loss of capacity in future, through either redevelopment or constraints, is discouraged unless equivalent compensatory capacity is demonstrated.

Given the high degree of reliance on facilities outside Surrey the continued availability of capacity for the Plan period at facilities outside Surrey identified as managing significant quantities should be confirmed under the Duty to Cooperate through contact with the host WPAs listed in Table 10.

Appendix 1 – SNRHW Cell and Soil Treatment Permitted Waste List Comparison

Green = May be accepted Red = May not be accepted

Waste Category	Waste Code	SNRHW Cell	Soil Treatment Facility
Mine and Quarry Wastes	01 03 05*		
Mine and Quarry Wastes	01 03 07*		
Mine and Quarry Wastes	01 04 07*		
Mine and Quarry Wastes	01 05 05*		
Mine and Quarry Wastes	01 05 06*		
Leather, Fur and Textile Industry Wastes	04 02 19*		
Petroleum, Gas and Coal Processing Wastes	05 01 02*		
Petroleum, Gas and Coal Processing Wastes	05 01 03*		
Petroleum, Gas and Coal Processing Wastes	05 01 04*		
Petroleum, Gas and Coal Processing Wastes	05 01 05*		
Petroleum, Gas and Coal Processing Wastes	05 01 06*		
Petroleum, Gas and Coal Processing Wastes	05 01 09*		
Petroleum, Gas and Coal Processing Wastes	05 01 15*		
Inorganic Chemical Processing Waste	06 03 11*		
Inorganic Chemical Processing Waste	06 03 13*		
Inorganic Chemical Processing Waste	06 03 15*		
Inorganic Chemical Processing Waste	06 04 03*		
Inorganic Chemical Processing Waste	06 04 04*		
Inorganic Chemical Processing Waste	06 04 05*		
Inorganic Chemical Processing Waste	06 05 02*		
Inorganic Chemical Processing Waste	06 07 01*		
Inorganic Chemical Processing Waste	06 13 02*		
Inorganic Chemical Processing Waste	06 13 04*		
Organic Chemical Process Waste	07 01 10*		

Waste Category	Waste Code	SNRHW Cell	Soil Treatment Facility
Organic Chemical Process Waste	07 01 11*		
Organic Chemical Process Waste	07 02 10*		
Organic Chemical Process Waste	07 02 11*		
Organic Chemical Process Waste	07 02 14*		
Organic Chemical Process Waste	07 03 10*		
Organic Chemical Process Waste	07 03 11*		
Organic Chemical Process Waste	07 04 10*		
Organic Chemical Process Waste	07 04 11*		
Organic Chemical Process Waste	07 04 13*		
Organic Chemical Process Waste	07 05 10*		
Organic Chemical Process Waste	07 05 11*		
Organic Chemical Process Waste	07 05 13*		
Organic Chemical Process Waste	07 07 10*		
Organic Chemical Process Waste	07 07 11*		
Thermal Processes Waste	10 01 04*		
Thermal Processes Waste	10 01 13*		
Thermal Processes Waste	10 01 14*		
Thermal Processes Waste	10 01 16*		
Thermal Processes Waste	10 01 18*		
Thermal Processes Waste	10 01 20*		
Thermal Processes Waste	10 01 22*		
Thermal Processes Waste	10 02 07*		
Thermal Processes Waste	10 02 13*		
Thermal Processes Waste	10 03 19*		
Thermal Processes Waste	10 03 23*		
Thermal Processes Waste	10 03 25*		
Thermal Processes Waste	10 04 04*		
Thermal Processes Waste	10 04 06*		
Thermal Processes Waste	10 04 07*		
Thermal Processes Waste	10 05 03*		
Thermal Processes Waste	10 05 05*		
Thermal Processes Waste	10 05 06*		
Thermal Processes Waste	10 06 03*		

Waste Category	Waste Code	SNRHW Cell	Soil Treatment Facility
Thermal Processes Waste	10 06 06*		
Thermal Processes Waste	10 06 07*		
Thermal Processes Waste	10 08 15*		
Thermal Processes Waste	10 08 17*		
Thermal Processes Waste	10 09 05*		
Thermal Processes Waste	10 09 07*		
Thermal Processes Waste	10 09 09*		
Thermal Processes Waste	10 09 11*		
Thermal Processes Waste	10 09 13*		
Thermal Processes Waste	10 10 05*		
Thermal Processes Waste	10 10 07*		
Thermal Processes Waste	10 10 09*		
Thermal Processes Waste	10 10 11*		
Thermal Processes Waste	10 10 13*		
Thermal Processes Waste	10 11 09*		
Thermal Processes Waste	10 11 11*		
Thermal Processes Waste	10 11 13*		
Thermal Processes Waste	10 11 15*		
Thermal Processes Waste	10 11 17*		
Thermal Processes Waste	10 11 19*		
Thermal Processes Waste	10 12 09*		
Thermal Processes Waste	10 12 11*		
Thermal Processes Waste	10 13 09*		
Thermal Processes Waste	10 13 12*		
Thermal Processes Waste	10 14 01*		
Chemical Surface Treatment and Metal Coating Wastes	11 01 16*		
Chemical Surface Treatment and Metal Coating Wastes	11 02 02*		
Chemical Surface Treatment and Metal Coating Wastes	11 02 07*		
Chemical Surface Treatment and Metal Coating Wastes	11 05 03*		
Chemical Surface Treatment and Metal Coating Wastes	11 05 04*		
Shaping and Physical Treatment of Metals and Plastics	12 01 16*		
Oil Wastes and Wastes of Liquid Fuels	13 05 01*		
Oil Wastes and Wastes of Liquid Fuels	13 05 02*		
Oil Wastes and Wastes of Liquid Fuels	13 05 03*		
Oil Wastes and Wastes of Liquid Fuels	13 05 08*		

Waste Category	Waste Code	SNRHW Cell	Soil Treatment Facility
Packaging, Absorbents, Wiping Cloths ETC N.O.S	15 01 11*		
Wastes Not Otherwise Specified in the List	16 01 11*		
Wastes Not Otherwise Specified in the List	16 02 09*		
Wastes Not Otherwise Specified in the List	16 02 12*		
Wastes Not Otherwise Specified in the List	16 03 03*		
Wastes Not Otherwise Specified in the List	16 04 01*		
Wastes Not Otherwise Specified in the List	16 04 03*		
Wastes Not Otherwise Specified in the List	16 07 08*		
Wastes Not Otherwise Specified in the List	16 07 09*		
Wastes Not Otherwise Specified in the List	16 08 02*		
Wastes Not Otherwise Specified in the List	16 08 05*		
Wastes Not Otherwise Specified in the List	16 08 07*		
Wastes Not Otherwise Specified in the List	16 11 01*		
Wastes Not Otherwise Specified in the List	16 11 03*		
Wastes Not Otherwise Specified in the List	16 11 05*		
Construction and Demolition Wastes	17 01 06*		
Construction and Demolition Wastes	17 02 04*		
Construction and Demolition Wastes	17 04 09*		
Construction and Demolition Wastes	17 04 10*		
Construction and Demolition Wastes	17 05 03*		
Construction and Demolition Wastes	17 05 05*		
Construction and Demolition Wastes	17 05 07*		
Construction and Demolition Wastes	17 06 01*		
Construction and Demolition Wastes	17 06 03*		
Construction and Demolition Wastes	17 06 05*		

Waste Category	Waste Code	SNRHW Cell	Soil Treatment Facility
Construction and Demolition Wastes	17 09 01*		
Construction and Demolition Wastes	17 09 02*		
Construction and Demolition Wastes	17 09 03*		
Waste and Water Treatment Wastes	19 01 05*		
Waste and Water Treatment Wastes	19 01 07*		
Waste and Water Treatment Wastes	19 01 10*		
Waste and Water Treatment Wastes	19 01 11*		
Waste and Water Treatment Wastes	19 01 13*		
Waste and Water Treatment Wastes	19 01 15*		
Waste and Water Treatment Wastes	19 01 17*		
Waste and Water Treatment Wastes	19 02 04*		
Waste and Water Treatment Wastes	19 02 05*		
Waste and Water Treatment Wastes	19 02 07*		
Waste and Water Treatment Wastes	19 02 11*		
Waste and Water Treatment Wastes	19 03 04*		
Waste and Water Treatment Wastes	19 03 06*		
Waste and Water Treatment Wastes	19 04 02*		
Waste and Water Treatment Wastes	19 08 06*		
Waste and Water Treatment Wastes	19 08 07*		
Waste and Water Treatment Wastes	19 08 08*		
Waste and Water Treatment Wastes	19 08 13*		
Waste and Water Treatment Wastes	19 10 03*		
Waste and Water Treatment Wastes	19 10 05*		
Waste and Water Treatment Wastes	19 11 07*		
Waste and Water Treatment Wastes	19 13 01*		

Waste Category	Waste Code	SNRHW Cell	Soil Treatment Facility
Waste and Water Treatment Wastes	19 13 03*		
Municipal Wastes	20 01 21*		

Appendix 2 Step-by-Step Method for Patteson Court Capacity Calculation

1. Actual Inputs in 2021 at Patteson Court Landfill classified under the waste types Non-Hazardous, Hazardous and Inert broken down by R&D activity code are shown in Table 1 below.

Table 1: Breakdown of the R&D activity code tonnages as a total of the Non-Hazardous, Hazardous and Inert Waste accepted at Patteson Court Landfill.

Waste Type	Activity Code	Tonnage	Total (Tonnes)
Non-Hazardous	D05	424,177	
Non-Hazardous	R05[13]	25,832	450,009
Hazardous	D05	61,998	61,998
Inert	D05	25,851	

[13] Only waste coded as 19 13 02 - solid wastes from soil remediation other than those mentioned in 19 13 01

Waste Type	Activity Code	Tonnage	Total (Tonnes)
Inert	R05[14]	28,782	
Inert	R10[15]	51,438	105,070

2. Void space at end of 2021 obtained from the Agency's dataset on remaining landfill void is required to calculate the remaining available capacity for the site and what portion of this is available for the SNRHW cell in particular (see step 5).
   Void space at end of 2021 = **2,211,470m^3**

3. Apportion the remaining void space between the three principal waste types. Remembering to reduce the risk of onsite double counting, by subtracting the tonnage value associated with activity code R05 from the total tonnes of a) non-hazardous and b) inert waste types:

   a) Non-hazardous waste: 450,009 – 25,832 = 424,177 tonnes
   b) Inert waste: 105,070 – 28,782 = 76,288 tonnes

   These revised values are used to calculate the proportion of the total volume of landfill each waste category may occupy

4. Calculate the proportion of the total volume of landfill each waste category may occupy, as shown in Table 2 below.

Table 2: Apportioning Patteson Court Landfill by waste types that is already occupied with waste.

	Non Haz	Haz	Inert
Tonnes received in 2021 (see calcs above)	424,177[16]	61,998	76,288
Tonnes converted to volume	424,177m^3 (1t:1m3)	61,998m^3 (1t:1m3)[17]	45,773m^3 (1.5t:1m3)
Assumed % void occupied	79%	12%	9%

[14] Only waste coded as 17 05 04 - soil and stones other than those mentioned in 17 05 03
[15] Only waste coded as 17 05 04 - soil and stones other than those mentioned in 17 05 03
[16] Black bag waste (20 03 01) at c2,500 tonnes and trommel fines (19 12 12) at c309,000 tonnes (D05)
[17] Ratio 1:1 as hazardous waste is relatively homogenous (with few interstitial spacing) but will not undergo heavy compaction due to the need to avoid breakage and release of asbestos fibres.

Findings

79% of void may be occupied by non-hazardous waste.

12% of void may be occupied by hazardous waste (presuming the operator continues to provide separate SNRHW cells for the remaining life of the site).

9% of void may be occupied by inert waste (primarily for restoration purposes)

The above allocations do not account for void occupied by engineered cell walls or base.

5. The remaining void space in 2021 of 2,211,470m^3 is divided using the above percentages to estimate the void remaining that may be occupied by each waste type as follows:

   - Non-Hazardous = 2,211,470 x 79% (0.79) = 1,747,061m^3
   - SNRHW Cell = 2,211,470 x 12% (0.12) = **265,376m^3**
   - Inert = 2,211,470 x 9% (0.09) = 199,032m^3

6. Estimate the life of the SNRHW cell by dividing the remaining void space as a volume (calculated in step 5), by the total tonnage of the permitted hazardous waste codes/descriptions that may be accepted at Patteson Court Landfill SNRHW cell produced in Surrey from WDI 2021 data (8,360 tonnes).

   Void volume apportioned to SNRHW cell ÷ the tonnes of waste produced in Surrey 2021 data that might go to the SNRHW cell = number of years to fill the void
   265,376/8,360 (SNRHW Cell Surrey) = 32 years