



Medway Local Plan Waste Evidence Base

Medway Waste Needs Assessment 2024 Update

Report 3 - Management Requirements for Construction,
Demolition & Excavation Waste in Medway to 2041

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Abbreviations

| | |
|---------------------------|--|
| BRE | Building Research Establishment |
| C&I | Commercial & Industrial Waste |
| C, D & E WASTE | Construction, Demolition & Excavation Waste |
| DEFRA | Department for Environment, Food and Rural Affairs |
| DoWCoP | Definition of Waste Code of Practice |
| EA | Environment Agency |
| EfW | Energy from Waste |
| EWC | European Waste Catalogue |
| LACW | Local Authority Collected Waste |
| NPPF | National Planning Policy Framework |
| nPPG | National Planning Practice Guidance |
| MRS | Metal Recycling Site |
| rWFD | Revised Waste Framework Directive (retained) |
| WDF | WasteDataFlow |
| WDI | Waste Data Interrogator |
| WNA | Waste Needs Assessment |
| WPA | Waste Planning Authority |
| WRAP | Waste Resources Action Programme |
| WTS | Waste Transfer Station |

Glossary of Terms

| | |
|--|---|
| CL:AIRE Definition of Waste Code of Practice (DoWCoP) | Enables the transfer and reuse of naturally occurring soil materials between sites as non-waste, without the need to have an environmental permit. |
| Commercial Waste | Waste arising from premises which are used wholly or mainly for trade, business, sport, recreation or entertainment, excluding local authority collected and industrial waste. |
| 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. |
| Energy from Waste | The conversion of the calorific value of waste into energy, normally heat or electricity through applying thermal treatment of some sort. May also include the production of gas that can be used to generate energy. |
| Environment Agency | The body responsible for the regulation of waste management activities through issuing 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 including flood protection. |
| Exemptions | Certain activities exempt from the need to obtain an Environmental Permit. Each exemption has specific limits and conditions that must be complied with to remain valid. Exemptions must be registered with the Environment Agency. Each registration lasts 3 years. |
| 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. |
| Incineration | The controlled combustion of waste. Energy may also be recovered in the form of heat (see Energy from Waste). If energy is not recovered it sits at the bottom of the waste hierarchy and is classed as ‘disposal’ alongside landfill. |
| Inert Landfill | Landfill site permitted to only accept inert waste for disposal. |
| Inert Waste | Waste not undergoing significant physical, chemical or biological changes following disposal, and does not pollute surface or groundwater. |
| Landfill (including land raising) | The permanent disposal of waste to land, by the filling of voids or similar features, or the construction of landforms above ground level (land-raising). |
| Landfill Directive | Retained European Union legislation restricting the landfilling of biodegradable municipal waste and requiring pre-treatment of all waste destined to be landfilled and separate disposal of hazardous, and non-hazardous and inert wastes. |
| Local Aggregate Assessment | Annual assessment of aggregate availability and demand produced by each Mineral Planning Authority as required by the National Planning Policy Framework (NPPF). |

| | |
|---------------------------------------|--|
| Mass Balance | Method of assessing the quantity of waste that may be converted to recycled aggregate by comparing inputs and outputs for sites reporting through the WDI. |
| Mining Waste | Waste from extractive operations (i.e. waste from extraction and processing of mineral resources) including materials that must be removed to gain access to mineral resources, such as topsoil, overburden and waste rock, as well as tailings remaining after minerals have been largely extracted from the ore. Management subject to control through retained EU Directive 2006/21/EC. |
| Non-Hazardous Landfill | A landfill permitted to accept non-inert (biodegradable) wastes e.g. household and commercial and industrial waste. Will also accept some inert waste. May only accept hazardous waste if a special cell is constructed. |
| Non-Inert | Waste that is potentially biodegradable or may undergo significant physical, chemical or biological change once landfilled. |
| 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. |
| Recovery to land | Activities involving the permanent deposit of inert waste for specific purposes not classed as disposal. Generally subject to environmental permitting. May include backfilling of mineral workings. |
| Recycled Aggregate | Aggregates produced from recycled construction waste such as crushed concrete and planings from tarmac roads. |
| The Plan Area | The area subject to the Local Plan to which this study relates; in this case Medway. |
| Waste Local Plan | A statutory development plan prepared (or saved) by a waste planning authority setting out policies in relation to the management of waste arising within its area and provision of development to manage waste arising within that area. In this case policies will form part of the Medway Local Plan. |
| Waste Planning Authority (WPA) | The local authority responsible for waste development planning and control; in this case Medway Council. |
| Waste Transfer Station | A site to which waste is delivered for bulking prior to transfer to another place for further processing or disposal. |

1. Introduction

1.1 The Medway Waste Needs Assessment (WNA) 2024 Update consists of an overall main report, a review of strategic waste flows and five waste stream specific supporting reports which refresh the evidence base relating to projected management requirements for waste arising in Medway. The five waste stream specific reports are:

1. Local Authority Collected Waste;
2. Commercial & Industrial Waste;
3. Construction, Demolition & Excavation Waste;
4. Hazardous Waste; and
5. Scoping Review of Other Waste.

1.2 This report is concerned with updating the forecast for Construction, Demolition and Excavation (C, D & E) waste arising in Medway through to 2041, using 2022 data as a baseline.

1.3 The national Planning Practice Guidance (nPPG) chapter on Waste states that: "Planned provision of new capacity and its spatial distribution should be based on robust analysis of best available data." (emphasis added) (Para 035). Therefore, this report includes a robust analysis to identify what might be considered the "best available data" relating to C, D & E waste production and management.

C, D & E waste is defined as follows: "*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.*"

1.4 This report reviews and updates the evidence base supporting the planning policies on waste management in the draft new Medway Local Plan, using the following methodology:

1. Estimating C, D & E waste baseline arisings;
2. forecasting future C, D & E Waste growth
3. profiling the existing C, D & E waste management methods; and,
4. comparative capacity assessment and in doing so identifying future management requirements.

2. Estimating C, D & E Waste Baseline Arisings

Context

2.1 The Medway WNA 2020 estimated that around 180,000 tonnes of C, D & E waste was produced in Medway in 2018, the WNA update for 2020 estimated c129,500 tonnes and 2021 c172,500 tonnes respectively¹.

Methodology

2.2 The national methodology for estimating annual waste generation from the construction sector for England² (initially prepared to report on progress made towards meeting the retained revised Waste Framework Directive (rWFD) target) uses information collected relating to four principal management routes:

1. Waste dealt with by transfer and treatment facilities (reporting through Environment Agency Waste Data Interrogator (WDI))
2. Waste sent to landfill (reporting through the WDI)
3. Waste managed at sites exempt from environmental permitting, referred to as 'exemptions'.
4. Waste recycled as aggregate (from national estimates produced by the Mineral Products Association)

2.3 The methodology applies a calculation relating to these management routes which, in summary, is as follows:

*C, D & E waste generation =
Inputs to final fate (ultimate point of management) permitted facilities (landfill and recovery to land operations) +
outputs from intermediate permitted facilities (such as waste transfer sites) +
inputs to final fate exemptions +
the quantity of recycled aggregates produced.*

2.4 In order to assess C, D & E waste arisings at Plan area level the national methodology has been modified to reflect local circumstances. In particular, the following modifications have been made:

- The population of exempt sites registered in Medway has been established through the Environment Agency held exempt register. Then the estimated value for the quantity of

¹ Given the Covid pandemic lock down occurred in 2020, it is unsurprising that the 2020 arisings value was significantly lower. It has therefore been regarded as an anomalous value when considering trends in arisings.

²https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/400594/CDE-generation-methodology.pdf

waste managed at the key exemption managing C, D & E waste ('U1'³) from a Government funded report⁴ was applied.

- the quantity of waste converted into recycled aggregate has been based on the mass balance method⁵. (see glossary) using data from the WDI 2022, rather than from the national estimates produced by the Mineral Products Association.

2.5 The key steps in the methodology are:

1. Calculate inputs arising in Medway going to all permitted facilities applying European Waste Catalogue (EWC) codes selected for their inclusion as C, D & E waste.
2. Deduct EWC codes relating to hazardous waste (this waste is accounted for in a separate report).
3. Quantify C, D & E waste going to its final fate or leaving the Plan area.
4. Deduct waste going from intermediate facilities located in Medway to other facilities within Medway (to avoid double counting).
5. Add figure for C, D & E waste sent to EfW (if any).
6. Add figure for recycled aggregate calculated using national mass balance method.
7. Calculate quantity of C, D & E waste managed at exempt sites.
8. Quantify and apportion waste managed at sites within Medway but not attributed to an area below regional level within the WDI and reattribute any anomalous values (if any).
9. Sum the above to generate an overall figure.

How this methodology has been applied is set out in the sections below.

2.6 C, D & E waste is taken to be comprised of wastes falling within the following List of Waste/European Waste Catalogue codes:

- Chapter 17 (Construction & Demolition Waste)
- 19 12 09 (minerals such as sand, stones)
- 20 02 02 (soil and stones).

2.7 A check has also been undertaken for any waste classified under EWC 19 13 as this includes remediated soils which should be included in the C, D & E waste arisings total however no amount of waste of this type was reported as arising in Medway in the WDI 2022.

³ The U1 permitting exemption covers the use of limited tonnages of specified inert waste in construction.

⁴ *Review of the Factors Causing Waste Soil To Be Sent To Landfill; 2007 to 2011*. Waste Resources Action Programme (WRAP), 2013.

⁵ *Recycled Aggregates Data: Guidance on Assessing Levels of Recycled Aggregates* (May 2022).

Inputs Of Medway Waste To Permitted Facilities Anywhere

Step 1: Calculate the tonnage of C, D & E waste from Medway in the WDI sent to permitted sites.

2.8 The total quantity of C, D & E waste reported in the WDI 2022 as managed at permitted sites in 2022 arising from Medway is c77,000 tonnes. The breakdown in terms of management routes is shown in Data Line 3 of Table 1 below.

Table 1: C, D & E Waste from Medway Managed through Permitted Sites (tonnes)

Source: WDI 2022

| | Landfill | | Recovery to Land | Metal Recycling Sites | Transfer | Treatment | Grand Total |
|--|--------------|---------------|------------------|-----------------------|--------------|---------------|---------------|
| | Non Haz | Inert | | | | | |
| Medway arisings managed at Medway sites | 0 | 33,545 | 0 | 0 | 2,909 | 16,000 | 52,454 |
| Medway arisings managed at sites outside Medway | 1,266 | 4,266 | 815 | 2,105 | 339 | 15,931 | 24,721 |
| Totals | 1,266 | 37,811 | 815 | 2,105 | 3,248 | 31,931 | 77,175 |

Step 2: Deduct EWC codes relating to hazardous component of C, D & E waste

2.9 The requirements for management of hazardous waste arising in Medway are accounted for in a separate report. Therefore, the hazardous waste component has been deducted to avoid double counting. Of the inputs shown in Table 1, a total of 137 tonnes were identified as hazardous waste which when deducted still leaves a total of c77,000 tonnes. The revised values are shown in Table 2 for completeness.

Table 2: C, D & E Waste from Medway Managed through Permitted Sites excluding hazardous waste

Source: WDI 2022

| | Landfill | | Recovery to Land | Metal Recycling Sites | Transfer | Treatment | Grand Total |
|--|----------------------|---------------|------------------|-----------------------|--------------|---------------|---------------|
| | Non Haz ⁶ | Inert | | | | | |
| Medway arisings managed at Medway sites | 0 | 33,545 | 0 | 0 | 2,888 | 16,000 | 52,433 |
| Medway arisings managed at sites outside Medway | 1,253 | 4,266 | 815 | 2,103 | 311 | 15,858 | 24,605 |
| Totals | 1,253 | 37,811 | 815 | 2,103 | 3,199 | 31,858 | 77,038 |

⁶ This also includes waste deposited at non-hazardous waste landfills with Stable Non-Reactive Hazardous Waste (SNRHW) cells, which is why the total has reduced with the deduction of hazardous waste in this step.

Step 3: Quantify waste going to its final fate or leaving the Plan area

- 2.10 As inputs to Landfill and Recovery to Land involve the permanent deposit of waste, they are regarded as final points of management (or fate), so these values are taken as final as follows:
- 39,064 tonnes (combined landfill values in Table 2) +
815 tonnes (Recovery to Land value from Table 2)
= 39,879 tonnes.

Table 3: Non-hazardous (including inert) C, D & E Waste from Medway managed via Permanent Deposit

| Component | Value (tonnes) | Cumulative Total (tonnes) |
|---------------------------|----------------|---------------------------|
| Permanent Deposit: | 39,879 | 39,879 |

- 2.11 As shown in Figure 1 below waste from Medway managed at intermediate sites outside Medway ceases to be identified as coming from Medway, once it has been received at the intermediate management facility.

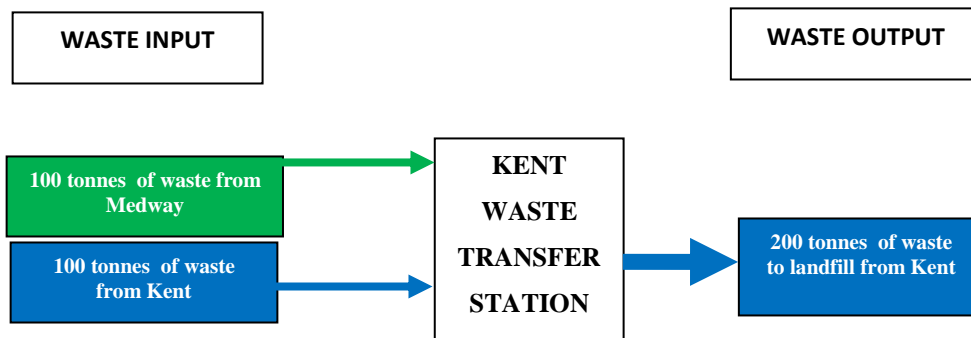


Figure 1: Schematic of how Flows of Medway waste to Sites outside Medway are reported in WDI

- 2.12 Hence the tonnage managed at intermediate sites outside Medway is also taken to be a 'final value' as follows:
- 2,103 (out of Plan area MRS from Table 2) +
311 (out of Plan area transfer from Table 2) +
15,858 (out of Plan area treatment from Table 2)
= 18,272 tonnes.

This is added to the running total in Table 4.

Table 4: Table 3 plus managed outside Medway

| Component | Value (tonnes) | Cumulative Total (tonnes) |
|-------------------------------|----------------|---------------------------|
| Permanent Deposit: | 39,879 | 39,879 |
| Managed Out of Medway: | 18,272 | 58,151 |

Step 4: Calculate the tonnage of C, D & E waste from Medway managed in Medway that may have been subject to reclassification

2.13 Having established the quantity of Medway C, D & E waste going to a final fate or leaving the Plan area as c58,000 tonnes (Table 4), the quantity of inputs managed at intermediate sites within Medway to be included in the arisings value also needs to be accounted for. This value needs to be further interrogated to ensure that it does not:

- Double count inputs to intermediate sites in Medway that subsequently get managed at a 'next step' site as Medway waste and hence over report arisings; nor,
- misses C, D & E waste that may have been reclassified following processing through these sites and hence under-report arisings. This is because waste leaving an intermediate site may be reclassified as a waste from a waste management process (under waste chapter 19) rather than Chapter 17 and hence may not be counted as C, D & E waste (other than waste under EWC code 19 12 09). An example follows:

2.14 'Intermediate' Site 1 in Medway receives 100 tonnes of Medway C, D & E waste. Following treatment e.g. sorting and some processing, the 100 tonnes gets split into:

- 25 tonnes of soil (classed as Chapter 17 waste) which goes for Recovery to Land at Site 2; The 25 tonnes of soil is therefore also recorded at the point of input to the Recovery to Land site as waste arising in Medway (regardless of whether Site 2 is within or outside Medway) and should therefore not be counted at the intermediate site.
- 50 tonnes of recycled aggregate, sold directly for use as an aggregate; This is counted under the recycled aggregate value that may be obtained via the annual local production survey for the Local Aggregates Assessment but is not explicitly in the WDI as it ceases to be waste. This is counted at the intermediate site;
- 25 tonnes of waste classed as Chapter 19 waste due to the incoming waste having been processed and then reclassified as 'waste from waste management processes'. This is counted at the intermediate site.

This is illustrated in Figure 2 below:

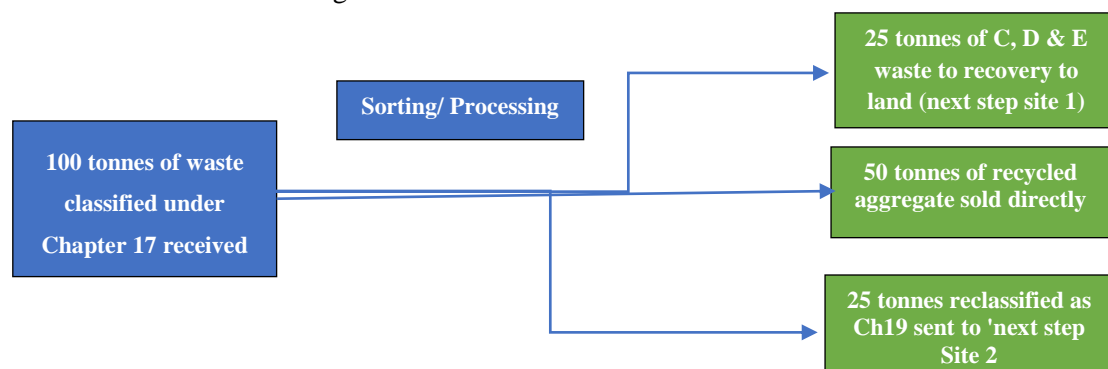


Figure 2: Schematic of intermediate site outputs to track Medway C, D & E waste fate

- 2.15 As it is not possible from input data to distinguish inputs to next step/final fate sites as whether they have gone direct from source or via an intermediate site, that element of Chapter 19 waste that came from intermediate sites in Medway that may have originated from C, D & E waste from Medway has been estimated. This is done by identifying each Medway intermediate site that received C, D & E waste from Medway that also reported Chapter 19 waste as an output.
- 2.16 The proportion of the Chapter 19 output that might be attributed to the input Medway C, D & E waste was determined as follows:
1. Did the site have a shortfall between C, D & E waste received and that which was removed? i.e. is there more reported as coming in, than went out.
 2. Did the site have outputs classed under Chapter 19?
 3. If yes then the percentage of total inputs attributed to Medway is applied to the outputs of Chapter 19 to give a Chapter 19 'makeup'.
 4. All inputs to the site are then examined to identify what proportion of the inputs are C, D & E waste and C&I waste. A proportion of the Chapter 19 'make up' may have originated from C&I waste. If the site did receive C&I waste then the % of C, D & E waste is applied to the Chapter 19 'make up'.
- 2.17 NB: Where the Ch 19 output is greater than the shortfall, only the shortfall value is used. Where the shortfall can't be made up this may be taken to indicate that tonnages of C, D & E Waste have been converted into recycled aggregate which is not generally declared on the permit waste returns and hence reported in the WDI, as it has ceased to be waste.
- 2.18 Applying this method to the Medway Intermediate sites data for Metal Recycling Sites⁷, Waste Transfer Stations & Waste Treatment sites identified as both receiving C, D & E waste from Medway and producing Chapter 19 waste in 2022 yields the following:
- Q1: Three intermediate waste sites within Medway were identified as having a shortfall between the inputs and outputs of C, D & E waste of greater than 500 tonnes⁸.
- Q2: Of these sites, one had net⁹ outputs of waste classified as Chapter 19 of over 500 tonnes as shown in Table 5.
- Q3: The percentage inputs from Medway has been applied to the Chapter 19 outputs to give a total Chapter 19 makeup of 1,787 tonnes shown in Table 5. When added to the running Medway C, D & E baseline 2022 arising running total, this gives the value shown in Table 6.

⁷ No shortfall over 500 tonnes between CDE waste inputs and outputs was found for any MRS site.

⁸ 500 tonnes is taken to be a tonnage regarded as significant for the purposes of this exercise.

⁹ "Net" being the difference between any inputs of Ch19 and outputs of Ch19 waste.

Table 5 : Intermediate sites within Medway with a shortfall between CDE inputs <500t also reporting an output of waste under Ch 19

| Facility Type | Site + Operator ¹⁰ | Shortfall <500t (tonnes) | Net Ch 19 produced (tonnes) WDI 2022 | % C, D & E waste input from Medway | Ch 19 make up (tonnes) (amber box in Fig 2) (If net Ch 19>shortfall, then the shortfall value taken. If net Ch 19<shortfall then the net Ch 19 taken) % from PA* |
|---------------|---|--------------------------|--------------------------------------|------------------------------------|---|
| Treatment | Knight Road, Rochester, Saward Tipping Services Ltd | 43,540 | 4,864 | 37% | 1,787 |
| Total | | | | | 1,787 |

Table 6 : Table 4 plus Chapter 19 (Table 5) (tonnes) – Step 4

| Component | Value (tonnes) | Cumulative Total (tonnes) |
|---|----------------|---------------------------|
| Permanent Deposit: | 39,879 | 39,879 |
| Managed Out of Medway: | 18,272 | 58,151 |
| Medway intermediate site net Ch 19 output: | 1,787 | 59,938 |

Additions

Inputs to Energy from Waste plants

Step 5: Energy from Waste plants taking C, D & E waste from Medway.

2.19 The Environment Agency dataset for waste going to incinerators and energy from waste plants, now included within the WDI, shows that 364 tonnes of C, D & E waste from Medway was sent for incineration in 2022. Hence the tonnage has been included in the running C, D & E waste total as shown in Table 7 below.

Table 7: Table 6 plus Medway C, D & E waste managed by incineration

| Component | Value (tonnes) | Cumulative Total |
|---|----------------|------------------|
| Permanent Deposit: | 39,879 | 39,879 |
| Managed Out of Medway: | 18,272 | 58,151 |
| Medway intermediate site net Ch 19 output: | 1,787 | 59,938 |
| To incineration: | 364 | 60,302 |

¹⁰ All sites were also found to be producing recycled aggregate from C, D & E input which is accounted for in a later step.

Recycled Aggregate Production

Step 6: Operator survey for recycled aggregate production in Medway.

2.20 In the WNA 2020 the quantity of waste converted into recycled aggregate was estimated by reference to the annual survey of Medway recycled aggregate producers for recycled aggregate sales conducted by Medway Council. In the case of LAA operator survey 2022 the survey on found a single site that declared sales of recycled aggregate of 310 tonnes. This is significantly lower than for previous years so the WDI mass balance method as set out in the national method (see reference in footnote 4) was used as well to identify any Medway sites with a shortfall between the reported inputs and outputs of C, D & E waste that might indicate that the site was converting inert C, D & E waste to recycled aggregate. Table 8 shows a single site operated by Saward Tipping Services was identified using the mass balance method along with the site that responded to the LAA operator survey, as shown in Table 8 below.

Table 8: Summary of Recycled Aggregate Production Estimates (tonnes)

| Site | Operator | 2022 LAA survey response | Shortfall (Table 5) | Ch 19 make up (Table 5) | % Inputs from Medway in WDI | WDI 2022 Mass Balance (Shortfall – Ch 19) x % from Medway | Preferred Value |
|------------------------|-----------------------------|--------------------------|---------------------|-------------------------|-----------------------------|---|-----------------|
| Knight Road, Rochester | Saward Tipping Services Ltd | - | 43,540 | 1,787 | 37% ¹¹ | 14,213 | 14,213 |
| Isle of Grain Terminal | Aggregate Industries UK Ltd | 310 ¹² | 4,096 | 0 | 0% ¹³ | 0 | 0 |
| Total | | | | | | | 14,213 |

2.21 Table 8 shows that 14,213 tonnes of C, D & E waste reported as arising from Medway was converted into recycled aggregate using the ‘mass balance’ method. This value has been included in the calculation of C, D & E waste arising running total in Table 9. This gives a Medway C, D & E baseline 2022 arising running total of c74,500 tonnes.

¹¹ Note that this site also received waste uncodeable below North West Region, this is interrogated in step 8.

¹² Given the low value, it was confirmed by telephone that this is the correct total recycled aggregate sold in 2022.

¹³ All inputs in 2022 were from Kent and not Medway (pers. comm. with operator).

Table 9: Table 6 plus Recycling Aggregate

| Component | Value (tonnes) | Cumulative Total |
|---|----------------|------------------|
| Permanent Deposit: | 39,879 | 39,879 |
| Managed Out of Medway: | 18,272 | 58,151 |
| Medway intermediate site net Ch 19 output: | 1,787 | 59,938 |
| To Incineration: | 364 | 60,302 |
| Recycled Aggregate Production: | 14,213 | 74,514 |

Medway C, D & E Waste going to Exempt sites

Step 7: Medway registered exemptions x factor for exemptions taking C, D & E type waste.

2.22 The national Planning Practice Guidance (nPPG) advises that "...when forecasting construction and demolition waste arisings, the following may be relevant:

- *the fact that a sizeable proportion of construction and demolition waste arisings are managed or re-used 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 (emphasis added)

2.23 The quantity of C, D & E waste managed through exemptions has substantially fallen since Regulations were introduced in 2011. The maximum quantities permitted to be managed through exemptions were reduced from 50,000 tonnes to between 1,000 and 5,000 tonnes. Despite this, account is still taken of the possible contribution such activities may make to management of this stream, and hence arisings.

2.24 Paragraph U1 exemptions (that cover the use of limited tonnages of specified waste in construction) potentially account for the most significant quantities of C, D & E waste being managed at exempt sites, as it relates to the use of waste in construction, which would primarily be hardcore from demolition used to create hard standing/roads or soils used in the construction of bunds. This activity results in C, D & E waste going to a final fate and so all waste managed via this route is included in the arisings value. A report produced in 2013¹⁴ estimated a mean quantity of waste managed by U1 exemptions as 600 tonnes per exemption, the maxima being between 1,000 tonnes (inert soils) and 5,000 tonnes (specified waste only).

Table 10: Count of U1 exemptions with live registrations in Medway at end 2022

| | 2020 | 2021 | 2022 | Mean |
|---------------------|------|------|------|------|
| Paragraph U1 | 10 | 9 | 5 | 8 |

¹⁴ WRAP, 2013, *Review of the Factors Causing Waste Soil To Be Sent To Landfill*; 2007 to 2011.

2.25 Exemption registrations are valid for 3 years, and hence the total population of exempt activities identified in Table 10 above includes any site registered between January 2020 and December 2022. However, a survey of exempt activities undertaken by Surrey County Council in 2017¹⁵ indicated that those registered under paragraph U1 tend to be used on a ‘one-off’ basis. In theory, it is possible that all the activities registered between January 2020 and December 2022 were utilised in 2022 and so the total number could be used to estimate arisings, however this is considered unlikely and so instead the total number registered was divided by three to generate a mean annual value of 8 for the number of U1 exempt activities actually active in Medway in 2022. Applying the value of 600 tonnes per exemption to the mean number of registered U1 exemptions over the three-year period gives an estimated total tonnage managed at U1 exempt sites in Medway of 4,800 tonnes. This addition to the arisings total is shown in Table 11.

Table 11: Table 9 plus Exemptions

| Component | Value (tonnes) | Cumulative Total |
|---|-----------------------|-------------------------|
| Permanent Deposit: | 39,879 | 39,879 |
| Managed Out of Medway: | 18,272 | 58,151 |
| Medway intermediate site net Ch 19 output: | 1,787 | 59,938 |
| To incineration: | 364 | 60,302 |
| Recycled Aggregate Production: | 14,213 | 74,514 |
| Input to U1 Exemptions: | 4,800 | 79,314 |

Accounting for Mis, or Non, Attributed Waste

Step 8: Accounting for C, D & E waste tonnage attributed to regional level only.

2.26 The WDI 2022 reports three Medway sites as having received inputs of C, D & E type waste not coded below regional level (in this case shown as arising in ‘London’ and ‘South East’). In order to apportion this waste a factor has been applied to the unattributed C, D & E waste based on the percentage of total C, D & E waste inputs received at these sites already attributed to Medway as shown in Table 12.

¹⁵ Waste Permitting Exemption Telephone Survey conducted by Surrey County Council.

Table 12: C, D & E Waste inputs to Medway Sites not attributed below regional level
Source: EA WDI 2022

| Site | Operator | Tonnes Received uncodeable below Regional Level | % of total C, D & E inputs that were from Medway | Derived Value (tonnes) |
|------------------------|-------------------------------|---|--|------------------------|
| Alpha Lake | Brett Aggregates Ltd | 5,420 | 0% | 0 ¹⁶ |
| Knight Road, Rochester | Saward Tipping Services Ltd | 7,584 | 37% | 2,787 |
| Gillingham Gate | Mobile Compactor Services Ltd | 1,369 | 0% ¹⁷ | 0 |
| Total | | | | 2,787 |

2.27 Table 12 shows c3,000 tonnes of uncoded C, D & E waste reattributed to Medway. Given this site was identified as producing recycled aggregate in Table 8, this tonnage has been included within the recycled aggregate production value in Table 13 below.

Table 13: Table 11 plus C, D & E Waste to Medway Plan Area Sites not attributed below regional level
italicised values include values derived through computation

| Component | Value (tonnes) | Cumulative Total |
|---|----------------|------------------|
| Permanent Deposit: | 39,879 | 39,879 |
| Managed Out of Medway: | 18,272 | 58,151 |
| Medway intermediate site net Ch 19 output: | 1,787 | 59,938 |
| To Incineration: | 364 | 60,302 |
| Recycled Aggregate Production inc Reattributed Waste | <i>17,000</i> | 77,301 |
| Input to U1 Exemptions: | 4,800 | 82,101 |

¹⁶ All uncodeable inputs were from London so assumed to be correct.

¹⁷ Mobile Compactor Services was contacted (in 2020) to determine the catchment area served by its site and this confirmed that 95% of the waste managed arises in London with only 5% from Medway. As the site only received c1,500 tonnes in total, no reattribution of this waste to Medway has been made.

Step 9: Accounting for misattributed tonnage.

2.28 Commissioners Road has permission for infill of an old quarry prior to construction of housing. This is permitted as a Recovery to Land operation by the Environment Agency. In the WDI 2020 all the input to this site was reported as coming from the adjacent Plan area of Kent. However, given its relatively central position within Medway and the fact that until 1999 Medway formed part of Kent, it is considered that inputs are likely to have actually come from Medway. Given there are no known reason that would mean inputs to this site would have been sourced solely from Kent, it was therefore been assumed that an element of input may have been misattributed. In the WNA 2020 a proportion of the input to the site was reattributed by applying the profile of origin of inputs to the Manor Farm Barn inert landfill located in a similar geographical position within Medway. As Manor Farm Barn was taken as a proxy in the WNA 2020, the same approach has been applied in this update. This shows that, over a three-year period, an average of 40% of the inputs to Manor Farm Barn were from Medway (updated for period 2020-2022). When applied to the inputs to Commissioners Road Recovery Operation for 2022 it gives results shown in Table 14.

Table 14: Reattribution of C, D & E Waste to Commissioners Road Recovery Operation

Source: EA WDI 2022

| Component | Tonnes from Medway | Tonnes from outside Medway |
|---|--------------------|----------------------------|
| Average % Input to Manor Farm Barn Landfill & Recovery Operation (2018-2020) | 40% | 60% |
| Input to Commissioners Road Recovery Operation in 2022 | 0 | 175,440 |
| Reattributed input to Commissioners Rd based on Manor Road % | 70,176 | 105,264 |

2.29 Table 14 shows c70,000 tonnes of C, D & E waste attributed to Medway to be included in the permanent deposit total value in data line 1 in Table 15 below.

Table 15: Table 13 plus additions in para 1.32

italicised values include values derived through computation

| Component | Value (tonnes) | Cumulative Total |
|---|----------------|------------------|
| Permanent Deposit: | <i>110,055</i> | 110,055 |
| Managed Out of Medway: | 18,272 | 128,327 |
| Medway intermediate site net Ch 19 output: | 1,787 | 130,114 |
| To Incineration: | 364 | 130,478 |
| Recycled Aggregate Production: | <i>17,000</i> | 147,477 |
| Input to U1 Exemptions: | 4,800 | 152,277 |

2.30 The baseline C, D & E waste arisings value generated for 2022 is therefore taken as **c152,500 tonnes**.

3. Forecasting Future C, D & E Waste Growth

3.1 The baseline arising value generated for 2022 of c152,500 tonnes compares with c183,500 tonnes estimated as arising in 2021 as shown in Table 15 Which also shows a step by step comparison.

Table 16: Comparison between 2021 and 2022 values on a step by step basis with commentary

| Component | Value for 2021 (tonnes) | Value for 2022 (tonnes) | Commentary on Difference between 2021 and 2022 value |
|--|-------------------------|-------------------------|---|
| Permanent Deposit¹⁸ | 108,413 | 39,879 | The quantity of waste sent to permitted permanent deposit to land facilities decreased by c68,500t in 2022 as compared with 2021. See Table 17 for the breakdown. |
| Managed out of Medway | 13,340 | 18,272 | The quantity of waste sent to sites outside of Medway for management increased by c5,000t in 2022 as compared with 2021. |
| Medway intermediate site net Ch 19 output | 1,283 | 1,787 | The net quantity of waste output of Ch 19 from Medway sites attributed to Medway waste increased by c500t in 2022 as compared with 2021. |
| Inputs to EFW | - | 364 | The quantity of waste to incineration increased by c500t in 2022 as compared with 2021. |
| Recycled Aggregate Production | 6,088 | 14,213 ¹⁹ | The quantity of waste recycled into aggregate increased by c8,000t in 2022 as compared with 2021. |
| Input to U1 Exemptions | 7,400 | 4,800 | The quantity of waste managed under U1 exemptions fell by c2,600t in 2022 as compared with 2021. |
| Medway Site Inputs at Regional Level only | 1,338 | 2,787 | The quantity of waste uncoded below regional level attributed to Medway increased by c1,500t in 2022 as compared with 2021. |
| Reattributed Waste | 34,871 | 70,176 | The quantity of waste reattributed increased by c35,500t in 2022 as compared with 2021. |
| Total | c172,500 | c152,500 | The quantity of C, D & E waste that arose in Medway fell by c20,500t in 2022 as compared with 2021. |

3.2 A more detailed analysis of the tonnages sent for permanent deposit is shown in Table 17 below.

¹⁸ These values don't include the reattributed Commissioners Road tonnages to allow for direct comparison of reattributed values.

¹⁹ Does not include tonnage reattributed to allow for direct comparison in line 7 'Medway site inputs at regional level only'.

Table 17: Permanent Deposit 2020 and 2021 split including inferred Medway input to Commissioners Road site

| | Management Route | | | Total |
|-------------|------------------|----------------|------------------|----------------|
| | Landfill | | Recovery to Land | |
| | Non-haz LF | Inert LF | | |
| 2021 | 15,097 | 90,450 | 44,755 | 150,301 |
| 2022 | 1,253 | 37,811 | 70,991 | 110,055 |
| Diff | -13,844 | -52,639 | +26,236 | 260,356 |

3.3 Waste going to landfill²⁰ has fallen by c66,500 tonnes from 2021 to 2022. There has been an increase in inputs to the single Recovery to Land site in Medway (Commissioners Road) of c26,000 tonnes from 2021 to 2022. This remains the only site with such a permit in Medway and has a limited life²¹.

3.4 In order to check for the possible effect of the Covid-19 pandemic on C, D & E waste arisings due to disruption of construction activity, a review of C, D & E waste arisings has been undertaken. To allow for direct comparison, the 2018, 2019 and 2020 baseline have been reworked to align with the updated method, particularly for Step 4. The outcome is shown in Table 18 below.

Table 18: Medway C, D & E Waste arisings 2018, 2020, 2021 & 2022 from WDI

| Year | 2018 | 2019 | 2020 | 2021 | 2022 |
|--------------------------------|---------|---------------|---------|---------|---------|
| CDE waste arisings | 185,404 | 227,716 | 135,832 | 172,733 | 152,277 |
| Growth rate p.a. | | 22.82% | -40.35% | 27.17% | -11.84% |
| Average growth rate p.a | | +8.34% | | | |

3.5 Table 18 shows that C, D & E waste arisings in 2020 decreased from 2018 levels but experienced a bounce back in 2021, however with a fall on 2018 levels. Given the pandemic's principal impact was in 2020, this data reflects expectations. The average growth across the period suggests a rate of +8.34% per annum. However, if the 2020 arising is ignored this gives an average growth per annum of -4.47% taking 2022 vs 2018 over 5yrs only using data for 4 years.

²⁰ Includes c33,500 tonnes going to Manor Farm Barn in Medway, c4,500 tonnes going to Borough Green Landfill in Kent and c1,500 tonnes going to Silt Lagoons in Havering.

²¹ It is becoming increasingly challenging to secure Recovery to Land permits and so it is expected that there will be a fall in inputs to such permitted sites with a commensurate increase in reliance on sites operating under the CL:AIRE Definition of Waste Code of Practice (DoWCoP) as a means of on-site excavation waste management.

Conclusion

- 3.6 Given the lack of expectation that specific planned regeneration or major infrastructure projects will give rise to additional C, D & E waste management needs over the Plan period, a zero-growth forecast was taken in the WNA 2020 as per nPPG advice. The outcome of this baseline refresh exercise indicates that a positive growth forecast might be justified or a negative growth if the Covid year is ignored.
- 3.7 Given the uncertainty it is therefore considered that a static growth rate as recommended in the WNA 2020 based on the reasoning set out in the WNA 2020 remains appropriate for arisings of this stream in Medway.

Profiling the existing C, D & E waste management methods

- 3.8 The new Medway Local Plan will have an underlying strategy reflecting the aspiration of how Medway Council would wish to see C, D & E Waste arisings being managed over the Plan period. This is normally achieved by setting targets (denoting floors or ceilings) for the management of proportions of a particular waste stream, which once converted into tonnages provide a basis against which management capacity requirements may be determined. It is first necessary to understand how the C, D & E Waste produced in the Plan area is currently managed (the "management profile") to establish realistic future management targets which then informs future capacity requirements.

Baseline C, D & E Waste Management Profile

- 3.9 By assessing the different elements associated with the management of C, D & E waste arising in Medway in 2022 as set out in Table 15, it is possible to generate an existing management profile for this waste stream as presented in Table 19:

Table 19: C, D & E Waste Management Profile Actual Data 2022

| Route | Purpose | Tonnes | % of known |
|------------------------------|---|----------------|-------------------|
| Recycling & Reuse | Recycled Aggregate (Table 15) | 17,000 | 11% |
| | Subtotal | 17,000 | |
| Recovery | Exemptions (Table 15) | 4,800 | 75% |
| | Use of Waste/ Recovery to Land (Table 2 Recovery to Land Total + Commissioners Road Table 13) | 70,991 | |
| | Inert Landfill (backfill of mineral workings) (Table 2) | 37,811 | |
| | Non-Inert Landfill Restoration (Input of soil & stones + minerals Table 2) | 1,253 | |
| | Subtotal | 114,855 | |
| Non-Inert Landfill | Ch 19 outputs to landfill | 1,787 | 1% |
| | Subtotal | 1,787 | |
| Unknown | Treatment (remainder) | 18,636 | 13% |
| | Total | 152,277 | |

3.10 Table 19 gives the following management profile for C, D & Waste arising in Medway in 2022:

- 11% re-used and recycled,
- 75% recovered in some other way, and
- 1% disposed to landfill
- 13% to treatment (final fate unknown)

3.11 Table 20 below displays the actual management profile over the period 2018 - 2022 which is shown visually in Figure 3.

Table 20: Comparison of Medway Management Profile 2018, 2019, 2020²², 2021 and 2022

| Route | 2018 | 2019 | 2020 | 2021 | 2022 |
|------------------------------|------|------|------|------|------|
| Recycling & Reuse | 28% | 0.5% | 6% | 4% | 11% |
| Recovery | 59% | 89% | 87% | 87% | 75% |
| Non-Inert Landfill | 1% | 0.5% | 1% | 1% | 1% |
| Unknown (Treatment) | 12% | 10% | 7% | 8% | 13% |

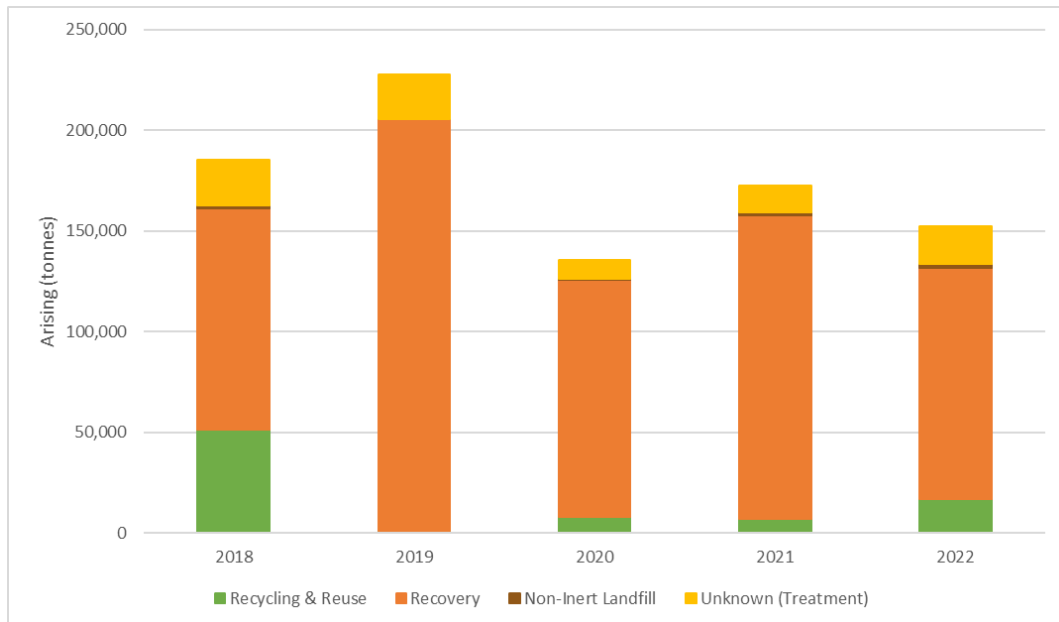


Figure 3: Comparison of Medway C, D & E Waste Management Profile

²² 2018, 2019 and 2020 values were adjusted to match the 2021 and 2022 methodology to allow for direct comparison.

3.12 Figure 3 shows how total C, D & E Waste arisings have fluctuated between c130,000 tpa (2020) and c227,500 tpa (2019) over the 5-year period. Figure 3 also shows how C, D & E waste is predominantly been managed by recovery with very little waste disposed to landfill (1% of less). Given the management route followed depends largely on the actual nature of waste arising, the next section considers the composition of this waste stream.

C, D & E Waste Composition

3.13 The principal distinction in the C, D & E waste stream in terms of management (and so targets) is between inert and non-inert materials, with a further possible distinction between hard and soft inert materials. By considering what type of material would be suitable for management through which component of the management profile shown in Table 20 above, it is possible to arrive at an indicative breakdown by material type shown in Table 21. This is undertaken by looking at the actual inputs that were received to determine the material type. This can inform the setting of appropriate targets as some types of material are only suited to some types of management method. For example, only hard inert material can be converted into recycled aggregate, and generally material used in backfill will be soils and sub-soils.

Table 21: C, D & E Waste Composition from Management Profile Actual Data 2022

| Hierarchy Tier | Management Route | Inert | | Non Inert/ Mixed |
|------------------------|--------------------------------|--------|---------|------------------|
| | | Hard | Soft | |
| Recycling/Reuse | Recycled Aggregate | 17,000 | 0 | 0 |
| Other Recovery | Exemptions | 0 | 4,800 | 0 |
| | Use of Waste/ Recovery to Land | 0 | 70,991 | 0 |
| | Inert Landfill | 788 | 37,023 | 0 |
| | Non-Inert Landfill Restoration | 0 | 1,253 | 0 |
| Disposal | Ch 19 outputs to landfill | 0 | 0 | 1,787 |
| Unknown | Treatment | 0 | 0 | 18,636 |
| | Totals | 17,788 | 114,067 | 20,422 |
| | Breakdown | 12% | 75% | 13% |

3.14 In the absence of specific data, all waste going to 'Treatment' has been assumed to be non-inert. This gives an overall inert content of 87%, with c13% being non-inert.

Management Targets

3.15 The revised EU Waste Framework Directive sets a minimum target of 70% by weight of non-hazardous Construction & Demolition waste being prepared for re-use, recycling and other material recovery by 2020²³.

3.16 It should be noted that:

- Backfilling operations using waste to substitute other fill materials may be counted towards the target. i.e. backfilling of mineral workings may be classed as recovery.
- Naturally occurring material categorised under EWC 17 05 04 (soil & stones) is excluded from the target. i.e. its use is unconstrained by targets.

3.17 Given the actual data suggests that nearly 99% of arisings are managed through a recovery route, with very little being disposed to landfill, it is considered appropriate for the proposed updated C, D & E waste targets to essentially reflect the current management profile derived above. This is set out in Table 22.

Table 22: Proposed Updated C, D & E Waste Management Targets

Yr0 represents 2018 baseline Yr1 represents 2019. Actual values shown in italics are rounded.

| Component | | <i>Actual</i> | Proposed Milestone Years | | | |
|------------------|---|------------------------------|--------------------------|-------------|-------------|-------------|
| | | <i>2022</i> | 2025 | 2030 | 2035 | 2041 |
| Inert | Recycled Aggregate | <i>86%</i> | ≥86% | | | |
| | Recovery to Land inc exemptions and inert landfill | | | | | |
| Non-inert | Recovery including source separation, composting and timber (EfW)²⁴ | <i><13%</i> ²⁵ | 13% | | | |
| | Remainder to Landfill | <i>>1%</i> | 1% | | | |

²³ The UK Government has committed to achieving targets set in the revised Waste Framework Directive even though the UK has now left the EU.

²⁴ Actual treatment value taken from Table 21.

²⁵ 'Less than' as a proportion of the residues from treatment is expected to go to landfill but the actual amount is unknown. However, this is expected to decline over time as greater source segregation and improved processing of trommel fines to extract stone occurs.

4. Projected Waste Management Requirements

4.1 Table 22 indicates the following peak capacity requirements for the management of C, D & E waste arising in Medway during the Plan period:

- c132,000 tpa of inert recovery via recycled aggregate production/ recovery to land;
- c18,500 tpa recovery through non-inert recycling/ composting;

In addition, a cumulative requirement c34,000t of non-inert landfill capacity as shown in Table 23.

Table 23: Predicted Non-Inert Waste Landfill Requirement for C, D & E Waste arising in Medway over Plan period (tonnes)

| Year | Annual Requirement | Cumulative Requirement |
|-------------|---------------------------|-------------------------------|
| 2023 | 1,787 | 1,787 |
| 2024 | 1,787 | 3,574 |
| 2025 | 1,787 | 5,361 |
| 2026 | 1,787 | 7,148 |
| 2027 | 1,787 | 8,935 |
| 2028 | 1,787 | 10,722 |
| 2029 | 1,787 | 12,509 |
| 2030 | 1,787 | 14,296 |
| 2031 | 1,787 | 16,083 |
| 2032 | 1,787 | 17,870 |
| 2033 | 1,787 | 19,657 |
| 2034 | 1,787 | 21,444 |
| 2035 | 1,787 | 23,231 |
| 2036 | 1,787 | 25,018 |
| 2037 | 1,787 | 26,805 |
| 2038 | 1,787 | 28,592 |
| 2039 | 1,787 | 30,379 |
| 2040 | 1,787 | 32,166 |
| 2041 | 1,787 | 33,953 |

5. Comparative Capacity Assessment

5.1 Assessment of the existing waste management capacity in 2022 has been conducted and compared to the capacity in 2018 and 2020 in Table 25 below.

Table 24: Comparative Capacity Assessment 2018 vs 2020 vs 2022

Values in italics are those with capacities that are unknown

| Component | Site | 2018 Capacity | 2020 Capacity | 2022 Capacity | Commentary |
|--|------------------------------|--------------------------|--------------------------|--------------------------|---|
| Recycled Aggregate | Isle of Grain Stone Terminal | c135,000t | c68,000t ²⁶ | c68,000t | Up to 89,000 tonnes of recycled aggregate capacity exists in Medway although only 9,750 tonnes was used in 2020. |
| | Saward Tipping | - | 20,896t | 43,540t | Peak input to Saward Tipping site permitted since 2019. |
| | OCL Regeneration | - | - | 45,000t | Total capacity 75,000tpa of which maximum 30,000t hazardous waste counted in hazardous report. |
| Recovery to Land | Commissioners Road | 678,780m ³ | 358,220m ³ | 171,447 m ³ | The site has planning permission for the importation of approximately 695,435m ³ for its completion (Planning Statement 2016) with the relevant permit issued 02.11.2018. Taking an average of the WDI inputs for 2018 - 2022 gives c116,000m ³ capacity per annum which would give it a life until mid-2024. |
| Exemptions | - | <i>c21,000t</i> | <i>c17,000t</i> | <i>c4,800t</i> | Reduction of exemption capacity of c12,000 tonnes in 2022 as compared with 2020, although values are based on estimations per U1 exemption produced by WRAP so there is a significant degree of uncertainty. |
| Inert landfill | Alpha Lake | c1,000,000m ³ | c1,000,000m ³ | c1,000,000m ³ | Remaining landfill 2022 dataset indicates 1Mil cubic metres void still remains although WDI 2022 indicates c5,500 tonnes was received at the site. |
| | Chalk Lake | c400,000m ³ | c400,000m ³ | c400,000m ³ | No change as no waste received |
| | Manor Farm Barn | c772,000m ³ | c642,000m ³ | c520,800m ³ | The site permit was issued 21.02.2018. Taking an average of the WDI inputs for 2020 -2022 gives 64,500m ³ annum which would give it a life until 2030. |
| Non inert recycling capacity ²⁷ | | c35,000t | c13,000t ²⁸ | c16,000t | Unit 18 Morgans Timber Yard counted in 2018 and 2020 has since ceased operations, new site called Darnet Yard permit issued 31/05/2022 |

²⁶ Peak input calculated by examination of recycled aggregate returns over the past decade.

²⁷ See Table 26 for site breakdown.

²⁸ Crushing Contractors site ceased to operate.

Table 25: Medway Intermediate Sites Principally Accepting Inputs coded as C, D & E Waste
Source: EA WDI (italicised entry indicates reattributed values)

| Site | Operator | Planning Register | EA Permit Limit | Peak Value WDI 5yrs See Appendix 1 (tonnes) | Preferred value (adjusted) |
|--------------------------------|--------------------------------|-------------------|-----------------|---|----------------------------|
| Gillingham Gate, Chatham Docks | Mobile Compactor Services Ltd | 8,000 | 3,100 | 1,581 | 8,000 |
| Darnet Yard | Parkes Utilities Surfacing Ltd | - | 75,000 | 8,149 | 8,149 |
| Total | | | | | 16,149 |

Conclusion

5.2 The overall outcome of the assessment is presented in Table 27 below.

Table 26: Medway C, D & E Waste Management Requirements vs Available Capacity

| | Peak Capacity Requirement (Discussion under paragraph 1.51) | Capacity (Table 25 + 26) | Difference |
|--|---|--------------------------|-------------------|
| Recycled Aggregate (tpa) | >132,000t | >330,500t ²⁹ | +198,500 |
| Recovery to Land (tpa) | | | |
| Inert Landfill - void (m3) | 0t | 2,881,200t | +2,881,200 |
| Non-inert Recycling/composting | 18,500t | 16,000t ³⁰ | -2,500 |
| Remainder to Non-inert Landfill (cumulative m3) | 34,000 | 0t | -34,000 |
| Balance | | | +3,043,200 |

5.3 Given the overall capacity balance shown in Table 27 is positive, net self-sufficiency is predicted to be achieved for this stream.

5.4 We would however recommend contacting WPAs in whose areas non-inert landfill capacity might be sought to confirm its possible availability for the Plan period.

²⁹ Reducing to 156,540 tonnes after completion of Commissioners Road.

³⁰ Total from Table 26.