Construction & Demolition Waste

Soil and Stone Recovery / Disposal Capacity -

UPDATE REPORT 2020

Eastern Midlands Region / Connacht Ulster Region / Southern Region Waste Management Plans 2015 - 2021





Rialtas na hÉireann Government of Ireland









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1 INTRODUCTION

The Regional Waste Management Planning Offices (RWMPOs) appointed RPS on behalf of the Eastern – Midlands, Connacht-Ulster and Southern Waste Management Planning Regions to quantify and analyse national capacity within the market for the management of soil and stone waste arisings, including hazardous, based on 2018 data. This report updates the Soil and Stone Recovery / Disposal Capacity report published in 2016. The report also documents data with respect to waste concrete and other CDW (construction & demolition waste).

The report delivers a 10-year forecasting exercise predicting the volumes of soil and stone, concrete, and other CDW generation.

With respect to soil and stone arisings, the report examines the national recovery and disposal outlets i.e. soil recovery facilities, inert landfills and non-hazardous landfills. This allows for the estimation of currently available and future capacity to meet market demand.

Soil and stone arisings notified as by-product (under Article 27 of the European Communities [Waste Directive] Regulations 2011) feature within this report, and the quantities subsequently deemed to be by-product are factored into the forecasting exercise. However, soil and stone by-products do not need to compete for the available recovery and disposal capacity within the domestic network of soil waste facilities, since they are not waste, and they can be put to more beneficial use.

Under the EU waste classification system, commonly known as 'The List of Waste (LoW)', the majority of soil and stone waste in Ireland arises from the construction and demolition sector, and accordingly is assigned LoW code 17 05 04 (soil and stones other than those mentioned in 17 05 03). For soil and stone from construction and demolition sources, which is demonstrated to be hazardous, the mirror entry LoW of 17 05 03* applies (soil and stones containing hazardous substances). Soil and stone waste also arises from other sectors or sources (e.g. quarrying, mining), and the volumes are very small by comparison. However, these soil and stone wastes are typically managed in the same manner as the soil and stone from construction and demolition sources and compete with the available recovery and disposal capacity within the domestic market. A non-exhaustive list of other types of soil and stone waste, with their LoW code, is as follows:

- 01 01 02 wastes from mineral non-metalliferous excavation (source industrial)
- 01 04 09 waste sand and clays (source industrial)
- 01 04 12 tailings and other wastes from washing and cleaning of minerals other than those mentioned in 01 04 07 and 01 04 11 (source industrial)
- 17 05 05* dredging spoil containing hazardous substances (source C&D)
- 17 05 06 dredging spoil other than those mentioned in 17 05 05 (source C&D)
- 19 09 02 sludges from water clarification (source industrial)
- 20 02 02 soil and stones (source municipal)

Regardless of the source of the soil and stone, the character of the material (in terms of the absence of, or the degree of contamination from anthropogenic sources) determines its fate. Soil and stone waste will only be suitable for acceptance at a waste recovery or disposal facility, if it meets the particular waste acceptance criteria for the intended facility. Typically, unlined soil recovery facilities can only accept uncontaminated soil and stone (these are exclusively recovery facilities). Inert landfills can accept soil and stone with marginal levels of contamination, predominantly for disposal plus some recovery depending on the character of the material. Non-hazardous landfills have a somewhat greater tolerance for contamination, also predominantly for disposal but recovery is permitted depending on the character of the waste. There are no hazardous waste landfills in Ireland at present. The report provides an analysis of the data presented and provides conclusions and recommendations in **Section 8**.

2 BACKGROUND

The quantity of CDW managed nationally has shown an increasing trend from 2012 to 2018, when 6.2m tonnes of CDW was collected. **Table 2-1** shows collected CDW data from 2012 - 2018 and its growth trend. Quantities have increased each year with the exception of 2017.

Soil and stone is the largest fraction of CDW waste accounting for approximately 77% of the total quantity. The volume of soil and stone managed nationally has grown similarly, increasing from 2.3m tonnes in 2012 to almost 5m tonnes in 2018.

Table 2-1: CDW and Soil Wa	aste Data 2012 - 2018
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Unit = Million Tonnes	2012 ¹	2013 ¹	2014 ¹	2015 ¹	2016 ¹	2017 ²	2018 ²
Total CDW	3.14	2.94	3.84	5.17	5.35	4.7	6.22
Soil and stone	2.27	2.04	2.89	3.69	4.30	3.29	4.79

Breakout of Non-Soil and Stone Construction and Demolition Material							
Mixed construction and demolition waste	N/A	N/A	N/A	N/A	N/A	0.37	0.41
Concrete, bricks, tiles and gypsum	N/A	N/A	N/A	N/A	N/A	0.31	0.76
Metals	N/A	N/A	N/A	N/A	N/A	0.18	0.18
Bituminous mixtures	N/A	N/A	N/A	N/A	N/A	0.04	0.06
Segregated wood, glass and plastic	N/A	N/A	N/A	N/A	N/A	0.02	0.02

In both 2017 and 2018 soil and stone waste accounted for over 70% of total CDW. In 2018, concrete, brick and tile accounted for 12% of the total CDW, mixed construction and demolition wastes were 6.7% and metals were responsible for 2.9%. The remaining 1.4% is made up of bituminous material and segregated wood, glass & plastic.

The current growth trend is expected to continue over the medium to long term in line with planned delivery of housing and infrastructure projects described in Project Ireland 2040.

However short-term growth is being impacted negatively by the COVID-19 pandemic. The pandemic has led to significant contraction in the economy and this is expected to reduce CDW generation in 2020 and 2021.

¹ Data sourced from NWCPO.

² Data sourced from EPA

3 POLICY & LEGISLATION CONTEXT

This chapter summarises recent Irish and European policy and legislative developments and their implications for the management of CDW.

3.1 European Policy and Legislation

In December 2015, the Commission adopted the Circular Economy Action Plan (COM (2015) 614) which was updated in March 2020 (COM (2020) 98) as part of the European Green Deal. In terms of the construction sector the plan identifies the existing footprint within the EU as follows:

- It accounts for ~50% of all extracted materials;
- It is responsible for over 35% of the EU's total waste generation; and
- Greenhouse gas emissions from material extraction, manufacturing of construction products, construction and renovation of buildings are estimated at 5-12% of total national GHG emissions.

In response the Commission is proposing a new comprehensive Strategy for a Sustainable Built Environment to be published in 2021. This Strategy will ensure coherence across the relevant policy areas such as climate, energy and waste. It will promote circularity principles throughout the lifecycle of buildings through:

- Revision of the Construction Product Regulation including the possible introduction of recycled content requirements for certain construction products;
- Promoting measures to improve the durability and adaptability of built assets in line with the circular economy principles for buildings design and developing digital logbooks for buildings;
- A revision of the public procurement rules, in order to include requirements to use green public procurement tools and life-cycle costing/assessment;
- A revision of material recovery targets set in EU legislation (i.e. the Waste Framework Directive 2008/98/EC) for construction and demolition waste and its material-specific fractions; and
- Promoting initiatives to reduce soil sealing, rehabilitate abandoned or contaminated brownfields and increase the safe, sustainable and circular use of excavated soils.

Furthermore, the 'Renovation Wave' initiative announced in the European Green Deal will lead to significant improvements in energy efficiency in public and private buildings in the EU. This initiative will be implemented in line with circular economy principles, including optimised lifecycle performance and longer life expectancy of built assets. As part of the revision of the recovery targets for construction and demolition waste, the Commission will pay special attention to insulation materials, which generate a growing waste stream.

The revised EU legislative framework on waste (Directive (EU) 2018/851) entered into force in July 2018 and sets clear targets for reduction of waste and establishes an ambitious and credible long-term path for waste management and recycling. Ireland transposed this Directive into national law in August 2020, establishing the European Union [Waste Directive] Regulations 2020. In relation to CDW the Directive states that by the 31st December 2024, the Commission shall consider setting preparing for re-use and recycling targets for CDW and its material-specific fractions. In this regard the previous target², set down in EU Waste Framework Directive (Directive 2008/98/EC), is likely to change.

3.2 Policy in Ireland

A new national waste policy entitled 'A Waste Action Plan for a Circular Economy' was issued by the Department of Communications, Climate Action and Environment (DCCAE) in September 2020, outlining Ireland's updated goals, actions and policies to be implemented from 2020 - 2025. The new policy is structured around the framework provided in the EU's Second Circular Economy Action Plan launched in March 2020.

³ The preparing for reuse, recycling and other material recovery of non-hazardous construction and demolition waste is increased to a minimum of 70% by weight by 2020 (excluding naturally occurring material defined in category 17 05 04).

The policy is intended to move Ireland toward a circular economy shifting away from waste disposal, favouring circularity and sustainability by identifying and maximising the value of material through improved design, durability, repair and recycling. By extending the time resources are kept within the local economy, both environmental and economic benefits are foreseen. The policy looks to implement increased regulation and measures across every sector in order to attain its goal.

Waste Action Plan 2020 - Measures Targeting Construction & Demolition Waste

Headline points on CDW in the Action Plan are as follows:

- Project Ireland 2040 sets out the State's development goals over the next 20 years which allows for the opportunity to forecast large, specific waste streams with a focus on preventing or efficiently managing the waste from these areas.
- Prevention of soil arisings which are a significant financial burden on the sector are to progress by placing value on the used material where possible. There is a strong focus on Article 27 and the endof-waste decision making process. These processes are to be streamlined and detailed guidance will be developed for specific problematic materials.
- The use of recycled construction materials will be incentivised (potentially by introducing a levy on virgin aggregates).
- The plan looks to make national end-of-waste decisions for specific construction and demolition waste streams at the earliest possible stage.
- The 2006 Best Practice Guidelines for construction and demolition waste will be revised to improve the Preparation of Waste Management Plans for Construction and Demolition Waste Projects.

Regional waste planning and associated policy actions are currently implemented through the three regional waste management plans. These were published in May 2015 and set out a regional framework to implement national and European Policy. These plans incorporate the policy actions supporting the shift to a circular economy and set headline targets for recycling and prevention. The current regional plans will be replaced in 2021 with a National Management Plan for a Circular Economy. This will include targets for the construction sector based on EU legislation and policy changes.

3.3 By-product and end-of-waste

The EU Waste Framework Directive (Directive 2018/851), enacted in Ireland under the Waste Directive Regulations 2011 (S.I. No. 126 of 2011), amended by the European Union (Waste Directive) Regulations 2020 (S.I. No. 323 of 2020), requires Member States to undertake the following:

- Apply the waste hierarchy in waste management legislation and policy;
- Take measures, as appropriate, to promote the reuse of products and preparing-for-reuse activities, notably by encouraging the establishment and support of reuse and repair networks, the use of economic instruments, procurement criteria, quantitative objectives or other measures;
- Establish waste management plans;
- Promote the high-quality recycling of waste materials as part of the overall aim to make the EU a 'recycling society'; and
- Ensure that the preparation for reuse, recycling and other material recovery of non-hazardous construction and demolition waste is increased to a minimum of 70% by weight by 2020 (excluding naturally occurring material defined in category 17 05 04).

There are two important provisions within the European Communities (Waste Directive) Regulations 2011 for the construction sector. These allow for the reclassification of waste as resources and are addressed under Article 27 (by-product) and Article 28 (end-of-waste). The 2020 amending regulations aims to take a positive approach to assessing by-product and end of waste applications provided they are of sufficient quality and comply with national guidance.

3.3.1 Article 27

Article 27 which allows for the declaration of a material as a by-product rather than a waste where certain criteria can be demonstrated by the economic operator. This instrument is well established for soil and stone but is also open to other materials.

Soil and Stone By-product Developments in Ireland

With growth in construction activity the industry is faced with increasing competition for the limited available capacity at facilities for acceptance and treatment of soil and stone waste. Classification of soil and stone as a by-product has significant economic benefits, allowing for the handling of material outside waste legislation and environmental benefits through facilitating the circular economy. The EPA issued updated 'Guidance on Soil and Stone By-Products' in June 2019. Under Article 27 an "economic operator" can decide, under certain circumstances, that a material is a by-product and not a waste. Decisions made by economic operators must be notified to the EPA. The Agency takes a risk-based approach in making their determination with an advisory period for determinations of 10 weeks. The EPA is required to maintain a register of notified decisions. Economic operators are required to demonstrate that all four by-product conditions are met, including:

1.Further use of the soil and stone is certain;

2. The soil and stone can be used without any further processing other than normal industrial practice; 3. The soil and stone are produced as an integral part of a production process; and,

4. Further use is lawful fulfilling relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

The EPA have reported that the majority of notifications require consultation to clarify matters. A comprehensive and carefully prepared notification, paying close attention to the available guidance, would greatly increase the chances of a faster outcome. The EPA intend to further develop and improve the online notification form, which should also assist in minimising turnaround times.

3.3.2 Article 28

Article 28 which sets out the grounds by which a material, which is recovered or recycled from waste, can be deemed to be no longer a waste and complies with a set of end-of-waste criteria (common use for specific purposes, a market demand exists, fulfils technical requirements and no adverse impact to the environment).

End of Waste (EoW) Developments in Ireland

The declassification of recycled aggregates and crushed concrete as wastes under Article 28 is a mechanism facilitating the reduction of CDW. If a construction and demolition waste aggregate obtains EoW status, it ceases to be waste and becomes a product. It will no longer be regulated by waste legislation and the environmental protection measures in waste legislation will no longer apply. As of September 2020, there have been two approved applications for recycled aggregate, one from Integrated Materials Solutions Limited Partnership (IMS) and one from Panda Greenstar. These applications provide a roadmap for future applications in the sector. In both cases, the EPA decided that recycled aggregate produced in compliance with the process and quality conditions set out, will cease to be waste. The decisions document the following criteria and the monitoring requirements:

- 1. Waste used as input for the recovery operation;
- 2. Treatment processes and techniques;
- 3. Quality of recycled aggregate resulting from the recovery operations;
- 4. Sampling and Analysis; and,
- 5. Additional documentation.

The EoW product can be used in bound and unbound applications but is restricted to the construction of roadways, in order to limit potential sources of groundwater contamination.

3.4 EPA Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities

EPA issued guidance in January 2020, titled 'Guidance on waste acceptance criteria at authorised soil recovery facilities'. This guidance applies to licenced, permitted and registered facilities.

New Guidance on the Acceptance of Waste at Soil Recovery Facilities

The 2020 guidance document '*Guidance on waste acceptance criteria at authorised soil recovery facilities*' provides guidance to facility operators for selecting maximum concentrations and/or trigger levels for relevant contaminants in soil and stone arising from non-greenfield sources. The proposed trigger levels must be approved by the authority in question i.e. the EPA for licenced facilities and the respective local authority for waste facility permits and certificates of registration.

The guidance also addresses material originating from greenfield sites, where a more qualitative approach is permitted, reflecting the much lower risk of contamination being present in soil and stone originating from virgin ground / greenfield sites. Minimum criteria for greenfield soil and stone includes a letter of suitability from an appropriately qualified person. There is no requirement for testing unless directed by the Agency or local authority. Visual checks and procedures must be carried out on arrival and records of inspections maintained.

For non-greenfield sites, to assist facility operators in selecting the maximum concentrations that should apply to their site, the EPA together with the Geological Survey of Ireland (GSI) has developed maximum concentrations for a suite of parameters, for seven defined geological domains. The concentrations vary across the domains, according to the particular geological setting of that domain. The concentrations set have been calculated to be consistent with the requirement for soil and stone accepted at unlined soil recovery facilities, to be uncontaminated. A facility operator can use the mapping facility developed by the GSI, to identify in which domain their facility is located, and to propose the maximum concentrations associated with that domain. As mentioned above, maximum concentrations for relevant parameters must be agreed between the facility operator and the respective authority. The EPA is in the process of agreeing site specific concentrations with existing licenced facility operators, and the local authorities are following the same approach for new and review authorisation applications.

4 INERT SOIL AND STONE RECOVERY FACILITIES

4.1 Licensed Soil Recovery Facilities

Soil Recovery Facilities above a set capacity threshold (>200,000 tonnes lifetime capacity), are authorised by the Environmental Protection Agency (EPA), under the Waste Management (Licencing) Regulations 2004. These facilities can handle significant tonnages of waste annually, compared to facilities authorised by Local Authorities, under the Waste Management (Facility Permit and Registration) Regulations, 2007, as amended (refer to Section 4.2) that accept a maximum of 200,000 tonnes over the lifetime of the permit.

Figure 4-1 below shows the geographical spread of licenced soil recovery capacity nationally. It should be noted that the figures presented include un-commenced capacity.

Figure 4-2 below presents only active capacity nationally, at end-2018.

A summary of the licensed soil recovery capacity nationally and by region, including annual and lifetime capacities are set out in the sections below. A detailed breakdown of the data by region is provided in **Appendix A**, which further documents each licenced facility by operator and operating status, showing its ability to continue to, or to commence, accepting waste going forward.

4.1.1 EMR Capacity

Table 4-1 shows the spread of fifteen facilities and associated capacities in the EMR by local authority area. Capacities are concentrated on the eastern side of the Region in Wicklow, Kildare, Meath and Fingal, principally serving construction sites in the Greater Dublin Area (GDA). The GDA area includes the local authorities of Dublin City, South Dublin, Dun Laoghaire-Rathdown, Fingal, Meath, Kildare and Wicklow.

There are eight facilities in Fingal (3) and Meath (5). Of these, three are active, three are un-commenced, one is at application stage and one is closed. Combined, these counties have 86% of the active capacity on offer to the market (2,411,400 tonnes end-2018). In Kildare 344,000 tonnes of annual capacity is active. Wicklow has one un-commenced site with a capacity of 300,000 tonnes/annum and one site that is unavailable, with no remaining capacity. The other local authority areas in the Region have no active licenced capacity.

The Region also has three facilities in the GDA at application stage. Two of these are in Kildare and one in Dublin (Fingal). Together they offer a potential annual capacity of 1,272,833 tonnes to the region.

4.1.2 SR Capacity

Table 4-1 shows that the available capacity of the seven facilities in the SR is located in the eastern part of the region, in counties Wexford and Kilkenny, with one facility in each of these counties. The active and available annually capacity, at end-2018, is 525,000 tonnes, of which 400,000 tonnes (76%), is located in Wexford. These areas border the EMR where construction activity nationally is highest. There are currently three licenced facilities in County Cork – one is inactive and two are licenced facilities that are yet to commence operation. When operational these facilities will have a combined annual capacity of 580,000 tonnes.

The Southern Region has two facilities at application stage. These facilities located in Cork and Wexford have been at application stage since December 2019 and August 2019 respectively. When active these facilities combined will offer an additional 380,000 tonnes of annual capacity to the market.

4.1.3 CUR Capacity

Table 4-1 shows there is a single licenced facility in the Region located in Mayo. The facility with an annual capacity of 90,000 tonnes is situated on the west coast of County Mayo in a rural location away from large urban centres. The annual data shows that intake at the facility was low level in 2017 and 2018, when it accepted <1,000 tonnes per annum. The low level of licensed capacity indicates that uncontaminated waste collected in the Region is being accepted principally at permitted and registered facilities. There are no applications for new licensed soil recovery facilities in the CUR region.

4.1.4 National Capacity

Overall, the geographical spread of licenced soil recovery facilities nationally is concentrated in the EMR which contains 80% of the active and available capacity. A further 17% of the active and available capacity is in the SR with the remaining 3% located in the CUR. **Table 4-1** shows that 2.4m tonnes of the active annual capacity is located on the eastern side of the country in the Greater Dublin Area (in counties Fingal, Meath, Kildare, Wicklow). Future capacities (new applications and un-commenced operations) exceed 2.1m tonnes nationally, with 73% of this capacity in the EMR and 27% (580,000 tonnes) planned for Cork. This is a positive development for the SR but the regional imbalance in capacities is expected to remain.

County	No. of Facilities	Annual Capacity (Application Stage) Tonnes	Annual Capacity (Licenced Un- commenced)	Annual Capacity (Active and Available)	
			Tonnes	Tonnes	
Dublin (Fingal)	3	532,833	-	1,900,000	
Meath	5	-	670,000	167,400	
Kildare	5	740,000	570,000	344,000	
Wicklow	2	-	300,000	-	
EMR Sub-total	15	1,272,833	1,540,000	2,411,400	
Wexford	2	80,000	-	400,000	
Kilkenny	1	-	-	125,000	
Cork (County)	4	300,000	580,000	-	
SR Sub-total	7	380,000	580,000	525,000	
Мауо	1	-	0	90,000	
CUR Sub-total	1	-	0	90,000	
National Sub-total	23	1,652,833	2,120,000	3,026,400	

Table 4-1: Geographical spread of licenced soil recovery facility capacities



Figure 4-1 GeographicalSpread of Licensed Soil Recovery Capacity (includes un-commenced)



Figure 4-2 Geographical Spread of Active Licensed Soil Recovery Capacity

4.2 Facilities Operating Under a Waste Facility Permit

Soil Recovery Facilities with an expected lifetime capacity of up to 200,000 tonnes, are authorised by local authorities, under the Waste Management (Facility Permit and Registration) Regulations 2007, as amended. Smaller facilities up to a lifetime capacity of 25,000 tonnes are authorised by means of a Certificate of Registration (CoR) (refer to Section 4.3), and facilities with a lifetime capacity of between 25,000 and 200,000 tonnes, are authorised by means of a Waste Facility Permit.

Unlike licenced soil recovery facilities, permitted (and registered) facilities (class 5 and class 6) are not subject to annual tonnage limits, under the Waste Management (Facility Permit and Registration) Regulations, Third Schedule Part I. The capacity tonnages reported below (and in Appendix B), all relate to the lifetime capacity limit. Once issued, a permit is valid for 5 years, and the permit holder has a maximum of 5 years to use the capacity limit set.

The lifetime capacity limits for class 5 and class 6 permits, are currently (since 2019) set at 200,000 tonnes and 50,000 tonnes respectively. The limit for class 5 facilities was increased from 100,000 tonnes in 2019, as per an amendment to the Waste Management (Facility Permit and Registration) Regulations. The capacity data documented in this report is from 2018, and therefore relates to class 5 facilities with an upper capacity limit at the time, of 100,000 tonnes.

It should be noted that if an applicant wishes to accept greater than 25,000 tonnes per year at their facility, they must prepare and submit an EIAR with their permit application, in accordance with Schedule 5, Part 2, 11(b) of the Planning and Development Regulations 2001, as amended. In some cases, this has meant that facilities are effectively self-imposing an annual limit of 24,999 tonnes.

Details of the permitted soil recovery facilities including annual intakes and remaining capacities, at end-2018, nationally and by region, are set out in the following sections and summarised in **Table 4-2**. A more detailed breakdown of permitted capacity, annual intake and AR (annual report) completion rate for each local authority area can be found in **Appendix B**.

It should be noted that there are limitations to the validity of comparing permitted (or registered) data from different years. The five year lifetime means that the number of facilities is likely to change year on year, as some facilities cease operating, and new facilities enter the market. Furthermore, each yearly dataset has varying completion rates associated with it, in particular for intake tonnages and remaining capacity, as permit holders have either not completed their reporting or reported incomplete data. Whilst the resultant incomplete datasets will not fully reflect the scale of capacity in the market, they do provide a reasonable estimate, particularly for 2018 which has seen a significant improvement in the reporting completion rates. This report presents permitted data for 2015, 2016 and 2018. Discretion is advised when interpreting the relevant data. These limitations, and the reporting completion rates in each region, are presented in **Sections 4.2.1-4.2.3** and in more detail in **Appendix B**.

4.2.1 Eastern Midland Region Capacity

The number of permitted soil recovery facilities in the EMR has more than doubled since 2016 from 24 to 49. At the end of 2018, at least 1.3m tonnes of permitted capacity remained. This is likely an under-estimation as permitted facilities in the EMR returned an 80% completion rate (i.e. 20% of facilities did not report capacity remaining) for this reporting indicator in 2018. Further detail on data reporting completion rates can be found in **Appendix B**.

This capacity remaining represents a 67% increase on the 653,000 tonnes of remaining permitted capacity recorded at the end of 2016. However, this increase can be partly attributed to an increase in the reporting rate for remaining capacity between 2016 to 2018.

The lifetime permitted capacity in the Region in 2018 was 2.7m tonnes - an increase of 62% compared to 2016 data.

Intake data for 2018 was 546,000 tonnes, a 68% increase in intake since 2016 as shown in **Appendix B**. However, this increase can be largely attributed to a significant increase in the rate of reporting of intake data in 2018, with all active permitted facilities submitting data.

There are 15 facilities located in Meath, providing 35% of the regions permitted capacity - the Region's largest share in a single local authority area. Wicklow has the next largest share of facilities with eight active sites. Overall, there is a good spread of permitted soil recovery facilities across the other EMR local authorities with one facility in each of those local authorities, aside from Dun Laoghaire-Rathdown, which has none.

4.2.2 SR Capacity

The Southern Region has the largest permitted capacity with 80 facilities authorised in 2018 (compared to 66 facilities in 2016). The majority of these sites are located in Counties Cork, Wexford and Kerry with these counties having 32, 17 and 13 facilities respectively. All other local authorities have at least two permitted facilities aside from Cork City Council which has no facilities in Classes 5 and 6. Cork County has the largest permitted capacity in the Region at 1.8m tonnes. The county with the least permitted capacity is Waterford with 50,000 tonnes. In 2018, active permitted facilities accepted over 820,000 tonnes of soil waste.

The remaining permitted capacity at the end of 2018 was at least 1.9m tonnes. This is likely an underestimation due to permitted facilities in the SR returning an 83% completion rate for this reporting indicator in 2018 meaning that some permitted capacity is not included in the total figure quoted. Further information on data reporting completion rates can be found in **Appendix B**.

The permitted capacity in the Region in 2018 was 5.7m tonnes, an increase of 27% compared to 2016 data.

The reporting rate in this Region has increased greatly since 2016. The rate of reporting for intake tonnages and remaining capacity was 99% and 83% respectively. The corresponding rates in 2016 were just 45% and 33%.

4.2.3 CUR Capacity

There are 17 permitted soil recovery facilities in the Connaught-Ulster Region with a reasonable spread across the local authority areas. Mayo, Galway and Cavan each have four permitted facilities and other local authority areas (aside from Leitrim) have at least one facility.

At the end of 2018, the total remaining permitted capacity was 377,170 tonnes, out of a total permitted capacity of over 685,000 tonnes. However, the remaining capacity quoted is likely an under-estimation due to permitted facilities in the CUR returning a 59% completion rate for this reporting indicator. Further information on data reporting completion rates can be found in **Appendix B**.

4.2.4 National Capacity

Nationally the number of permitted facilities, their permitted lifetime intake and remaining lifetime capacity have all increased since 2016. In 2018 there were 146 permitted facilities with 3.6m tonnes of capacity remaining by year end.

The increase in the number of facilities is a response to market demand and strong growth in the construction sector. The geographical spread of permitted facilities around the country is reasonably good.

Improved rates of reporting have been noted in each region for 2018 data compared to previous years. For example, the national reporting rate for intake tonnages increased from 51% to 99% from 2016 to 2018.

53% of the national remaining lifetime capacity is located in the SR with 37% situated in the EMR. In comparison to these regions, the CUR had just 10% of the remaining national capacity (377,000 tonnes) at the end of 2018.

Region	No. of Facilities	Permitted Capacity Tonnes (Lifetime)	Intake 2018 Tonnes	Remaining Capacity ³ Tonnes (Lifetime)
EMR	49	2,665,197	546,012	1,333,523
SR	80	5,749,119	820,035	1,919,779
CUR	17	685,325	48,595	377,170
National Total	146	9,099,641	1,414,642	3,630,472

Table 4-2: Geographical spread of Permitted Soil Recovery Facility Capacities (2018)

4.3 Facilities Operating Under Certificate of Registration

Registered soil recovery facilities cover smaller scale soil recovery activity. Registered facilities (class 5 and class 6), just like permitted soil recovery facilities, are not subject to annual tonnage limits, under the Waste Management (Facility Permit and Registration) Regulations, Third Schedule Part II. The capacity tonnages reported below (and in **Appendix C**), relate to the lifetime capacity limit. Once issued, a certificate of registration is valid for 5 years, and the certificate holder has a maximum of 5 years to use the capacity limit set. The lifetime capacity limits for class 5 and class 6 certificates, are set at 25,000 tonnes and 10,000 tonnes respectively. Details of the registered soil recovery facilities including annual intakes and remaining capacities are set out in the following sections and summarised in **Table 4-3**. A more detailed account of national registered capacity and annual intake figures, broken down to each local authority area, is provided in **Appendix C**.

As noted in **Section 4.2**, there are limitations to the validity of comparing registered data between years, and discretion is advised when interpreting the relevant data. These limitations, and the reporting completion rates in each region, are presented in **Sections 4.3.1-4.3.3** and in more detail in **Appendix C**.

4.3.1 Eastern Midlands Region

There are 43 Certificate of Registration facilities in the EMR in 2018, 19 more than there was in 2016. The remaining registered capacity in the Region at the end of 2018 was 188,000 tonnes. This is likely an underestimation due to registered facilities in the EMR returning a 49% completion rate for this annual reporting indicator. Further information on data reporting completion rates can be found in **Appendix C**.

The 2018 data shows Longford is the county with the largest number of registered facilities with 17 active sites and a combined remaining registered capacity of 52,140 tonnes. However, it should be noted that Longford had a completion rate of just 35% for this reporting indicator. The Dun Laoghaire-Rathdown area is the only area within the Region without a registered facility.

The reporting completion rate for facilities' intake tonnages and registered capacities in 2018 was 84% and 49% respectively. These completion rates are an improvement on the corresponding 2016 completion rates.

4.3.2 Southern Region

The Southern Region has the highest number of registered facilities at 83. This is 33% greater than 2016. Clare has the most facilities with 16; Carlow has the least with 1. The other facilities in the Region are well distributed across the counties. County Cork, Kerry, Waterford, Wexford, Limerick and Clare all have eight or more facilities. The remaining registered capacity in the Region at the end of 2018 was 453,559 tonnes. This

³Remaining capacity figures are probable under-estimations due to incomplete reporting completion rates (refer to Appendix B for further information)

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is likely an under-estimation due to registered facilities in the SR returning a 65% completion rate for this reporting indicator. Further information on data reporting completion rates can be found in **Appendix C**.

The rate of completion for intake data is 94% in 2018 when five of the 83 facilities failed to report on this. The registered capacity reporting rate was much lower with only 53% of facilities reporting this figure. This reporting rate is, however, significantly better than the corresponding 34% reporting rate in 2016.

4.3.3 Connacht Ulster Region

There were 53 registered facilities in the CUR, of which 26 (49%) facilities are in Mayo. Cavan has the second highest number, with 12 facilities. There is a poor spread of facilities across the region. All other counties have 4 or fewer facilities, with no active facilities in Galway City. 2016 data shows a similar spread with twice more facilities in Mayo than in the next nearest county. The remaining capacity for the Region at the end of 2018 was 1,005,242 tonnes. This is likely an under-estimation due to registered facilities in the CUR returning a 66% completion rate for this reporting indicator. Further information on data reporting completion rates can be found in **Appendix C**.

Like the other regions, the reporting rate has improved since 2016 with 94% and 66% of sites reporting their intake and registered capacities respectively.

4.3.4 National Capacity

There are 179 registered facilities nationally, at end-2018, a 34% increase since 2016. In 2018, these registered facilities accepted 387,000 tonnes of waste with capacity remaining at the end of the year of over 1.67m tonnes. 1m tonnes of the available capacity is in the CUR. The remaining capacities given are subject to probable under-estimation due to imperfect reporting rates as flagged.

The distribution of registered facilities is reasonably good between EMR and SR, but not in CUR. The SR has the greatest share of facilities (83 in total), followed by the CUR (53) and EMR, with 43 facilities.

Region No. of Facilities		Registered Capacity tonnes (Lifetime)	Intake 2018 tonnes	Remaining Capacity Tonnes (Lifetime)
EMR	43	394,934	102,724	188,288
SR	83	1,284,682	188,892	453,559
CUR	53	1,174,458	95,380	1,005,242
National Total	179	2,854,074	386,996	1,647,089

Table 4-3: Geographical spread of Registered Soil Recovery Facility Capacities (2018)

4.4 Inert Landfill

Inert landfill facilities in Ireland are authorised by the EPA, under the Waste Management (Licencing) Regulations, 2004, and are a distinct group of facilities. These facilities have a low permeability basal liner, typically constructed of clay. The principal activity at these facilities is disposal compared to backfilling which is classed as a recovery activity at soil recovery facilities.

Inert landfill facilities accept wastes which comply with the waste acceptance criteria limits for inert landfills as described in the EU Landfill Directive. These intake materials are typically different to soil wastes accepted at unlined soil recovery facilities; the latter are uncontaminated and mostly from greenfield sites. Inert landfills can accept lightly contaminated soil wastes from brownfield sites provided these materials meet the landfill's particular waste acceptance criteria set out in their licence.

Table 4-4 shows the current licenced inert landfill facilities and intake from 2016-2018. It also includes the Tara Mines facility (an IED licenced facility), which is not an inert landfill, but is included in this section, since its waste acceptance criteria align most closely with this category of facility.

Facility	Waste	Status	- 2016	2016	2017	2017	2018	2018	Remaining
Name	No		Disposal	toppos	Disposal	Recovery	Disposal	tonnos	
	1101		tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes ⁴
IMS	W0129-02	Active	145,417	-	49,291	-	203,771	39,808.5	3,874,316
Walshestown	W0254-01	Active	-	-	113,723	-	156,514	-	2,105,238
Kyletalesha	W0026-03	Active	-	-	-	-	800	-	95,400
Tara Mines	P0516-04	Active	No Data	-	9	363,450	-	315,930	-
Total			145,417	0	163,023	363,450	361,085	355,739	6,074,954
LoW Codes							17 05 04,	17 05 04	
							19 09 02		

Table 4-4: National Intake (2016 – 2018) and Capacity (2018) Data for Inert Landfills

The three inert landfills in the country, and the Tara Mines facility, are located in the EMR and all facilities were active in 2018. The total tonnage accepted in 2018 was approximately 717,000 tonnes, a significant increase on the 526,000 tonnes accepted in 2017. The tonnage accepted in 2018 is split almost evenly between disposal and recovery activities.

The remaining lifetime capacity at these facilities amounts to just under 6.1 million tonnes nationally. The IMS facility had 3.9m tonnes remaining, with 2.1m tonnes remaining at Walshestown, at the end of 2018.

There are no active inert landfill facilities in the SR or CUR. The lack of facilities to manage soil wastes which are unsuitable for acceptance at soil recovery facilities heightens the potential for mismanagement of such waste materials. This can include illegal dumping or disposal of the materials at unsuitable facilities.

4.5 Findings

This section summarises the number of facilities and related capacities, by Region, from the analysis earlier in this chapter.

4.5.1 Eastern Midlands Region

There are 106 authorised facilities in the Region for soil and stone acceptance as follows:

- Four active licenced soil recovery facilities;
- Six licenced soil recovery facilities due to start providing capacity;
- Four active inert landfills
- Forty-nine permitted facilities; and
- Forty-three registered facilities with CoRs;

⁴Tonnage calculated using density conversion factor for 17 05 04 material: 1.06 tonnes/m³

The geographical balance of licensed Soil Recovery Facility capacities is concentrated in four local authority areas - Fingal, Meath, Kildare and Wicklow. None of the five EMR local authorities outside the GDA - Louth, Laois, Longford, Offaly, and Westmeath - have licensed SRF capacity.

The licenced SRF capacities are the most significant in terms of available capacity serving the region. The Region's current active and available annual licenced market capacity is 2.4 million tonnes. However, the situation is fluid, with facilities being developed. In July 2020, there were three license applications for new facilities in the EMR and six facilities which have been granted licences but had yet to commence activity. The combined capacity of the un-commenced facilities is 1.5m tonnes per annum.

Analysing the data shows that waste licence facilities in the Region are of the scale required by the market. Six of the ten licenced sites have annual capacity of 300,000 tonnes or more and one facility is licenced to accept 1,500,000 tonnes of soil wastes each year. These large-scale facilities offer certainty to market operators. A healthy supply of licenced capacity for soil wastes is required to support the expected growth in construction activities in the Region long-term.

The permitted and registered facilities offer a much smaller capacity to the Region. The EMR remaining permitted lifetime capacity is 1.3 million tonnes (at end-2018). The registered remaining lifetime capacity in the Region is much smaller by comparison with just over 188,000 tonnes available (at end-2018).

The rate of return of data by permitted and registered operators has improved since 2016. In the EMR the completion rate for registered and permitted facility's intake has increased from 56% to 92% from 2016 to 2018. While less of an improvement is visible regarding remaining capacity reporting, the trend is positive showing an increase from 55% to 65% over the same period.

The geographical spread of these sites is reasonably good. The local authorities within County Dublin have low counts of permitted or registered facilities with no area having more than one of each. A number of local authorities (Laois, Louth, Offaly and Westmeath) have low registered capacities and are reliant on permitted facilities.

Licensed capacity is authorised on an annual basis while permitted and registered capacity is authorised on a lifetime capacity, meaning that these cannot be aggregated and are reported separately.

The capacity for uncontaminated soil comprises of 2.4m tonnes annual licenced capacity and 1.52m tonnes lifetime capacity provided by permitted and registered sites. This capacity is concentrated in the Greater Dublin Area. This is not surprising as it is the centre of construction activity in the Region and nationally. In other local authorities in the region, capacity supply is lower and needs monitoring. Co-ordination between local authorities on the supply of facilities locally and regionally would be beneficial. There are three inert landfills in Ireland, plus the Tara Mines facility, and all are located in the EMR providing predominantly disposal capacity. The four active inert landfill facilities have approximately 6.1m tonnes of remaining lifetime capacity to accept lightly contaminated soils. Based on current intake data this appears to be adequate capacity to supply the EMR currently.

4.5.2 Southern Region

There are 167 authorised facilities in the SR for the recovery of soil and stone as follows:

- Two active licenced soil recovery facilities;
- Two licenced soil recovery facilities are not yet active (and future activity at one of these sites is uncertain);
- Eighty permitted facilities; and
- Eighty-three registered facilities with CoRs;
- There are no inert landfills in SR

The two active licensed facilities are located in Kilkenny (close to the border with Waterford) and Enniscorthy, County Wexford. There are two facilities in Cork which are licenced but have yet to commence activity. Together they offer 580,000 tonnes of annual capacity to the region. There are a further two facilities at application stage that are not included in the total authorised number. Of these, one is in Cork applying for

300,000 tonnes per annum capacity and another is in Wexford applying for 80,000 tonnes per annum. These additional facilities will accommodate increased construction activity in the SR, particularly in the urban centres of Cork and Limerick.

The permitted facilities are concentrated in County Cork with 40% of the region's total facilities located in this county. Wexford and Kerry are also well served with 17 and 13 facilities respectively. Aside from this, there are seven other local authorities with low numbers of permitted facilities.

There is a similar number of registered sites in the SR with a good geographical distribution of sites. Clare, Cork, and Wexford are well served with registered sites. The remaining registered capacity for the SR, at end-2018, is 453,000 tonnes. Of this remaining registered capacity, 44% (198,000 tonnes) is located in two local authority areas, with 127,000 tonnes in Kerry and 71,000 tonnes in Cork.

Licensed capacity is authorised on an annual basis while permitted and registered capacity is authorised on a lifetime capacity, meaning that these cannot be aggregated and are reported separately.

The total remaining annual capacity at licenced sites in the SR at end-2018 comprised 525,000 tonnes.

The remaining permitted and registered lifetime capacity in the Southern Region at end-2018 was 1,920,000 and 454,000 tonnes respectively.

The permitted lifetime capacity in the SR is large compared to other regions with 693,000 tonnes situated in Cork alone. The available capacity serving the large regional urban centres of Limerick and Waterford is low and will be inadequate to address future planned development. It is noted that there are no inert landfills in the SR.

4.5.3 Connacht Ulster Region

There are 71 authorised facilities in the CUR for soil and stone recovery as follows:

- One licensed soil recovery facility;
- Seventeen permitted facilities; and
- Fifty-three registered facilities with CoRs.
- There are no inert landfills in CUR

The total authorised annual licenced capacity for the CUR at end-2018 comprises of 90,000 tonnes This is attributable to one facility located in Mayo.

Of the 17 permitted facilities in the region, Galway County, Mayo and Cavan each had four in operation in 2018. At the end of 2018, the remaining permitted lifetime capacity in the Region was 377,000 tonnes with 49% of this capacity in County Galway. Donegal, Leitrim and Monaghan reported having no remaining permitted capacity.

The CUR is heavily reliant on registered capacity for the recovery of soil waste. There is a concentration of registered facilities in County Mayo (26) and County Cavan (12) with 72% of the 53 registered facilities located in these two local authority areas. The remaining lifetime capacity from registered facilities at the end of 2018 totalled 1,005,242 tonnes with 62% of this capacity located in Mayo. Monaghan, Galway City and Sligo reported having no remaining registered capacity.

The total authorised lifetime capacity provided by permitted and registered sites is 1.38m tonnes. The available data suggests that there is sufficient capacity in the CUR as a whole, although it is concentrated in Mayo and Galway. There is a large quantity of registered sites within the CUR and even though these serve a purpose, they offer limited long-term capacity. The lack of licenced capacity may become an issue as development activity picks up (particularly in and around Galway City). It is noted that there are no inert landfills in the CUR.

5 NON-HAZARDOUS SOIL AND STONE

Non-hazardous landfill facilities in Ireland are authorised by the EPA, under the Waste Management (Licencing) Regulations, 2004. These facilities accept non-hazardous wastes, predominantly from municipal sources but industrial and construction and demolition wastes, including soil waste, also compete for void space. These are engineered landfills constructed with geotextile liners and collection systems to manage leachate and landfill gas. These facilities can accept material for disposal to the landfill or, if the material is suitable, there is some limited capacity for recovery activities. Recovery material can often be soil waste for daily cover or rubble for internal haul roads.

5.1 Soil and stone intake at landfill

Table 5-1 shows the acceptance of soil (comprising both non-hazardous and inert soils) at non-hazardous landfills.

Non-Hazardous Landfill Facilities	20)16	20	17	2018			
	Disposed (tonnes)	Recovered (tonnes)	Disposed (tonnes)	Recovered (tonnes)	Disposed (tonnes)	Recovered (tonnes)		
Drehid	51,739	218,622	23,023	53,621	7,015	80,126		
Knockharley	-	50,703	-	22,379	-	12,334		
Ballynagran	-	1,865	-	163	-	22,002		
East Galway	-	-	-	18,962	-	17,485		
Corranure	-	107,698	-	76,678	-	80,566		
Total	51,739	276,599	23,023	144,553	7,015	197,762		
LoW Codes					170504, 190902	170504, 190902		

Table 5-1: Soil Intake at Non-hazardous Landfill

5.2 Non-hazardous landfill capacity

Table 5-1 shows that non-hazardous landfills can accept significant volumes of soil for recovery purposes. Drehid has accepted the most significant volume, with an intake of over 350,000 tonnes between 2016-2018. Corranure is next most significant, accepting 265,000 tonnes over that period.

Drehid historically accepted a significant volume of non-hazardous materials for disposal and in particular for recovery. The table shows over 218,000 tonnes of soils been accepted for recovery in 2016. Data from previous years shows similarly high rates of soil waste accepted for recovery. The acceptance of non-hazardous and inert soils has reduced since 2016 as available void capacity has diminished. At the end of 2018 the remaining capacity at Drehid was 636,085m³ compared to 5,006,968m³ of available capacity when the site commenced activity. The site accepted just over 7,000 tonnes of non-hazardous soil for disposal in 2018 compared to almost 52,000 tonnes in 2016. Conversely, Ballynagran increased the intake of non-hazardous soil waste for recovery from 163 tonnes in 2017 to 22,002 tonnes in 2018 in response to market demand.

In 2018, there were 3 non-hazardous landfill facilities in the EMR, 2 in the CUR and no active facility in the SR. The Corranure facility stopped accepting waste for disposal in 2010 but the facility continues to accept substantial quantities of soil material for recovery activities as shown.

5.3 Soil and stone export

Table 5.2 details the quantities of non-hazardous soils exported from 2016-2018. The table shows exporting of non-hazardous soils was over 161,000 tonnes in 2018 a significant increase compared to 2016 and 2017.

During the same period tonnages of non-hazardous soils accepted for disposal at indigenous facilities has dropped. The data indicates there is a need for additional indigenous disposal capacity to treat this waste stream with current capacity limited. The majority (89%) of Ireland's exported non-hazardous waste is sent to Norway, the most active destination for such materials. The remainder of the waste was sent to the Netherlands.

Export	2016 Tonnes	2017 Tonnes	2018 Tonnes		
Netherlands	-	2,766	17,459		
Norway	-	42,244	144,373		
Northern Ireland	-	1,041	-		
Germany	4,045 (of 17 05 04)	-	-		

Table 5-2: quantities of non-hazardous soils exported

5.4 Construction and Demolition Fines Management

Construction and demolition fines are generated from the processing of mixed construction and demolition waste principally sourced from skips. Classified under LoW code 19 12 12, they are defined as wastes generated from the mechanical treatment of waste such as sorting, crushing, compacting and pelletising. This material consists primarily of soil, wood, concrete, drywall, rock and other miscellaneous material particles. If a construction and demolition fine material has a high soil concentration it can also be used as clean structural fill for recovery activities on a landfill site. Fines consisting of denser material such as concrete and brick can also be used for recovery purposes as structural fill.

Table 5-3 shows the acceptance of construction and demolition fines at non-hazardous landfill sites from 2016-2018. The Drehid facility accepts the largest share of the construction and demolition fine material nationally, accepting approximately 50% of the national total in 2018 for both disposal and recovery. Most of this material is accepted for recovery purposes with only Drehid and Knockharley accepting fines for disposal. In 2018, 82% of the construction and demolition fine material was used for recovery. This is lower than corresponding levels of recovery in 2017 and 2016 where the recovery rate of material was 92% and 99% respectively. This is in part due to increasing quantities of fines material accepted for disposal at Knockharley with over 33,000 tonnes accepted in 2018. Neither Corranure nor Powerstown accepted any construction and demolition fine material between 2016 and 2018.

Table 5-3: Construction and o	demolition fines Intake at	Non-Hazardous Sites
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Construction and demolition fines												
	2	016	2	017	2018							
	Disposed tonnes	Recovered tonnes	Disposed tonnes	Recovered tonnes	Disposed tonnes	Recovered tonnes						
Drehid	-	120,547	2,336	111,383	3,231	101,079						
Knockharley	704	37,123	13,175	25,000	33,673	10,138						
Ballynagran	-	41,598	-	42,632	-	41,267						
East Galway	-	3,883	-	21,338	-	19,770						
Total	704	203,151	15,511	200,353	36,904	172,254						

6 HAZARDOUS SOIL AND STONE

There is no dedicated hazardous waste to energy or landfill treatment capacity in Ireland. Hazardous soil materials, depending on the nature of the contamination, are treated and stabilised at specialised indigenous facilities. Treatment activities at some of these facilities can change the characterisation of soil wastes from hazardous to non-hazardous, whereby the soil can then be directed to non-hazardous facilities. The lack of final treatment capacity for hazardous soils nationally creates a reliance on overseas facilities for final treatment.

Table 6-1 shows quantities of hazardous soils treated in Ireland and exported from 2014 to 2018. Ireland's reliance on overseas capacity is clear with significant tonnages exported during the period 2016-2018. From 2015 to 2017 the quantity of hazardous soil treated and managed within the state decreased significantly from over 5,900 tonnes in 2015 to over 600 tonnes in 2016 and 2017.

There has been a significant increase in the treatment of contaminated soils in Ireland in 2018 with over three times the amount of hazardous soil being treated within the country compared to the previous year. This rise in treatment of hazardous soil waste domestically, is associated with a drop in the volumes exported. In 2018 Ireland exported almost 75,000 tonnes of hazardous soil, a drop of over 26,000 tonnes from 2017.

Table 6-1: Hazardous Soil Treatment and Exportation⁵

	2014 (tonnes)	2015 (tonnes)	2016 (tonnes)	2017 (tonnes)	2018 (tonnes)
Irish hazardous waste treatment facilities	1,630	5,938	682	608	18,733
Exported	5,701	14,329	79,591	101,440	74,912

Table 6-2 shows the destination countries where our hazardous soil wastes are exported to for final treatment. In 2018 Norway was the primary destination accepting 57%. Netherlands and Germany accepted 22% and 21% respectively.

Table 6-2 2018 Hazardous Soil Export Destination⁶

Country	2017	2018
	tonnes	tonnes
Norway	48,259	38,374
Netherlands	27,799	15,126
Belgium	15,012	14,563
Northern Ireland	4,292	4,122
Germany	6,077	2,699
Total	101,439	74,884

⁵ Data received from EPA.

⁶ Data received from NTFSO. We note that the 2018 total exported figure in this table differs slightly from the figure in the previous table. The data is from two different sources (NTFSO and EPA) and the reason for the difference is unclear.

7 FORECASTS

Predicting waste growth is a challenging exercise. There are many factors which influence the generation of CDW waste with the strength of the economy a key driver. A vibrant construction sector tends to lead to high volumes of construction wastes. In this section projections for CDW, including for soil waste, for the years 2020 -2029 are presented. A full set of projection data and explanation on the approach is included in **Appendix D**.

7.1 **Growth Factors and Assumptions**

The are many factors which drive the growth of construction wastes with a strong economy recognised as key. For the purpose of these forecasts it is assumed increases in construction wastes, including soils, are linearly correlated with construction activities.

A reliable measure of construction activity is the performance indicator, Total Construction Output factor, which is reported annually in the EuroConstruct Report. This indicator measures the economic value of construction related output in the economy.

The data shown in **Table 7-1** was reported in the EuroConstruct Reports. The 89th Euroconstruct report⁷ forecasts output factors for 2020-2022 and these are shown in the table.

Table 7-1: Total Construction Output Factors 2016-2019 and Forecasts 2020-2022

	2016	2017	17 2018		2020 Forecast	2021 Forecast	2022 Forecasts	
Ireland	10.2%	13.6%	12.1%	5.6%	-37.7%	17.6%	7.6%	

The table shows that positive output factors were recorded from 2016-2019. During this period the Irish economy performed well and construction activity was strong. The 2020-2022 forecast factors provide a short-term look ahead predicting the performance of the construction sector. The impact of Covid-19 is included in these forecasted factors.

The Covid 19 crisis has significantly impacted the Irish economy across many sectors including development and construction. The forecast for 2020 reflects this with a 37.7% decrease in output forecast. The forecast for 2021 and 2022 predicts a gradual return to normal economic activity (although this is a fluid situation with an uncertain outlook).

These factors allow CDW forecasts to be prepared for this time period with a linear correlation assumed. To generate forecasts from 2023 conservative assumptions have been applied to generate two different scenarios, a high growth and a low growth forecast. The high growth projections are generated assuming a consistent growth rate of 5.5% per annum. This rate aligns with previously published high growth forecasts. This rate is reasonable and considered more suitable than assuming that the highest growth factor from the years 2020-2020 continues for the entire period. The low growth scenario applies a rate of 3.0% from 2023 onwards. This is consistent with the approach adopted in 2018 and 2019.

Table 7-2 presents the quantity of soil and stone wastes and CDWs managed and collected nationally from 2012 to 2019. An analysis of this data shows the annual average growth of construction wastes from 2012 to 2019 is 18%.

During the start of this period construction wastes were at a low level, due to a depressed construction sector following the financial crisis. As the economy and construction activity has picked up construction wastes have grown quickly and significantly each year. This scale of annual growth is not anticipated each year from 2020-2029. It is also expected that the reuse of soils generated off-site from construction site will increase with increased use of the by-product mechanism and process. As a result, conservative growth factors have been

⁷ Table 2 of 89th Euroconstruct Summary Tables (2020)

selected to generate the high and low forecasts. The annual growth rate of construction wastes and trends need regular monitoring to ensure suitable rates are applied to future forecasts.

Stream	2012 (tonnes)	2013 (tonnes)	2014 (tonnes)	2015 (tonnes)	2016 (tonnes)	2017 (tonnes)	2018 (tonnes)	2019 (tonnes)
Total CDW	3,144,000	2,936,000	3,837,000	5,175,000	5,350,000	4,750,000	6,220,000	8,813,000
Soil & Stone	2,274,000	2,043,000	2,892,000	3,690,000	4,302,000	3,827,000	4,786,000	7,563,000

Table 7-2: CDW including Soil and Stone Waste Reported 2012 - 2019⁸

7.2 CDW and Soil Waste Forecasts

CDW and soil forecasts for high and low growth scenarios have been prepared and are included in **Appendix D**. For the purpose of this report the high growth scenario was selected as the more likely outcome. Combining the reported waste data and growth projections a CDW and soil waste forecast was generated. This data is presented in **Table 7-3** and **Figure 7-1**. The figure clearly shows the impact of Covid on the generation of CDW including soil and stone wastes. By the end of 2029 it is forecast that CDW will grow to a total of 10.1m tonnes. The corresponding forecast data for soil and stone waste is 8.7m tonnes by end of 2029.

Table 7-3 Forecasts f	for C&D Was	te includina 🕄	Soil and Stone	2019 - 2029 ⁹	(High Growth	Scenario)
					(

Unit - tonnes	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Total CDW	5,491,000	6,457,000	6,948,000	7,330,000	7,733,000	8,158,000	8,607,000	9,081,000	9,580,000	10,107,000
Soil Stone	4,712,000	5,541,000	5,962,000	6,290,000	6,636,000	7,001,000	7,386,000	7,792,000	8,221,000	8,673,000



Figure 7-1: Actual and Projected National C&D Waste Quantities including Soil and Stone

⁸ All figures are rounded to the nearest 1000

⁹ All figures are rounded to the nearest 1000

8 CONCLUSIONS & RECOMMENDATIONS

Since the first CDW report published in 2016 the capacity available to recover uncontaminated soil and stone waste has increased nationally. The 2016 report identified the need nationally for new licensed soil recovery capacity to come on stream and provide capacity for increasing volumes of soil wastes. New capacity has come on stream in the market. This type of capacity offers long-term and secure options for soil and stone wastes and is preferred. Permitted and registered capacity is more transient characterised by smaller facilities with lower levels of capacity.

Licensed capacity is most prominent in the EMR which has a healthy supply of active capacity and substantial new capacity due to come on stream. The Region contains 80% of the active national capacity. Capacity in the SR is growing with the latest data indicating the Region has 17% of the national capacity. The CUR has 3% of the national capacity. New licensed facilities are also due to come on stream. Future capacities (new applications and un-commenced operations) exceed 2.1m tonnes nationally, with 73% of this capacity planned for the EMR and 27% (580,000 tonnes) planned for Cork.

The urban centres of Dublin and Cork which are a focal point for development and construction are (or will be) well served by licensed capacity. This is in contrast to Limerick, Galway and Waterford cities which have no licensed soil recovery facilities or inert landfills in their counties. The available intake data indicates that current volumes would support the development of long-term licensed capacity in these areas to support planned infrastructure and housing developments.

Permitted and registered soil recovery facilities are more prevalent than licensed capacity with locations in almost every county.

Permitted lifetime capacity remaining at the end of 2018 was 3.6m tonnes which is substantial, providing short term supply for the market. 53% of this remaining capacity was located in the SR. 55% of the total permitted facilities in 2018 were located in the SR. In the absence of widespread licensed capacity, the SR is reliant on this type of facility capacity to meet demand. Intake at these facilities exceeded 800,000 tonnes in 2018 which is an indication that there is sufficient supply to support additional licensed facilities (noting there are new planned licensed capacities). The CUR had 11% of the total permitted facilities in 2018 with a low level of remaining lifetime capacity (377,000 tonnes) reported by year end.

The number of registered facilities in 2018 was 179 with 46% in the SR and 30% in CUR. By year end over 1m tonnes of registered lifetime capacity remained in the CUR, representing 60% of the remaining registered lifetime capacity nationally (~1.65m tonnes). The recorded intake reported by registered facilities in 2018 was 387,000 tonnes.

Nationally there were 325 registered and permitted facilities at the end of 2018, with an estimated 5.2m tonnes of lifetime capacity remaining by the end of the year. It is noted that the reported remaining capacity and intake data at permitted and registered facilities is an under-estimation due to incomplete rates of reporting. The policy within the regional waste management plans to preferentially support development of larger capacity facilities is acknowledged, and this will remain as on ongoing focus for the next generation of plan(s).

There is an increasing demand for inert landfill capacity as construction and development at brown field sites in urban centres increases. There were four inert facilities active nationally in 2018, all located in the EMR. Two of these facilities located in Fingal and Kildare, have significant remaining capacity. There are no active inert facilities in the other regions. The lack of such facilities in other regions is a concern, in particular the SR with three large cities and numerous urban renewable and docklands regeneration projects planned. There appears to be a real need for long term inert landfill capacity in this region.

The data shows that current capacity for the acceptance of non-hazardous soil wastes for disposal is limited and disposal intake at active facilities has reduced. Available void capacity at non-hazardous landfills is prioritised for other streams principally residual municipal waste. There is a need particularly in the short/medium term for additional non-hazardous capacity at exiting disposal facilities. However more innovative solutions to divert this waste stream from landfill need to be actively pursued to ensure a viable long term option that is better aligned to circular economy principles. Similarly the ongoing management of CDW fines needs examination. Currently over 200,000 tonnes (2018 data) of this waste are being accepted at active non-hazardous landfills principally for recovery purposes. The long-term viability of this approach and suitability of this material for recovery purposes at landfills is not certain. New solutions need to be identified for this stream focused on alternative approaches to treatment at landfill including harnessing the potential resource value of this stream. An examination should include assessing the suitability of solutions under Article 24 and Article 28 of EU Waste Framework Directive (Directive 2008/98/EC).

In 2018, ~75,000 tonnes of hazardous soil and stone materials were exported, principally to Norway. The lack of hazardous waste cells for the disposal of such material remains an issue. The amount of hazardous waste treated in Ireland grew to over 18,700 tonnes. This increase is due to an improvement in indigenous treatment of contaminated soils.

This current report has taken a wider view on treatment capacity for soil wastes compared to previous versions with analysis provided on uncontaminated, inert, non-hazardous and hazardous soil wastes. The type, location and scale of available capacity servicing each stream are identified and assessed as part of the analysis. There are clear regional imbalances with the EMR well served with available capacities and facilities accepting uncontaminated, inert and non- hazardous soil wastes. The SR and CUR are not as well served defined by a lack of licensed capacity for uncontaminated soil wastes, no dedicated inert waste facilities and no long-term non-hazardous landfill facilities. Future capacity analysis needs to build on the analysis at the regional level.

The preparation of this report relies on the annual waste statistics reported by the network of waste facilities that this study examines, as well as that reported by collectors of C&D waste. The value of this study is directly proportional to the accuracy of the data, as well as the completeness of the data, and the validation of the reported data is therefore critical. The quality of the data reported by the waste facility operators, as well as collectors of C&D waste, ranges from extremely poor to excellent. Overall, the validation exercise is extremely resource intensive, with the majority of the resources being taken up by the greater focus required on the poor-quality annual returns.

For this study, the biggest validation burden rests with the local authorities for the 325 permitted and registered sites. Significant improvements have been made in recent years including

- Ongoing development and improvement of the NWCPO portal,
- An in-depth quality control review of the Waste Facilities Register, coupled with improvements to the functionality and breadth of the register, which is expected to conclude in 2021,
- Inclusion of data quality into the National Waste Enforcement Priorities for 2020,
- Greater focus by the RWMPOs on the validation of construction and demolition data since 2019, and
- Establishment in 2019 of a Data Validation Working Group by the local authorities.

The NWCPO and the EPA have been working to harmonise the reporting obligations on waste operators, as well as aligning the validation effort by all authorities. The recently published Waste Action Plan for a Circular Economy acknowledges the challenges with respect to the reporting, collection and validation of waste statistics, and sets out a number of measures to address this.

The COVID pandemic will have a significant impact on the generation of CDW with an unexpected and severe drop in CDW and soil and stone wastes generated. Forecasts will be similarly affected. By 2027 soil and stone wastes generated are estimated to be 5.2m tonnes compared to 7m tonnes as forecast in 2019.

The determination of soil and stone materials as by-product is increasing, however the lack of a complete dataset is inhibiting a full analysis of this prevention mechanism. It is understood that the EPA have recently (August 2020) established a procedure to address the backlog of notifications.

8.1 **Recommendations**

Based on the analysis undertaken and conclusions of this study, the following recommendations are proposed:

- 1. It is recommended that the activities of the national Construction Waste Resource Group and sub-groups continues to maintain progress in improving management of CDW aligned with the ambition set out in the Waste Action Plan for a Circular Economy. Future activities are to include a strong focus on prevention, furthering the application of by-product and EoW instruments, as well as monitoring of treatment capacity and ongoing enforcement actions.
- 2. Notwithstanding the sectoral approach to a more circular economy, there is still a capacity gap for nonhazardous CDW streams, in particular soils, fines, rubble and concrete. It is recommended that additional disposal capacity is provided for this stream in the short to medium term to facilitate progress on key infrastructure under the National Development Programme.
- 3. It is recommended that the development of an online application process for waste facility permits and certificate of registrations, including class 5 & 6 recovery facilities, is considered by the regional waste management planning offices in consultation with other key stakeholders such as DECC, NWCPO and EPA.
- 4. It is recommended that construction and demolition waste management policy and targets are prioritised as part of the forthcoming National Waste Management Plan for a Circular Economy. These policies are to include an action plan for CDW fractions including setting sector specific targets building on the national soil and stone waste reports.
- 5. It is recommended that an examination of alternative treatment options for the management of CDW fines is undertaken to identify potential innovative treatment solutions, plus market or regulatory barriers, and in addition that consideration is given to the application of financial instruments to incentivise better management of CDW from site of origin through the treatment supply chain.
- 6. It is recommended that enforcement carried out by local authorities at permitted and registered soil recovery facilities is stepped up in line with National Priorities for 2021 to increase the level of scrutiny at these facilities. There needs to be greater consistency in enforcement of waste data reporting obligations to support better datasets and analysis for informing policy decisions.
- 7. It is recommended that a biennial update of available waste license, permitted and registered market capacity data is completed to track the current capacity status in each Region and allow engagement with central and local government, EPA, industry and other key stakeholders. This update is to include analysis of regional capacities for uncontaminated, inert and non-hazardous soil wastes.
- 8. It is recommended that developments that have demolition and excavation processes are conditioned in planning permissions to exhaust all reuse possibilities before sending to recovery or disposal facilities.
- 9. It is recommended that development plans for cities and counties include circular economy objectives for new developments that include reuse of soil/stone and other materials generated during the construction phase.

APPENDIX A - SOIL RECOVERY FACILITIES - LICENSED

Eastern Midlands Region

There are 15 soil recovery facilities in the EPA licensing system for the Eastern Midlands Region, the principal waste treatment activity at these sites is R5.

The annual active licenced capacity for the EMR, at end-2018, is 2,411,400 tonnes, whilst the annual authorised capacity is 3,951,400 tonnes - a 15% decrease since 2016. The authorised capacity includes the capacity of active and uncommenced sites. The decrease in authorised capacity in the EMR can be largely attributed to the separation out in this report of soil recovery capacity and inert landfill capacity.

The details of the facilities in the study area are presented in Table A-1.

One site has become active since the previous report - the Milverton Waste Recovery facility which can accept 400,000 tonnes of soil waste annually. Three facilities are awaiting regulatory approval including:

- Ballinderry GCHL Ltd.
- GLV Bay Lane Ltd.
- Kilsaran, Halverstown.

These sites are applying to activate 1,272,833 tonnes of annual capacity.

Two facilities have filled to capacity and are inactive:

- Fassaroe Waste Recovery Facility); and
- Murphy Concrete Manufacturing facility.

Six authorised facilities are currently not offering capacity to the market. These facilities are un-commenced and still have their full capacity to offer which amounts to a combined remaining capacity of 14.5 million tonnes.

The six authorised facilities which have not commenced operations are:

- Calary Quarry (Roadstone) was granted its licence in November 2019 and has an annual and total capacity of 300,000 and 3,2800,00 tonnes respectively.
- Clashford Recovery (Clashford Recovery Ltd.) was authorised in September 2019 and has an annual and total capacity of 170,000 and 805,200 tonnes respectively.
- Boherkill (Kildare Sand & Gravel) was authorised in February 2019 to accept 225,000 tonnes annually for a total capacity of 1,500,000 tonnes.
- Tullykane (Kilsaran Concrete) was authorised in January 2019 and has an annual and total capacity of 400,000 and 5,600,000 tonnes respectively.
- N&C Enterprises Limited (N&C Enterprises Limited) was granted its licence in August 2017 and has not change status since the previous report.
- Mullaghcrone Quarry (Roadstone) was granted its licence in April 2017 and has not changed status since the previous report.

Together these six sites have a potential annual capacity of 1,540,000 tonnes to serve the GDA market. The opening of these facilities may be delayed post Covid as a result of the impact of the temporary cessation of construction activities during the first half of 2020.

Eight operators are responsible for the 15 licenced soil recovery facilities in the EMR. Details of these eight operators in the Region are as follows:

- Roadstone Limited operates five sites with a total annual authorised capacity of 2.85 million tonnes, although 650,000 tonnes are currently not available (Fassaroe & Mullaghcrone);
- Kilsaran Limited is licensed for one site with a capacity of 400,000 that is not yet active. A second facility is at application stage with a proposed annual capacity of 300,000 tonnes;
- N&C Enterprises Limited operates one site with a total authorised capacity of 345,000;
- Behans Quarry operates one site with a total active capacity of 344,000 tonnes;
- Clashford Recovery Ltd. licensee of one site with a total authorised capacity of 170,000 tonnes;
- Kiernan Sand and Gravel Limited licensee of one site with a total active capacity of 167,400 tonnes;
- Kildare Sand & Gravel licensee of one site with a total authorised capacity of 225,000; and
- Murphy's Concrete Manufacturing Limited licensee of one site with an authorised capacity of 738,000 tonnes. It has no remaining capacity left to accept soil and stone waste material



Figure A-1: Annual Capacity by Operator

Facility Name / Licensee	Licence No.	Status	Local Authority	Annual Soil Waste Authorised Capacity	Remaining Capacity (lifetime) ¹⁰ (tonnes)	Expected Closure (Year)
GLV Bay Lane Limited	W0301-01	Application	Fingal	532,833	1,332,084	2023
Huntstown Inert Waste Recovery (Roadstone)	W0277-03	Active	Fingal	1,500,000	2,555,600	2051
Milverton Waste Recovery (Roadstone)	W0272-01	Active	Fingal	400,000	1,886,795	2025
Ballinderry GCHL Limited	W0298-01	Application	Kildare	440,000	1,234,335	2026
Blackhall Soil Recovery (Behans Land Restoration Limited)	W0247-01	Active	Kildare	344,000	122,400	2022
Boherkill - Kildare Sand & Gravel Limited (Kildare Sand & Gravel Limited)	W0295-01	Authorised Un- commenced	Kildare	225,000	1,500,000	2029
Kilsaran Halverstown (Kilsaran Concrete Unlimited Company)	W0300-01	Application	Kildare	300,000	1,200,000	2025
N&C Enterprises Limited (N&C Enterprises Limited)	W0292-01	Authorised Un- commenced	Kildare	345,000	1,500,000	2031
Clashford Recovery (Clashford Recovery Limited)	W0265-01	Authorised Un- commenced	Meath	170,000	805,200	Unknown
Kiernan Sand & Gravel (Kiernan Sand & Gravel Limited)	W0262-01	Active	Meath	167,400	938,100	2027
Murphy Concrete Manufacturing (Murphy Concrete Manufacturing Ltd)	W0151-01	Inactive	Meath	738,000	0	2018
Mullaghcrone Quarry (Roadstone)	W0278-01	Authorised Un- commenced	Meath	100,000	1,800,000	Unknown
Tullykane - Kilsaran Concrete (Kilsaran Concrete)	W0296-01	Authorised Un- commenced	Meath	400,000	5,600,000	2033
Calary Quarry (Roadstone Limited)	W0293-01	Authorised Un- commenced	Wicklow	300,000	3,280,000	2040
Fassaroe Waste Recovery (Roadstone)	W0269-01	Inactive	Wicklow	550,000	0	2017
Total (Authorised on Paper)				3,951,400	19,988,095	
Total (Active)				2,411,400	5,502,895	

Table A-1: Soil Recovery Facilities operating under a Waste Licence in the EMR

¹⁰ For active facilities the remaining capacity stated was reported at the end of 2018, for authorised uncommenced facilities and application stage facilities the remaining capacity is the full lifetime capacity.



Figure A-2: Active and Authorised Capacity by Local Authority- Eastern Midland Region

Table A-2 summarises the intake tonnages at active soil recovery facilities in EMR from 2014 to 2018. The following observations can be made relating to the most significant active sites:

- The Blackhall Soil Recovery Facility is authorised to accept 344,000 tonnes of soil wastes. In 2018, the Blackhall facility accepted 311,267 tonnes of soil waste materials.
- The Huntstown Facility which reached over 99% of its 750,000 capacity in 2016, then increased their annual capacity to 1,500,000, an intake reached in 2018.
- Kiernan Sand & Gravel Facility is still an active site with remaining capacity. It did not accept any waste in 2018 and in the preceding years accepted 67,457 and 51,052 tonnes in 2017 and 2016 respectively.
- The Milverton Facility become active in the latter half of 2018. It accepted 13,204 tonnes of soil waste in that portion of the year, which is 3% of their authorised annual capacity. This low intake may reflect the opening for only a small period during the 2018 calendar year.

Table A-2: Waste Intake Data for 2014- 2018 at Licensed Soil Recovery Facilities in the EMR

Facility Name	Status	Local Authority	Annual Licenced Capacity (tonnes)	Soil Intake 2014 (tonnes)	Non-Soil Intake 2014 (tonnes)	Total Intake 2014 (tonnes)	Soil Intake 2015 (tonnes)	Non-Soil Intake 2015 (tonnes)	Total Intake 2015 (tonnes)	Soil Intake 2016 (tonnes)	Non-Soil Intake 2016 (tonnes)	Total Intake 2016 (tonnes)	Soil Intake 2017 (tonnes)	Non-Soil Intake 2017 (tonnes)	Total Intake 2017 (tonnes)	Soil Intake 2018 (tonnes)	Non-Soil Intake 2018 (tonnes)	Total Intake 2018 (tonnes)
Blackhall Soil Recovery	Active	Kildare	344,000	378,756	18,000	396,756	389,919	10,041	399,960	384,237	13,425	397,662	377,653	21,937	399,590	311,267	12,641	323908
Fassaroe Waste Recovery	Active - soi capacity no available	lWicklow t	550,000	221,968	19,257	241,225	0	18,895	18,895	0	7,624	7,624	0	0	0	0	0	0
Huntstown Inert Waste Recovery	Active	Fingal	1,500,000	-	-	-	175,886	0	175,886	748,493	0	748,493	997,356	0	997,356	1,499,873	0	1,499,873
Kiernan Sand & Gravel	Active	Meath	167,400	-	-	-	-	-	-	50,632	420	51,052	66,341	1,116	67,457	0	0	0
Milverton Waste Recovery (Roadstone)	Active	Fingal	400,000	-	-	-	-	-	-	-	-	-	-	-	-	13,204	0	13,204
Murphy Concrete Manufacturing	Active - soi capacity no available	lMeath t	738,000	511,677	37,713	649,390	630,879	118,284	749,163	636,491	112,093	748,584	-	-	-	-	-	-
LoW Code																17 05 04	17 01 01, 17 01 02, 17 01 03, 17 01 07	
		1	1				1	1	1	1	1					1	1	
Total (Active) Soil	and stone Ca	pacity 2014	2,208,000	1,239,953	77,762	1,317,715	-	-	-	-	-	-	-	-	-	-	-	-
Total (Active) Soil	and stone Ca	pacity 2015	2,388,000	-	-	-	1,260,861	149,476	1,410,337	-	-	-	-	-	-	-	-	-
Total (Active) Soil	and stone Ca	pacity 2016	2,829,000	-	-	-	-	-	-	2,210,434	150,072	2,360,506	-	-	-	-	-	-
Total (Active) Soil	and stone Ca	pacity 2017	3,579,000	-	-	-	-	-	-	-	-	-	1,441,350	23,053	1,464,403	-	-	-
Total (Active) Soil	and stone Ca	pacity 2018	3,660,766	-	-	-	-	-	-	-	-	-	-	-	-	1,824,344	12,641	1,823,781

Southern Region

There are seven soil recovery facilities in the EPA licensing system for the Southern Region. The principal waste treatment activity at these sites is R5.

The active annual licenced capacity for the SR, at end-2018, is 525,000 tonnes, whilst the total authorised (active and uncommenced) annual licensed capacity is 1,105,000 tonnes. This active capacity is over four times greater than that reported in the 2016 report, while the authorised capacity is just under twice that of its 2016 counterpart. The authorised capacity represents the capacity belonging to both the active and uncommenced sites i.e. sites which have received their licences and still have some or all of their original capacity to offer to the market. **Table A-3** details the intake tonnages and capacity data for these facilities.

Facility Name / Licensee	Licence No	Status	Local Authority	Annual Licenced Capacity (tonnes)	Soil Intake 2016 (tonnes)	Soil Intake 2017 (tonnes)	Soil Intake 2018 ¹¹ (tonnes)	Remaining Capacity (lifetime) ¹² (tonnes)	Expected Closure (Years)
Middleton Facility	W0307- 01	Application	Cork	300,000		-	-	2,520,000	Unknown
Tulligmore Quarry Solutions Limited	W0255-02	Authorised - Not Commenced	Cork	280,000	-	-	-	5,600,000	2037
Lissard & Ballyhilloge, Mallow Contracts Ltd.	W0266-01	Inactive	Cork	50,000	20,259	6,268	-	0	2017
Garryhesta Pit Roadstone Limited.	W0299-01	Authorised - Not Commenced	Cork	300,000	-	-	-	1,276,043	Unknown
Grabbagh Quarry, Crystalhill Inns Ltd. CHI	W0260-01	Active	Kilkenny	125,000	12,866	107,284	65,169	325,483	Unknown
Brownswood Roadstone Ltd	W0280-01	Active	Wexford	400,000	-	10,420	139,808	1,179,772	Unknown /2024
Wexford Facility MSK Silversand Ltd.	W0305-01	Application	Wexford	80,000	-	-	-	1,354,400	2039
Total (Authorised)				1,105,000	33,125	123,972	204,977	8,381,298	
Total (Active)				525,000				1,505,255	

The Tulligmore Quarry Facility is authorised but has not commenced activity since its licence application was first authorised in 2013. This facility has a significant lifetime capacity in excess of 5.6m tonnes.

¹¹ All 2018 soil intake data is 17 05 04

¹² For active facilities the remaining capacity stated was reported at the end of 2018, for authorised uncommenced facilities and application stage facilities the remaining capacity is the full lifetime capacity.

Since the 2016 report the Mallow Facility in Ballyhilloge has become inactive after exhausting its capacity. Roadstone's Brownswood Facility commenced waste acceptance in 2017 and intake is growing.

The soil intake across the region's facilities has been growing significantly in recent years, increasing from 33,000 tonnes in 2016 to over 204,000 tonnes in 2018. Although demand has increased no facility has reached its annual capacity limit. The remaining capacity at Brownswood and Tulligmore facilities is significant. Similar to the Eastern Midlands Region, Roadstone are the largest operators in the Southern Region with 63% of the authorised (active and uncommenced) annual capacity and 76% of the active annual capacity.

The data shows the four authorised (active and uncommenced) waste licensed facilities have a remaining capacity of 8.4m tonnes with the two active facilities accounting for 1.5m tonnes of this amount.

Figure A-3 shows the geographic spread of licenced capacity in the region. Although the capacities are sufficient, the region's active licensed facilities have a poor geographical distribution at present. Both active sites are on the east of the Region immediately south of the EMR.



Figure A-3: Active and Authorised (Active and Uncommenced) Capacity by Local Authority- Southern Region

Connacht Ulster Region

There is one soil recovery facility in the EPA licensing system for the Connacht Ulster Region. This facility is active with an annual licenced capacity at end-2018 of 90,000 tonnes. The annual capacity for the region has not changed since the previous report published in 2016.

Table A-4 shows there has been a consistent decrease in the quantity of soil and stone material accepted at the facility each year.

Between 2016 and 2017 the facility also accepted 25,266 tonnes of 19 12 09 material that originated as sludge from drinking water treatment plants. In 2018, 213 tonnes of soil and stone were accepted at the facility.

Facility Name / Licensee	Licence No	Status	Local Authority	Annual Licenced Capacity (tonnes)	Soil Intake 2016 (tonnes)	Soil Intake 2017 (tonnes)	Soil Intake 2018 ¹³ (tonnes)	Remaining Capacity (lifetime) (tonnes)	Expected Closure (Years)
Lennon Quarries Ltd.	W0260-01	Active	Mayo	90,000	11,563	472	213	unknown	unknown

 $^{^{\}rm 13}$ All 2018 soil intake data is 17 05 04

APPENDIX B - SOIL RECOVERY FACILITIES - PERMITTED

Eastern Midland Region

At end-2018, forty-nine active permitted facilities were operating in the EMR mainly for Class 5 activity, and a small number operating to Class 6.

These facilities had a collective remaining capacity of 1.33 million tonnes out of a combined lifetime capacity of approximately 2.67 million tonnes. **Table B-1** details the intake tonnages and the capacity data for each facility.

There is a concentration of facilities in the areas surrounding Dublin, albeit no facilities in Dun Laoghaire Rathdown County Council.

Local	No. of	Permitted	Intake	Intake	Intake	Remaining	Intake	Completion	Remaining	Completion
Authority	Facilities	Capacity	2016	2017	2018 ¹⁴	Capacity	Reported	Rates %	Capacity	Rates %
	Class	tonnes	(tonnes)	(tonnes)	(tonnes)	tonnes	(No.	(Intake)	Reported	(Remaining
	5&6	(Lifetime)				(Lifetime)	Facilities)		(No.	Capacity)
			1						Facilities)	
Dublin City	1	24,999	No Data	5	300	-	1	100	1	100
Dun										
Laoghaire-	0	-	No Data	-	-	-	-	N/A	-	N/A
Rathdown										
Fingal	1	24,992	No Data	5,495	8,352	11,256	1	100	1	100
Kildare	3	99,000	111,011	19,772	33,602	3,000	3	100	1	33
Laois	1	71,500	No Data	23,709	14,364	43,092	1	100	1	100
Longford	3	-	468	18,515	4,993	68,710	3	100	-	-
Louth	5	475,000	17,980	27,612	98,422	222,722	5	100	5	100
Meath	15	951,056	48,341	220,892	228,678	665,602	15	100	13	87
Offaly	4	267,650	4,805	35,237	21,846	57,997	4	100	4	100
South Dublin	1	78,300	No Data	51,284	34,251	43,300	1	100	1	100
Westmeath	7	407,500	27,833	94,356	43,771	131,259	7	100	6	86
Wicklow	8	265,200	43,143	99,479	57,433	86,585	8	100	6	75
Total	49	2,665,197	253,581	596,354	546,012	1,333,523	49	100	39	80

Table B-1 Capacity (2018) and Intake (2016-2018) data at Permitted Soil Recovery Facilities EMR

With respect to the remaining capacity figure of 1,333,523 tonnes, it must be noted that 10 out of the 49 operators have not reported their remaining capacity figure, which is a breach of their annual reporting obligations. For this reporting indictor the data available indicates an 80% completion rate. Due to the incompleteness of the dataset, the remaining capacity figure is assumed to represent an under-reporting of supply to the market, at end-2018.

Comparison with the data reported previously, indicates that the remaining capacity has increased from 653,172 tonnes, at the end of 2016 to 1,333,523 tonnes at the end of 2018. The completion rate for reporting of remaining capacity has also increased from 31% to 80%.

The reported waste intake tonnage for 2018 at these facilities is approximately 546,012 tonnes combined. This represents an increase of approximately 300,000 tonnes from the previous study where no intake data for 2016 was reported or made available for 25% of the facilities.

¹⁴ All material recorded is 17 05 04

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The following additional observations are made:

- The WFP capacity is shared to a small degree with facilities authorised for class 6 activity (non-soil and stone). The extent of which class 6 activity reduces the capacity to accept soil and stone material is not clear. The majority of activity is understood to be class 5, dealing with soil and stone material.
- Although the waste facility permit data reporting has reached 100% in 2018 for intake, the remaining capacity is under-reported. Consequently, an accurate figure for the region's entire remaining capacity is not known. This impacts on the value of the analysis.

Southern Region

At end-2018, a total of 80 active permitted facilities have been identified in the SR mainly authorised for class 5 activity, with a small number of class 6 operations.

These facilities had a collective remaining capacity of 1.92 million tonnes out of a collective lifetime capacity of approximately 5.75 million tonnes. This is an increase of more than 1.2 million tonnes from 2016 data - due to a combination of the opening of new facilities and improved reporting.

Table B-2 details the intake tonnages and capacity data for each facility. In terms of location, the facilities are concentrated in County Cork with 40% located in the County. Only 6.25% of the facilities in the SR are serving the large urban centres of Limerick and Waterford (three facilities are located in Limerick and two in the Waterford functional areas). There are no facilities located in the Cork City Council functional area. The high concentration of facilities in County Cork and low density of facilities in Waterford/Limerick continues a trend reported for the 2016 data.

With respect to the remaining capacity of 1,919,779 tonnes, as at the end of 2018, County Cork holds 36% while Wexford holds over 39%.

Only 66 of the 80 operators in SR reported their remaining capacity as part of their annual return, an 83% completion rate. The other 14 operators have not reported this information which is a breach of their annual reporting obligations. Therefore, the total remaining capacity reported for the SR is somewhat underestimated. However, this 83% rate of reporting is higher than the previously reported 33% in 2016.

The reported waste intake tonnage in 2018 at these facilities was approximately 820,035 tonnes. This is an increase of 458,045 tonnes since 2016. Whereas less than half of the operators reported their intake in 2016, 79 of the 80 operators reported an intake for 2018.

Table B-2 Capacity (2018) and Intake Data (2016 – 2018) at Permitted Soil Recovery Facilities SR

Local Authority	No. of Facilities Class 5&6	Permitted Capacity tonnes (Lifetime)	Intake 2016 tonnes	Intake 2017 tonnes	Intake 2018 ¹⁵ tonnes	Remaining Capacity tonnes (Lifetime)	Intake Reported (No. Facilities)	Completion Rates % (Intake)	Remaining Capacity Reported (No. Facilities)	Completion Rates % (Remaining Capacity)
Carlow	4	297,500	31385	38,229	55,664	30,000	4	100	3	75
Clare	4	175,000	14042	48,615	10,750	-	4	100	2	50
Cork City	-	-	0	19,264	-	-	-	-	-	
Cork	32	1,818,679	186894	211,425	279,099	693,716	32	100	28	88
Kerry	13	1,607,695	58486	100,061	83,771	289,265	13	100	11	85
Kilkenny	2	250,000	1100	20,375	16,344	30,000	2	100	2	100
Limerick City & County	3	200,000	12516	66,520	38,725	81,750	3	100	2	67
Tipperary	3	155,000	30186	38,366	18,822	26,931	2	67	2	67
Waterford City & County	/ 2	50,000		28,809	22,058	19,700	2	100	1	50
Wexford	17	1,195,245	19470	107,603	294,802	748,417	17	100	15	88
Total	80	5,749,119	354,079	679,266	820,035	1,919,779	79	99	66	83

¹⁵ All material recorded is 17 05 04

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Connacht Ulster Region

At end-2018, a total of seventeen active permitted facilities have been identified in the CUR mainly for class 5 activity with a small number of class 6 operations.

These facilities have a collective remaining capacity of 377,000 tonnes out of a combined lifetime capacity of 685,000 tonnes. **Table B-3** details the intake tonnages and capacity data for each facility.

23.5% of the region's facilities are located in Counties Mayo, Cavan, and Galway. Local authorities Sligo, Donegal, Galway City, Roscommon and Monaghan hold the remaining 30% of the region's active permitted facilities for soil recovery activities. County Leitrim has no active permitted capacity. This is a much-improved geographic spread than reported for 2016.

Only ten of the seventeen facilities have reported their remaining capacity which totals 377,170 tonnes. This represents a 59% completion rate for the region.

The reported waste intake tonnage for 2018 was approximately 48,595 tonnes which is a decrease of over 50% from 105,932 tonnes in 2016 despite the improved reporting rates recorded in 2018.

Table B-3 Capacity (2018) and Intake Data (2016 - 2018) at Permitted Soil Recovery Facilities CUR-

Local Authority	No. of Facilities Class 5&6	Permitted Capacity tonnes (Lifetime)	Intake 2016 tonnes	Intake 2017 tonnes	Intake 2018 ¹⁶ tonnes	Remaining Capacity tonnes (Lifetime)	Intake Reported No. Facilities	Completi on Rates % (Intake)	Remaining Capacity Reported No. Facilities	Completion Rates % (Remaining Capacity)
Cavan County	4	48,500	3,406	4,519	1,200	32,300	4	100	2	50
Donegal County	1	-	No Data	8,757	2,480	-	1	100	-	-
Galway City	1	100,000	No Data		7,774	100,000	1	100	1	100
Galway County	4	222,500	No Data	9,350	7,730	186,394	3	75	3	75
Leitrim County	-	-	No Data	580	-	-	-	-	-	-
Mayo County	4	66,000	4,151	41,293	610	48,351	4	100	1	25
Monaghan County	1	49,950	No Data	14,638	21,062	-	1	100	1	100
Roscommon County	1	100,000	No Data	18,753	7,739	8,000	1	100	1	100
Sligo County	1	98,375	98,375		-	2,125	1	100	1	100
Total	17	685,325	105,932	97,890	48,595	377,170	16	94	10	59

¹⁶ All material recorded is 17 05 04

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APPENDIX C - SOIL RECOVERY FACILITIES - REGISTERED

Eastern Midlands Region

At end-2018, the NWCPO lists 49 facilities operating under certificates of registration in EMR for class 5 & 6 activities.

These facilities have a collective remaining capacity of 188,288 tonnes out of a collective lifetime capacity of approximately 394,934 tonnes. **Table C-1** details the intake tonnages and capacity data for each facility

The table shows 40% of the sites are located in Longford. Counties Dublin, Meath, Wicklow and Kildare each have five or four facilities. All other counties have three or less.

The following observations are made:

- Only 21 of the 43 CoR facilities reported remaining capacity data, a reporting rate of 48%. Combined, this data totalled 188,288 tonnes.
- Not all facilities listed are open to the market as merchant facilities. Some facilities are opened to support a particular operator or to suit a particular local project, e.g. GAA and horse racing clubs. These facilities are unlikely to provide any meaningful capacity to the construction industry.

Table C-1 Capacity (2018) and Intake Data (2016 - 2018) at Registered Facilities EMR

Local Authority	No. of Facilities Class 5&6	Registered Capacity tonnes (Lifetime)	Intake 2016 tonnes	Intake 2017 tonnes	Intake 2018 ¹⁷ tonnes	Remaining Capacity tonnes (Lifetime)	Intake Reported (No. facilities)	Completion Rates % (Intake)	Remaining Capacity Reported (No. facilities)	Completion Rates % (Remaining Capacity)
Dublin City	1	24,999	-	5	1,069	-	1	100	1	100
Dun Laoghaire-Rathdown	0	-	-	-	-	-	-	-	-	-
Fingal	1	24,943	-	5,495	-	24,943	1	100	1	100
Kildare County	4	38,500	12,825	19,772	1,450	37,680	4	100	2	50
Laois County	3	29,000	5,800	23,709	1,175	1,413	3	100	2	67
Longford County	17	107,500	No Data	18,515	27,393	52,140	14	82	6	35
Louth County	3	25,000	No Data	27,612	2,869	-	1	33	1	33
Meath County	5	50,492	48,341	220,892	26,162	31,530	3	60	3	60
Offaly County	2	50,000	70,975	35,237	12,087	26,861	2	100	2	100
South Dublin	1	10,000	No Data	51,284	5,000	-	1	100	1	100
Westmeath County	1	10,000	No Data	60,229	6,506	-	1	100	1	100
Wicklow County	5	24,500	7,540	99,479	19,013	13,721	5	100	1	20
Total	43	394,934	145,481	562,227	102,724	188,288	36	84	21	49

¹⁷ All intake material recorded is 17 05 04

Southern Region

At end-2018, 83 facilities are recorded as operating under certificates of registration in SR for class 5 & 6 activities.

These facilities have a collective remaining capacity of 454,000 tonnes out of a collective lifetime capacity of approximately 1.3m tonnes. The remaining capacity was reported by 54 of the 83 facilities (65%) and so it is likely an underestimate of the actual total.

Table C-2 details the intake tonnages and capacity data for each facility

There is a reasonable geographical spread of facilities across the region. Clare, Cork, Kerry and Waterford each have 10 or more facilities. Carlow and Cork City have one and two sites respectively.

The total reported waste intake tonnage at these facilities is 189,000 tonnes in 2018. This is an increase from the previous total of 147,000 tonnes in 2016. The 2018 data is from 78 facilities, representing a completion rate of 94%.

The following observations are made:

- Not all facilities listed are open to the market as merchant facilities. Some facilities may have been opened to support a particular local project and the authorisation obtained to allow a relatively small area of land to be improved. These facilities do not provide any meaningful capacity to the construction industry.
- Similar to waste facility permit data, the CoR remaining capacity is underestimated.

Table C-2 Capacity (2018) and Intake Data (2016 – 2018) at Registered Facilities SR

Local Authority	No. of Facilities Class 5&6	Registered Capacity (tonnes) (Lifetime)	Intake 2016 (tonnes)	Intake 2017 (tonnes)	Intake 2018 ¹⁸ (tonnes)	Remaining Capacity Tonnes (Lifetime)	Intake Reported (No. facilities)	Completion Rates % (Intake)	Remaining Capacity Reported (No. facilities)	Completion Rates % (Remaining Capacity)
Carlow	1	-	14,515	38,229	3,720	15,000	1	100	-	-
Clare	16	157,500	5,350	48,615	24,515	43,600	13 81		9	56
Cork City	2	-	No Data	19,264	-	-	2	100	-	-
Cork	14	442,800	19,846	210,425	33,754	71,425	14	100	11	79
Kerry	10	270,700	14,614	100,061	35,079	127,190	10	100	9	90
Kilkenny	4	35,000	800	20,375	2,000	24,500	4	100	2	50
Limerick City and County	8	54,412	No Data	66,520	20,356	25,534	7	88	3	38
Tipperary	5	50,920	8,655	38,366	6,578	34,360	5	100	4	80
Waterford City and County	14	141,600	71,154	28,809	52,570	47,700	13	93	9	64
Wexford	9	131,750	12,070	107,603	10,320	64,250	9	100	7	78
Total	83	1,284,682	147,004	678,266	188,892	453,559	78	94	54	65

¹⁸ All intake material recorded is 17 05 04

Connacht Ulster Region

At end-2018, the NWCPO lists 53 facilities operating under certificates of registration in CUR for class 5 & 6 activity.

These facilities have a collective remaining capacity of 1 million tonnes out of a collective lifetime capacity of approximately 1.2m tonnes.

Table C-3 details the intake tonnages and capacity data for each facility.

In terms of location, approximately 50% of the sites are located in Mayo. Counties Donegal, Leitrim, Roscommon, Sligo and Galway City all have two or less facilities. There is a poor geographic spread of these facilities across the CUR, with strong concentrations in Cavan and Mayo with 71% of the facilities being located in these two local authority areas.

Table C-3 shows 35 of the 53 operators in the study area responded to the question on remaining capacity as part of their annual return. The remaining operators have not reported this information which is a breach of their annual reporting obligations. For this indicator the reported data represents a 66% completion rate. 83% of the region's reported capacity resides in Counties Mayo and Cavan.

The reported waste intake tonnage for the facilities in CUR is approximately 95,000 tonnes in total. This data was reported by 50 of the 53 facilities (94% report completion rate).

Table C-3 Capacity (2018) and Intake Data (2016 - 2018) at Registered Facilities CUR

Local Authority	No. of Facilities Class 5&6	Registered Capacity Tonnes (Lifetime)	Intake 2016 tonnes	Intake 2017 tonnes	Intake 2018 ¹⁹ tonnes	Remaining Capacity tonnes (Lifetime)	Intake Reported (No. facilities)	Completio n Rates % (Intake)	Remaining Capacity Reported (No. facilities)	Completion Rates % (Remaining Capacity)
Cavan County	12	140,792	140792	4,519	35,165	48,055	12	100	8	67
Donegal County	2	-	0	8,757	5,688	58,000	1	50	-	-
Galway City	0	-	-	-	-	-	-	-	-	-
Galway County	4	45,000	45,000	9,350	1,752	43,280	2	50	2	50
Leitrim County	1	22,450	-	580	1,644	22,450	1	100	1	100
Mayo County	26	876,950	66,500	41,293	16,766	620,457	26	100	18	69
Monaghan County	4	26,750	26,750	14,638	11,376	-	4	100	2	50
Roscommon County	2	32,400	32,400	18,753	14,550	213,000	2	100	2	100
Sligo County	2	30,116	-		8,440	-	2	100	2	100
Total	53	1,174,458	311442	97,890	95,380	1,005,242	50	94	35	66

¹⁹ All intake material recorded is 17 05 04

APPENDIX D –CONSTRUCTION AND DEMOLITION WASTE PROJECTIONS 2019-2029

The following explanatory note is provided to support the data presented below in **Tables D-1-D-4**.

- The methodology for generating a revised set of Construction and Demolition Waste (CDW) projections is consistent with the previous approach published in 2019.
- High and low growth projections have been prepared using the latest available waste data and construction growth output factors.
- Published waste data for years 2012-2018 and unpublished 2019 waste collection data (validated) have been used in the projections.
- Growth factors from the 89th Euroconstruct Report (Ireland) have been applied to forecast data for the years 2020 to 2022. This is consistent for both sets of projections (high and low growth).
- From 2023 onwards the high growth projections apply a growth rate of 5.5% per annum, this aligns with previously published forecasts. This is reasonable and more suitable than assuming that the highest growth factor from the 89th Euroconstruct Report for years 2020-2020 continues for the entire period. This approach is further supported by a predicted cooling of the Irish economy compared to recent growth rates.
- The low growth scenario applies a rate of 3.0% from 2023 onwards. This is consistent with the approach adopted in 2018 and 2019.
- The 2019 data made available by the NWCPO includes a figure for total CDW and separately soil waste (17 05 04). Non-hazardous waste is calculated as 15% of the total soil waste. The quantity of inert waste is then taken as the remaining soil waste which is not accounted for as hazardous (collected) or nonhazardous (factored) material.
- The latest (2020) high and low growth projections are marginally greater than the forecasts generated in 2019. Comparing these forecasts for 2028, the higher growth series is just 21,000 tonnes greater than the previously predicted value (9.6m tonnes). A similar trend is noted for the low growth series with the latest data 214,000 tonnes greater than the previous forecast (8.1m tonnes).
- By-products are an increasingly important factor when preparing CDW projections. Data provided by the EPA shows a significant tonnage of potential soil and stone by-product materials for 2017, 2018 & 2019. A final determination on this tonnage has not been completed which undermines the reliability of these numbers.
- The absence of verified data on by-products is influencing the projections and without data certainty the size of the total market for soils (wastes and by-product) is unclear.
- Assumed soil, stone and concrete by-product amounts have been applied from 2020 to 2029 to complete the projected dataset. The reliability of such assumptions is uncertain as final determinations on notifications from 2015 2019 are incomplete.

CDW REPORT

Table D-1: CDW Forecasts High Growth Scenarios

Link Crowth Projections 2010 Date			Published	Data (excludir	ng 2019 data w	hich is unpublished)		CDW Projections to 2029									
High Growth Projections 2019 Data	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
TOTAL CONSTRUCTION OUTPUT (Euroconstruct Projections)	85.9%	102.5%	110.4%	106.8%	115.8%	116.3%	108.7%	105 .6%	62.3%	117.6%	107.6%	105.5%	105.5%	105.5%	105.5%	105.5%	105.5%	105.5%
Total CDW Treated/Collected for Year	3,144,000	2,935,808	3,836,800	5,174,700	5,350,400	4,749,599	6,219,541	8,813,373	5,490,731	6,457,100	6,947,840	7,329,971	7,733,119	8,158,441	8,607,155	9,080,549	9,579,979	10,106,878
Soil Wastes	2,273,900	2,043,100	2,891,500	3,689,500	4,301,500	3,827,106	4,786,162	7,562,758	4,711,598	5,540,840	5,961,943	6,289,850	6,635,792	7,000,761	7,385,802	7,792,021	8,220,583	8,672,715
Other 17 (excl 170101 and Soil Wastes)						695,977	777,889	836,730	768,702	903,994	972,698	1,026,196	1,082,637	1,142,182	1,205,002	1,271,277	1,341,197	1,414,963
Concrete (170101)						226,516	655,490	413,886	384,351	451,997	486,349	513,098	541,318	571,091	602,501	635,638	670,599	707,481
Non-Hazardous (15% of Soil Wastes)						574,066	717,924	1,134,414	706,740	831,126	894,291	943,478	995,369	1,050,114	1,107,870	1,168,803	1,233,087	1,300,907
Hazardous						62,376	61,505	57,656	47,116	55,408	59,619	62,899	66,358	70,008	73,858	77,920	82,206	86,727
Inert						3,190,664	4,006,733	6,370,688	3,957,743	4,654,305	5,008,032	5,283,474	5,574,065	5,880,639	6,204,074	6,545,298	6,905,289	7,285,080
Table D.O. High Onewith Drainsting	(0040 and	0040	.)															

 Table D-2: High Growth Projections (2018 and 2019 series) Comparison

Analysis with Previous Projections	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Total CDW Collected for Year	3,144,000	2,935,808	3,836,800	5,174,700	5,350,400	4,749,599	6,219,541	8,813,373	5,490,731	6,457,100	6,947,840	7,329,971	7,733,119	8,158,441	8,607,155	9,080,549	9,579,979	10,106,878
Previous projections (2019)						4,749,400	5,600,000	6,000,000	6,400,000	6,600,000	6,900,000	7,300,000	7,700,000	8,100,000	8,600,000	9,100,000	9,600,000	
Difference						199	619,541	2,813,373	-909,269	-142,900	47,840	29,971	33,119	58,441	7,155	-19,451	-20,021	
Byproducts Soil and Stone				511,645	906,118	1,567,958	3,645,518	4,948,707	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Byproducts Concrete				2,736	14,510	2,751	36,484	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000

Table D-3: CDW Forecasts Low Growth Scenarios

Low Growth Projections 2019 Data	Published Data (Excluding 2019 data which is unpublished)								CDW Projections to 2029									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
TOTAL CONSTRUCTION OUTPUT (Euroconstruct Projections)	85.900%	102.500%	110.400%	106.8%	115.8%	116.3%	108.7%	105.6%	62.3%	117.6%	107.6%	103.0%	103.0%	103.0%	103.0%	103.0%	103.0%	103.0%
Total CDW Collected for Year	3,144,000	2,935,808	3,836,800	5,174,700	5,350,400	4,749,599	6,219,541	8,813,373	5,490,731	6,457,100	6,947,840	7,156,275	7,370,963	7,592,092	7,819,855	8,054,450	8,296,084	8,544,966
Soil Wastes	2,273,900	2,043,100	2,891,500	3,689,500	4,301,500	3,827,106	4,786,162	7,562,758	4,711,598	5,540,840	5,961,943	6,140,802	6,325,026	6,514,776	6,710,220	6,911,526	7,118,872	7,332,438
Other 17 (excl 170101 and Soil Wastes)						695,977	777,889	836,730	768,702	903,994	972,698	1,001,878	1,031,935	1,062,893	1,094,780	1,127,623	1,161,452	1,196,295
Concrete (170101)						226,516	655,490	413,886	384,351	451,997	486,349	500,939	515,967	531,446	547,390	563,812	580,726	598,148
Non-Hazardous (15% of Soil Wastes)						574,066	717,924	1,134,414	706,740	831,126	894,291	921,120	948,754	977,216	1,006,533	1,036,729	1,067,831	1,099,866
Hazardous						62,376	61,505	57,656	47,116	55,408	59,619	61,408	63,250	65,148	67,102	69,115	71,189	73,324
Inert						3,190,664	4,006,733	6,370,688	3,957,743	4,654,305	5,008,032	5,158,273	5,313,022	5,472,412	5,636,585	5,805,682	5,979,853	6,159,248

Table D-4: Low Growth Projections (2018 and 2019 series) Comparison

Analysis with Previous Projections	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Total CDW Collected for Year	3,144,000	2,935,808	3,836,800	5,174,700	5,350,400	4,749,599	6,219,541	8,813,373	5,490,731	6,457,100	6,947,840	7,156,275	7,370,963	7,592,092	7,819,855	8,054,450	8,296,084	8,544,966
Previous projections (2019)						4,749,400	5,600,000	6,000,000	6,400,000	6,600,000	6,800,000	7,000,000	7,200,000	7,400,000	7,600,000	7,800,000	8,100,000	
Difference						199	619,541	2,813,373	(909,269)	(142,900)	147,840	156,275	170,963	192,092	219,855	254,450	196,084	
Byproducts Soil and Stone				511,645	906,118	1,567,958	3,645,518	4,948,707	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Byproducts Concrete				2,736	14,510	2,751	36,484	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000

Colour Legend

2012 - 2018 Published/Reported data Projection figures to 2028. Growth Factor from 85th Euroconstruct Report	Growth Factors from previous Euroconstruct Reports Growth Factors from 89 th Euroconstruct Report (applied)
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Assumed % growth factors 2022 to 2029.

Assumed by-product amounts

Table D-5 sets out the construction output factors reported by the 87th and 89th Euroconstruct Reports. An updated report is published every six months although significant changes to the report content are yearly. Following consultation with the report author it was recommended to use the growth factors in the 89th report for years 2020-2022 (there is an overlap in this period with previously published outlook factors so clarification was required).

Table D-5: Reported Construction Output Factors												
Report	2015	2016	2017	2018	2019	2020	2021	2022				
87 th Euroconstruct Report	6.8%	15.8%	16.3%	8.7%	8.0%	6.0%	2.5%	-				
89 th Euroconstruct Report	-	10.2%	13.6%	12.1%	5.6%	-37.7%	17.6%	7.6%				

Comparing the two datasets the following observations are noted:

- The 89th Euroconstruct Report construction output factor for 2018 was 3.4 percentage points more than what was predicted previously (8.7%) in the 87th Report edition.
- The forecast for 2019 has decreased by 2.4 percentage points to 5.6%, where it was previously 8.0%.
- The outlook for 2020, as predicted in the 87th Report has decreased by 43.7 percentage points to -37.7% (due to the impact of Covid-19).
- The outlook for construction output for 2021 shows a rise from the forecasted 2.5% to 17.6% (this increase is due to expected positive economic and sector growths as the impact of Covid-19 eases compared to 2020).
- The 87th Report previously predicted the annual growth of construction output at an average of 5.5% from 2019 to 2021. The 89th Report predicts an annual average of -4.2% over the three-year period, from 2020 to 2022 (due to Covid).
- The annual average growth of construction waste from 2012 to 2019 using actual data is 18%.

Summary

Table D-6 summarises the Total CDW and Soil Waste projections for the period 2019- 2029 indicating the volumes anticipated and projected market growth over the period.

There are many influencing factors which can impact upon these estimates. These include construction output, annual capital expenditure, market slowdown, Brexit, COVID-19, by-products and end of waste.

The impact of these factors is not certain and there is a continued need to monitor and report annually on CDW data and update the projections.

Table D-6: Estimated High and Low Projections for Total CDW and Soil Wastes												
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029		
ligh Growth Projections (tonnes)												
Total CDW	5,490,000	6,460,000	6,950,000	7,330,000	7,730,000	8,160,000	8,610,000	9,080,000	9,580,000	10,110,000		
Soil Waste	4,710,000	5,540,000	5,960,000	6,290,000	6,640,000	7,000,000	7,390,000	7,790,000	8,220,000	8,670,000		
Low Growth Projections (tonnes)												
Total CDW	5,490,000	6,460,000	6,950,000	7,160,000	7,370,000	7,590,000	7,820,000	8,050,000	8,300,000	8,540,000		
Soil Waste	4,710,000	5,540,000	5,960,000	6,140,000	6,330,000	6,510,000	6,710,000	6,910,000	7,120,000	7,330,000		
Projection Ranges (unit – mtonnes)												
Total CDW	5.5m	6.5m	7m	7.2m-7.3m	7.4m-7.7m	7.6m-8.2m	7.8m-8.6m	8.1m-9.1m	8.3m-9.6m	8.5m-10.1m		
Soil Waste	4.7m	5.5m	6m	6.1m-6.3m	6.3m-6.6m	6.5m-7m	6.7m-7.4m	6.9m-7.8m	7.1m-8.2m	7.3m-8.7m		



Figure D-1 Total CDW Projections to 2029

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Figure D-2 Soil Waste Projections to 2029

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