

East Meath - North Dublin Grid Upgrade Environmental Impact Assessment Report (EIAR): Volume 2

Chapter 16 – Waste

EirGrid

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16. Waste

16.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) has considered the likely waste and resource impacts associated with the Construction and Operational Phases of the East Meath to North Dublin Grid Upgrade (hereafter referred to as the Proposed Development). A full description of the Proposed Development is presented in Chapter 4 (Proposed Development Description) of this EIAR.

The likely impacts associated with the Proposed Development during the Construction and Operational Phase have been assessed (see Section 16.4). Site clearance, excavation and construction are activities which will take place during the Construction Phase which are likely to generate surplus materials. In recent years there has been a shift in focus on best practice waste management and waste minimisation in construction and an increase in the reuse of construction by-products in projects.

The assessment has been carried out according to best practice and guidelines relating to waste and resources assessment (as listed in Section 16.2.2) and having regard to other similar scale projects.

The following aspects of the Proposed Development are particularly relevant to the resource and waste assessment:

- Throughout the design of the Proposed Development, consideration has been given to the minimisation of resource usage and to the generation of waste through retention of material on site and re-use;
- During construction, material usage will be minimised and material will be reused where possible. Waste will be generated from site clearance and excavation; and
- During operation, maintenance waste is likely to be generated from maintenance works associated with the Proposed Development.

The use of resources and the potential for waste and surplus materials to be generated during site clearance, excavation, construction and operation of the Proposed Development are assessed. The potential environmental effects of the use of resources and the generation and management of waste arising are examined in the context of the existing local and regional waste management environment. Mitigation measures are identified, where necessary, to reduce the impact of the use of resources and generation of waste by the Proposed Development during the Construction and Operational Phases.

16.2 Methodology

16.2.1 Study Area

The study area with regards to waste and resources comprises all areas and activities within the Planning Application Boundary, including both permanent and temporary land take boundaries.

Waste from the Proposed Development could be accepted at sites nationally and internationally (that are suitably licensed or permitted for the waste volume and type), for treatment, recovery and disposal. However, given that waste management planning in Ireland takes place on a regional basis, the study area for waste treatment, recovery and disposal comprises the Eastern-Midlands Waste Region (EMWR), and is broadened out to a national study area as required.

16.2.2 Relevant Guidelines, Policy and Legislation

The following guidelines and policy documents were considered and complied with when undertaking the waste and resources assessment:

- The Environmental Protection Agency (EPA) Guidelines on the Information to be Contained in Environmental Assessment Reports (hereafter referred to as the EPA Guidelines) (EPA 2022);
- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission 2017);
- Institute of Environmental Management and Assessment (IEMA) Guide to: Materials and Waste in Environmental Impact Assessment – Guidance for a Proportionate Approach (hereafter referred to as the IEMA Guidelines) (IEMA 2020);
- Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects (EPA 2021a);
- The Circular Economy Programme 2021-2027 (EPA 2021b);
- A Waste Action Plan for a Circular Economy – Ireland’s National Waste Policy 2020-2025 (draft) (hereafter referred to as the National Waste Action Plan) (Department of Communications, Climate Action and Environment (DCCAE) 2020);
- National Waste Management Plan for a Circular Economy 2024-2030 (Regional Waste Management Offices 2024);
- Eastern – Midlands Region Waste Management Plan 2015-2021 (EMWR 2015);
- Construction & Demolition Waste - Soil and Stone Recovery / Disposal Capacity – Update Report 2020 (Regional Waste Management Offices 2020);
- EU Construction & Demolition Waste Protocol and Guidelines (European Commission 2018);
- Transport Infrastructure Ireland (TII) The Management of Waste from National Road Construction Projects. GE-ENV-01101 (TII 2017);
- The Use of Road Tar in Ireland and Research of Treatment Protocols. RE-PAV-00002 (TII 2023);
- Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations 2011 (EPA 2019);
- A New Circular Economy Action Plan for a Cleaner and More Competitive Europe (European Commissions 2020); and
- Waste Classification – List of Waste and Determining if Waste is Hazardous or non-Hazardous EPA (EPA 2018).

The following directives and legislation were applied when undertaking the waste and resources assessment:

- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (hereafter referred to as the Waste Framework Directive);
- S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020 (hereafter referred to as the Waste Directive Regulations);
- S.I. No. 86/2008 - Waste Management (Facility Permit and Registration) Regulations 2008, as amended;
- S.I. No. 821/2007 - Waste Management (Facility Permit and Registration) Regulations 2007;
- S.I. No. 820/2007 - Waste Management (Collection Permit) Regulations 2007, as amended;
- S.I. No. 419/2007 - Waste Management (Shipments of Waste) Regulations 2007;
- Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (hereafter referred to as the Landfill Directive);
- Number 26 of 2022 – Circular Economy and Miscellaneous Provisions Act 2022; and

- Number 10 of 1996 - Waste Management Act 1996 Revised (hereafter referred to as the Waste Management Act 1996 (as amended)).

16.2.2.1 Sustainable Resource and Waste Management Principles

16.2.2.1.1 Circular Economy

More efficient use of resources is the primary goal of sustainable resource and waste management. In order to achieve this goal there is a need to move away from the traditional linear economy model to a circular economy model, where the value of products, material and resources is maintained in the economy for as long as possible, such that the generation of waste is minimised. Image 16.1 illustrates the circular economy model.

The National Waste Action Plan (DCCA 2020) notes that:

'In a circular economy the value of products and materials is maintained for as long as possible; waste and resource use are minimised, and resources are kept within the economy when a product has reached the end of its life, to be used again and again to create further value.'

The European Union (EU) Circular Economy Action Plan (European Commission 2020) notes that:

'the EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade.'

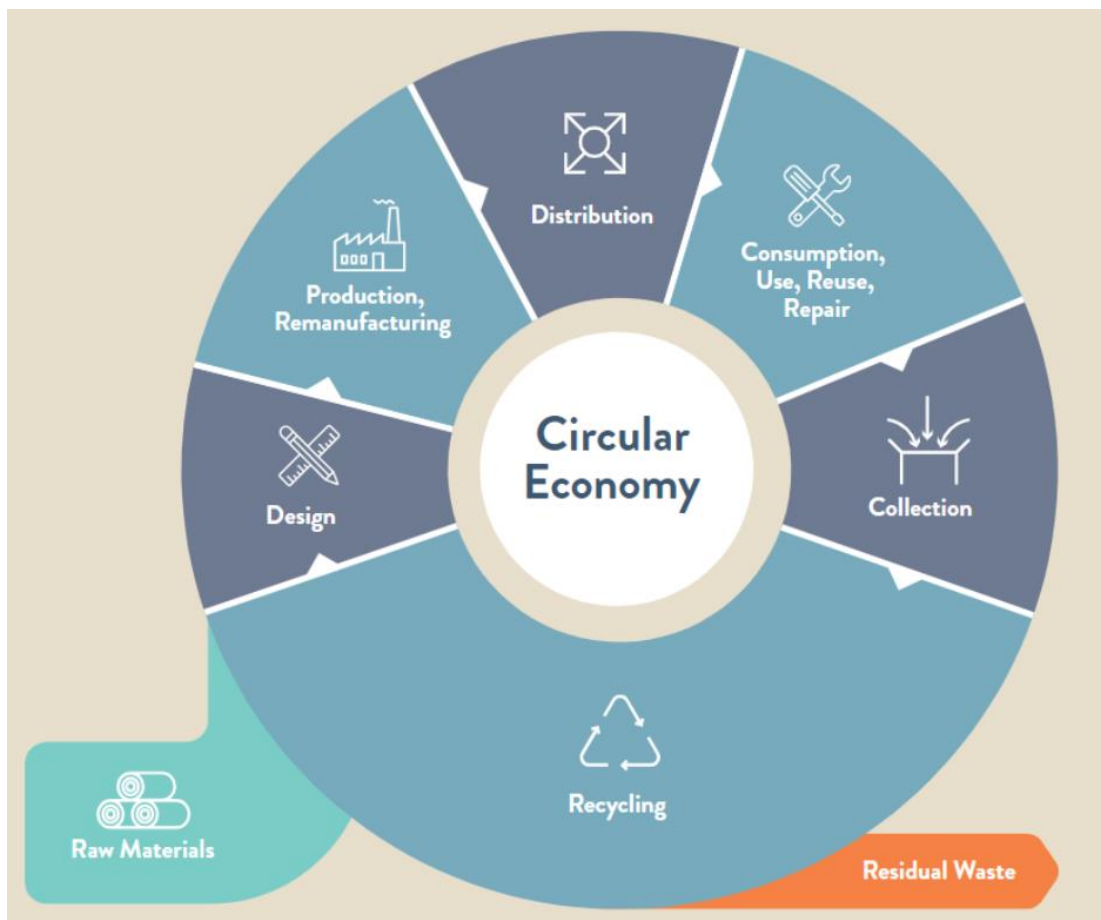


Image 16.1: The Circular Economy (DCCA 2020)

16.2.2.1.2 Waste Hierarchy

Where residual waste generation is unavoidable it will be dealt with in a way that follows the waste hierarchy, as set out in the Waste Framework Directive and illustrated in Image 16.2. The waste hierarchy supports the need to achieve efficient use of material resources, minimise the amount of waste produced (or otherwise increase its value as a resource), and reduce as far as possible, the amount of waste that is disposed to landfill.

The consideration of resources in the context of this assessment includes a review of the potential beneficial reuse of materials arising from the construction of the Proposed Development (e.g. excavated soil and stone or concrete).

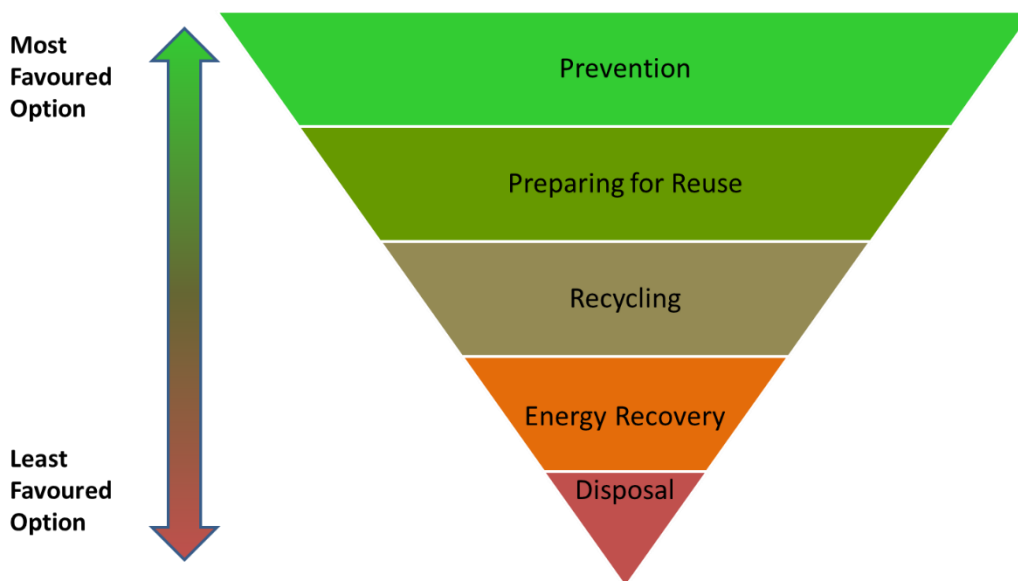


Image 16.2: Waste Hierarchy

Prevention and reuse are the most desirable options for the management of waste. Waste prevention / minimisation is inherent in the design of the Proposed Development, where surplus materials will be reused within the Proposed Development as far as reasonably practicable. Where material cannot be reused within the Proposed Development, options for reuse offsite will be considered where appropriate to the type and condition of the material.

Where reuse of surplus material is not possible, the material will be sent to recycling or recovery facilities as appropriate and where feasible. Only where there is no option to recycle or recover the material, will disposal of it to a landfill be considered.

16.2.3 Data Collection and Collation

A desk study was undertaken which comprised the following tasks:

- Review of relevant policy and legislation which creates the legal framework for waste and resource management in Ireland;
- Review of the estimated surplus materials and by-product generation for the Construction Phase of the Proposed Development and subsequently incorporated into the development of the EIAR;
- Review of the estimated imported material required for the construction of the Proposed Development;
- Types, quantities and management of construction and demolition (C&D) waste arising generated in Ireland, the relevant local authority and EMWR jurisdictions were reviewed;

- Types, quantities and management of commercial and industrial waste generated in Ireland and EMWR jurisdictions were reviewed; and
- Availability (type and capacity) of waste infrastructure within the EMWR was reviewed.

16.2.4 Appraisal Method for the Assessment of Impacts

The potential environmental impacts of waste and resource generation and management associated with the Proposed Development were assessed for both the Construction and Operational Phases. These impacts may be neutral, positive or adverse and are dependent on the measures employed to prevent and / or manage the waste generated and materials used.

The following factors were considered when determining the significance of the impacts of the Proposed Development on the various aspects of the baseline environment:

- Desk study of current waste and by-product management practices in Ireland;
- Estimates of the types and quantities of waste and by-product generation and management from the Proposed Development, and of the imported materials required to construct the Proposed Development. This is compared with the established baseline set out in Section 16.2.4.1;
- An assessment of the likely environmental impacts that may arise from the quantity of waste requiring disposal to landfill;
- An assessment of the likely environmental impacts that may arise from the use of imported material during the Construction Phase;
- The surplus materials arising and waste infrastructure capacity in the Eastern-Midlands Region in which the Proposed Development will be located; and
- A review of the Proposed Development in the context of the waste hierarchy and circular economy principles to determine the mitigation measures required.

The criteria used to categorise the significance of waste and resource impacts is based on and compliant with both the EPA Guidelines (EPA 2022) and the IEMA Guidelines (IEMA 2020). The EPA Guidelines are complemented by the more detailed approach set out in the IEMA Guidelines with respect to materials and waste.

With respect to waste generation and management, the IEMA Guidelines set out the criteria to assess the sensitivity of waste management capacity regionally or nationally (as relevant) for both inert / non-hazardous and hazardous waste (Table 16.1), and sets out the magnitude of impact as a result of the consumption of that void space (Table 16.2).

Table 16.1: Sensitivity Criteria for Waste (IEMA 2020)

Value	Description	
	Inert / Non-Hazardous	Hazardous
	Across the Construction and/or Operational Phases, the baseline landfill void capacity is expected to...	
Negligible	...remain unchanged, or is expected to increase through a committed change in capacity.	...remain unchanged, or is expected to increase through a committed change in capacity.
Low	...reduce minimally: by <1% as a result of wastes forecast.	...reduce minimally: by <0.1% as a result of wastes forecast
Medium	...reduce noticeably: by 1-5% as a result of wastes forecast.	...reduce noticeably: by 0.1- 0.5% as a result of wastes forecast.
High	...reduce considerably: by 6-10% as a result of wastes forecast.	...reduce considerably: by 0.5-1% as a result of wastes forecast.
Very High	... reduce very considerably (by >10%); end during construction or operation; is already known to be unavailable; or, would require new capacity or infrastructure to be put in place to meet forecast demand.	... reduce very considerably (by >1%); end during construction or operation; is already known to be unavailable; or, would require new capacity or infrastructure to be put in place to meet forecast demand.

Table 16.2: Assessing Magnitude of Impact for Waste (IEMA 2020)

Value	Description	
	Inert / Non-Hazardous	Hazardous
No Change	Zero waste generation and disposal from the development	Zero waste generation and disposal from development
Negligible	Waste generated by the development will reduce regional* landfill void capacity baseline# by <1%.	Waste generated by the development will reduce national landfill void capacity baseline # by <0.1%
Minor	Waste generated by the development will reduce regional* landfill void capacity baseline# by 1-5%.	Waste generated by the development will reduce national landfill void capacity baseline # by <0.1-0.5%
Moderate	Waste generated by the development will reduce regional* landfill void capacity baseline# by 6-10%.	Waste generated by the development will reduce national landfill void capacity baseline # by <0.5-1%
Major	Waste generated by the development will reduce regional* landfill void capacity baseline# by >10%.	Waste generated by the development will reduce national landfill void capacity baseline # by >1%
* Or where justified, national.		
# Forecast as the worst-case scenario, during a defined construction and/or operational phase		

With respect to imported materials for the construction of the Proposed Development, the IEMA Guidelines set out the criteria to assess the sensitivity of materials (Table 16.3), and sets out the magnitude of impact as a result of the use of materials (Table 16.4).

Table 16.3: Sensitivity Criteria for Materials (IEMA 2020)

Value	Description
	On balance, the key materials required for construction of a development ...
Negligible	Are forecast (through trend analysis and other information) to be free from known issues regarding supply and stock; and/or Are available comprising a very high proportion of sustainable features and benefits compared to industry-standard materials.*
Low	Are forecast (through trend analysis and other information) to be generally free from known issues regarding supply and stock; and/or Are available comprising a high proportion of sustainable features and benefits compared to industry-standard materials*.
Medium	Are forecast (through trend analysis and other information) to suffer from some potential issues regarding supply and stock; and/or Are available comprising some sustainable features and benefits compared to industry-standard materials*
High	Are forecast (through trend analysis and other information) to suffer from known issues regarding supply and stock; and/or Comprise little or no sustainable features and benefits compared to industry-standard materials*
Very High	Are known to be insufficient in terms of production, supply and/or stock; and/or Comprise no sustainable features and benefits compared to industry-standard materials*

*Subject to supporting evidence, sustainable features and benefits could include, for example, materials or products that: comprise reused, secondary or recycled content (including excavated and other arisings); support the drive to a circular economy; or in some other way reduce lifetime environmental impacts.

Table 16.4: Assessing Magnitude of Impact for Materials (IEMA 2020)

Value	Description
	The assessment is made by determining whether through a development, the consumption of ...
No change	...no material is required.
Negligible	...no individual material type is equal to or greater than 1% by volume of the regional* baseline availability.
Minor	...one or more materials is between 1-5% by volume of the regional* baseline availability.
Moderate	...one or more materials is between 6-10% by volume of the regional* baseline availability.
Major	...one or more materials is >10% by volume of the regional* baseline availability.

* or where justified, national.

For both waste and materials, the determination of significance of the impact follows the matrix within the IEMA Guidelines. As the significance levels differ from the EPA Guidelines, the IEMA Guidelines have been adapted to use the EPA significance rating names (Table 16.5). For the duration of the impact for both waste and materials, the definitions as per the EPA Guidelines are used (refer to Table 1.3 in Chapter 1 (Introduction and Environmental Impact Assessment Process)).

Table 16.5: Determining Significance (IEMA Guidelines adapted to reflect the EPA Guidelines Significance Ratings)

Sensitivity (or Value) of the Receptor	Magnitude of Impact					
	No Change	Negligible	Minor	Moderate	Major	
Very High	Neutral	Not Significant	Significant	Very Significant	Profound	
High	Neutral	Not Significant	Slight	Significant	Very Significant	
Medium	Neutral	Imperceptible	Not Significant	Moderate	Significant	
Low	Neutral	Imperceptible	Imperceptible	Not Significant	Slight	
Negligible	Neutral	Neutral	Imperceptible	Imperceptible	Not Significant	

16.2.4.1 Assumptions and Limitations

There were no limitations in the writing of this Chapter that affected the assessment. At this stage, it is not possible to accurately estimate the volume of waste generated and materials required during the Operational Phase of the Proposed Development. The main source of operational waste would arise during maintenance activities and would be generated from broken equipment, while the main requirement for materials would be

from the replacement equipment. All equipment will be professionally manufactured and installed, and will be maintained in accordance with the manufacturer's, EirGrid's and ESB's relevant guidelines. Based on professional judgment, the risk of broken equipment is assessed to be extremely low and so it is not anticipated to result in any significant environmental impacts.

16.3 Baseline Environment

The baseline environment for materials, waste and by-products management in Ireland is described in this Section.

16.3.1 Waste and By-Products

16.3.1.1 Construction Waste

Construction waste, including excavation waste, will be the main type of waste generated as a result of the Proposed Development. There will also be small quantities of municipal-type waste generated during construction and operation (i.e. associated with maintenance activities).

The EPA publishes statistics on waste generation and management for Ireland. The most recent statistics available were published in August 2023 and concern the year 2021. With respect to construction and demolition (C&D) waste, the EPA data states that there were 9 million tonnes of C&D waste generated in Ireland in 2021, an approximate 10% increase on 2020, with 96% undergoing final treatment in Ireland and only 4% being exported abroad for final treatment (EPA 2023a). Table 16.6 provides the breakdown of C&D waste in Ireland in 2021. The majority of the C&D waste (85%) was backfilled with only 8% recycled and 7% sent for disposal in 2021. The EPA reported that Ireland achieved 85% material recovery in 2021, surpassing the 70% EU target.

Table 16.6: C&D Waste Quantities Collected in Ireland in 2021 (EPA 2023a)

Waste Type	Quantity (Tonnes)	Proportion of Total C&D Waste
Soils, Stones & Dredging Spoil	7,696,287	85.1%
Concrete, Brick, Tile & Gypsum	608,235	6.7%
Mixed C&D Waste	362,380	4.0%
Metal	257,558	2.8%
Bituminous Mixtures	87,343	1.0%
Segregated Wood, Glass & Plastic	31,946	0.4%
Total	9,043,749	100%

16.3.1.1.1 Hazardous Waste

Hazardous waste will be generated during the Construction Phase of the Proposed Development (potentially including oils, batteries, asbestos, asphalt (bituminous mixtures containing coal tar) and contaminated soils and materials). According to the EPA statistics for 2021 (EPA 2023b), there was a total of 466,941 tonnes generated in Ireland in 2021, which was a decrease of approximately 16% on 2020. 52% of the hazardous waste generated in Ireland was treated in-country, with the other 48% exported to other countries (mainly the United Kingdom and within the EU) for treatment. Specifically with respect to C&D hazardous waste, there were 106,664 tonnes generated in 2021, of which approximately 33,000 tonnes were contaminated soils (99% of which were treated in Ireland).

16.3.1.1.2 Municipal Waste

Municipal waste will be generated in small quantities during the Construction and Operational Phases of the Proposed Development (e.g. canteen, office and staff welfare waste). According to the EPA statistics for 2021

(EPA 2023c) Ireland generated 3.17 million tonnes of municipal waste in 2021, which represents a decrease of one percent on the 2020 quantities. This breaks down as 57% from household sources and 43% from commercial and public service sources. Approximately 1.3 million tonnes were recycled in 2021, equating to a recycling rate of 41%. 42% of Ireland's municipal waste went for incineration for energy recovery, with 16% going to landfill. An estimated 38% of all municipal waste generated was exported.

16.3.1.1.3 Waste Management Facilities

With respect to waste management in Ireland, there are three operational EPA licensed landfills and two incinerators in Ireland, and these are all located within the EMWR (Table 16.7). Together, in accordance with their EPA authorisations, these facilities have a total annual disposal capacity of 1,660,000 tonnes (EPA 2023d; EPA 2024).

Table 16.7: EPA Licensed Landfill / Incinerator Capacity Per Annum (EPA 2023d; EPA 2024)

Facility Name	Authorisation Number	Maximum Capacity per Annum (tonnes)	C&D / Inert Waste Acceptance Limit per Annum (tonnes)
Landfills			
Knockharley Landfill, Co. Meath	W0146	440,000	Up to 285,000
Ballynagran Residual Landfill, Co. Wicklow	W0165	175,000	28,000
Drehid Waste Management Facility, Co. Kildare	W0201	120,000	No limit for inert waste where used in landfill engineering
Incinerators			
Indaver Ireland Ltd.	W0167	235,000	50,000
Dublin Waste to Energy Ltd.	W0232	690,000	N/A
Total		1,660,000	>363,000

In addition to landfills and incinerators, there are 16 soil recovery facilities licensed by the EPA within Ireland (EPA 2024d). Of these, eight are operational (or due to commence operations) within the EMWR, with four of those located within County Meath and County Dublin. The eight facilities located within the EMWR are listed in Table 16.8.

Table 16.8: EPA Licensed Soil Recovery Facility Capacity Per Annum in the Eastern-Midlands Region (EPA 2024)

Facility Name	Authorisation Number	Operational?	Maximum Capacity per Annum (tonnes)
Blackhall Soil Recovery Facility, Naas, Co. Kildare	W0247	Yes	400,000
Clashford Recovery Facilities Ltd., Naul, Co. Meath	W0265	Yes	190,000
Milverton Waste Recovery Facility, Skerries, Co. Dublin	W0272	Yes	400,000
Huntstown Quarry, Finglas, Dublin 11	W0277	Yes	1,595,000
Mullaghroane Quarry, Donore, Co. Meath	W0278	Not yet commenced	100,000
N&C Enterprises Limited, The Pit, Naas, Co. Kildare	W0292	Yes	345,000
Calary Quarry, Kilmacanogue, Co. Wicklow	W0293	Yes	300,000
Kildare Sand & Gravel Limited, Rathangan, Co. Kildare	W0295	Yes	225,000
Total			3,555,000

In addition to EPA licensed waste facilities, local authorities have the power to grant Waste Facility Permits and Certificates of Registration for waste management activities within their jurisdiction. There are permitted and certified waste facilities located throughout Ireland. A summary of the number of facilities currently authorised within the EMWR is provided in Table 16.9, with an estimate of the approximate annual capacity for soil and stone (the most common C&D waste) provided based on the permits / registrations available from the National Waste Collection Permit Office (NWCPPO).

Table 16.9: Summary of Waste Facility Permits / Certificates of Registration within the Eastern-Midlands Region (NWCPO 2024 – Accessed February 2024)

Local Authority within the EMWR	Total Number of Facilities	Total Number which Accept Soil and Stone Waste	Approximate Annual Capacity for Soil & Stone
Local Authority Areas in which the Proposed Development is Located:			
Meath	65	22	530,000
Fingal	21	9	375,000
Local Authority Areas in the Wider EMWR:			
Dublin City	32	5	110,000
Dún Laoghaire – Rathdown	2	0	0
South Dublin	46	12	217,000
Kildare	40	23	1,071,000
Laois	20	7	120,000
Longford	23	15	120,000
Louth	25	10	440,000
Offaly	18	11	310,000
Westmeath	24	16	307,000
Wicklow	30	18	400,000
Total	346	148	4,000,000

A summary of the estimated annual capacity for C&D waste (soil and stone in particular) within the Eastern-Midlands Region is provided in Table 16.10.

Table 16.10: Summary of Approximate Annual Capacity for Soil and Stone Waste within the Eastern-Midlands Region (EPA 2023d; EPA 2024; NWCPO 2024)

Facility Name	Number of Facilities (November 2023)	Approximate Maximum Capacity per Annum C&D / Soil and Stone Waste (tonnes)
Landfills	3	363,000
Incinerators	2	50,000
Soil Recovery Facilities	8	3,555,000
Local Authority Waste Facility Permits / Certificates of Registration	148	4,000,000
Total	161	7,968,000

For forecasting the capacity into the future, there are no statistics available for the EMWR or for Ireland. The capacity within the state (and therefore in the EMWR) however is currently largely static and is forecast to reduce in the medium-term. The IEMA Guidance provides data for England, Scotland and Wales, with the landfill capacity for all waste types reducing by an average of 12% per annum over the period between 2014-2018. Given the lack of specific forecasting data available for Ireland, it is considered that a similar fall to that in England, Scotland and Wales in landfill capacity is broadly acceptable. Therefore, the sensitivity of the waste management capacity within the EMWR is Very High based on the sensitivity ratings in Table 16.1.

16.3.1.2 By-Products (Article 27)

With respect to material generated as a by-product of the Construction Phase (e.g. surplus excavated soil and stone), Article 27 of the Waste Directive Regulations allows for this material to be treated as a by-product instead of a waste, as long as the material satisfies the following requirements:

- “(a) further use of the substance or object is certain;*
- (b) the substance or object can be used directly without further processing other than normal industrial practice;*

*(c) the substance or object is produced as an integral part of a production process; and
(d) further use is lawful in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts."*

The material producer must notify the EPA of their determination that the material is a by-product and not a waste. On receipt of an Article 27 notification, the EPA can determine that the material is a waste or a by-product. Where the EPA does not make a determination, the material has not been determined as a waste. Where the material has not been determined to be a waste, the material is available for reuse within the industry.

According to the EPA waste statistics (EPA 2023a), there were 123 by-product notifications assessed totalling 12,526,137 tonnes of material. Of this quantity, the EPA determined that 459,836 tonnes were a by-product, 600 tonnes were a waste, and the notifications for 152,400 tonnes of material were withdrawn. The EPA made no determination with respect to the remaining 11,913,301 tonnes.

16.3.2 Imported Materials

The quantities of material which are currently imported to the study area under baseline conditions are low. Currently material is only imported as part of maintenance activities which are undertaken on the existing infrastructure such as roadways, footpaths, utilities, substations and verges. These activities would largely involve repair of surfaces and general roadworks, drainage maintenance and repair, utility works, landscaping and winter maintenance.

A report entitled Essential Aggregates: Providing for Ireland's Needs to 2040 (Irish Concrete Federation 2019) was published in 2019 which details and quantifies Ireland's natural aggregate reserves. At the time of publication of that report, Ireland had approximately 500 active large commercial quarries, approximately 220 ready mixed concrete plants, 20 large scale precast concrete plants and 40 plants producing bitumen bound road surfacing materials.

The Irish Concrete Federation quantifies the annual production of these materials in Ireland on their website, with the 2022 figures (the most recent available) being as follows:

- Five million cubic metres of ready-mixed concrete;
- 135 million concrete blocks;
- 38 million tonnes of aggregates;
- Two million tonnes of bituminous road surfacing materials; and
- Two million square metres of paving products.

16.4 Potential Impacts

This Section presents potential impacts that may occur due to the Proposed Development, in the absence of mitigation, but taking into account the best practice measure set out in Section 16.5. predicted residual impacts are then presented in Section 16.6.

16.4.1 'Do Nothing' Scenario

In the Do Nothing scenario the Proposed Development would not be constructed and therefore the surplus materials would not be generated, and the required construction materials would not be consumed. Therefore, the Do Nothing impact with respect to waste and resources would be Neutral.

16.4.2 Construction Phase

16.4.2.1 Waste

Waste will arise during the Construction Phase largely as a result of excavation activities, as well as from surplus construction materials and damaged materials. Construction works areas, site offices and temporary facilities are also likely to generate waste during the Construction Phase (e.g. municipal type wastes by construction employees, packaging, food waste, etc.). Hazardous wastes which are likely to arise include small quantities of waste electrical and electronic equipment, batteries, oil / fuel residues and oil contaminated items.

The most likely types of waste to be generated during the Construction Phase of the Proposed Development are listed in Table 16.11, with their accompanying List of Waste (LoW) code (EPA 2018).

Table 16.11: Main Waste Types Likely to be Generated during Construction

Waste Type	LoW Code
Concrete	17 01 01
Wood, glass and plastic	17 02 01 – 17 02 04*
Bituminous mixtures	17 03 01* - 17 03 03*
Metals	17 04 01 – 17 04 11
Soil and Stones	17 05 04
Wastes of liquid fuels	13 07 01* – 13 07 03*
Absorbents, filter materials, wiping cloths and protective clothing	15 02 02* – 15 02 03
Batteries and accumulators	16 06 01* – 16 06 06*
Vegetation	20 02 01
Waste packaging	15 01 01 – 15 01 11*
Municipal waste (separately collected fractions)	20 01 01 – 02 01 99
Mixed municipal waste	20 03 01
Note: Numbers with an * are hazardous waste types	

The likely quantities of surplus materials / waste which will require removal during the Construction Phase have been estimated and are provided in Table 16.12. The estimate has been undertaken by the authors of Chapter 4 (Proposed Development Description) based on the Proposed Development dimensions, the construction techniques as described in that Chapter, professional judgment, and consultation with EirGrid and ESB.

Table 16.12: Estimate of Waste Quantities During the Construction Phase

Location	Waste / Surplus Material Type	Quantity (m ³)	Quantity (tonnes)	
Cable Route				
In-Carriageway	Asphalt*	3,666	8,432	
	Engineered Fill	14,663	32,259	
	Subsoil	31,160	46,740	
Off-Road / In-Verge	Subsoil	16,848	25,272	
	Engineered Fill (Haul Roads)	20,992	46,182	
Permanent Access Tracks	Top Soil	3,192	4,469	
Belcamp Substation				
Permanent Access Tracks	Topsoil	80	112	
Earthworks	Subsoil	11,200	16,800	
Woodland Substation				
Earthworks	Subsoil	50	75	
Enabling Works				
Passing Bays	Asphalt*	578	1,329	
	Engineered Fill	2,310	5,082	
	Subsoil	1,733	2,600	
Construction Platforms	Engineered Fill	4,050	8,910	
	Subsoil	1,350	2,025	
Compounds	Engineered Fill	25,200	55,440	
Totals By Material				Proportion of Total (%)
	Asphalt*	4,243	9,761	3.1
	Topsoil	3,272	4,581	2.4
	Subsoil	62,341	93,512	45.5
	Engineered Fill	67,215	147,873	49.0
	Total	137,072	255,727	100

As shown, soils and fill material will make up the majority of the Construction Phase surplus material at 96.9% of the total estimated quantities requiring removal during the Construction Phase. The estimated total C&D waste to be generated during the Construction Phase is 255,727 tonnes, which is equivalent to approximately 3% of the C&D waste management baseline for the EMWR as set out in Table 16.10.

As outlined in Section 16.3.1.1.3, the sensitivity of the waste management capacity within the EMWR is Very High, while the magnitude of the impact is Minor. Therefore, in accordance with Table 16.5, the potential impact prior to mitigation is assessed as Negative, Significant and Short-Term. It should be noted that this is based on a conservative assessment approach, where all estimated waste has been assumed to arise in a single year with all going to landfill for disposal.

With specific regard to asphalt / bituminous waste, while the overall quantity is relatively small, this material may contain coal tar which would be categorised as Hazardous Waste. Coal tar was variously used in road surfacing in Ireland up to the late 1970s, and TII's The Use of Road Tar in Ireland and Research Treatment Protocols (TII 2023) categorises the likely presence of coal tar by road type, ranging from "never" for motorways and dual carriageways to "sometimes" in urban areas and legacy single carriageway roads. In the absence of details or dates of road construction along the route of the Proposed Development, it is conservatively assumed at this stage that 50% of road surface material could contain coal tar and would be categorised as Hazardous Waste. This would result in a potential hazardous waste quantity of 5,019 tonnes. Typically, hazardous waste generated in Ireland is transported to and disposed of at facilities in England or it

is diverted from landfill through cold recycling applications. The Hazardous Waste capacity in England in 2022 was 11,882,411 tonnes (UK Government Waste Statistics 2022). In the worst-case scenario of all potential coal tar waste going to landfill from the Proposed Development, this would represent c.0.0004% of capacity. Consequently, the magnitude of the impact would be Negligible. In accordance with Table 16.5, the potential impact prior to mitigation is assessed as Negative, Not Significant and Short-Term.

In addition to the above potential waste materials, there will be small quantities of mixed municipal waste arising from the construction staff, and from the offices, canteens and welfare facilities, which will constitute well less than 1% of total existing waste management capacity of the EMWR. The potential impact of this waste stream during the Construction Phase is Negative, Not Significant and Short-Term.

16.4.2.2 Imported Materials

The Construction Phase will require the importation of a number of key construction materials for the Proposed Development works. This material will include items such as engineering fill, concrete and asphalt. For a full description of the Construction Phase, please refer to Chapter 4 (Proposed Development Description).

Table 16.13 provides an estimate of the quantities of the major materials required to complete the Construction Phase of the Proposed Development.

Table 16.13: Estimate of Material Quantities Required for the Construction Phase

Location	Imported Material Type	Quantity (m ³)	Quantity (tonnes)
Cable Route			
In-Carriageway	Asphalt	3,666	8,431
	Engineered Fill	21,079	46,373
	Concrete / CGBM B	20,546	-
Off-Road / In-Verge	Engineered Fill (Haul Roads)	20,992	46,182
	Concrete / CGBM B	11,085	-
Permanent Access Tracks	Engineered Fill	4,788	10,534
Joint Bays	Concrete	796	-
Belcamp Substation			
Permanent Access Tracks	Engineered Fill	120	264
Civils & Foundations	Concrete	1,964	4,714
400kV GIS Hall	Steel	-	127
Woodland Substation			
Civils & Foundations	Concrete	107	257
Enabling Works			
Passing Bays	Asphalt	578	1,328
	Engineered Fill	2,310	5,082
	Subsoil	1,733	2,599
Construction Platforms	Engineered Fill	4,050	8,910
	Subsoil	1,350	2,025
Compounds	Engineered Fill	25,200	55,440

The quantities of material listed in Table 16.13 represent a very small proportion of the Irish quantities manufactured per year, as outlined in Section 16.3.2, summarised below:

- Estimated quantity of asphalt required represents less than 1% of the total quantity of bituminous road surfacing materials produced in Ireland per annum (approximately 0.5%);

- Estimated quantity of concrete required represents less than 1% (approximately 0.7%) of the total quantity produced in Ireland per annum; and
- Similarly, assuming the aggregate composition of asphalt is 90% to 95% and concrete is 60% to 80%, the estimated total aggregate quantity required by the Proposed Development represents less than 1% (approximately 0.7%) of the total aggregate quantity produced in Ireland per annum.

In addition to the quantities outlined in Table 16.13 there will be equipment and plant required for the substations, such as shunt reactors, transformers (current and voltage), cable sealing ends, surge arrestors, gantries, post insulators, disconnectors, circuit breakers, GIS bushings, bulk head lighting and lighting masts. There will also be approximately 150 drums of insulated copper cabling (37.5km multiplied by three phases) required for the cable route. These items will be acquired for the project pre-fabricated from specialist manufacturers.

Importation of material to the Proposed Development will be carried out throughout the Construction Phase, with different materials being required at different times. The main direct impacts associated with the importation of construction materials will arise from the gathering / manufacture of the materials, and once the materials are used within the Proposed Development, they will no longer be available for other uses. There will also be impacts associated with the importation of materials through the requirement of heavy goods vehicles (HGVs) for the delivery of the material and the use of materials. Impacts associated with transport of materials are covered in more detail in Chapter 7 (Air Quality), Chapter 8 (Climate), Chapter 9 (Noise and Vibration) and Chapter 14 (Traffic and Transport) of this EIAR, where relevant.

As the materials required for the Construction Phase of the Proposed Development are generally readily available as outlined in Section 16.3.2, the sensitivity of the imported material will be Low. As the quantities of the materials required constitute less than 1% of the quantities produced per annum in Ireland, the magnitude of the impact will be Negligible. Therefore, as per Table 16.5, the potential impact associated with the imported materials will be Negative, Imperceptible and Short-Term.

16.4.3 Operational Phase

16.4.3.1 Waste

It is not anticipated that any significant amounts of waste will be generated during the Operational Phase of the Proposed Development. The routine maintenance of the Proposed Development is described in Chapter 4 (Proposed Development Description). Should equipment need to be replaced, the broken equipment will be managed during the Operational Phase in-line with ESB waste management plans and procedures. As outlined in ESB Networks' most recent Environmental Performance Report (ESB Networks 2022), *"ESB Networks are committed to being at the forefront of the sustainable and circular economy, and the effective management of waste is a fundamental part of this environmental management goal"*. This waste will be managed in accordance with all relevant waste management legislation. At this stage, it is not possible to estimate the volume of waste that will be generated from broken equipment. All equipment will be professionally manufactured and installed, and will be maintained in-line with the manufacturer's and ESB guidelines. Based on professional judgment, the risk of broken equipment is assessed to be extremely low and so it is not anticipated to result in any significant environmental impacts.

16.4.3.2 Imported Materials

It is not anticipated that any significant amounts of material will be required during the Operational Phase of the Proposed Development. The routine maintenance of the Proposed Development is described in Chapter 4 (Proposed Development Description). Should equipment need to be replaced, the new equipment will be professionally manufactured and installed, and will be maintained in-line with the manufacturer's and ESB

guidelines. Based on professional judgment, the risk of replacement equipment is assessed to be extremely low and so it is not anticipated to result in any significant environmental impacts.

16.5 Mitigation and Monitoring Measures

16.5.1 Construction Phase

16.5.1.1 Waste

There will be a potential Negative, Significant and Short-Term impact as a result of the generation of waste by the Proposed Development during the Construction Phase. Additionally, there will be a potential Negative, Not Significant and Short-Term impact as a result of the generation of hazardous waste. In order to mitigate the impact, the following outlines the mitigation measures to be applied during the Construction Phase.

A Construction Resource and Waste Management Plan (CRWMP) has been prepared (included as Appendix C to the Construction Environmental Management Plan (CEMP) included as a standalone document in this planning application). The appointed contractor will implement and update this document (as necessary) in accordance with best practice as described in Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (EPA 2021).

The appointed contractor(s) will be responsible for reviewing and updating the CRWMP prior to the commencement of construction and will undertake periodic reviews, updating as necessary throughout the Construction Phase in agreement with the planning authorities. The CRWMP outlines how waste arising during the C&D Phases of the Proposed Development will be managed in a way that ensures compliance with the provisions of the Waste Management Act 1996 (as amended).

All operations will be managed and programmed in such a manner as to prevent / minimise waste production. All waste material will be managed in accordance with the waste hierarchy (Image 16.2), with an emphasis on reuse, recycling and recovery of material over disposal where feasible.

In order to minimise the creation of waste, opportunities for reuse of excavated material within the Proposed Development (e.g. as fill) will be sought. Where possible, excavated materials will be re-used for backfill subject to the results of testing, whereby representative samples will be retrieved from each material type (allow one per 100m³) submitted for laboratory analysis and the results of analysis assessed to assess whether it is inert. If material is not inert, it will be disposed of at a suitable facility in line with waste management legislation and guidance.

Where there is no reuse potential within the Proposed Development of such material, either due to the material being unsuitable or due to the quantity being in excess of requirements, the potential for reuse as a by-product in accordance with Article 27 will be investigated by the appointed contractor(s). Where this option is technically / economically feasible, the appointed contractor(s) will be responsible for the EPA Article 27 notification and the associated requirements. Any material which is to be managed as a by-product will be appropriately stored on-site and will be kept separate from any waste storage to avoid cross contamination.

Where waste is created it will be managed on-site in accordance with good practice and applicable waste legislation as follows:

- Waste excavated material will be appropriately stockpiled;
- Waste will be segregated at source to prevent cross contamination;
- Where relevant (e.g. excavated fill material), wastes will be sampled and tested to allow classification prior to disposal;

- Waste receptacles will be appropriate to the waste streams using them, and covered or netted where practicable to prevent wind-blown debris emanating from them;
- Any hazardous wastes will be stored in segregated waste containers which are appropriately labelled;
- All waste will be collected by a suitable contractor in possession of a valid and appropriate Waste Collection Permit, and will only be transported to suitably licensed or permitted waste facilities (i.e. facilities in possession of a valid EPA Licence, Waste Facility Permit or Certificate of Registration);
- Regular site inspections and cleaning will be done in order to minimise the potential for litter in the surrounding area;
- Waste records will be maintained throughout the Construction Phase of the Proposed Development; and
- Waste auditing against the CRWMP will be carried out.

The quantity and type of waste and materials leaving site during the Construction Phase will be recorded by the appointed contractor. The name, address and authorisation details of all facilities and locations which waste and materials will be delivered to will be recorded along with the quantity for each facility. Records will show which material is recovered, which is recycled and which is disposed of.

Any off site interim storage or waste management facilities for excavated material will have the appropriate EPA Licence, Waste Facility Permit or Certificate of Registration, as appropriate, in place.

Excavated materials from within roadways (e.g. capping, subbase and bituminous materials) will be reused or recycled in line with TII specifications where reasonably practicable:

- Capping, subbase, bituminous and concrete materials could be reused or recycled in fill and capping materials providing they comply with the Specification for Road Works Series 600 – Earthworks (CC-SPW-00600) (TII 2013a);
- Subbase, bituminous and concrete materials could be reused or recycled in subbase or base materials providing they comply with the Specification for Road Works Series 800 – Unbound and Cement Bound Mixtures (CC-SPW-00800) (TII 2013b); and
- Subbase and bituminous materials could be recycled in base or binder materials providing they comply with Road Pavements – Bituminous Materials (CC-SPW-00900) (TII 2015).

With respect to the potential to encounter coal tar within road planings, this will be managed in alignment with TII's The Use of Road Tar in Ireland and Research Treatment Protocols (TII 2023). The contractor will test all road planings for the presence of coal tar to ensure accurate classification of all arisings prior to disposal, thus minimising the quantity being disposed of as hazardous waste. Furthermore, the contractor will seek recycling options for any coal tar to divert it from landfill.

Following the best practice measures outlined above, the quantity of waste material requiring disposal will be reduced and the post-mitigation impact will be Negative, Not Significant and Short-Term for all waste streams.

16.5.1.2 Imported Materials

There will be a potential Negative, Imperceptible and Short-Term impact associated with the importation of materials for the construction of the Proposed Development.

The Proposed Development has been designed to minimise the quantities of construction materials required. It is likely that all engineering backfill materials (i.e. engineering fill, thermal sand, cement bound granular material) will be imported to site. Where possible, excavated materials will be re-used for backfill subject to the results of testing (as outlined in Section 16.5.1.1).

Consideration will be given by the appointed contractor to the sustainability of material being sourced for the construction of the Proposed Development. As far as is reasonably practicable, materials required for the construction of the Proposed Development will be sourced locally to reduce the amount of travelling required to get the material to the site. Key issues to be considered when sourcing materials for the Construction Phase will include the source, the material specification, production and transport costs, and the availability of the material. For quarried material sourced within the State, only quarries which are included in local authority quarry registers will be used by the appointed contractor to source any quarried material.

Construction materials will be managed on-site by the appointed contractor in such a way to prevent overordering and waste. Materials will be stored in appropriate storage areas or receptacles to reduce the potential for damage requiring replacement. 'Just-In-Time' ordering principles will be implemented by the appointed contractor, where practicable, to reduce the potential for over-ordering.

16.5.2 Operational Phase

As there are no anticipated significant Operational Phase impacts, no additional mitigation or monitoring measures are considered necessary. Waste will be managed during the Operational Phase in line with ESB waste management plans and procedures.

16.6 Residual Impacts

No significant residual impacts have been identified for the Construction or Operational Phase of the Proposed Development.

16.7 Conclusion

There will be a potential Negative, Significant and Short-Term impact as a result of the generation of waste by the Proposed Development during the Construction Phase, while there will be a potential Negative, Imperceptible and Short-Term impact associated with the importation of materials for the construction of the Proposed Development. The significance of these impacts will be reduced by the mitigation measures outlined within Section 16.5.1, particularly with respect to construction waste which will reduce to Negative, Not Significant and Short-Term following the diversion of waste from landfill. There are no significant impacts anticipated as a result of the Operational Phase of the Proposed Development. There are no significant residual impacts predicted as a result of the Proposed Development, either during the Construction Phase or the Operational Phase.

16.8 References

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TII (2103b). Specification for Road Works Series 800 – Road Pavements – Unbound and Cement Bound Mixtures. Standard CC-SPW-00800

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TII (2017). The Management of Waste from National Road Construction Projects. Standard GE-ENV-01101

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Directives and Legislation

Directive 1999/31/EC of 26 April 1999 on the landfill of waste

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

Directive 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC

Regulation (EC) No. 1013/2006 of the European Parliament and of the Council of 14 June 2006 on Shipments of Waste

Number 10 of 1996 - Waste Management Act 1996 (as amended)

Number 26 of 2022 – Circular Economy and Miscellaneous Provisions Act 2022

S.I. No. 419/2007 - Waste Management (Shipments of Waste) Regulations 2007

S.I. No. 820/2007 - Waste Management (Collection Permit) Regulations 2007 (as amended)

S.I. No. 821/2007 - Waste Management (Facility Permit and Registration) Regulations 2007

S.I. No. 86/2008 - Waste Management (Facility Permit and Registration) Regulations 2008 (as amended)

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