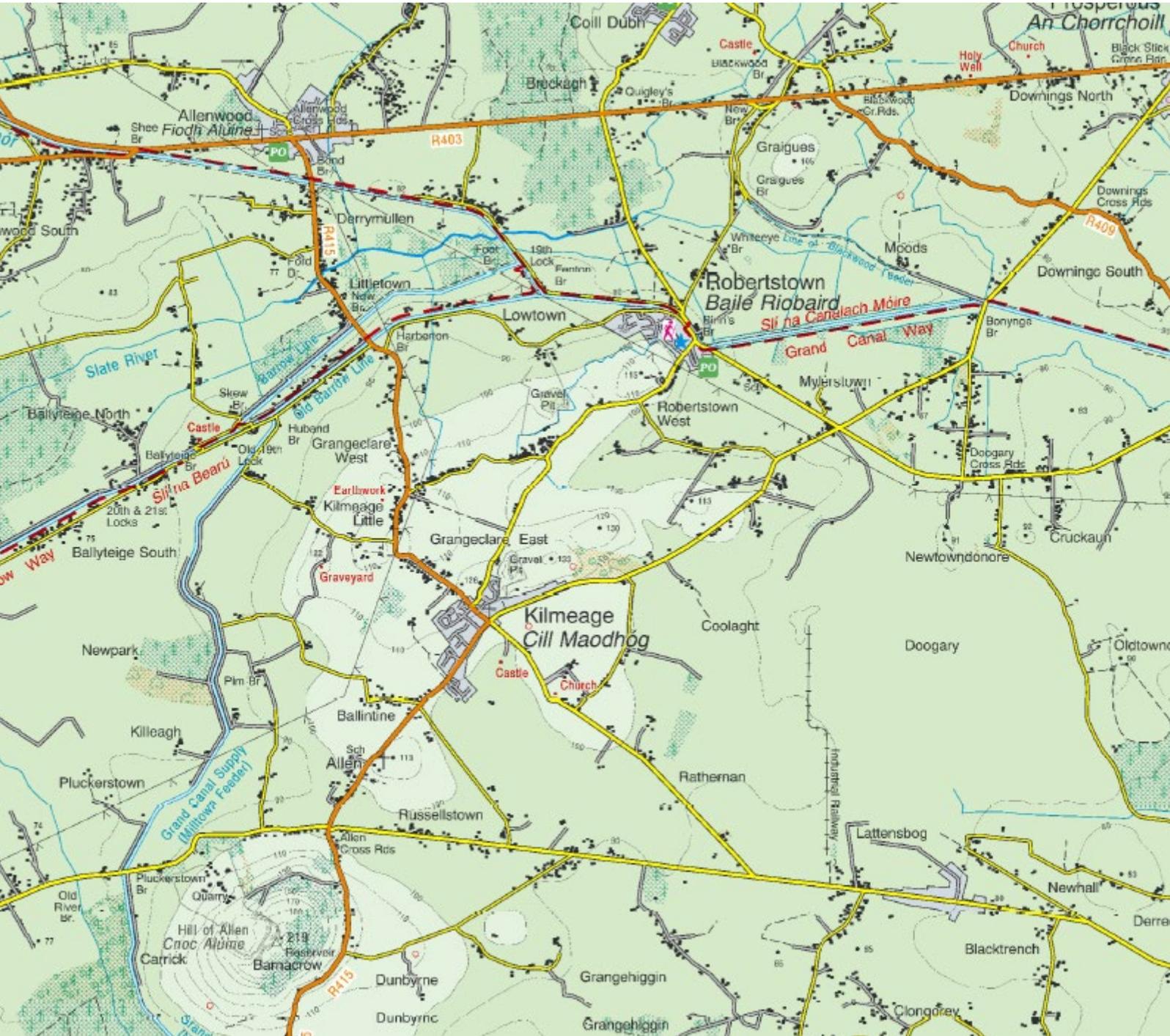


CHAPTER 3

PROJECT DESCRIPTION

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CHAPTER 3: DESCRIPTION

The Proposed Development

Construction / Operational / Restoration Phase

3.1 The development will consist of the following:

- The removal of woodland, vegetation and overlying soils & subsoils;
- the extraction of sand and gravel on a phased basis from an area of c. 8.65 ha to a final floor level at 95 mOD (Ordnance Datum);
- the infilling of the lands using inert waste on a phased basis following the extraction of sand and gravel;
- the restoration of the lands back to original ground level and the establishment of native woodland planting;
- all related ancillary development and associated site works including processing (crushing, screening and washing) and stockpiling of materials; installation of infrastructure for the management of water on site; provision of landscaped screening berms and all other related activities;
- Provision of a site office, toilet (portaloo), canteen, weighbridge, wheelwash and site entrance.

3.2 The proposed development is within an overall application area of c. 13.2 hectares and is for a total period of 34 years (the sand and gravel extraction operational period is for 20 years and the importation of materials for restoration is for a further 14 years).

3.3 The Proposed Development will include for the importation of ca. 2,000,000 m³ (or ca. 3.2 million tonnes) of inert soil and stone material to restore ground gradients to similar levels prior to sand and gravel extraction i.e. current ground levels.

3.4 It is proposed to fill the pit void with either:

- Inert soil and stone classified as a waste (imported inert greenfield and non-greenfield soils and stone, and river dredge spoil) operating as a soil recovery facility that will require a waste management licence authorised by the EPA; or,
- Soil and stone by-product (i.e. virgin soil or equivalent to virgin soil and stone and dredge material) which will be notified to the EPA as an Article 27 by-product at the source location, and the Site will be authorised by the Local Authority planning conditions.

3.5 The restored land will provide natural habitat land use, with ecological benefit provided through woodland planting of native species.

Aggregate Reserve Assessment

3.6 The total recoverable reserve of sand and gravel from within the proposed extraction area, to 95 m OD (4 metres above the water table – refer to EIAR Chapter 8) is assessed at c. 4 million tonnes.

Duration of Extraction / Infilling Operations

Extraction Operations

- 3.7 An outline of the proposed extraction plan and the final ground level contours is shown in Figure 3.5. Cross-sections through the final landform are shown in Figure 3.6. As requested by Kildare Co Co an indicative phasing plan for the development, along with accompanying cross sections, are provided in Figures 3.1 – 3.4.

Table 3.1
SAND AND GRAVEL Quantities

Material	Quantity
Topsoil / Overburden	93,000 m ³
Sand and Gravel	4 Million Tonnes

- 3.8 The duration of extraction activities at the application site will largely be dictated by the rate at which the sand and gravel reserve is extracted from the site. There are many factors which will influence this, including, but not limited to the:
- Prevailing economic climate and related construction industry output;
 - Distance of construction projects from the facility (and scale of activity).
- 3.9 In light of these and other variables, calculation of extraction rates and duration is not an exact science. However, an extraction capacity of up to 250,000 tonnes per annum is sought to provide the applicant with the ability to respond to demand for aggregates for large infrastructure projects in the Region.
- 3.10 A planning permission duration of 20 years is therefore sought for the extraction and processing period and a further 14 years to complete final restoration of the site – see below.

Infilling Operations

Capacity and Lifespan

- 3.11 The only material requirements in respect of the proposed restoration scheme are the inert soil, stone and rock to be used in filling and restoring the application site. At the present time, it is considered that the principal sources of such materials over the lifetime of the waste recovery facility will be construction and development related activities from the surrounding region.
- 3.12 As stated earlier in this Chapter ultimately the pit void will be infilled back to original ground levels and restored to woodland / natural habitat.

Table 3.2
INERT WASTE Quantities

Material	Quantity	Source
Inert subsoil, stones and rock	3,200,000 tonnes	Imported

3.13 The duration of filling activities at the application site will largely be dictated by the rate at which approximately 99,500 tonnes of externally sourced inert soil and stone is imported. There are many factors which will influence this, including, but not limited to the:

- Availability of acceptable inert materials at construction / development sites;
- Prevailing economic climate and related construction industry output;
- Distance of construction projects from the facility (and scale of activity);
- Logistical / programming constraints at sites generating inert materials;
- Climatic conditions (reduced construction activity in wet weather) and
- Disruptions along the existing local and national road network.

2.1 In light of these and other variables, prediction of intake rates and volumes and timing of activities is not an exact science. It is anticipated that the maximum rate of soil and stone waste importation to the proposed backfill / recovery facility will be 99,500 tonnes per annum. Assuming that the rate of backfilling is ultimately 99,500 tonnes per annum, the expected operational life of the proposed inert waste facility will be up to 32 years. Following cessation of backfilling activities within the application area, an aftercare period of 1-2 years may be required to ensure the restoration proposals are implemented.

2.2 As the intake rate is based on market demand, the applicant is seeking a permission for 34 yrs (which includes a restoration period of up to 2 years).

Method of Extraction

3.14 A wheeled front-end loader or tracked excavator will be used to excavate the previously stripped sand and gravel deposit. Sand and gravel material will be transported to the proposed processing plant (crushing, screening and washing) using a dump truck.

Stability of the Pit

3.15 Industry standard slope angles, bench heights, and bench widths will be used for extraction operations at the site.

Landscaping / Screening

3.16 The following measures are proposed reduce the visual impact of the proposed development:

- Retention of southern face of existing hill.
- Retention of existing planting along all boundaries of the application site.
- Provision of a proposed landscaped screening berm along the northern, western and southern boundaries of the extraction area.
- Supplementary planting along the western side of the proposed access road – refer to Figure 3.1.

3.17 The area of Forestry Plot 7 (refer to Appendix 2.2) lying to the south of the proposed extraction area will be removed of the dominant ash species in year 1, and replacement planting with more suitable species will take place in years 2-3 – refer to Figure 3.1.

Operating Hours

3.18 It is intended that the proposed development will have operating hours of 07:00 to 18:00 hrs. Monday to Friday, and 08:00 to 14:00 hrs on Saturdays. Deliveries and loading of HGVs can occur from 07:00 to 19:00, but will be limited after 18:00. No extraction / infilling operations will be carried out outside of those times.

3.19 The quarry will not operate on Sundays or Bank Holidays.

Employment

- 3.20 The proposed sand and gravel extraction development will provide employment to up to 10 no. people directly on-site, in addition to a number of indirect employees such as crushing contractors, HGV drivers, maintenance contractors, local suppliers, etc.
- 3.21 The proposed backfilling operations will require a minimum of two personnel to be based at the proposed recovery facility at all times during working hours. One individual will be nominated as site manager and will be required to
- (i) check that the soil and stone being brought to the facility has been pre-cleared and meets site acceptance criteria; and
 - (ii) collate and maintain all records of waste intake.
- 3.22 One further individual will be required to
- (i) operate site plant and equipment such as a bulldozer or a mechanical excavator on a full time basis as required and
 - (ii) visually inspect and monitor the suitability of the soil and stone being imported and accepted at the facility.
- 3.23 The development of the site is consistent with the policies set out in the National Planning Guidelines for the sector; the Regional Planning Guidelines and the Kildare County Development plan which recognise the requirement for:
- A secure supply of construction aggregates and related products is necessary for the continued development of the region;
 - Proven aggregate reserves need to be safeguarded for future extraction;
 - 'Best environmental management practice' to be implemented within quarry developments.

Site Access

- 3.24 Access to the proposed development site shall be at an existing access onto the L7081 Local Road. Trucks will exit the site at the same entrance. Improvements to the existing access are proposed as part of this application – refer to Chapter 13.
- 3.25 Sightlines at the access have been assessed against Section 5.6.3 of TII Publications document DN-GEO03060, which requires 160m of unobstructed visibility (where the design speed is 85kph) at a point 3.0m back from the edge of the carriageway. The posted speed limit on the L7081 is 80kph, so has a design speed of 85kph.
- 3.26 Visibility in both directions was found to meet, and exceed, the requirements of TII Publications document DNGEO-03060 – refer to EIAR Chapter 13.
- 3.27 A swept path analysis has been carried out of the amended entrance design that demonstrates the entrance is suitable to cater for articulated vehicles – refer to Chapter 13 Drawing no. CR-1_0002.
- 3.28 All trucks leaving the development will pass through a proposed new wheelwash. The access road from the wheelwash to the county road will be surfaced to prevent carryout of material onto the public road.

Site Security

- 3.29 The perimeter of the entire working area will be secured by a combination of the existing hedgerows, screening berms (in parts) and post & wire fences. Signs will also be erected around the pit excavation and site boundaries showing 'WARNING DEEP EXCAVATION', or similar.

Site Roads, Parking and Hardstanding Areas

- 3.30 HGV's will access the site from the existing site entrance and travel north over a section of paved internal roadway within the application site.
- 3.31 Adequate car parking provision for employees and visitors will be provided at the proposed site office as indicated in Figure 3.1.

Weighbridge

- 3.32 In order to track and record the amount of material entering / exiting the application site, all HGV traffic will be directed across a proposed weighbridge located adjacent to the weighbridge office, as indicated on the site layout plan in Figure 3-1.
- 3.33 CCTV cameras will be installed around the weighbridge and weighbridge office and used to inspect all soil and stone waste being imported for recovery at the facility.
- 3.34 On arrival, HGV drivers will identify themselves to site-based staff at the weighbridge office (most likely the facility manager or an authorised assistant) before proceeding to the backfilling area. Staff will take a copy of the delivery docket, record the time and date of arrival, the nature, origin and weight of the imported soil and stone, the customer / client name, the truck licence plate number, the relevant waste collection permit details and any further details which may be required by any future waste permit / licence. All records of waste intake will be maintained on site for intake tracking and auditing purposes.
- 3.35 Any separated non-inert construction and demolition waste inadvertently brought to the recovery facility will be dispatched off-site (in skips) to other licensed waste disposal or recovery facilities and will be weighed out at the weighbridge.

Wheelwash

- 3.36 In order to prevent transport of clay and dust onto the public road network, a wheelwash will be installed along the egress road leading out of the application site. All HGV and articulated trucks exiting the proposed facility will be required to pass through the proposed wheelwash facility, the location of which is indicated on the site layout plan in Figure 3-2.
- 3.37 Water required for the wheelwash facility will be topped up as required from the proposed water management system at the site (refer to EIAR Chapter 8: Page 22). The wheelwash will be cleaned out and maintained at regular intervals as recommended by the supplier. Any sludge removed from the wheelwash will be removed off-site to an authorised waste recovery or disposal facility.

Utilities & Welfare Facilities

- 3.38 It is envisaged that site based staff will be contactable by mobile phone only and that email and broadband connections to the site office will be provided via a mobile (4G) network.
- 3.39 Given the lack of combustible waste materials at this site, it is considered highly unlikely that a fire will break out during backfilling and recovery operations. A range of fire extinguishers (water, foam and CO₂) will be kept at the site office / staff welfare facilities to deal with any localised small-scale fires which could occur. Additional fire-fighting capacity can be provided

by storing water in a mobile bowser on unsealed hardstand areas surrounding the site offices / facilities.

- 3.40 A water supply well will be installed. The requirement for water on the subject site relates mainly to dust suppression during processing activities and suppression of dust in the pit floor and access route by means of sprinklers and also a water bowser during dry weather. Water will also be required for the proposed washing plant and wheelwash (refer to EIA Chapter 8: Page 22).

Offices and Ancillary Facilities

- 3.41 Proposed ancillary facilities at the site include a portacabin office / canteen, weighbridge, wheelwash and toilets (portaloo).

Water Management

- 3.42 During the extraction / filling operations, the working areas will be graded so as to ensure that surface water run-off falling over the development footprint falls to sumps at temporary low points and allowed to percolate to ground.
- 3.43 Due to the provision of the concrete plinth, and associated paved area, it is proposed to install a drainage system associated with these features. The drainage system will collect water and pass it through a fuel/oil interceptor before entering a soak pit facilitating natural infiltration – refer to Planning Drawing 11.

Fuel Storage

- 3.44 A mobile tanker will be used for refuelling the mobile plant on the pit floor.
- 3.45 Oil and lubricants for plant and machinery will be stored on spill pallets in the proposed designated storage area on site.
- 3.46 The location and layout of the proposed hardstand area and hydrocarbon interceptor are shown on the site layout drawing in Figure 3-1.

Machinery & Plant

- 3.47 Construction activities in relation to the sand pit will mainly relate to the clearance of woodland / vegetation in certain areas of the site. Construction stage plant will include a tracked excavator, wheelwash, lorry and chainsaw.
- 3.48 Machinery and plant to be used on site for extraction and infilling operations will include crushers and screeners, a washing plant, tracked excavators, bull dozers, front end loading shovels and dump trucks as described above. These machinery and plant will be retained on site to facilitate the proposed development.

Lighting

- 3.49 Sufficient lighting will be provided at the site to ensure safe operations during winter periods.
- 3.50 Lighting at the proposed entrance and within the application site will be designed to ensure the development will not be a source of light pollution to adjacent lands, property and the public road network.
- 3.51 The requirements of the Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light (GN01:2021) in relation to the impact of lighting design on the adjoining lands, properties and the public road network will be taken into consideration when designing any proposed lighting for the site, including the entrance area.

Emissions

3.52 Due to the nature of the Proposed Development, the primary types of emissions will be associated with the extraction of sand and gravel and deposition of inert soil and stone at the Site, along with the transport to / from market to site. There will be no point sources of emissions to air associated with the Proposed Development. As such, the most likely emissions will be noise, dust, water and greenhouse gases (GHGs), arising from the activity of transport of materials to / from the Site and within the site boundaries. Refer also to EIAR Chapter 9 (Climate).

Waste management

Extractive Waste Management

3.53 Almost all products and by-products arising from the aggregate processing have commercial value. Any waste materials from the site are stored, collected, recycled and/or disposed of in accordance with any requirements of Kildare County Council.

Silt Lagoons

3.54 A settlement lagoon system is an important part of the washing process in a sand and gravel pit operation. Its primary function is to remove the silt, clay, and other ultrafine particles from the washing water, allowing the water to be reused in the wash plant. It also facilitates the collection and safe disposal of waste solids. The proposed lagoon system is shown on Figure 2.1, and Planning Drawing 12 that accompanies the application.

3.55 The following describes the proposed aggregate processing system for the site:

- **Initial Washing:** sand and gravel will be transported to the proposed washing plant, where it will be mixed with water to create a slurry. This slurry is then agitated, either mechanically or by using high-pressure jets of water, which helps to dislodge the silt from the sand and gravel.
- **Separation:** After washing, the slurry is passed through a series of screens or sieves. These allow the sand and gravel to pass through while trapping the silt and other fine particles. The result is a mixture of water and silt, known as wash water.
- **Settlement in Lagoons:** The wash water is then transferred to a settlement lagoon. The fine particles of silt in the water settle to the bottom of the lagoon due to gravity. A series of lagoons will be used, with water flowing from one to the next, to allow for continuous operation of the wash plant.
- **Water Recycling:** Once the silt has settled, the clear water at the top of the lagoon will be pumped back to the wash plant for reuse.
- **Silt Disposal:** Over time, the bottom of the lagoon will fill up with silt. This will be periodically removed, typically using an excavator. The silt will then be used on site for site restoration purposes.

General Waste Management

3.56 Only soil and stone waste carried by authorised waste collectors will be accepted at the proposed soil recovery facility under a strictly controlled approval and permitting system. It is envisaged that the majority of the HGV drivers will be employed by, or contracted to, authorised / approved hauliers.

3.57 Potential waste produced and the measures used to control it are described as follows:-

- Scrap metal – these materials are chiefly produced from the maintenance of the possessing plants and can cause a nuisance if allowed to build up in an uncontrolled manner. A designated scrap metal area will be demarcated on site and the build-up of scrap is controlled by the regular removal by licensed scrap metal dealers.
- Used Oil and Oil Filters – any waste oil/oil filters that may arise from servicing of fixed or mobile plant will be removed from the site by a licensed waste contractor.
- Used Batteries – similarly all used batteries will be removed from site for collection and recycling by a licensed waste contractor in accordance with the Waste Management Regulations.
- Domestic Style Waste (Canteen Waste) – domestic waste generated at the offices and employee's facility will be collected by a licensed waste collection contractor.

Waste Inspection and Quarantine Facility

- 3.58 Any imported waste which is accepted at the facility but subsequently suspected to be non-compliant with waste acceptance criteria for the facility will be re-loaded onto HGV trucks and transferred across the application site to a proposed waste inspection and quarantine facility for closer examination and/or testing.
- 3.59 The proposed waste inspection facility, which essentially comprises a sealed concrete slab, is at the location shown on Figure 3.1. A tarpaulin will be provided at the inspection area to cover any suspect material during periods of rainfall.
- 3.60 As incident rainfall will not come into contact with consignments of suspected contaminated waste stored, it is considered that there is no requirement to install drainage infrastructure to provide for the separate collection and storage of potentially contaminated surface water run off arising at this location.
- 3.61 Should any subsequent inspection or testing of suspect soil waste at the inspection and quarantine facility identify any non-inert material which cannot be accepted or reused in the restoration of this site it will be segregated and temporarily stockpiled (quarantined) pending removal off site by permitted waste collectors to an authorised waste disposal or recovery facility. Provision will also be made for temporary storage of any separated non inert construction and demolition waste (including metal, timber, plastic etc.) in skips prior to removal off site to a licenced recovery facility.

Energy Requirements

- 3.62 Energy requirements of the Proposed Development will be limited to the operation of the weighbridge, offices, limited groundwater abstraction, welfare facilities, lighting and CCTV. The energy demand will be supplied via connection to the national grid.
- 3.63 The fuel associated with the plant from the Proposed Development (Diesel) will be delivered to the site by mobile fuel bowser, as required.

Waste Activities

- 3.64 The proposed waste recovery activities at the application site are all classified as Class R5 recovery activity according to the Fourth Schedule of the Waste Management Acts 1996-2013 (as amended) (recycling or reclamation of other inorganic materials).
- 3.65 The Classes of Activity at the site, as specified in Part I of the Third Schedule of the Waste Management (Facility Permit and Registration) Regulations 2007 (as amended) are:

- Class No. 5 (recovery of excavation or dredge spoil comprising natural materials of clay, silt, sand, gravel or stone and which comes within the meaning of inert waste, through deposition for the purposes of the improvement or development of land, where the total quantity of waste recovered at the facility is less than 200,000 tonnes).
 - Class No. 6 (recovery of inert waste (other than excavations or dredgings comprising natural materials of clay, silt sand or stone) through deposition for the purposes of the improvement or development of land, where the total quantity of waste recovered at the facility is less than 50,000 tonnes).
 - Class No. 13 (storage of waste pending any of the operations R1 to R12).
- 3.66 A separate waste authorisation (permit or licence) will be required from the Environment section of Kildare County Council or the Environmental Protection Agency (EPA).
- 3.67 Imported waste material may be recycled and sold as aggregate, subject to meeting accepted specifications.¹ The Environmental Protection Agency have published a national decision on end-of-waste setting out criteria for recycled aggregates in decision.

Article 27 (if required)

- 3.68 The Proposed Development includes provisions for the importation of 3.2 million tonnes of inert C&D, soil, stone and inert dredge spoil materials to the Site. If this material is classified as an Article 27 by-product, then the Proposed Development would be operated in accordance with the document titled "Consultation Paper Regulation 27(7) National By-Product Criteria for Greenfield Soil and Stone used in Developments".

Operational Phase

- 3.69 The operational phase will comprise deposition of inert soil, stones and inert dredge spoil into the pit void.
- 3.70 Material will be delivered to the Site by HGVs and backfilling will commence, progressing upward from the pit floor and spreading across the Site area in a gradual manner to raise the level of the Site back to original ground level so that it merges with the topography of the surrounding lands.
- 3.71 Unloading will occur within the void and levelling of the incoming soils material will then be carried out as required by tracked bulldozer. Typical operation will require a single on-site bulldozer and an excavator periodically.
- 3.72 Inert soil and stone imported to the proposed recovery facility must be identified as Class 17 05 04 material as per the European Waste Catalogue (EWC).
- 3.73 Temporary access ramps in and out of active filling areas will be at a gradient of approximately 1v:10h. Temporary side slopes in backfilled soil and stone will be constructed at gradients of no greater (steeper) than 1v:2h in order to ensure stability. On completion, final gradients across the restored ground surface will be relatively shallow, typically of the order of 1v:5v or less.

¹ National End-of-Waste Decision EoW-N001/2023 of 12th September 2023 establishing criteria determining when recycled aggregate ceases to be waste under Regulation 28 of the European Union (Waste Directive) Regulations 2011 – 2020

Waste Acceptance

- 3.74 Prior to accepting material from each individual source site, the facility operator must obtain information on the past use of the site and must reject where soil or groundwater contamination has been identified or where there is an increased risk of contamination being present.

Note: Soil and stone should generally not be accepted from sites where activities in the past have involved the manufacture or storage of hazardous substances (e.g., chemical manufacturing facilities, oil storage facilities, retail filling stations) unless it is clear that the risk of contamination being present is low.

- 3.75 All soil and stone waste accepted from a source site will require a letter of suitability signed by a qualified person². A further letter of suitability for each subsequent 5,000 tonnes of material received from the same source site shall also be obtained.

- 3.76 The letter of suitability shall state the following:

- i. The waste is clean inert soil and stones;
- ii. A description of the source and nature of the soil and stone;
- iii. The location of the source of the soil and stone (including a map showing the source site boundary);
- iv. The material is suitable for use within the facility:
 - a. Basic characterisation, compliance testing and on-site verification has been undertaken; The permit holder shall propose site specific maximum concentrations and/or soil trigger levels for relevant contaminants in non-greenfield soil and stone, to be accepted at the facility, for agreement with Kildare County Council. The permit holder shall follow the methodology set out in EPA guidance entitled 'Guidance on waste acceptance criteria at authorised soil recovery facilities', when developing their site specific trigger levels; and
 - b. The material will not cause environmental pollution at the facility.

- 3.77 All waste contractors bringing material to the recovery facility must hold a valid waste collection permit. All customers must call the operator before waste may be accepted at the facility.

- 3.78 The following measures are proposed to control waste acceptance & handling at the facility:

- Waste arriving at the facility shall be inspected at the point of entry to the facility and subject to this inspection, weighed, documented and directed to the appropriate area/tipping point. Each load of waste arriving at the appropriate area/tipping point, shall be inspected upon tipping. Only after such inspections shall the waste be processed for recovery or subsequent disposal off-site.
- Any waste deemed unsuitable for acceptance or handling at the facility and/or in contravention of this permit shall be immediately separated and removed from the facility at the earliest possible time. Such waste shall be recovered or disposed of at an alternative

² Qualified person: A suitably qualified, trained and experienced person who is a registered professional with chartered status (or equivalent) awarded by a relevant professional body and who has the requisite knowledge and experience required to issue a letter of suitability

facility with appropriate waste authorisation. Temporary storage of such wastes shall be in a designated waste quarantine area.

- 3.79 The waste recovery facility will be located within an area which will have defined perimeter and will be securely fenced. The access to the facility will be controlled by a security gate that will be locked when the facility is unmanned. It is anticipated that this would deter fly-tipping.

Waste Recording

- 3.80 Details of each waste consignment brought to the site will be recorded on the site register.

Waste Testing

- 3.81 Due regard will be had to the EPA publication 'Guidance on waste acceptance criteria at authorised soil recovery facilities' (EPA, 2020).

- 3.82 The appropriate geochemical maximum thresholds for material source are set out in Table 3 below for comparison with the WAC Testing Results. The application site is located with Domain 2.

Table 1: Extract from EPA 'Guidance on waste acceptance criteria at authorised soil recovery facilities' (2020)

Domain	As	Cd	Cr ¹¹	Cu	Hg	Ni	Pb	Zn
Domain 1	15.6	1.50	51.5	51.2	0.254	47.8	48.3	137
Domain 2	24.9	3.28	50.3	63.5	0.360	61.9	86.1	197
Domain 3	38.1	1.60	47.5	56.9	0.457	54.4	81.3	237
Domain 4	32.3	0.97	51.7	80.4	0.285	50.3	91.4	155
Domain 5	41.5	1.42	73.2	77.6	0.302	65.7	109	224
Domain 6	85.8	2.38	54.0	40.0	0.527	28.2	108	168
Domain 7	30.9	0.542	57.6	83.1	0.262	35.7	61.1	122

- 3.83 In addition, the following maximum concentrations and/or soil trigger levels will be adopted for organic compounds:

- TOC is 3% by weight or 30,000 mg/kg¹².
 - Total BTEX - 0.05 mg/kg
 - Mineral oil - 50 mg/kg
 - Total PAHs - 1 mg/kg
 - Total PCBs – 0.05 mg/kg
- i. No TOC, total BTEX, mineral oil, total PCBs, total PAH or asbestos result should exceed the respective maximum concentration and/or soil trigger level;
 - ii. For metals, the analytical results for up to three parameters in any particular soil and stone sample may exceed the respective maximum concentration and/or soil trigger level. However, no individual result should exceed 1.5 times the respective maximum concentration and/or soil trigger level.

PROPOSED ENVIRONMENTAL MONITORING: refer also to Chapter 17

General

- 3.84 Environmental sampling, monitoring and testing will be undertaken by the operator as required. Records of environmental monitoring and testing will be maintained on-site and forwarded to Kildare County Council as required under the terms of any grant(s) of planning permission and any waste authorisation issued in respect of the facility. Preliminary proposals for monitoring locations around the application site are presented in Chapter 17: Figure 17.1.

Dust Monitoring

- 3.85 Dust deposition monitoring will be undertaken at the application site. Dust monitoring locations shall be reviewed and revised where and as/when necessary. The results of the dust monitoring shall be submitted to Kildare County Councils on a regular basis for review and record purposes.

Ecological Monitoring

- 3.86 In the absence of any rare or protected species within the application site, it is considered that there is no requirement for ongoing ecological monitoring of other species during extraction, backfilling and restoration operations.
- 3.87 No specific ecological mitigation is required in relation to habitat loss, damage and fragmentation as impact is assessed as not significant. However, mitigation measures are required to ensure compliance with Wildlife Act 1976 (as amended) prohibiting the killing, injuring or taking; the damage, destruction or taking of nests in use or being built; and the taking or destruction of eggs, where any nest sites are found to be present in areas proposed to be stripped of vegetation.
- 3.88 To avoid destruction of any such nests all trees, shrubs and ground vegetation with the potential to support nesting birds will be removed outside the bird breeding season wherever practically possible in light of good forestry practice. However, if any vegetation clearance takes place during the bird breeding season (1st March to 31st August) the area will be inspected for any evidence of nesting activity by an experienced ecologist / ornithologist. Any identified nest will be marked and an appropriately sized exclusion zone for the relevant species delineated around all such nest site(s). No vegetation clearance will be permitted within any exclusion zone until such time as the young have fledged and left the nest. Given the likely nesting species at this site the exclusion zone is unlikely to exceed beyond a 20m radius of any nesting site.

Groundwater Monitoring

- 3.89 The site will operate an Environmental Management System (EMS), which will include surface water and groundwater sampling.
- 3.90 It is proposed that boreholes BH1 – BH5 (refer to EIAR Chapter 8), which are fitted with standpipes and gravel pack, will be used as groundwater monitoring wells during each phase of the development. Monitoring will be completed to satisfy any planning conditions or waste licence requirements.
- 3.91 The groundwater monitoring regime will remain in place for the life of the proposed extraction, backfilling and recovery operations and for a limited closure and aftercare period thereafter.

Leachate and Landfill Gas Monitoring

3.92 In the absence of biodegradable waste amongst the inert soil and stone waste used to backfill and restore the application site, no leachate or landfill gas can be generated and accordingly no provision has been made for leachate or landfill gas monitoring at this facility.

Meteorological Monitoring

3.93 No site specific meteorological monitoring is undertaken at the application site. Temperature, rainfall, sunshine, wind speed and direction are all recorded at the weather station at The Lullymore Nature Centre weather station is located approx. 8.42 km west of the proposed development. It is currently envisaged that representative meteorological data will be acquired from the existing weather station at Lullymore, as and if required.

Noise Monitoring

3.94 Noise monitoring will be carried out at the application site – refer to EIAR Chapter 11. Noise monitoring locations shall be reviewed and revised where necessary. The results of the noise monitoring will be submitted to Kildare County Council on a regular basis for review and record purposes.

Odour Monitoring

3.95 As the materials being placed or recovered are not biodegradable and do not therefore emit odorous gases, the backfilling and restoration activities will not give rise to odour nuisance. Accordingly, no provision has been made for odour monitoring at the application site.

3.96 Site staff will report and record any odour emissions at the site in the highly unlikely event that a complaint is made about odours emanating from the site.

Surface Water Monitoring

3.97 There are no surface water courses in the vicinity of the site and there are no discharges to any surface water courses from the site; therefore, no surface water monitoring is proposed here.

Stability and Settlement Monitoring

3.98 Temporary slopes in the extracted and backfilled areas will be visually inspected on an ongoing basis, at least once a month, by site staff and a record will be kept of same. Should these inspections give cause for concern, an inspection of the affected area(s) will be undertaken by a qualified geotechnical engineer and measures will be implemented to address any instability identified.

3.99 Following completion of backfilling and restoration works, and the closure of the recovery facility, the site will be returned to use, most likely as woodland. Considering the proposed after-use it is considered that stability and settlement monitoring of the infill lands is not required.

PROPOSED FINAL RESTORATION

Proposed Restoration Scheme

3.100 The restoration scheme for the planning application area is shown on the restoration plan Figure 3.7.

3.101 The application area will be restored to a natural habitat, which is one of the beneficial after uses listed in the EPA Guidelines: 'Environmental Management in the Extractive Industry' (2006). This will be achieved by the following measures:

- The application area will be infilled on a phased basis with ground levels ultimately being restored back to original levels pre extraction.
- The restored ground will be planted with a suitable mix of woodland planting.
 - The proposed replanting mixture is as follows: Pedunculate oak (40%). Downy birch (20%), hazel (20%) & hawthorn (5%) scattered throughout. Wild cherry (5%), planted in groups of 5 to 10 trees. Minor species (10%) to comprise at least three of the following, positioned alongside planned woodland edges & glades: holly, spindle, rowan, crab apple & (on wetter areas of the plot) alder.
- All existing boundary fences and hedgerows will be retained to ensure that the site is secure.
- All plant and machinery will be removed from the pit void.

3.102 The restoration works will be carried out in accordance with the EPA Guidelines (2006).

Woodland planting

3.103 Native woodlands provide high value habitats particularly in the context of a farmed agricultural landscape. As with hedgerows small copses of woodland create their own microclimate and provide refuges for fauna. Natural woodlands are characterised by layers – canopy, subcanopy and shrub layer-which creates vertical structure and increases the range of species that a woodland can support.

3.104 The dominant species to be planted are Pedunculate oak (40%), which is a robust, native tree which provides structure and Downy birch (20%) which also provides visual interest but has a light canopy. Hazel will be planted as it provides nuts in autumn. Holly, spindle, rowan, crab apple will be planted to create a sub-canopy/shrub layer. Due to the risk provided by ash die back disease, ash will not be planted. Trees will be planted as whips or transplants. It is noted that planting of semi-mature trees only provides advantages in the short-term; within 3-4 years planted whips will generally reach the same size as planted semi-mature trees.

3.105 Open spaces will be left within the woodland as they provide important habitats for wildflowers and grasses and will help to increase the biodiversity value of the restored site.

3.106 Additional detail is provided in **Table 2** below:

Table 2 Woodland planting

Overall summary: All planting will take place between October and April. All transplants to be protected from rabbits with 0.6m length spiral tree guards supported by bamboo canes. All species should be of Irish origin and preferably of local stock. Any plants which die, are removed or become seriously damaged or diseased within a period of five years from the completion of the development shall be replaced within the next planting season.

Species	Spacing	Size	% configuration
Pedunculate oak	0.5/m ²	1+1 transplant 80-100cm	40%
Downy birch	1/m ²	1+1 transplant 80-100cm	20%
Hazel	0.5/m ²	1+1 transplant 80-100cm	20%
Hawthorn	0.5/m ²	1+1 transplant 40-60cm	5%
Wild Cherry	0.5/m ²	1+1 transplant 40-60cm	5%
Minor species (10%) to comprise at least three of the following, positioned alongside planned woodland edges & glades: holly, spindle, rowan, crab apple & (on wetter areas of the plot) alder.			10%

Site Management and Supervision

3.107 The Applicant will clearly define the management responsibility for the site restoration work and will ensure that this person has the necessary information (from the planning application) and authority to manage the whole restoration process. Relevant staff will be briefed on the scheme and will be adequately supervised / controlled. A system of record keeping for the key restoration activities will be put in place.

Long Term Safety and Security

3.108 Existing hedges / treelines surrounding the development will be gapped up and thickened where required. These combined with fencing and the secure and locked entrance gates to the development will prevent unauthorised third party access.

Long Term Surface Water and Groundwater

3.109 Surface water will continue to percolate to ground – refer to EIAR Chapter 7.

Decommissioning of Plant and Machinery

3.110 Redundant structures, plant equipment and stockpiles will be removed from site on permanent cessation of extraction activity. Machinery and buildings will be sold as working machinery or scrap.

3.111 As part of the overall decommissioning process, all fuel/oil storage within the existing site will be removed from the site by a licensed waste contractor. Therefore, there will be no potential

for fuel, oil or sewage to cause long-term water pollution following completion of extraction activities.

Aftercare and Monitoring

3.112 Site Closure, After-care and Monitoring (5 years of monitoring). The Closure and Aftercare Phase will not involve any development activities within the Site. The primary aim of this phase is to monitor the success of restoration following the completion of the aforementioned phases. In the event intervention is needed to improve the success of the restoration policy, the monitoring will inform the relevant site manager of potential remedies.

3.113 A 5-year aftercare programme will be implemented for tree planting. Any plants which die, are removed or become seriously damaged or diseased within a period of five years from the completion of the development shall be replaced within the next planting season. The efficacy of rabbit/hare control measures will be assessed on an ongoing basis. Weed control should not be necessary in Years 1 or 2, however in year 3 some hand weeding may be required. Thinning of trees may be required in year 3 in woodland areas. The objective is to have a base of healthy, mature trees. Herbicide treatments should only used where necessary.

FIGURES

Figure 3.1: Proposed Site Layout: Phase 1 Extraction

Figure 3.2: Existing and Proposed Phase 1 Cross Sections.

Figure 3.3: Proposed Site Layout: Phase 1 Infill of Lower Floor

Figure 3.4: Existing and Proposed Phase 1 (Infilling) Cross Sections.

Figure 3.5: Proposed Site Layout (Final Extraction)

Figure 3.6: Existing and Proposed Cross Sections (Final Extraction)

Figure 3.7: Proposed Landscaping and Restoration Plan

Figure 3.8: Restoration Cross Sections

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