

SECTION 2 : DESCRIPTION OF WASTE RECOVERY FACILITY

2.1 PRINCIPAL ELEMENTS

The proposed quarry restoration scheme at Milverton, Skerries, Co. Dublin provides for

- (i) Use of imported natural materials, principally excess inert soil, stones and/or broken rock excavated on construction sites, to backfill and restore a large existing void created by previous extraction of limestone bedrock
- (ii) Separation of any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) unintentionally imported to site, prior to removal off-site to appropriately licensed waste disposal or recovery facilities
- (iii) Temporary stockpiling of topsoil and subsoil pending re-use as cover material for phased restoration of the site
- (iv) Phased restoration of the backfilled void (including placement of cover soils and seeding) and return to use as agricultural grassland
- (v) Environmental monitoring of noise, dust, surface water and groundwater for the duration of the site restoration works.

The existing void will only be infilled using inert soil materials imported from pre-approved external construction sites. Soil stockpiled in existing overburden mounds around the quarry will also be used to backfill the quarry void. No peat, contaminated soils, construction and demolition waste or non-hazardous waste will be accepted at the proposed recovery facility. Any non-inert construction and demolition waste will be removed off-site. The location and layout of the existing site is shown on Figure 2.1.

2.2 SITE INFRASTRUCTURE

2.2.1 Site Security

Vehicular access into Roadstone Dublin's landholding and the application site can only be gained via an entrance which fronts onto the R127 Regional Road which runs between Skerries and the junction with the former N1 National Primary Road (now the R132 Regional Road) at Blakes Cross. Aside from this road, there is no other vehicular access to the landholding.

At the present time, the entire site boundary is closed off by post and wire fencing and/or hedgerow. Prior to commencement of the proposed quarry backfilling and restoration activities, a detailed survey of the entire property boundary will be undertaken and where necessary, boundary fencing will be erected, existing fencing will be repaired and/or replaced and hedgerows will be strengthened or fortified by additional planting.

The only vehicles which will be permitted to access the proposed recovery facility will be HGV's carrying inert soil for backfilling and restoration purposes. This current proposal to backfill the worked out quarry with in-situ and imported inert soil and stones is part of the quarry restoration works which were previously notified and agreed with Fingal County Council as part of the quarry registration process undertaken in accordance with Section 261 of the Planning and Development Act of 2000 (Condition No. 13 of Planning Ref. Q/05/003)

Inert materials will be accepted at the site between 07.00 hours and 18.00hours each weekday (Monday to Friday) and 07.00hours to 13.00hours on Saturday. No materials are accepted at any other time including Sundays and Public Holidays. These operating hours are in compliance with those set by Condition 5 of the Section 261 Quarry Registration (Ref. No. Q/05/003). At all other times, the front gates at the access road will be closed, thereby restricting entry.

All heavy good vehicles (HGVs) importing inert soil and stone to the proposed recovery facility are required to pass over the existing weighbridge at the front of the Milverton recovery facility. On arrival at the facility, HGV drivers will identify themselves to the facility manager (or his nominated replacement) before proceeding to the active backfilling location within the former quarry. The facility manager (or his nominated replacement) will take a copy of the weigh docket, record the time and date of arrival, the nature and origin of the imported soils, the Client, the truck licence plate number and relevant collection permit details.

2.2.2 Site Roads and Parking Areas

All trucks delivering inert soil for quarry restoration purposes will be confined within the Applicant's landholding. Trucks will initially travel over a short section of paved road surface leading from the existing weighbridge immediately inside the site entrance. Thereafter they will travel over a network of unpaved internal roads and temporary haul roads to get to the active backfilling area.

Provision for employee and visitor car parking is currently provided on a paved area opposite the listed 'Engine Room' building, immediately inside the site entrance. Existing paved and unpaved haul roads across the site are indicated on the site infrastructure drawing in Figure 2.2, together with the location of the car parking area.

2.2.3 Hardstanding Areas

At the present time, there is a permanent hardstanding area in front of the former concrete production facility, located along the western site boundary. This hardstanding area is not sealed and any rain falling over this area either percolates downwards into the underlying soil / bedrock or runs-off eastwards over the existing ground surface, toward the existing quarry void. It is envisaged that the unpaved hardstanding area will be used for the storage of any necessary site plant, equipment and/or materials required at the facility.

The existing car parking area to the north of the maintenance shed is sealed by a concrete slab and will remain in place for the duration of the waste recovery activities at the site. Surface water across this area runs-off over the existing ground surface, toward the existing quarry void. Water collecting at the quarry floor is collected in sumps, pumped and discharged via a buried surface water pipe to the stream which runs immediately north of the site. The inferred location of the surface water pipe and the discharge point are both indicated on the site infrastructure layout in Figure 2.2.

2.2.4 Wheelwash and Weighbridge

In order to prevent transport of soil across onto public roads, it is envisaged that a temporary wheelwash facility will be installed along the existing roadway leading out of the proposed waste facility, as shown on the site infrastructure layout in Figure 2.2. All site traffic exiting the waste recovery facility will be directed through this wheelwash.

In order to track and record the amount of material entering the application site, it is proposed to direct all HGV traffic importing soil and stones to the waste recovery facility across the existing weighbridge inside the front gate. Any separated non-inert construction and demolition waste dispatched (in skips) to other licensed waste disposal or recovery facilities will also be weighed out at the existing weighbridge. Records of imported soil tonnage will be maintained for waste auditing purposes.

2.2.5 Laboratory Testing

Laboratory testing of soil, surface water, groundwater and soil water percolate (leachate) will be undertaken off-site at an ILAB / UKAS accredited geo-environmental laboratory. Any validation testing and laboratory testing required to confirm inert classification of waste soil will also be undertaken by the same laboratory. All samples taken on-site will be forwarded to the laboratory on the same day and test results will typically be forwarded to site in seven to ten working days.

It is not envisaged that any environmental monitoring equipment such as pH and temperature meters, conductivity meters, flow meters and dissolved oxygen meters will be stored at the site office for the duration of the restoration works. Any such equipment will be brought to site by an in-house and/or independent environmental consultant as and when required.

2.2.6 Fuel and Oil Storage

Fuel for the proposed facility will be stored in existing fuel storage tanks within the Milverton facility which will be bunded to provide a storage volume equivalent to 110% of the tank storage volume. These tanks are constructed on a sealed concrete surface.

Plant maintained on site will principally comprise mechanical excavators and/or bulldozers. Mobile plant and equipment undertaking quarry backfilling works will be refuelled from mobile, double skin fuel bowzers or at existing maintenance sheds within the Milverton facility. Oil and lubricant changes and servicing of wheeled or tracked plant will be undertaken at the existing maintenance sheds. Re-fuelling of HGV trucks will take place on site at the auto-diesel tanks adjacent to the existing concrete production facility (refer to Figure 2.2).

A small bunded tank for waste oils will be provided at the maintenance shed and emptied at intervals by a licensed waste contractor and disposed off-site at a suitably licensed waste facility.

2.2.7 Waste Inspection and Quarantine Area

Any imported waste which, it is suspected, may not comply with waste acceptance criteria for the waste recovery facility, will be transferred across the application site to a covered portal frame structure which is currently unused and located adjacent to the concrete production facility (refer to Figure 2.2). This shed is constructed over a sealed concrete slab. It will serve as the dedicated waste inspection and quarantine facility for the waste recovery operation.

As incipient rainfall will not come into contact with consignments of suspected contaminated waste stored at the covered shed, there is no requirement to install drainage infrastructure to provide for the separate collection and storage of potentially contaminated surface water run-off.

Visual inspection, in-situ monitoring and testing of imported waste materials will be undertaken by the Applicant's site staff as inert waste materials are end-tipped at the active restoration area. If subsequently, there is any concern about the nature of the materials being placed, they will be re-loaded onto HGV trucks and re-directed to the waste inspection and quarantine facility for closer examination and inspection. Detailed records of all such inspections will be kept.

Should inspection or testing of suspect soil waste at the inspection and quarantine facility identify any non-inert material which cannot be accepted or re-used in the restoration of this site, it will be segregated and temporarily stockpiled (quarantined) pending removal off-site by permitted waste collectors to a suitably licensed permitted 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.) at the waste inspection area prior to removal off-site to a licensed recovery facility.

2.2.8 Traffic Control

Traffic to and from the proposed waste facility will generally travel along the R127 Regional Road from Blakes Cross to the south (on the former N1 National Primary Road). Only a very minor proportion will travel along the same road from Balbriggan and through the town of Skerries, which lies immediately north of the site.

Internally, within the Milverton facility, warning notices, direction signs and speed restriction signs will be established along paved and/or unpaved roads leading to and from the active restoration area and/or the waste inspection and quarantine area. All HGV traffic egressing the application site will be required to pass through the proposed temporary wheelwash facility and the existing weighbridge inside the front gates, both of which are shown on Figure 2.2.

2.2.9 Sewerage and Surface Water Drainage Infrastructure

Site staff at the Milverton facility will use toilet, hand washing and welfare facilities provided at the existing site offices. The location of these facilities and the septic tank servicing them are shown on the site services drawing in Figure 2.3

Currently, rainfall across the application site either

- (i) runs over sealed ground surfaces to collector drains which discharge via a buried surface water pipe to the stream which runs immediately north of the site. The inferred location of the surface water pipe and the discharge point are both indicated on the site infrastructure layout in Figure 2.2.
- (ii) runs over unsealed ground to a sump at the bottom of the existing quarry or

- (iii) percolates through unsealed ground into the underlying bedrock – this will ultimately flow to the sump at the floor of the existing quarry.

Removal of Water from Quarry Floor

At the present time, surface water run-off is ponding intermittently across the floor of the existing quarry. Pending commencement of backfilling activities and site restoration works, ponded water (which is relatively shallow) will continue to be pumped to the ground surface and discharged via existing drainage infrastructure (previously used for quarry dewatering purposes) to the stream running immediately north of the site.

Surface Water Management at Waste Inspection and Quarantine Area

As previously outlined, any suspect contaminated waste imported to this facility will be transferred across the application site to a covered shed located north of the existing concrete production facility. As the floor of the shed is sealed by a concrete slab and as no rainfall will come into contact with consignments of suspected contaminated waste, there is no requirement to install drainage infrastructure to provide for the separate collection and storage of potentially contaminated surface water run-off at the waste inspection and quarantine facility.

Surface Water Management during Quarry Backfilling

As backfilling of the quarry proceeds over the short-to-medium term, the flow of surface water run-off into the quarry will be minimised by the construction of drainage channels around the edge of the quarry. These channels will collect and divert overground surface water flows to temporary settlement ponds (excavated and constructed at the ground surface as required). Surface water run-off will initially discharge to a 'silt pond' where suspended solids will settle out in a still water environment. As this pond is filled and replenished with additional surface water run-off, excess water at the far end of the pond will discharge via an overflow pipe to a second pond, the 'clear water pond'. A schematic layout of the proposed settlement ponds is provided in Figure 2.4. Depending on their location and relative ground level, water from the clear water ponds will either flow or be pumped to existing surface water drainage infrastructure prior to discharging to the stream which flows north of the site.

During each restoration phase, the upper surface of the backfilled materials will be graded so as to ensure that surface water run-off falling over the quarry footprint falls to a sump at a temporary low point within the backfilled materials. Water will be pumped from sumps to settlement ponds at the original ground surface as and when required, and from there via surface channels or by pumping, to site drainage infrastructure and the stream north of the site. At the present time, it is tentatively proposed to locate settlement ponds close to existing drainage infrastructure at the retail centre display area, as shown on Figure 2.2.

In the longer term, during and after the final phase of the quarry backfilling works, ground contours and/or drainage channels will be modified as necessary to ensure that surface water run-off across the restored site is directed to boundary ditches, existing site drainage infrastructure or to the proposed closed depression to be created in front of the eastern quarry face. It is necessary to provide this closed depression in order to preserve the existing nesting site for the peregrine falcon in this rock face. It is envisaged that this landform will be permanently drained by installing a buried pipeline which will provide for gravity drainage (via an interceptor or settlement ponds) to the existing buried pipeline at the north-eastern corner of the site (refer to Figure 2.5). Thereafter surface water will be discharged via the existing surface water pipeline to the stream running north of the site.

2.2.10 Site Services

Electric power, lighting and heating are all currently provided via the electricity network to the existing site offices at the Milverton facility.

Site staff overseeing backfilling and recovery operations at the application site will be contactable by mobile phone. Site staff may also be contacted by fixed line telephone, fax and email facilities available at the site office.

A septic tank is installed south of the site office and currently services 2 toilets, 2 washbasins and a sink unit at the site offices.

Apart from short lengths of water supply and sewerage pipes and the existing surface water drainage infrastructure, no other buried services are present at the application site.

Overhead electricity transmission cables run along the western and southern boundaries of the application site, the northern side of the R127 Regional Road and also cross high ground at the northern end of the quarry. Telephone cables run along the southern side of the R127. Water to the site is provided via a local authority water main. The plan layout of existing sites services is shown on Figure 2.3.

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 to deal with any localised small scale fires which might occur. Additional fire-fighting capacity will be provided by storing water in a mobile bowser at the hardstanding area.

2.2.11 Plant Sheds and Equipment Compounds

Plant and equipment used in the quarry backfilling and soil recovery activities will be stored on the temporary hardstanding area in front of the former concrete production facility. Given the restricted access into the Milverton facility, it is not considered necessary to provide a secure compound for the waste recovery facility.

Any plant or equipment requiring specialist repair or overhaul will be taken to the existing maintenance sheds near the entrance to the site. Small items of mobile or hand-held plant and equipment will also be stored in the maintenance shed.

2.2.12 Site Accommodation

At the present time, a site office and staff welfare facilities are provided in the portacabin office and 'Engine Room' at the front of the application site. It is intended that all administration and management functions for the waste recovery facility will be based at these offices for the duration of the site restoration and soil recovery activities. Staff changing, washing and cooking facilities will also be provided at the same location.

2.2.13 Recovery of Other Waste Streams

Any intermixed and/or non-inert construction and demolition waste inadvertently imported to site with the inert soil will be segregated and stored at the waste quarantine facility. Any concrete or bricks imported to site re-used on site for temporary haul road construction. Excess quantities of concrete, brick or other inert construction and demolition waste will be transferred to a construction and demolition waste recovery facility, most likely that operated by the Applicant at Huntstown Quarry.

Any metal waste will be separated and placed in a skip pending removal off site to a licensed recovery facility. Any other non-inert waste (timber, plastic etc.) will also be separated off and placed in a skip pending removal off-site by permitted waste collectors to a licensed disposal or recovery facility.

2.3 RESTORATION AND RECOVERY ACTIVITIES

The backfilling of the existing quarry void with inert soils and stone is deemed to constitute inert waste recovery through deposition for the purposes of land improvement or restoration. The proposed restoration scheme provides for direct use of the imported soil and stone, without further processing.

2.3.1 Backfilling / Restoration Schedule

Backfilling of the application site will proceed in several phases and on completion, will substantially merge into the surrounding undulating pastoral landscape. An outline of the proposed phasing and the final ground level contours are shown in Figure 2.5. In addition to imported materials, soil in existing screening berms and/or stockpiles across the existing site will be used to backfill the quarry. Cross-sections through the final landform are shown in Figure 2.6.

It is currently envisaged that backfilling of the existing void will be undertaken in a number of 'lifts' from the existing quarry floor. Each phase of backfilling will generally correspond to the depth and extent of existing worked-out quarry benches. An outline phasing plan for the quarry backfilling activities is provided in Figure 2.7. Any temporary additional or replacement infrastructure required to facilitate the proposed works will be constructed and/or installed at the outset of the first phase of backfilling.

The plan extent and ground profile on completion of the first phase of backfilling is shown in Figure 2.8. Thereafter, backfilling of the quarry will progress upwards and extend laterally outwards (albeit only slightly) through Phases 2 and 3 as indicated on the phasing drawings in Figures 2.9 to 2.10.

On completion of the final restoration phase, a cover layer of subsoil and topsoil will be placed and graded across the backfilled soil. This will then be planted with grass in order to promote stability and minimise soil erosion and dust generation.

2.3.2 Method and Safety Statements for Construction Works

Any additional infrastructure required at the application site, over and above that which is currently in place, will be constructed in accordance with a detailed construction method statement and health and safety plan prepared by Roadstone Dublin Ltd. and/or its external work Contractors

2.3.3 Material Requirements

The only material requirements in respect of the proposed restoration scheme are the inert soil, stone and rock to be used in backfilling the existing quarry void. Clean, inert soil and stone is likely to be sourced from greenfield development sites. No construction and demolition waste (intermixed concrete, brick, pipes, metal, timber etc.) will be imported to site other than concrete, brick or secondary aggregate use in construction of temporary haul roads.

The total void space to be backfilled and restored is approximately 1,300,000m³. The backfilled materials will be subject to a degree of compactive effort in order to maximise the overall capacity of the proposed recovery facility. A target compaction density of 1.9t/m³ assumed for tonnage assessment purposes, gives an overall requirement for approximately 2,470,000 tonnes of inert soil and/or subsoil.

An estimate of the material quantities required to complete backfilling of the application site is provided below: -

MATERIAL	QUANTITY	SOURCE
Inert subsoil, stones and rock	1,880,000 tonnes	Imported
Stockpiled soil	570,000 tonnes	In-situ
Concrete / Concrete Products/ Brick	10,000 tonnes	Imported
Topsoil (150mm)	10,000 tonnes	Imported

Table 2.1 Material Requirements

In addition to the above, a relatively small quantity of directly imported inert concrete or brick or recovered (ie processed) secondary aggregate will be required to construct temporary haul roads across and through the site as the backfilling works proceed. Should they be required, secondary aggregates can be sourced from the Applicant's existing construction and demolition waste recovery facility at Huntstown Quarry.

2.3.4 Materials Balance

Approximately 300,000m³ (570,000tonnes) of the inert materials required to backfill the quarry site will be sourced from soil stockpiles and screening berms around the existing quarry void. All remaining inert materials to be used in the restoration of the application site will be imported from external construction work sites

2.3.5 Stability Analyses

Visual inspection and available site investigation data indicates that the area to be backfilled is underlain by slightly weathered to fresh intact, competent bedrock. Backfilling of the quarry using in-situ and imported soils will not induce failure within the rock. The application of loading to the underlying rock will not exceed that which existed prior to extraction and, as such, no deep seated foundation failure is therefore anticipated.

Temporary side slopes in backfilled soils (above formation level) will be graded at an angle no steeper than 35° (approximately 1v:1.5h), sufficient to ensure no large scale instability arises over the short-term. It is envisaged that ongoing assessment of slope stability will be undertaken at the application site as backfilling progresses.

In the longer-term, once backfilling and restoration works are complete, there will be no risk of instability as the site will be graded to a relatively flat, shallow slope. Permanent restored slopes on completion of the site backfilling and restoration activities will be everywhere shallower than 1v:2h and across much of the site, considerably shallower than this, typically 1v:8h or less. Given that the bulk of the soil materials to be imported to site for restoration purposes are likely to be relatively competent glacial tills, no long-term slope instability is anticipated to occur. This assertion is made in view of the fact that glacial till slopes of 1v:2h are routinely constructed for infrastructure projects across Ireland and are demonstrably stable.

2.3.6 Importation of Construction Materials

Of the construction materials required to construct site infrastructure, hardcore, drainage stone and concrete will be either be sourced from aggregate stockpiles remaining in-situ or from Roadstone Dublin's existing quarry at Huntstown. Other materials, principally drainage infrastructure will be sourced from specialist suppliers and installed prior to commencement of restoration activities.

2.3.7 Removal of Materials Off-Site

Any non-hazardous or hazardous wastes identified within the inert soils imported for restoration purposes will be separated, transferred to the waste inspection and quarantine facility pending removal to suitably licensed waste disposal or recovery facilities by permitted waste collectors. The Applicant anticipates, on the basis of its experience operating other waste recovery facilities in the Greater Dublin Area for several years that these waste quantities will be very low.

Inert concrete, block or brick imported to site may be re-used in re-use in temporary haul road construction at the restoration site. Excess quantities of concrete and bricks, timber, metal, pipes, tiles or other construction and demolition waste inadvertently brought to site will be separated using mechanical plant and stockpiled at the waste quarantine area pending transfer to a construction and demolition waste recovery site. Metal waste will be placed in a skip pending removal off-site to a licensed recovery facility. Other non-inert wastes (timber, plastic etc.) will be placed in a skip pending removal off-site by permitted waste collectors to a licensed disposal or recovery facility.

2.3.8 Formation Levels and Gradients

The quarry void will be backfilled in three phases working upwards from the existing quarry floor at -12mOD. The approximate filling level at the end of Phases 1 to 3 will be -2mOD, 12mOD and 26mOD, as indicated in Figures 2.8 to 2.10. Final formation levels on completion of the restoration works at the end of Phase 3 vary on account of the sloped nature of the restored landform and the requirement to provide a rock exposure for nesting birds, as indicated on Figure 2.4.

During each restoration phase, the upper surface of the backfilled materials will be graded so as to ensure surface water run-off falls to a sump at a low point within the quarry excavation. Surface water collecting in the sump will be pumped to settlement ponds at the ground surface as and when required, prior to discharge to the stream which runs north of the site.

Temporary access ramps into and out of the active backfilling areas will be at a gradient of approximately 1v:10h. Temporary side slopes in soil will be constructed at gradients no greater (steeper) than 1v:1.5h in order to ensure stability. On completion, final gradients across the restored ground surface will generally be very shallow, typically of the order of 1v:8v or less.

2.3.9 Bund Design

Given the inert nature of the materials being used to restore the application site, no provision is made in the restoration scheme for construction of perimeter / containment bunds at the boundary of the restoration area.

2.3.10 Capacity and Lifespan

The estimated volume of material to be placed at the application site is approximately 1,300,000m³. Of this, 300,000m³ is sourced within the application site, while the remainder will have to be imported. The duration of backfilling activities at the quarry void will largely be dictated by the rate at which approximately 1,000,000m³ (1,900,000 tonnes) of externally sourced inert soil and stone is imported to the site. There are many factors which will influence this in turn, including, but not limited to,

- Availability of acceptable inert materials at construction sites
- Prevailing economic climate
- Construction industry output
- Project location, scale, duration and distance from the facility
- Logistical and/or programming constraints at sites generating inert materials
- Climatic conditions (reduced construction activity in wet weather)
- Availability of hauliers
- Disruptions along the existing local and national road network
- Capacity of earthmoving plant to place and compact materials
- Waste inspection / weighbridge processing constraints

In light of these and other variables, calculation of intake rates and duration is not an exact science. At the present time, assuming 50 working weeks in each calendar year, 5.5 days per working week and 11 hours per working day, it is estimated that the rate of importation of inert materials to the quarry void could average around 250,000 tonnes per annum and increase to a maximum of 400,000 tonnes per annum should a large scale development project proceed at some stage within the surrounding catchment area during its operational life. If an average importation rate of 250,000 tonnes/year is assumed, the expected operational life of the facility will be 7.5 years.

In view of the difficult economic climate which exists at the present time, intake tonnages may be lower over the next few years (2009-2012) and the over that time, the facility may only operate on an intermittent, project-specific basis.

2.3.11 Basal and Side Slope Liner Design

Given the inert nature of the materials being used to restore the application site, no provision is made for installation of a basal liner or side slope liners at this facility, nor is any provision made for a drainage blanket at the base of the backfilled materials. At the present time, some surface water ponds across the floor of the former quarry. Prior to commencement of site operations and backfilling of inert soil across the quarry floor, any ponded water will be removed by pumping.

2.3.12 Leachate Management System

Given the inert nature of the materials being used to restore the application site, no provision is made for a leachate management system at this facility.

2.3.13 Landfill Gas Management System

Given the inert nature of the materials being used to restore the application site, no provision is made for a leachate management system at this facility.

2.3.14 Capping and Decommissioning

The application site will be restored on completion of backfilling operations to a landform which is generally similar to that which existed prior to rock extraction at the quarry, but for the provision of a closed depression in front of the eastern quarry face in order to preserve the existing rock face where a peregrine falcon has been observed to nest.

During and after the final phase of the quarry backfilling works, ground contours and/or drainage channels will be modified as necessary to ensure that surface water run-off across the restored site is directed to boundary ditches, existing site drainage infrastructure or to the proposed closed depression to be created in front of the eastern quarry face. It is envisaged that the closed depression will be permanently drained by installing a buried pipeline which will provide for gravity drainage (via an interceptor or settlement ponds) to the existing buried pipeline at the north-eastern corner of the site (refer to Figure 2.5). Thereafter surface water will be discharged via the existing surface water pipeline to the stream which runs immediately north of the site.

A cover layer comprising 150mm of topsoil and approximately 350mm of subsoil shall be placed over the inert backfilled materials on completion of the backfilling activities. This will then be planted with grass in order to promote stability and minimise soil erosion and dust generation. Thereafter the lands will be progressively returned to use as agricultural grassland.

Topsoil and subsoil will be imported to the site on a continual basis and shall not be used in the general backfilling of the site. The topsoil and subsoil shall be stockpiled pending re-use on completion of the site restoration works. These materials shall be stored separately within the application site, away from the active backfilling area and in such location and manner as not to create any temporary adverse visual impact or dust nuisance.

On completion of the third (and final) phase of the quarry backfilling and restoration works, all mobile plant and equipment associated with the waste recovery activities will be removed off site. Any temporary site accommodation, infrastructure and services will also be progressively removed off-site or decommissioned.

Wherever necessary, hardstanding surfaces will be broken up using a hydraulic breaker and transferred off site to a permitted construction and demolition waste recovery facility, most likely that operated by the Applicant at Huntstown Quarry.

2.4 WASTE ACCEPTANCE AND HANDLING

Only inert, uncontaminated soil and stones shall be accepted at the application site. Inert materials shall be accepted at the site between 07.00 hours and 18.00hours each weekday and 07.00hours to 13.00hours on Saturday. No materials shall be accepted at any other time including Sundays and Public Holidays.

Insofar as practicable, the source of each consignment of soil imported to site for backfilling purposes shall be identified in advance and subject to basic characterisation testing to confirm that soils at that location can be classified as inert. Ideally, characterisation testing will be undertaken in advance by Clients and/or Contractors forwarding soil to the application site.

All inert soils imported to the site will be unloaded (end-tipped) from trucks at the active backfilling face. It will be visually inspected by site personnel at that point to ensure that there is no intermixed construction or demolition, non-hazardous or hazardous waste placed within it.

If, following acceptance of waste, there is any concern about the nature of the wastes imported to site, it will be segregated and transferred to the waste inspection and quarantine area for closer inspection and classification. A detailed record will be kept of all such inspections.

Should inspections and/or subsequent testing indicate that the materials are non-inert and cannot be accepted and used for restoration purposes at this site, they will be removed off-site by permitted waste collectors to a suitably licensed / permitted waste disposal or recovery facility.

Operating procedures at the waste recovery facility will require all soil and stones forwarded for backfilling / recovery purposes to be pre-sorted at source, inert and largely free of construction or

demolition waste or any non-hazardous / hazardous domestic, commercial or industrial wastes. Any consignments forwarded to site with these materials intermixed in them will be immediately rejected and moved off site.

Any excessive quantities of inert construction and demolition wastes (most notably concrete and brick) imported to the site will be stockpiled at the waste quarantine area and either re-used in temporary haul road construction at the application site or removed off-site to the Applicant's construction and demolition waste recovery facility at Huntstown Quarry.

Any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) inadvertently imported to the site will be separated out and temporarily stored in skips at the waste quarantine area prior to removal off-site to appropriately licensed or permitted waste disposal or recovery facilities.

A representative sample shall be taken from one in every 500 loads of inert soil accepted at the facility and subjected to compliance testing which is less extensive than characterisation testing and focuses on key contaminant indicators. These data shall be used to confirm that the accepted soils are inert and comply with acceptance criteria. Compliance testing shall be undertaken by the Applicant.

An outline Waste Handling and Acceptance Plan for this waste facility is provided in Appendix 2.1 of this Environmental Impact Statement.

2.5 ENVIRONMENTAL NUISANCE CONTROL

2.5.1 General

Restoration activities at the application site will require a number of environmental controls to eliminate or minimise the nuisance to the public arising from the importation, placement and compaction of inert soils. The proposed environmental control measures are outlined in detail in the following sections.

The quarry backfilling and restoration works to be undertaken at the application site will ultimately be regulated by conditions attaching to any waste recovery licence issued by the Environmental Protection Agency (EPA). Any additional control measures required by the Waste Licence, in addition to those outlined, will also be implemented.

2.5.2 Bird Control

As the soil and stones being placed / recovered at the application site are free of putrescible (food / kitchen) waste, site activities are unlikely to attract scavenging birds such as gulls and crows for the duration of the restoration works. Accordingly, it is not intended to implement any specific bird control measures at the site.

In the unlikely event that any putrescible waste is identified among imported materials, it shall be immediately removed to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

2.5.3 Dust Control

In dry, windy weather conditions, the quarry backfilling and restoration activities may give rise to dust blows across, and possibly beyond the application site. In order to control dust emissions, the following measures will be implemented:-

- (i) water from a tractor drawn bowser will be sprayed on dry exposed soil surfaces (including unpaved road surfaces) as and when required;
- (ii) dust blows will be partially screened by the quarry side walls as backfilling progresses upwards. As the level of the backfilled materials approaches final surface levels, the site will be grassed on a phased basis as soon as practicable after placement of cover soils. This will help to minimise soil erosion and potential dust emissions;
- (iii) the area of bare or exposed soils will, insofar as practicable, be kept to a minimum. Consideration will be given to establishing temporary vegetation cover over temporary exposed soil surfaces pending final backfilling and restoration to restored ground level;

- (iv) all HGV's exiting the site shall be routed through a temporary wheelwash facility (refer to Figure 2.2) in order to minimise transport of fines by HGVs on paved internal site roads and the public road network;
- (v) Stockpiling of imported soils will be minimized. Soils will ideally be placed and compacted in-situ immediately after being unloaded. If and when temporary stockpiling of soils is required, they will be placed as far as practicable from nearby residences.

The amount of dust or fines carried onto the public road network will be further reduced by periodic sweeping of internal paved site roads and the existing public road.

2.5.4 Traffic Control

The proposed backfilling operations at the Milverton facility will entail importation of 1,900,000 tonnes of material required to fill the void. This translates to a total of 95,000 HGV movements (at 20 tonnes per load) to fill the quarry void. Roadstone Dublin Ltd has defined a relatively optimistic scenario where it would be possible to fill the void at Milverton in a seven year period. Although it is likely that it will take significantly longer to fill this void, as a result of depressed market demand at the present time, the seven year scenario is considered sufficiently onerous for modelling and assessment of traffic impacts.

Assuming an annual average intake of up to 250,000 tonnes / year corresponds to an average hourly HGV trip rate of eight HGV movements into and eight HGV movements out of the quarry per hour.

As indicated in Chapter 12 of this EIS, the proposed development will have no adverse impact on traffic flow along the existing R127 Regional Road *in a worst case scenario*. In order to improve visibility for traffic exiting the application site, it is intended to

- (i) remove the existing sign immediately beyond the site entrance and
- (ii) maintain any roadside vegetation which could potentially impact on visibility splays

In addition to this, it is intended to erect advanced warning signage approximately 300m east and west of the site entrance to inform motorists of their approach to the site and to advise them to slow down.

In order to minimise dirt and debris from being transferred from the quarry onto the public road network, a wheel wash facility will be installed at the site.

2.5.5 Litter Control

As the materials being placed or recovered at this site will be largely free of litter, the site restoration activities are unlikely to give rise to problems with windblown litter. Accordingly, it is not intended to implement any specific litter control measures at the site.

In the unlikely event that any litter waste is identified among imported materials, it shall be immediately removed to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

2.5.6 Odour Control

As the soil and stones being placed / recovered at this site are not biodegradeable and do not therefore emit odourous gases, site activities will not give rise to odour nuisance. Accordingly, it is not intended to implement any specific odour control measures at the site.

In the unlikely event that any biodegradeable waste is identified among imported materials, it shall be immediately removed to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

2.5.7 Vermin Control

As the soils and stones being placed / recovered at this site are free of putrescible (food / kitchen) waste, site activities are unlikely to attract vermin (rats) for the duration of the restoration works. Accordingly, no specific vermin control measures shall be implemented at the site.

In the unlikely event that any putrescible waste is identified among imported materials, it shall be immediately transferred to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

2.5.8 Fire Control

As the soil and stones being placed / recovered at this site are free of flammable materials and biodegradable waste which could create a fire or explosion risk, site activities will not present a fire risk for the duration of the restoration works. Accordingly, no specific fire control measures shall be implemented at the site.

Notwithstanding this, the following operational practices will be implemented in order to prevent fire at the application site:

- (i) smoking at the application site and at the site office will be prohibited
- (ii) any biodegradable or flammable waste included in materials imported to site shall be immediately transferred to the waste quarantine area pending removal off-site to a licensed waste disposal or recovery facility
- (iii) plant and equipment will be removed if they exhibit signs of overheating etc.

In the unlikely event that a fire does occur, the local fire station in Balbriggan will be contacted and emergency response procedures will be implemented. Fire extinguishers (water and foam) will be provided at the site office to deal with any small outbreaks which may occur.

2.6 ENVIRONMENTAL MONITORING

2.6.1 General

Up to relatively recently, an established programme of environmental monitoring was implemented at the application site while rock extraction and concrete production activities were ongoing. This environmental monitoring programme complied with the requirements of the existing planning permission / quarry registration conditions issued by Fingal County Council.

In addition, Roadstone Dublin operated an environmental management programme to monitor and manage emissions from the site. Although limit values for environmental emissions arising from former activities were identified by existing consents, it is expected that such limits will be set by the EPA should it decide to issue a waste licence in respect of the proposed inert waste recovery facility.

Environmental sampling, monitoring and testing will generally be undertaken by the Applicant's in-house environmental staff as required. Records of environmental monitoring and testing will be maintained on-site and forwarded to the EPA as required under the terms of the waste licence.

2.6.2 Dust Monitoring

Up to relatively recently, dust emissions associated with quarrying and concrete production activities within Roadstone Dublin's landholding were monitored on a quarterly (ie. three monthly) basis using Bergerhoff dust gauges at 2 No. locations (designated D1 and D2) close to the site boundary, shown on Figure 2.11. These gauges were located close to former emission sources within the landholding and were deemed to represent an upper bound on dust emission levels from former site activities.

It is currently envisaged that the two existing dust monitoring stations will remain in place and that one additional monitoring station (designated D3) will be established. These will be monitored for the duration of the site restoration activities and for a short duration thereafter.

2.6.3 Ecological Monitoring

Given the presence of a falcon nesting site at the application site, it is envisaged that an annual inspection of the proposed waste recovery facility will be undertaken by an ecological specialist in order to assess the impact of ongoing quarry backfilling activities on nesting falcons and identify what, if any, additional mitigation measures may be necessary to ensure that the existing habitat is protected.

2.6.4 Groundwater Monitoring

3 No. groundwater monitoring wells have recently been installed across Roadstone Dublin's landholding at Milverton. At the present time, it is envisaged that groundwater sampling and testing will be undertaken on a bi-annual basis at the 3 No. groundwater monitoring wells. Groundwater levels will also be recorded on a bi-annual basis. The location of the existing groundwater monitoring wells is indicated in Figure 2.11.

Groundwater samples are currently tested for a wide range of physical and chemical parameters in order to assess water quality and detect possible contamination at the site. Further detail on these data is presented in Section 6 of this Environmental Impact Statement.

It is currently envisaged that the existing groundwater monitoring regime will remain in place for the duration of the quarry backfilling and restoration works. Groundwater sampling and monitoring will continue as long as backfilling activities continue and for a short period thereafter.

2.6.5 Landfill Gas Monitoring

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

2.6.6 Leachate Monitoring

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

2.6.7 Meteorological Monitoring

At the present time, no meteorological monitoring is undertaken at the application site. It is understood that temperature, rainfall, sunshine, wind speed and direction are recorded at the weather station at Dublin Airport, approximately 17km south-west of the application site.

It is currently envisaged that representative meteorological data will be acquired from the existing weather station at Dublin Airport, as and if required.

2.6.8 Noise Monitoring

Up to relatively recently, noise emissions associated with quarrying and concrete production activities within Roadstone Dublin's landholding were monitored on a quarterly (ie. three monthly) basis at 2 No. locations (designated N1 and N2) close to the site boundary

It is currently envisaged that the former noise monitoring regime will be reinstated for the duration of backfilling activities and for a short period thereafter. In addition, another noise monitoring station (designated N3) will be established along the western site boundary, close to an existing residential property. Noise monitoring will be undertaken using a Larson Davis Model 824 Sound Level Meter, calibrated using a Larson Davies Acoustic Calibrator CAL 200 (or equivalent). Noise monitoring locations are indicated in Figure 2.11.

2.6.9 Odour Monitoring

As the materials being placed or recovered at this site are not biodegradeable and do not therefore emit odourous gases, the site restoration and recovery activities will not give rise to odour nuisance. Accordingly, no provision has been made for odour monitoring at this facility.

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.

2.6.10 Surface Water Monitoring

It is envisaged that surface water sampling and testing will be undertaken on a bi-annual basis (i.e. six monthly) basis at any temporary surface water features located across the application site. Sampling will also be taken at the existing upstream abstraction and downstream discharge points along the stream which runs beyond the northern site boundary. The proposed surface water monitoring locations are shown on Figure 2.11.

Surface water samples will be tested for a wide range of physical and chemical parameters in order to assess water quality and detect possible contamination at the site. Further detail is presented in Section 6 of this Environmental Impact Statement.

It is currently envisaged that the surface water monitoring regime will remain in place for the duration of the quarry backfilling and restoration works and for a short period thereafter.

2.6.11 Stability and Settlement Monitoring

On completion of the final phase of restoration, a number of fixed stations will be set into the ground surface across the restored area and will subsequently be surveyed annually, only as and if required by the waste licence. This monitoring will facilitate assessment of the magnitude of settlement and instability (lateral movement), if any, which may arise on completion of the site restoration works.

Temporary slopes in the backfilled soils 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 will be undertaken by a qualified geotechnical engineer and measures will be implemented to address any instability identified.

Following completion of restoration works and closure of the facility, stability and settlement monitoring will be undertaken as and if required by the waste licence.

2.7 FINAL RESTORATION AND AFTERCARE

The principal activity undertaken at the application site is restoration of lands within an existing limestone quarry. As previously noted in Section 2.3.14, the application site will be restored to give a landform which is more in keeping with the surrounding undulating landscape, refer to final site contour map in Figure 2.5. An outline of the proposed restoration phasing plan is provided in Figure 2.7.

On completion, the final landform will be profiled to ensure surface water run-off over the ground surface is directed to boundary ditches, site drainage infrastructure or to the proposed closed depression in front of the eastern quarry face. The closed depression will be permanently drained by installing a buried pipeline which will provide for gravity drainage via settlement ponds and existing site drainage infrastructure to the stream which runs immediately north of the site.

The final landform will be planted with grass in order to promote stability and minimise soil erosion and dust generation and the lands will be progressively restored to use as agricultural grassland.

Wherever necessary, hardstanding surfaces will be broken up using a hydraulic breaker and transferred-off site to a permitted waste recovery facility, most likely that operated by the Applicant at Huntstown Quarry.

Following completion of the restoration and site decommissioning works, provision will be made for further, short-term (<1year) environmental monitoring of air, surface water and groundwater.

2.8 CONTINGENCY ARRANGEMENTS

Details of existing contingency arrangements at the application site are provided in the contingency plan, a copy of which is provided in Appendix 2.2 of this report.

FIGURES

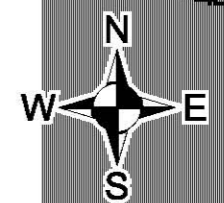
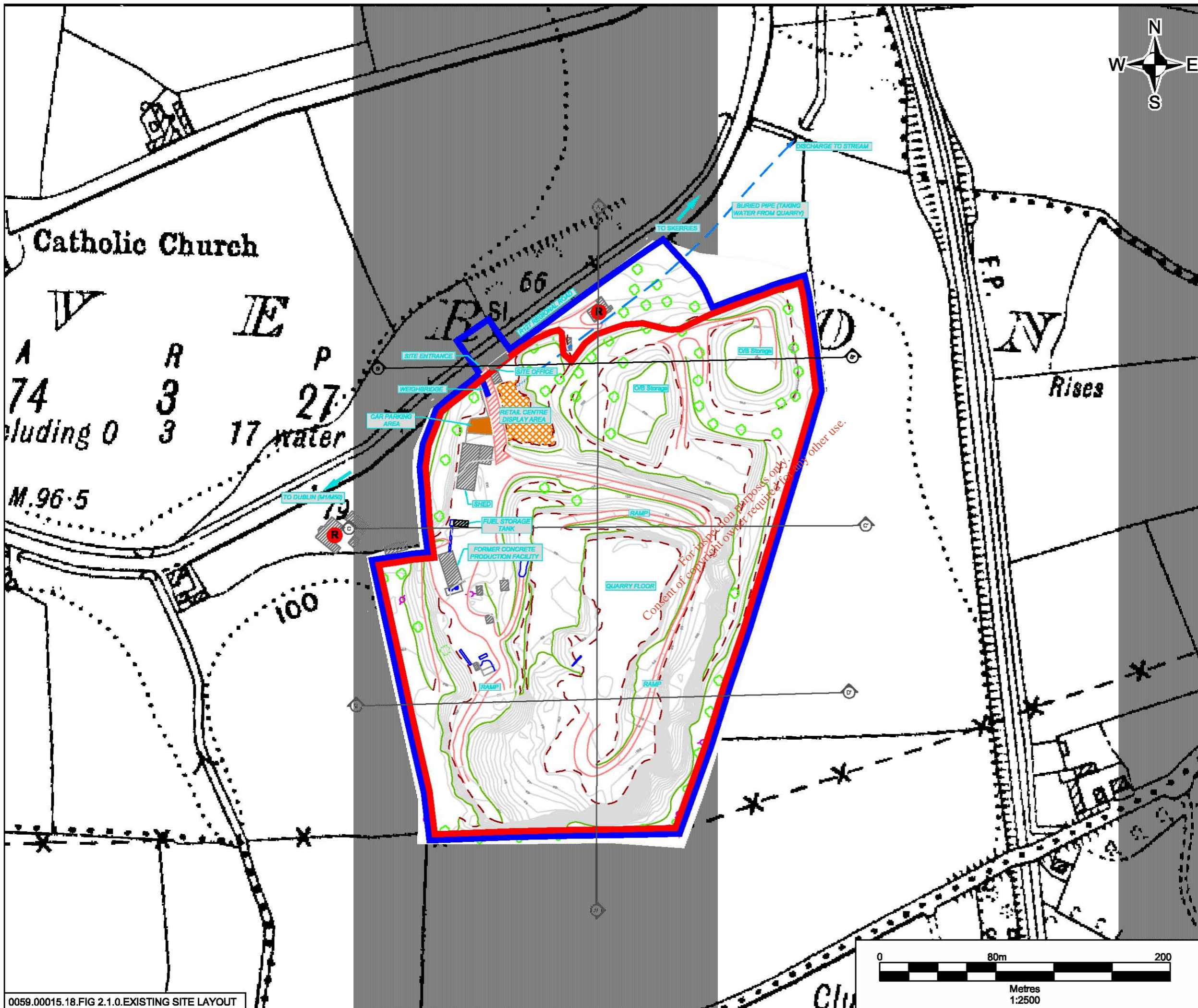
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APPENDIX 2.1
WASTE ACCEPTANCE AND HANDLING PLAN

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APPENDIX 2.2
CONTINGENCY PLAN

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LEGEND

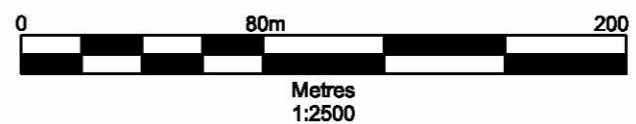
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	Waste Licence Application Area (c. 7.9ha)
	Cross Sections
	Buried Pipe
	Top of Bank
	Bottom of Bank
	Road
	Contour Line
	Building
	Internal Unpaved Road
	Internal Paved Road
	Location of Residence

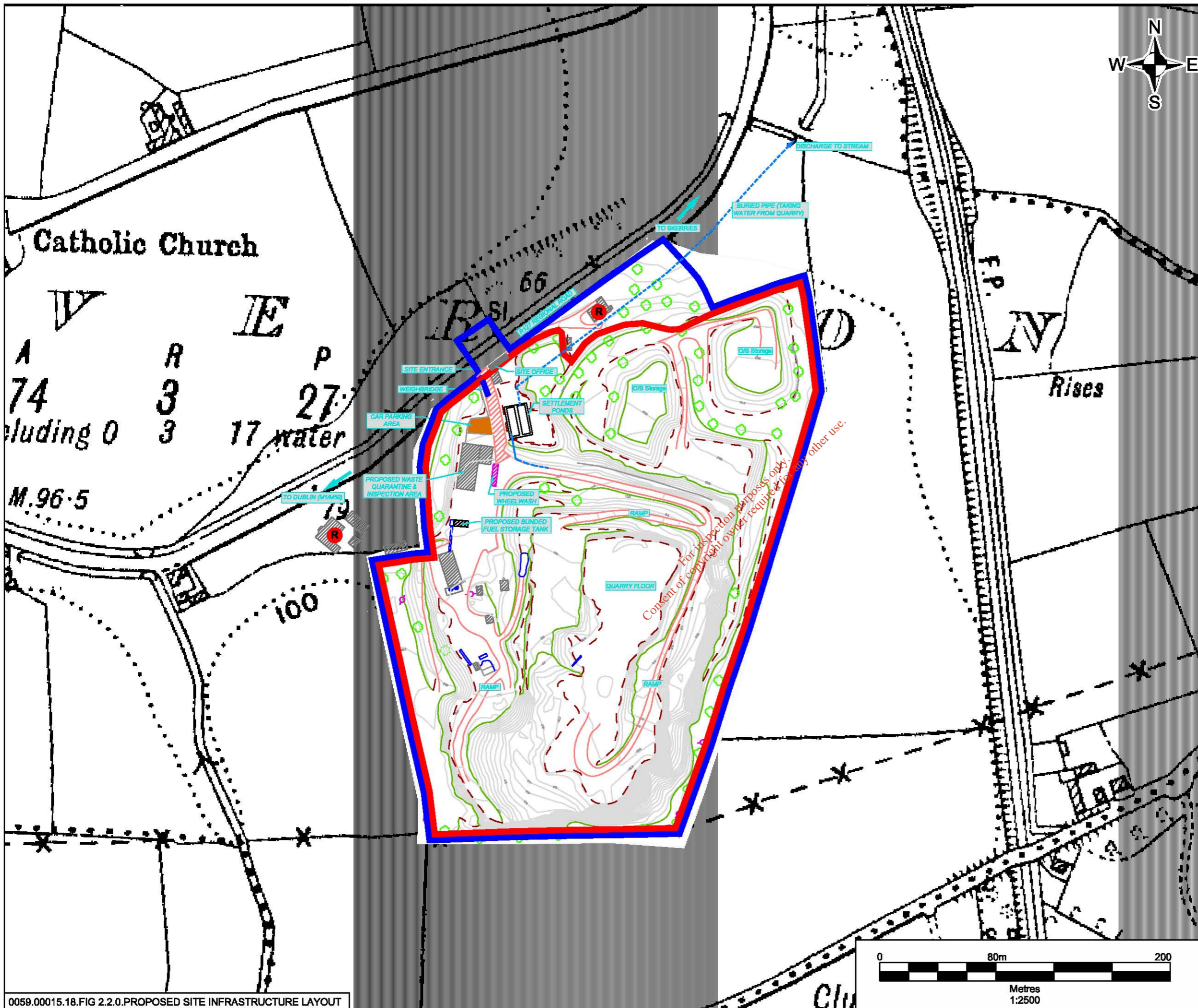
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EXISTING SITE LAYOUT

FIGURE 2.1





NOTES

1. Based on OSI 25inch Dublin Sheet No. 5 & 5a
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LEGEND

	Applicant's Land Interest (c. 8.6ha)
	Waste Licence Application Area (c. 7.9ha)
	Buried Pipe
	Top of Bank
	Bottom of Bank
	Road
	Contour Line
	Building
	Internal Unpaved Road
	Internal Paved Road
	Location of Residence

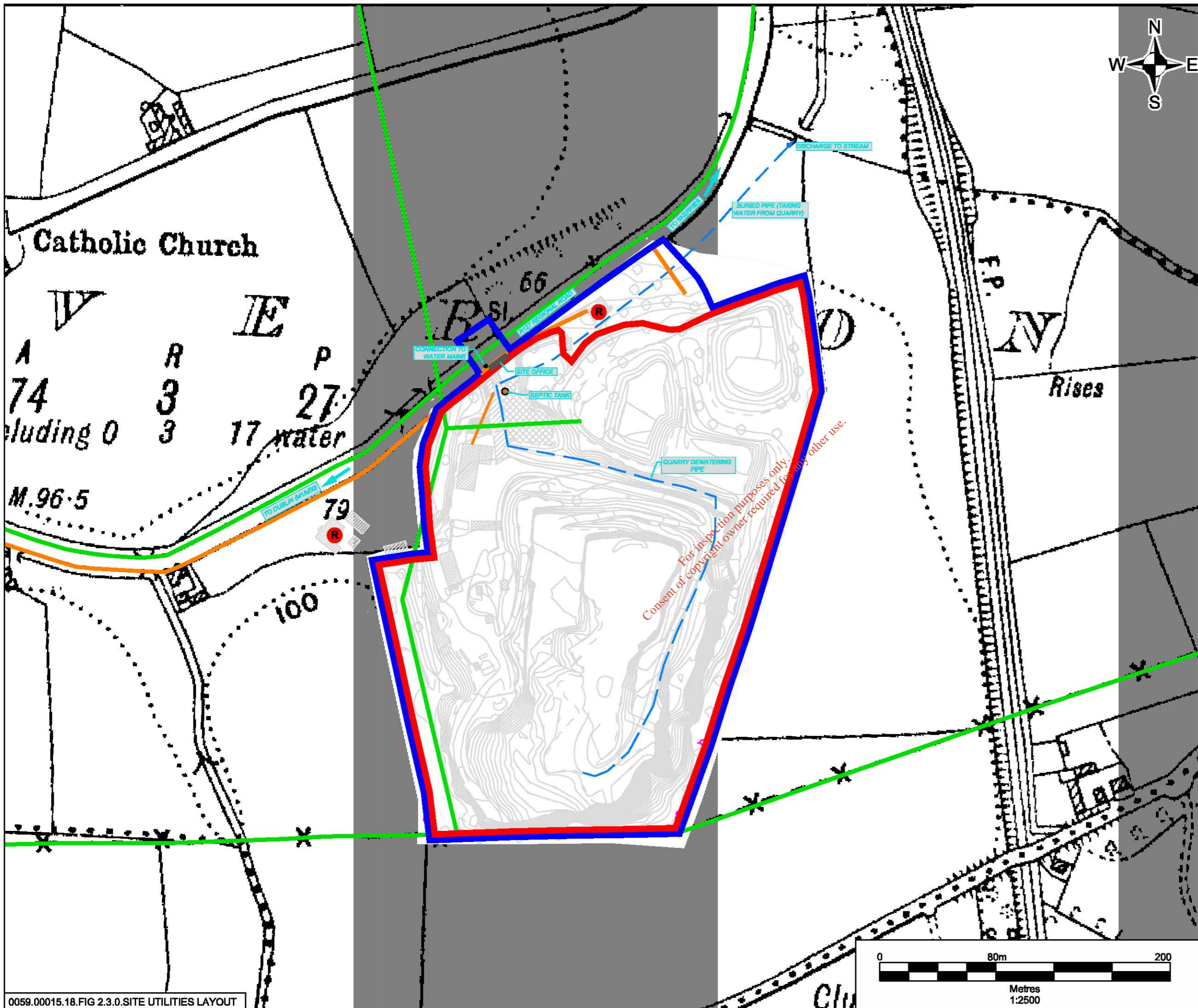
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 PROPOSED SITE
 INFRASTRUCTURE LAYOUT

FIGURE 2.2

Scale 1:2,500 @ A3 Date AUGUST 2009



NOTES

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LEGEND

	Applicant's Land Interest (c. 8.6ha)
	Waste Licence Application Area (c. 7.9ha)
	Surface Water Drainage
	Overhead Telephone Line
	Overhead Electricity Line
	Location of Residence

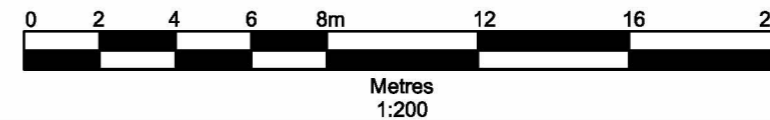
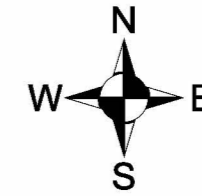
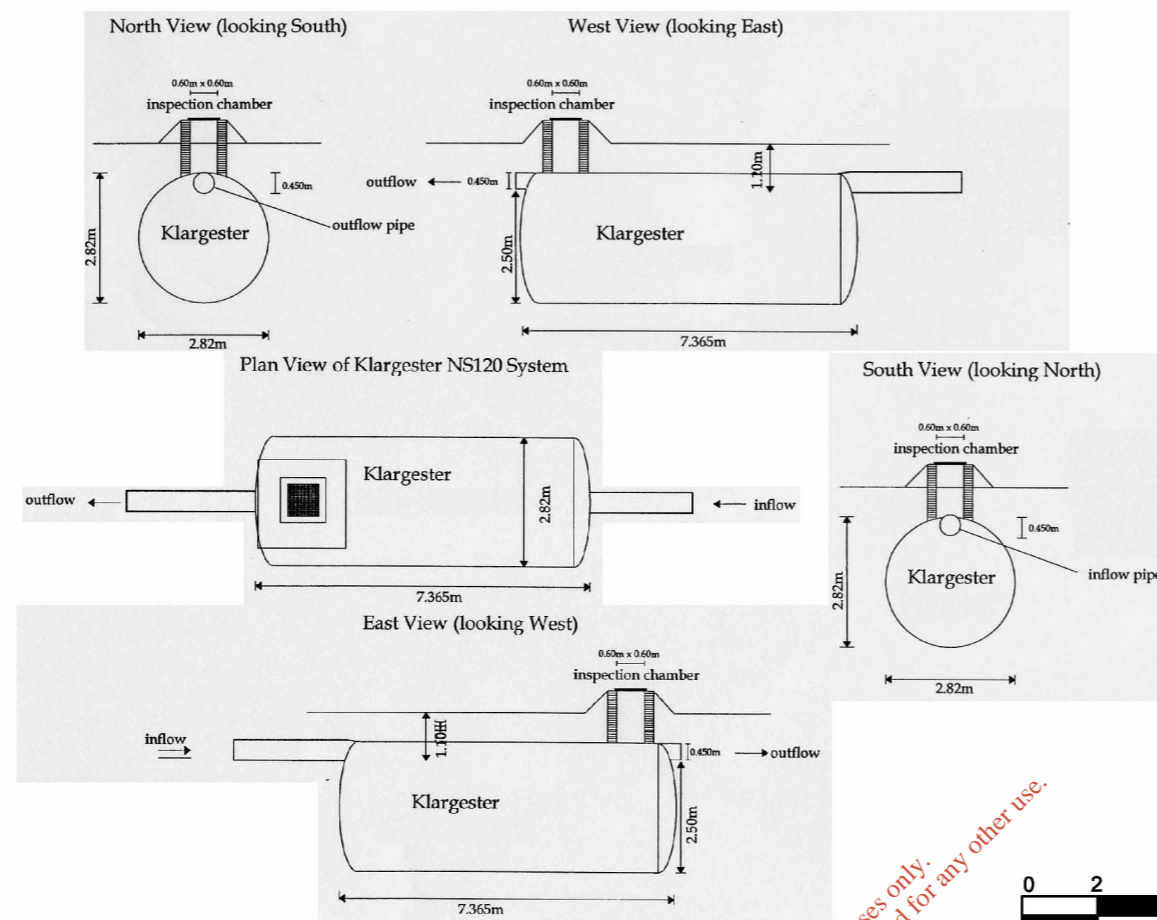
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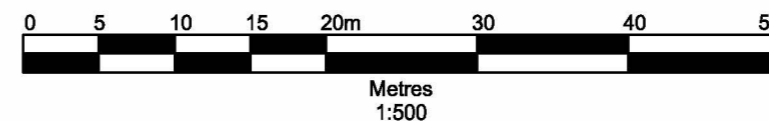
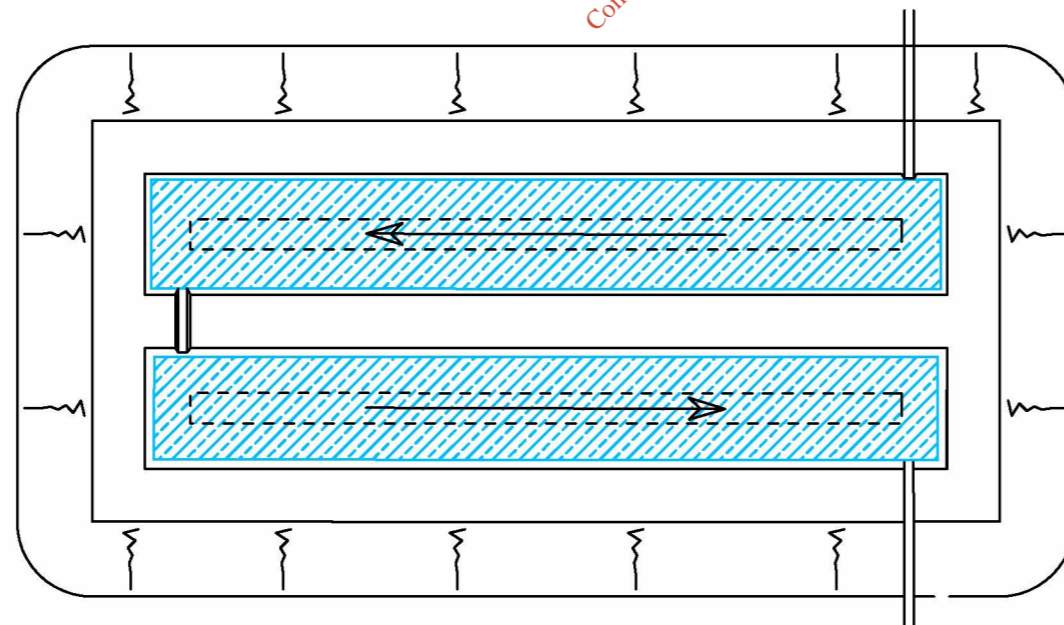
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SITE UTILITIES LAYOUT

FIGURE 2.3

Scale 1:2,500 @ A3 Date AUGUST 2009



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LEGEND



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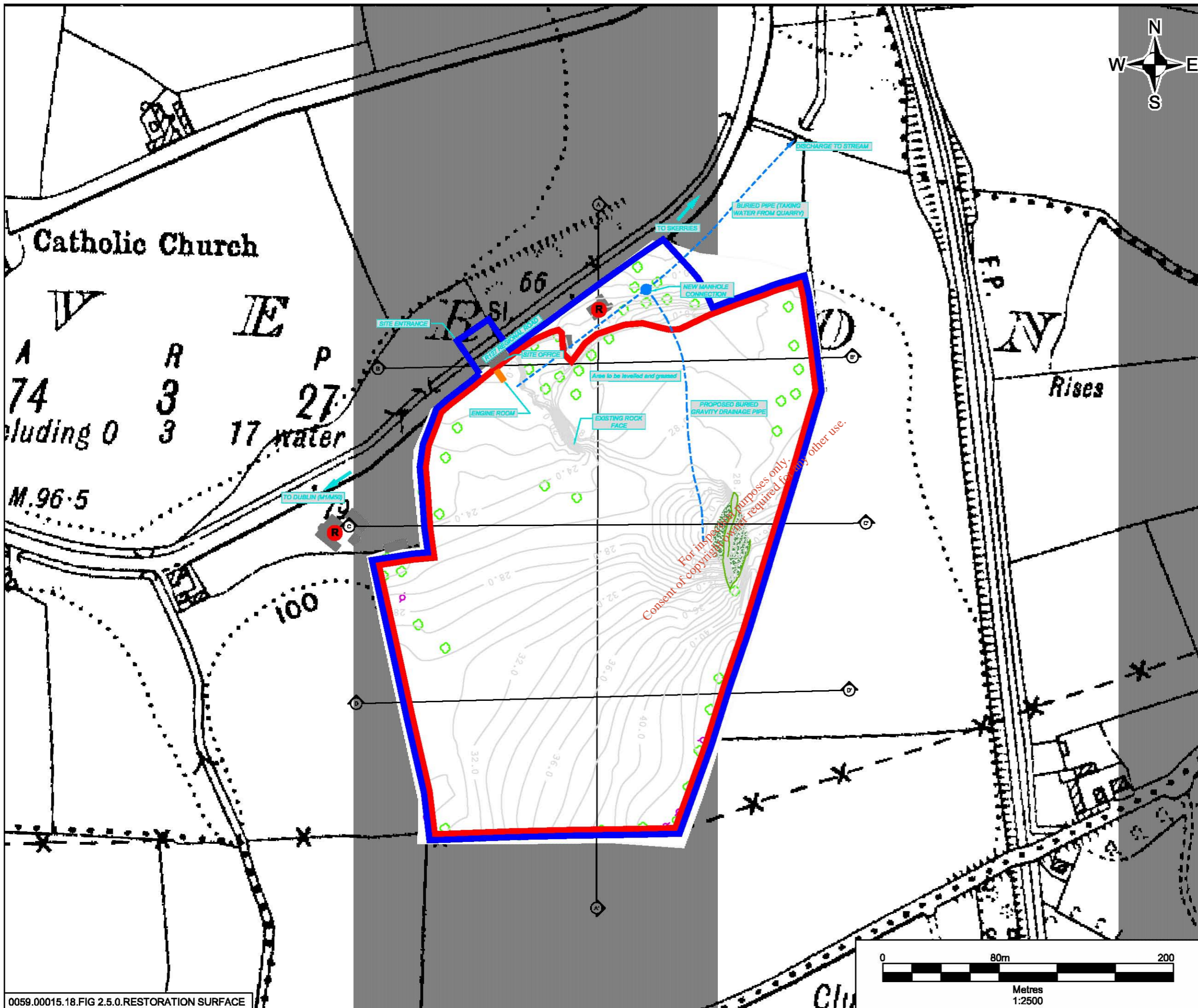
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SETTLEMENT POND &
INTERCEPTOR OPTIONS

FIGURE 2.4

Scale
AS SHOWN

Date
AUGUST 2009



NOTES

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LEGEND

- Applicant's Land Interest (c. 8.6ha)
- Waste Licence Application Area (c. 7.9ha)
- A Cross Sections
- Buried Pipe
- Top of Bank
- Bottom of Bank
- Road
- Contour Line
- / / / / Building
- R Location of Residence
- Engine Room

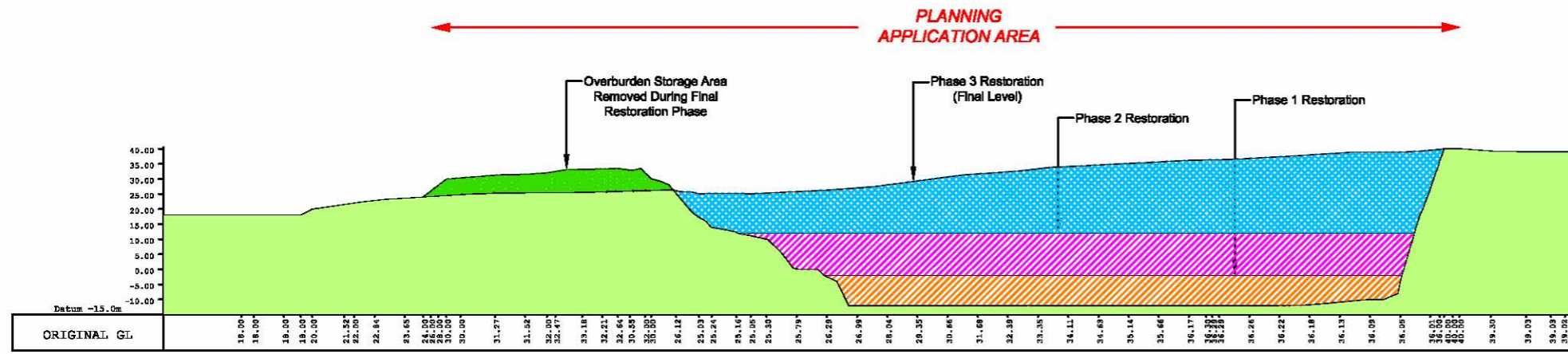
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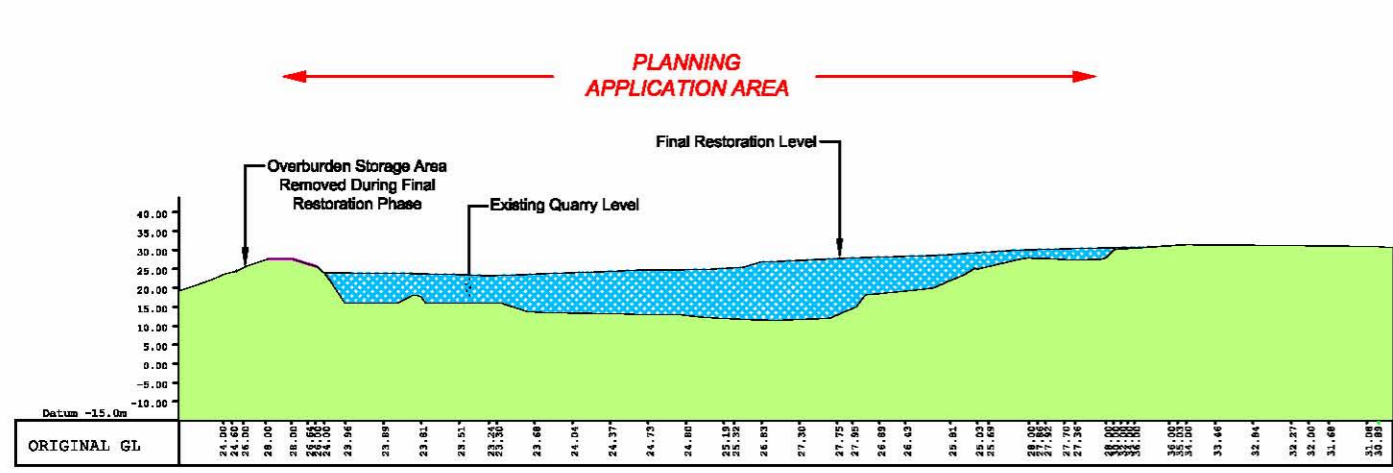
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 SKERRIES, CO. DUBLIN
 RESTORATION SURFACE

FIGURE 2.5

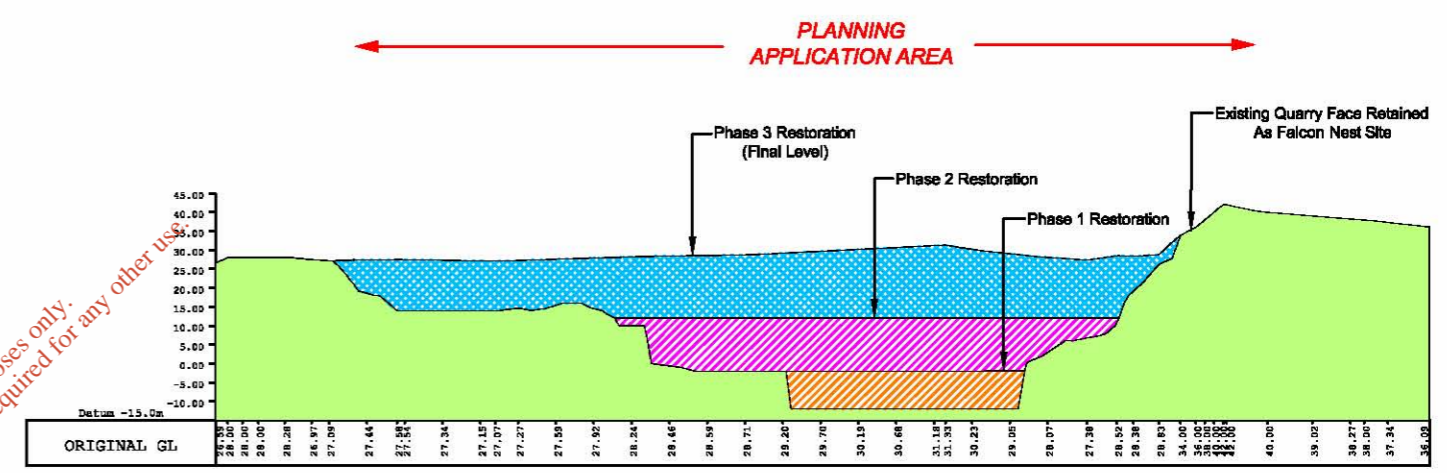
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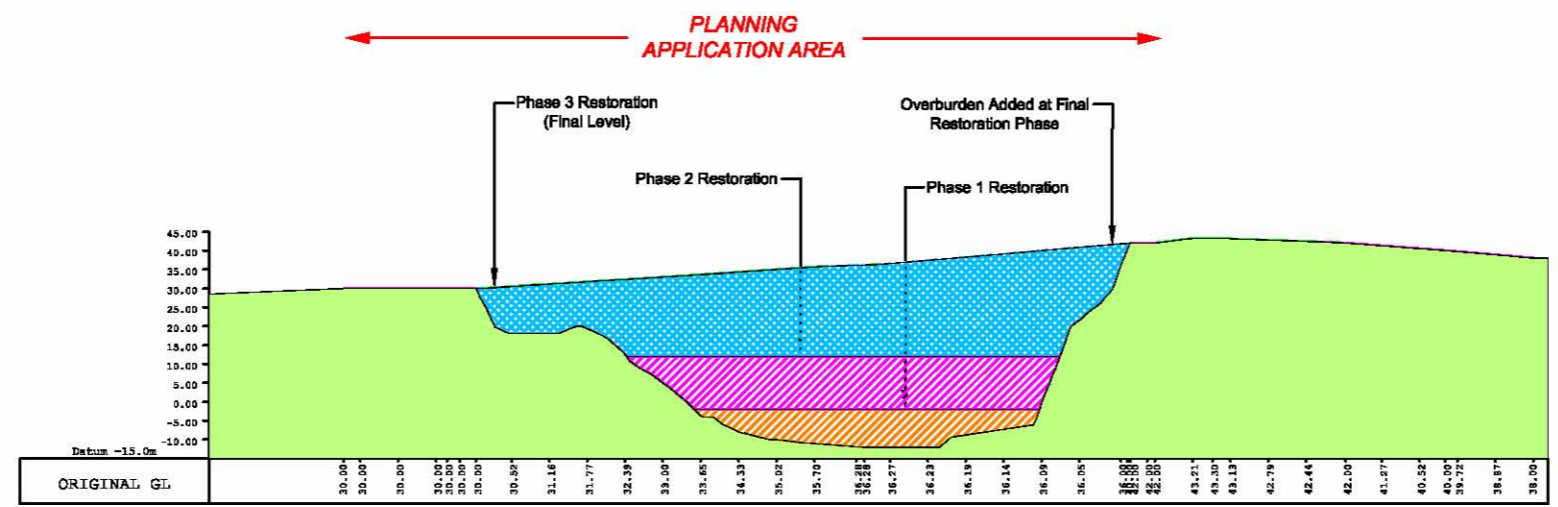
Section A-A'



Section B-B'



Section C-C'



Section D-D'

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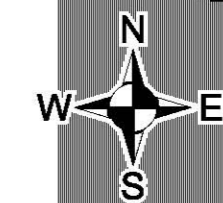
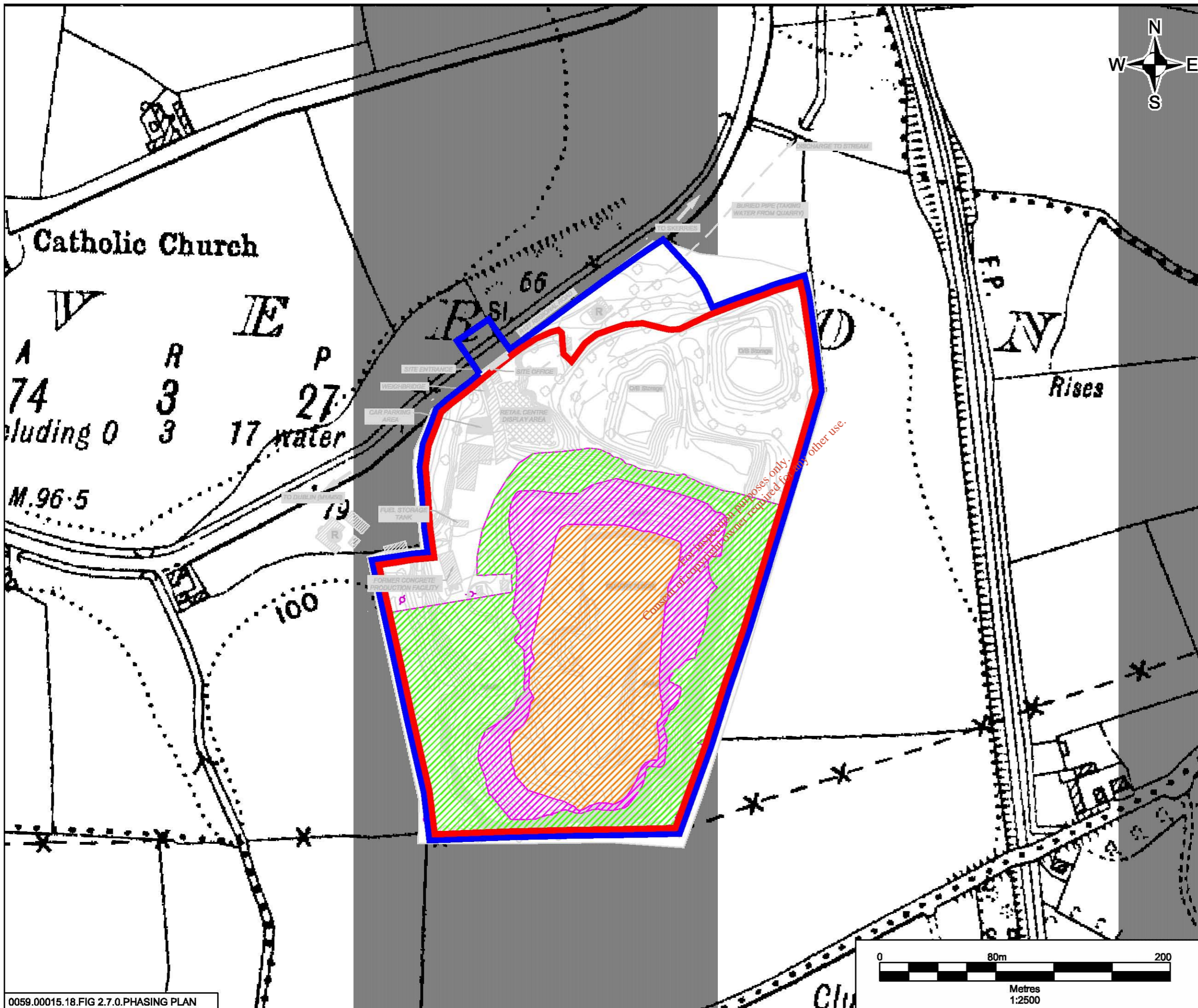
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RESTORATION CROSS SECTIONS

FIGURE 2.6

Scale: 1:2,000 @ A3

Date: AUGUST 2009



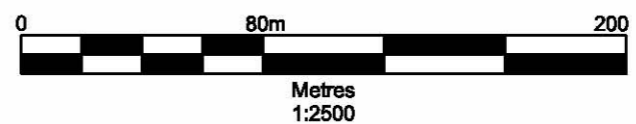
NOTES

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LEGEND

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	Waste Licence Application Area (c. 7.9ha)
	Phase 1 (c. 1.7ha)
	Phase 2 (c. 2.8ha)
	Phase 3 (c. 5.0ha)

0059.00015.18.FIG 2.7.0.PHASING PLAN



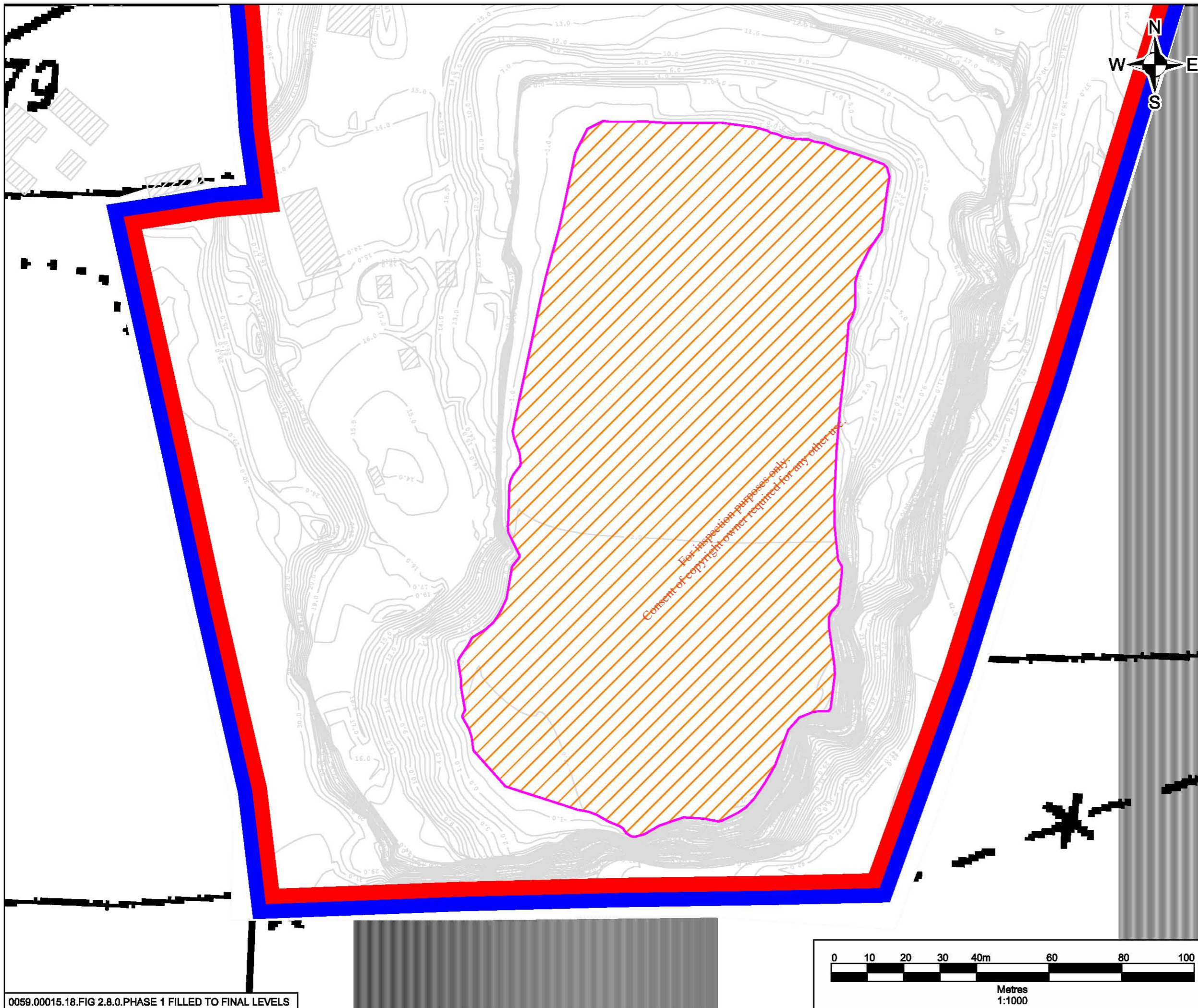
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PHASING PLAN




FIGURE 2.7

Scale 1:2,500 @ A3 Date AUGUST 2009




- NOTES**
1. Based on OSI 25inch Dublin Sheet No. 5 & 5a
 2. Ordnance Survey of Ireland Licence No. SU 0000709 (c) Ordnance Survey of Ireland & Government of Ireland
 3. Volume of Fill in Phase 1 is 108,564m³

LEGEND

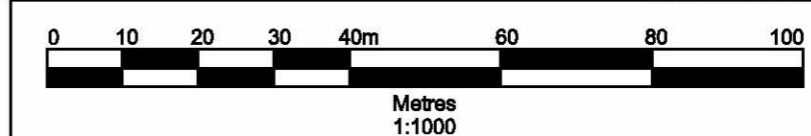
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	Waste Licence Application Area (c. 7.9ha)
	Phase 1 (c. 1.7ha)

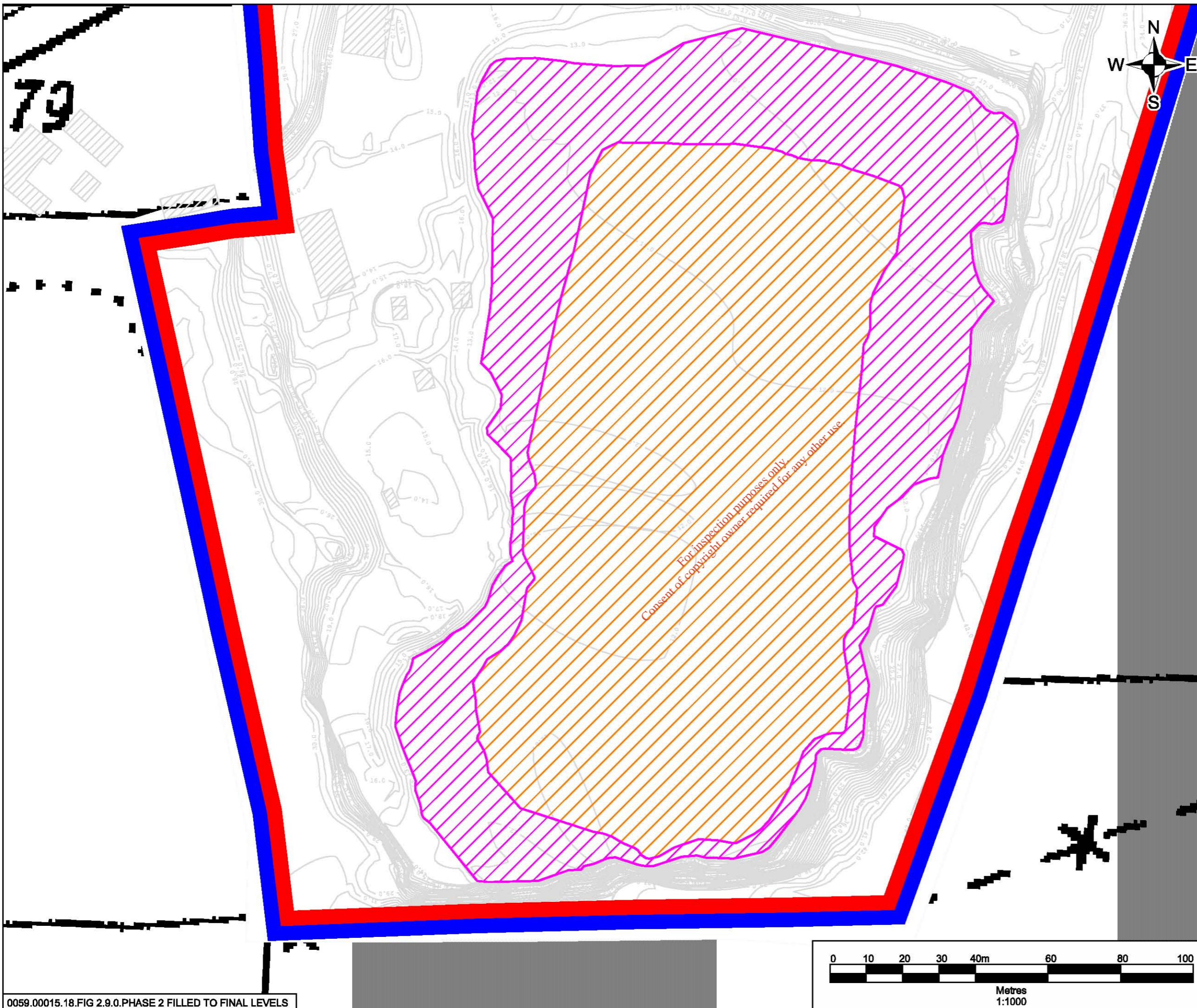
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PHASE 1 FILLED TO FINAL LEVELS

FIGURE 2.8





NOTES

1. Based on OSI 25inch Dublin Sheet No. 5 & 5a
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3. Volume of Fill in Phase 2 is 413995m³

LEGEND

	Applicant's Land Interest (c. 8.6ha)
	Waste Licence Application Area (c. 7.9ha)
	Phase 1 (c. 1.7ha)
	Phase 2 (c. 2.8ha)

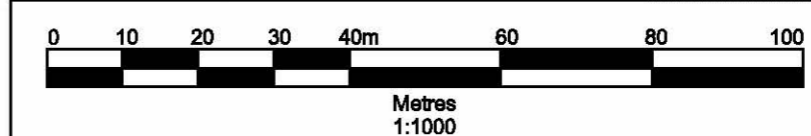
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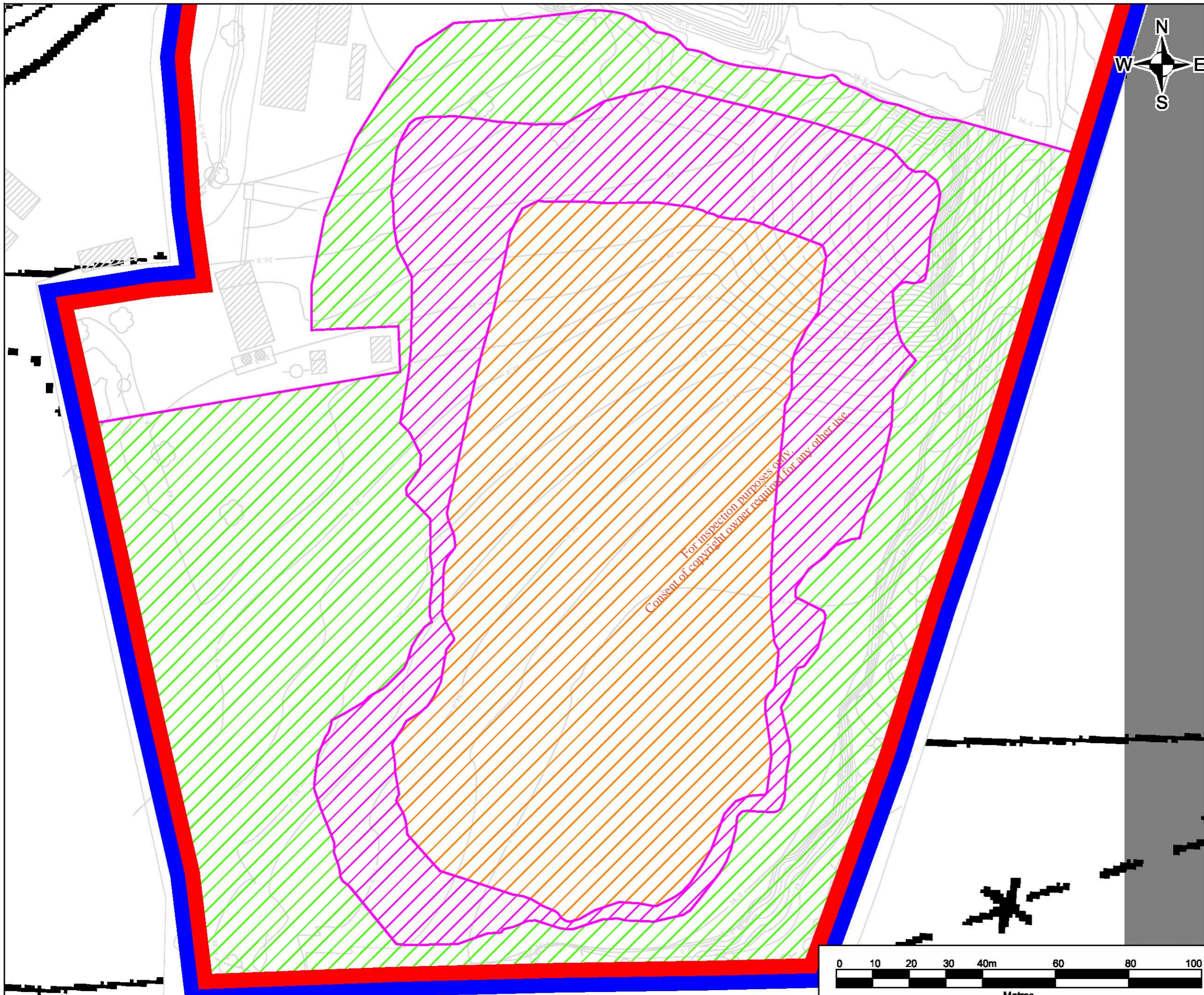
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PHASE 2 FILLED TO FINAL LEVELS

FIGURE 2.9





NOTES

1. Based on OSI 25inch Dublin Sheet No. 5 & 5a
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3. Volume of Fill in Phase 3 is 1,170,000m³

LEGEND

	Applicant's Land Interest (c. 8.6ha)
	Waste Licence Application Area (c. 7.9ha)
	Phase 1 (c. 1.7ha)
	Phase 2 (c. 2.8ha)
	Phase 3 (c. 5.0ha)

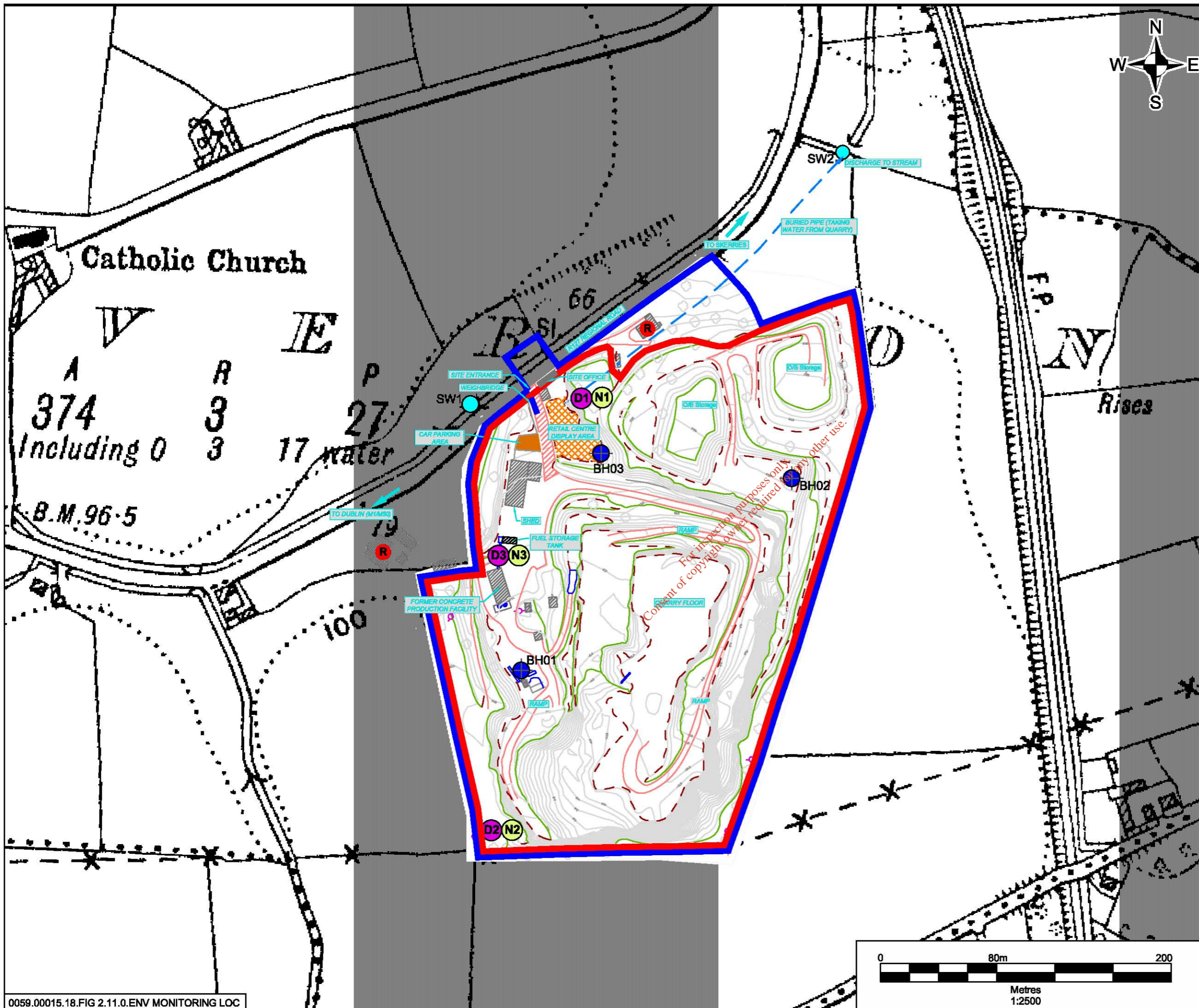
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ROADSTONE DUBLIN LTD.
WASTE LICENCE APPLICATION
 WASTE RECOVERY FACILITY,
 MILVERTON, SKERRIES, CO. DUBLIN
PHASE 3 FILLED TO FINAL LEVELS

FIGURE 2.10

Scale 1:1,000 @ A3 Date AUGUST 2009



NOTES

1. Based on OSI 25inch Dublin Sheet No. 5 & 5a
2. Ordnance Survey of Ireland Licence No. SU 0000709 (c) Ordnance Survey of Ireland & Government of Ireland

- LEGEND**
- Applicant's Land Interest (c. 8.6ha)
 - Waste Licence Application Area (c. 7.9ha)
 - R Location of Residence
 - + BH02 Groundwater Monitoring Well
 - SW1 Surface Water Monitoring Well
 - D2 Dust Monitoring Location
 - N2 Noise Monitoring Location



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ROADSTONE DUBLIN LTD.
WASTE LICENCE APPLICATION
WASTE RECOVERY FACILITY,
MILVERTON, SKERRIES, CO. DUBLIN
ENVIRONMENTAL MONITORING
LOCATIONS

FIGURE 2.11

Scale 1:2,500 @ A3

Date AUGUST 2009

ROADSTONE DUBLIN LIMITED

**INERT WASTE RECOVERY FACILITY
MILVERTON, SKERRIES, CO. DUBLIN**

WASTE ACCEPTANCE AND HANDLING PLAN

AUGUST 2009



Prepared by :
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- 1 INTRODUCTION**
- 2 WASTE ACCEPTANCE**
 - 2.1 Prior Approval of Waste Producers / Waste Collectors
 - 2.2 Basic Characterisation
 - 2.3 Compliance Testing
 - 2.4 On-Site Verification
- 3 WASTE HANDLING**
 - 3.1 Soil and Stones
 - 3.2 Construction and Demolition Waste

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1. INTRODUCTION

Roadstone Dublin Ltd. proposes to establish an inert waste recovery facility at its site at Milverton, Skerries, Co. Dublin at Irish National Grid Reference E324700 N259200. The facility is located on lands used by the company for limestone extraction and production of construction materials.

Activities at the waste recovery facility include

- (i) Use of imported inert natural materials, principally excess inert soil, stones and/or broken rock excavated on construction sites, to backfill and restore a large existing void created by previous extraction of limestone bedrock
- (ii) Separation of any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) unintentionally imported to site, prior to removal off-site to appropriately licensed waste disposal or recovery facilities
- (iii) Temporary stockpiling of topsoil and subsoil pending re-use as cover material for phased restoration of the site
- (iv) Phased restoration of the backfilled void (including placement of cover soils and seeding) and return to use as agricultural grassland
- (v) Environmental monitoring of noise, dust, surface water and groundwater for the duration of the site restoration works.

Backfilling and restoration of the quarry requires placement, compaction and capping of approximately 1,300,000m³ (or 2,470,000 tonnes) of inert soil and stone and minor quantities of recycled construction materials (for temporary haul road construction). Of this approximately 1,000,000m³ (or 1,900,000 tonnes) must be sourced from external construction or demolition sites.

Secondary aggregate will not be produced at the site. A limited amount of inert concrete / brick or recycled secondary aggregate will be imported to the site for construction of temporary haul roads internally within Roadstone Dublin's waste recovery facility.

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2. WASTE ACCEPTANCE

The site at Milverton operated as a quarry up until late summer 2008. It does not currently operate as a soil recovery facility. This current proposal to backfill the worked out quarry with in-situ and imported inert soil and stones is part of the quarry restoration works which were previously notified and agreed with Fingal County Council as part of the quarry registration process undertaken in accordance with Section 261 of the Planning and Development Act of 2000 (Condition No. 13 of Planning Ref. Q/05/003)

Only inert waste is recovered at this waste recovery facility. Soil and stones are generally recovered directly at the facility without any further processing. Small quantities of inert and/or recovered C+D waste is imported to the site for re-use in construction of temporary internal haul roads. No processing of inert C+D waste takes place at the proposed waste facility.

2.1 Prior Approval of Waste Producers / Waste Collectors

Inert waste (principally soil) shall only be accepted at this facility from waste producers and/or waste collectors who have been pre-approved by the site operator, Roadstone Dublin Ltd.

Approval to import inert waste to the facility shall only be issued to waste producers and/or waste collectors who can demonstrate that they have a valid waste collection permit and have a proven track record in the construction, waste management and/or haulage sectors.

Once approved, each waste collector will be issued with a unique customer code which must be presented at the weighbridge each time a consignment of inert soil waste is brought to the facility. Failure to present a valid customer code will mean the consignment will be rejected and not permitted to access the facility.

2.2 Basic Characterisation

Basic characterisation is the first step in the waste acceptance procedure and typically constitutes a full characterisation of the waste by gathering all necessary information to facilitate safe recovery in the long term. Basic characterisation is required for each type of waste.

The inert materials to be accepted at the site for use in backfilling / recovery activities are identified by their European Waste Catalogue reference number below

EWG Code	Waste Description
17 01 01	Concrete
17 01 02	Bricks
17 05 04	Soil and stones other than those mentioned in 17 05 03
17 05 06	Dredging spoil other than those mentioned in 17 05 05
20 02 02	Soil and stones

These materials are included on the list of wastes in Clause 2.1.1 in Section 2 of the Annex to Council Decision 2003/33/EC which are assumed to fulfil

- (i) the criteria set out for the definition of **inert waste** in Article 2(e) of the Landfill Directive (1999/31/EC) and
- (ii) the criteria listed in Section 2.1.2 of the Annex to 2003/33/EC.

As such, these wastes are deemed to be **exempt** from the general requirement for characterisation testing. All inert waste conforming to the EWC codes provided above are therefore considered acceptable for recovery at the Milverton facility without prior characterisation testing.

Note that the exemption from prior characterisation testing only applies to waste streams imported from a single known source, irrespective of whether they are separated or mixed.

Notwithstanding the above, the following restrictions shall apply

- (i) consignments containing peat shall not be accepted at this facility
- (ii) consignments containing soil from known or suspect contaminated sites or sites having a potentially high risk of contamination (eg. garage forecourts) shall not be accepted at this facility
- (iii) consignments containing asbestos, chemicals or any potentially hazardous materials shall not be accepted at this facility
- (iv) waste from unknown and/or unrecorded sources shall not be accepted at this facility
- (v) all inert soil accepted at the facility must have minimal quantities of other non-inert waste types (like metals, plastic, wood, rubber etc.)

Although there may be an exemption from testing, there is still a requirement to collect and record some basic characterisation information in advance which clearly demonstrates that the imported waste is inert. The waste producer and/or waste collector is therefore required to provide the following basic characterisation information to Roadstone Dublin prior to forwarding waste consignments to this waste facility

- (i) source and origin of the waste
- (ii) information on processes producing the waste (excavation, demolition etc.)
- (iii) composition and consistency of the waste
- (iv) physical appearance of the waste (smell, colour, physical form)
- (v) classification code according to European waste list (CD 2001/118/EC)

The producer of the waste and/or the waste collector will be responsible for ensuring that the basic characterisation information provided is correct.

Once Roadstone Dublin is satisfied on the basis of the basic characterisation information provided that the wastes to be imported to site are inert, it shall issue an approval reference code to the waste producer / collector to be provided on documentation accompanying the waste consignment(s) forwarded for recovery at this facility.

2.3 Compliance Testing

When wastes have been deemed to be acceptable for recovery at this facility on the basis of a basic characterisation, they shall be subject to subsequent compliance testing to demonstrate that they do in fact comply with basic characterisation and acceptance criteria.

As previously indicated, all waste materials to be accepted at this waste facility are included on the list of wastes in Clause 2.1.1 in Section 2 of the Annex to Council Decision 2003/33/EC which are assumed to fulfil

- (i) the criteria set out for the definition of inert waste in Article 2(e) of the Landfill Directive (1999/31/EC) and
- (ii) the criteria listed in Section 2.1.2 of the Annex to 2003/33/EC.

As such, these wastes are also deemed to be **exempt** from the general requirement for compliance testing.

Although there may be an exemption from compliance testing, there is still a requirement to check the imported wastes to ensure compliance with the basic characterisation information provided (excluding testing).

All inert soils imported to the site shall be brought in HGV trucks from the weighbridge at the front of the site directly to the active backfilling face (soil and stones). Prior to unloading (end-tipping) the imported waste, the documentation accompanying the waste consignment shall be presented by the waste producer or waste collector for checking by a site operative employed directly by Roadstone Dublin. The waste will be accepted at the facility provided

- (i) the waste being imported is the same as that described in the accompanying documentation and
- (ii) the accompanying documentation includes a valid approval code issued by Roadstone Dublin.

If any waste consignment forwarded to the waste recovery facility

- (i) fails to comply with the acceptance policy outlined in Section 2.2 above
- (ii) is inconsistent with the basic characterisation information provided
- (iii) is discovered or suspected to have unacceptable waste intermixed with it
- (iv) does not have a valid approval code on the accompanying documentation

it shall be rejected and removed off-site. A record of the rejection of the waste consignment will be made in the Site Rejects Book. If records indicate that consignments from a particular waste producer and/or waste collector are being repeatedly rejected, Roadstone Dublin will review whether or not to withdraw approval for its continued use of the facility.

In order to verify that the waste being accepted and used for restoration purposes at this recovery facility is inert, Roadstone Dublin will undertake some limited compliance testing on soil and stones which have been placed and compacted at the site. A representative sample of waste shall be taken from one in every 500 loads of inert soil accepted at the recovery facility. A leachate sample derived from each soil sample (at 10:1 liquid:solid ratio typically) will be subject to compliance testing focusing on key contaminant indicators, principally

- Arsenic (As)
- Cadmium (Cd)
- Lead (Pb)
- Mercury (Hg)
- Zinc (Zn)
- Total Organic Carbon
- BTEX (Benzene, Toluene, Ethylbenzene and Xylene)
- Diesel Range Organics / Mineral Oil

Limit values for inert soils shall be in accordance with those set by *Council Decision 2003/33 of 19 December 2002 establishing criteria for the acceptance of waste at landfills*. Test data shall be used to confirm that the imported soils are inert and comply with established waste acceptance criteria.

2.3 On-site Verification

As material is being unloaded, end-tipped and/or stockpiled at the active backfilling face (soil and stones), it shall be subject to further visual inspection by site operatives to ensure that it is consistent with the characterisation data provided and that there is no non-hazardous or hazardous waste intermixed with it.

If some contamination of soil and stones is immediately evident from visual inspection (unusual colour, smell etc.) or if unacceptable quantities of other materials (like metals, plastic, soil, organics, wood, rubber etc.) are included in it, it shall be loaded back onto the HGV and transferred off-site.

The waste producer / waste collector who imported the suspect material to site will be advised that no further loads will be accepted from the same source as the suspect material, pending completion of more detailed waste characterisation (potentially including testing) to confirm that all waste generated at the same source is inert. Testing shall be undertaken at the expense of the waste producer / waste collector. In this instance, characterisation testing shall comprise a minimum of one batch leaching test for parameters listed in Section 2.1.2 of Annex 2 of Council Decision 2003/33/EC.

3 WASTE HANDLING

Following unloading at the active backfilling area, accepted consignments of soil and stones will immediately be spread and compacted in-situ using a bulldozer.

Should minor quantities of non-inert waste occur amongst the soil and stones, it shall be separated out (mechanically or by hand, as appropriate) and temporarily stored in skips at the waste inspection and quarantine area prior to removal off-site to appropriately licensed waste disposal or recovery facilities

In the unlikely event that suspected contamination of the soil matrix is identified during the spreading, placement and compaction operations, it will be segregated from the main waste body and transferred to the covered waste inspection and quarantine facility pending closer inspection and testing to establish whether it is inert or not. Suspect waste will be identified on the basis of visual inspection (unusual colour, intermixed wastes etc) or by smell. Detailed records will be kept of all inspections and testing of suspect wastes.

Should inspections and/or testing indicate that the materials transferred to the waste inspection and quarantine facility are non-inert and cannot be accepted and used for restoration purposes at this site, they will be placed in skips and covered pending removal off-site by permitted waste collectors to a suitably licensed / permitted waste disposal or recovery facility.

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ROADSTONE DUBLIN LIMITED

**INERT WASTE RECOVERY FACILITY
MILVERTON, SKERRIES, CO. DUBLIN**

OUTLINE ENVIRONMENTAL CONTINGENCY PLAN

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AUGUST 2009



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1 ACCIDENTS AND THEIR CONSEQUENCES

1.1 Introduction

This document is the Contingency Plan for the inert waste recovery facility operated by Roadstone Dublin Ltd. at Milverton, Skerries, Co. Dublin. The principal waste activity at the site is the placement and compaction of inert soils in an existing quarry void.

All inert soils are imported to site from external construction and development sites. Minor quantities of inert and /or recovered C+D waste are imported to the facility from external construction sites / recovery facilities and re-used in the construction of temporary internal haul roads within the facility.

The purpose of this document is to identify contingency plans and arrangements that will be implemented during the operation of the inert waste recovery facility.

This document considers those aspects of on-site operations that may pose a risk of accidents with environmental consequences.

The resultant accident management plan describes the various techniques that will be implemented at the site to minimise the risks presented by site operations to the environment. It does not include those accidents, which may solely affect the health and safety of operatives, contractors or visitors to the site.

1.2 Accident / Hazard Identification

The following categories of potential hazard / accident have been identified and risk management measures are detailed in the following sections, which should be implemented at the site to ensure the environmental risks associated with the hazards are tolerable.

Fire

The fire management plan, which describes the procedures and precautions that will be implemented at the site, is presented in Section 2 of this plan.

Spillage and Leakage

Procedures that will be implemented at the site to minimise the risk from spillage and leakage is presented in Section 3 of this plan.

Stability

The measures to be taken during both the design process and during routine operations to ensure the stability of the site and prevent soil slippage are detailed in Section 4 of this plan.

Security and Vandalism

Measures that will be adopted to minimise the potential environmental impact associated with deliberate damage to control mechanisms such as fuel storage facilities are detailed in Section 5 of this plan.

2. FIRE MANAGEMENT PLAN

2.1 Operational Techniques

Waste management sites can represent a potential fire risk for a number of reasons.

- Site buildings contain electrical appliances and other sources of ignition along with materials that would readily burn.
- Litter and waste materials may support combustion.
- Maintenance activities on plant and equipment can represent a potential fire risk if necessary precautions are not taken.

Specific action that will be taken to prevent and minimise the risk of fires from these particular sources, together with general fire prevention precautions are detailed below.

Site Buildings/Electrical Appliances

All electrical appliances in use at the site will be tested in accordance with the Electrical Testing Regulations.

Housekeeping

Site buildings will be maintained in a tidy condition, and will be regularly cleaned to avoid the accumulation of paper and debris that may present an increased fire risk.

Litter and Combustible Waste

No litter or potentially combustible waste will be permitted to accumulate at the site.

Management Responsibility

The Facility Manager will have responsibility for ensuring that potential fire nuisances and hazards arising from site operations are minimised.

Training

All employees will undergo training relevant to their role in fire prevention, use of fire extinguishers, and emergency procedures.

Smoking Policy

Smoking will only be permitted at designated areas and specifically not within site buildings.

Fire Protection Equipment

Where appropriate, plant will be fitted with automated fire protection equipment.

Hot Work Permitting System

A formal permit to work system will be in place to ensure appropriate precautions are taken and approval obtained prior to any hot work being carried out on site plant and equipment.

Fire Fighting Equipment

Fire extinguishers will be provided in the site buildings and will be used if it is appropriate and safe to do so, in the event that fire is discovered in the building.

Smoke and Fire Alarms

Smoke and fire alarms will be fitted in the site offices.

2.2 Monitoring Techniques

All operatives will remain vigilant regarding the breakout of fire at the site, and the emergency procedure and action plan outlined below will be followed if fire is observed.

2.3 Fire Action Plan

Fire within Site Buildings

- The person discovering the fire will raise the alarm.
- If the fire cannot be safely tackled using appropriate fire extinguishers, the emergency services and the facility manager will be informed.
- Where applicable, and if it is safe to do so, all electrical supplies will be isolated and made safe in the area of the fire.
- The facility manager (or his deputy) will check for all visitors, contractors and staff to ensure everyone is accounted for.
- The facility manager (or his deputy) will direct the emergency services to any casualties.
- All used fire extinguishers will be returned to the supplier for refilling or replacement.

Plant and Equipment Fire

- The person discovering the fire will raise the alarm.
- If the fire cannot be safely tackled using appropriate fire extinguishers the emergency services and the facility manager will be informed
- If it is safe to do so, all electrical supplies will be isolated and made safe in the area of the fire.
- The facility manager (or his deputy) will check for all visitors, contractors and staff to ensure everyone is accounted for.
- The facility manager (or his deputy) will direct the emergency services to any casualties.
- All used fire extinguishers will be returned to the supplier for refilling or replacement.

Records

A fire log will be maintained. It will include the following details: -

- records of the maintenance of fire extinguishers;
- a record of all incidents of fire including date, time, nature and cause of the fire; and
- details on the action taken to extinguish the fire, and any subsequent changes to operational and emergency procedures.

The Environment Protection Agency will be advised of any serious fire incidents at the earliest practicable opportunity.

3 SPILLAGE AND LEAKAGE MANAGEMENT PLAN

3.1 Operational Techniques

In order to prevent spillages and leaks of potentially polluting materials and minimise the impact of any spillages that do occur, the following measures will be implemented at the site.

Unloading Procedure / Overfilling of Tanks and Bowsers

All potentially polluting materials delivered to site will be unloaded by suitably qualified employees from the delivery company, and overseen by a designated site operative. This will prevent the overfilling of mobile fuel bowsers in particular.

Storage Vessels/Containers

Potentially polluting liquids (principally fuel) will be stored in mobile, double skinned bowsers constructed to the appropriate Irish, British or International Standard, meeting the requirements of the Local Government (Water Pollution) Acts 1977 to 1990 and associated regulations.

Other potentially polluting liquids such as lubricating oils, waste oils derived from vehicle maintenance, pesticides etc, will be stored in containers located on sealed (ie. concreted) ground within the existing maintenance sheds.

All solid wastes arising on site and other solid potentially polluting materials will be segregated according to category, stored within containers which are designed to ensure the contents do not spill or escape and covered as necessary.

Inspection and Maintenance

All containers and bowsers will be inspected on a daily basis by the facility manager (or his designated deputy) to ensure their continued integrity, and identify the requirement for any remedial action.

In the event that remedial action is required, arrangements will be made to transfer any potentially polluting materials to secure alternative storage pending completion of remedial work. Remedial work will be undertaken as soon as possible. Containers and bowsers found to be faulty will not be used for the storage of polluting materials until appropriate remedial action is completed.

Absorbent Materials

A supply of materials suitable for absorbing and containing any minor spillage will be maintained on site.

3.2 Spill Containment Equipment

Materials suitable for containing spills including sealing devices and substances for damaged containers, drain seals and booms, and overdrums will be maintained at the site.

Plant Maintenance

All plant and equipment will be subject to maintenance in accordance with the suppliers / manufacturer's recommendations to avoid the failure of items of plant and equipment giving rise to potential emissions to the environment.

Drains

Surface water channels and drains will be subject to daily visual inspection by the Facility Manager. Action will be taken to remove any obstructions to flow.

3.3 Monitoring Techniques

All site personnel will be tasked with monitoring for evidence of spillage and leakage, during their day-to-day routine. The condition of bowsers and containers will also be inspected on a daily basis.

A daily and weekly inspection checklist will be used to record inspections of infrastructure, operations, pollution control and amenity management and monitoring. The inspection checklist will be used by the facility manager to identify requirements for remedial action.

Any evidence of spillage or leakage will be reported immediately to the Facility Manager (or his deputy) for appropriate remedial action.

3.4 Leaks and Spillage Action Plan

In the event of spillage of polluting materials, immediate action will be taken to contain the spillage.

The spillage will be reported to the Facility Manager, who will assess the situation and decide on the most appropriate course of action.

The action taken will depend upon the size of the spillage, the location of the spillage in relation to sensitive receptors and the chemical and physical nature of the spilled material.

Action taken may include some or all of the following: -

- if possible the leak will be stopped;
- if it safe to do so, the cause of the spill or leak will be isolated;
- if the spillage is small, spill granules will be used immediately if necessary to prevent the spill spreading. The area will be cleared and all contaminated material will be sent to an appropriately licensed site for disposal;
- if the spill is larger, inert materials such as clay or sand will be used to make a containment bund and specialist help will be sought to assist in clean up;
- in the event of a potentially serious spillage that may give rise to pollution of surface water immediate action will be taken if possible to prevent the spread of the spill into surface water channels and drains using suitable covers and barriers. The Environment Protection Agency will be informed immediately, and remedial action will be agreed;
- if the spillage cannot be contained using approved materials, the Environment Protection Agency and senior management will be contacted immediately and specialist help obtained;
- if a vehicle is found to be leaking, it will be moved to a position where the spillage can be contained i.e. quarantine facility, or other hard surfaced area, if it is safe to do so; and
- all personnel will follow instructions provided by managers or other competent persons. Appropriate precautions will be taken depending upon the nature of the spilled material to prevent any harm to human health, and all personnel involved in clean up will wear protective clothing appropriate for the nature of the spilled material.

All spillage incidents, site inspections, and remedial actions will be recorded in the site diary.

4 STABILITY MANAGEMENT PLAN

To ensure the long-term integrity of the slopes at the restoration site, precautions will be incorporated both at the design stage and during backfilling operations as detailed below.

4.1 Design Considerations / Stability Assessment

Stability of slopes prior to, during and following restoration of the former quarry is a key consideration during the design process.

The following factors have been taken into account during the design process: -

- *nature of substrata*, i.e. the presence of any historical mining and quarrying, presence of superficial deposits, variation in the water table, geotechnical and hydraulic properties of any materials to be utilised at the site;
- *stability of inert waste materials*, i.e. stability of temporary slopes during backfilling and
- *stability of capping and restoration layers*, i.e. final surface gradients and effects of soil settlement.

4.2 Operational Techniques

The following operational techniques to ensure stability of the backfilled materials, will be adopted at the site.

- *Waste compaction* : Inert waste will be levelled and compacted as soon as possible after discharge at the working area. This will minimise any future settlement, increase the density and strength of the backfill materials and enhance stability;
- *Height of tipping face* : The maximum height of the tipping face after compaction will be 2.5 metres. The end-tipping of uncompacted soil over high unstable faces will therefore be avoided.
- *Gradient of temporary slopes* : During restoration of the site, the slope adopted for temporary unrestored faces sloping to the floor will depend upon the nature of the soil, its moisture content, the height of the slope, nature of the foundation soil and the consequences of failure.

4.3 Monitoring Techniques

The following action will be taken to monitor the stability and settlement of the soil slopes: -

Visual Inspections

Visual inspections will be carried out at weekly intervals to identify the following: -

- evidence of tension cracks in temporary slopes caused by movement of the inert waste;
- evidence of instability or movement (back scarps and/or toe bulging)
- evidence of differential settlement causing depressions in the restored landform or damage to the surface water drainage system.

4.4 Action Plan

In the event that stability or settlement problems are discovered, appropriate remedial action will be taken as detailed below: -

Instability of Waste Mass

If there is visual evidence of movement within the inert soil mass, or evidence from the regular topographical surveys, the situation will be reviewed by a competent independent engineer, and appropriate remedial action will be taken in agreement with the Environment Protection Agency.

The action taken will depend upon the severity of the movement, the timescales over which the unstable mass will remain unsupported, and the consequences of failure.

Action taken may include one or more of the following: -

- the situation will continue to be monitored through regular visual inspections and topographical surveys;
- prohibition of operations at the base of the slope, which may place operatives at potential risk;
- adjustment to phasing of backfilling and restoration operations to provide additional support to the inert soil mass as soon as possible;
- engineering work to reduce the gradient of the slope and reduce the risk of failure; and
- revised design for future phases to reduce slope gradients and/or height of slopes and reduce time period over which temporary slopes remain unprotected.

Records

Records will be maintained as follows: -

- the results of visual inspections and topographical surveys;
- stability problems including date, nature and suspected cause of the problem; and
- details on the corrective action taken, and any subsequent changes to site design or operational procedures.

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5 SECURITY MANAGEMENT PLAN

Many potential problems can arise from inadequate control over access to waste management sites. These problems include: -

- non-permitted waste being imported in contravention of the Waste Licence;
- fly-tipping of wastes at the site entrance; and
- damage to plant and equipment.

Such problems not only disrupt safe operation of the waste facility but can also have significant financial implications for the operator who will be required to replace or repair stolen or damaged equipment. Environmental damage can also result if control systems are compromised.

5.1 Operational Techniques

In order to minimise the risk of problems arising as a result of inadequate security, the following measures will be implemented at the site.

Building Security

The permanent site office, at the front of the site, will have the benefit of a security alarm to discourage intruders. Windows will also be fitted with bars and /or shutters to prevent damage by vandals.

Lighting

The permanent site office and hardstanding area will have security lighting to discourage unauthorised visitors during the hours of darkness.

Fencing

The site will have the benefit of perimeter fencing which will extend around the perimeter of the site.

Security Gates

Security gates, which span the full width of the access road will be provided at the entrance to the site. The gates will be locked outside operational hours to deter unauthorised vehicular and pedestrian access. Access to gate keys will be restricted to a small number of Roadstone employees.

Inspection

Gates and fencing will be inspected weekly by the Facility manager (or his nominated deputy), to identify deterioration and damage, and the need for any repairs.

Maintenance and Repair

The fencing and gates will be maintained and repaired when required to ensure their continued integrity. In the event that damage is sustained, a temporary repair will be made within 24 hours until permanent repairs can be affected.

Warning Notices

Notices warning against unauthorised access (and alerting potential trespassers to on-site hazards) will be erected at the site entrance and will be repeated as necessary at locations around the perimeter of the site.

Authorised Access System

All visitors to the site will be required to register their presence by signing in the visitor's book on entry to the site, and again on exit. This will minimise the risk of unauthorised visitors being present on site.

Reporting Systems

In the event of fly-tipped material being found at the entrance to the site, the fly tipped material will be examined for evidence of ownership. In the event of evidence being found, the Environment Protection Agency and/or Local Authority will be advised so that legal action may be considered.

5.2 Monitoring Techniques

The operational procedures outlined above, including the regular inspections, security and reporting systems will ensure continual monitoring of security provision at the site.

5.3 Action Plan

In the event of a breach of security at the site, the following course of action will be followed;

Unauthorised Access

The route of access will be determined, and consideration given to the following measures as appropriate: -

- repair of gates or fencing;
- replacement of gates or fencing with more secure design;
- erection of warning signs; and
- installation or implementation of additional security measures for example security cameras, more frequent patrols.

Unauthorised Tipping

- the material will be examined for evidence of ownership;
- the Environment Protection Agency and Local Authority will be informed;
- with the agreement of the Environment Protection Agency and/or Local Authority, the material will be removed and disposed of correctly;
- if appropriate, additional warning signs will be erected; and
- additional security measures will be considered.

Records

A record relating to the management and monitoring of security will be maintained. It will include the following details: -

- records of the inspections and maintenance of security fencing and gates;
- a record of all breaches of security and incidents of fly-tipping, and investigations of these breaches of security; and
- details of the action taken to replace or repair security equipment, and investigate fly tipping, including any subsequent changes to operational procedures.