

# DESCRIPTION OF WASTE RECOVERY FACILITY 2

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## INTRODUCTION

### Principal Elements

- 2.1 The proposed quarry restoration scheme and inert soil recovery facility at Calary Quarry in the townlands of Killough Upper and Glencap Commons Upper, Kilmacanogue, Co. Wicklow provides for:
- Use of approximately 3,280,000 tonnes of imported inert natural materials, principally excess soil, stones and/or broken rock, to restore a large existing quarry by backfilling it to former ground level;
  - Installation of temporary site infrastructure and services including, site office, staff welfare facilities, weighbridge (with dedicated office), wheelwash, settlement ponds, pumphouse, hardstand areas, fuel and water storage tanks, waste inspection and quarantine facility and storage sheds;
  - Separation of any construction and demolition waste (principally concrete, metal, timber, PVC pipes and plastic) inadvertently imported to site prior to removal off-site to authorised waste disposal or recovery facilities;
  - Temporary stockpiling of topsoil pending re-use as cover material for final restoration of the site;
  - Restoration of the backfilled void (including placement of cover soils and seeding) and establishment of a heathland / grassland habitat similar to that which existed prior to quarrying;
  - Environmental monitoring of noise, dust, surface water and groundwater for the duration of the site restoration works and for a short period thereafter.
- 2.2 The existing void will only be backfilled using inert soil materials imported from external, pre-approved development sites. Soil stockpiled in existing overburden mounds, particularly around the western and southern perimeter of the quarry will also be used to backfill the quarry void. No peat, contaminated soils or non-hazardous waste will be accepted at the proposed recovery facility.
- 2.3 It is likely that relatively minor quantities of virgin aggregate will be imported to the application site and used to construct temporary haul roads across the facility as it is backfilled. The layout of the existing site is shown on Figure 2-1.

## SITE INFRASTRUCTURE

### Site Security

- 2.4 Vehicular access to Roadstone Ltd.'s property at Calary Quarry and the application site is directly off the R755 Regional Road which runs along the western site perimeter. There is no other vehicular access to the quarry or application site.
- 2.5 At the present time, the quarry / property boundary is secured by post and wire fencing and/or hedgerow. Prior to commencement of the proposed quarry backfilling and restoration activities, a survey of the entire property boundary will be undertaken and where necessary, new boundary fencing will be

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erected, existing fencing will be repaired and/or replaced and hedgerows will be strengthened or fortified by additional planting.

- 2.6 The majority of vehicles which will be permitted to access the proposed recovery facility will be HGV's carrying inert soil and stone for backfilling and restoration purposes. The proposal to backfill the quarry void with in-situ and imported inert soil and stones is part of a quarry restoration scheme which will be the subject of an application for planning permission to Wicklow County Council (WCC) and a waste licence application to the Environmental Protection Agency (EPA).
- 2.7 Inert materials will be accepted between 07.00 hours and 18.00 hours each weekday (Monday to Friday) and 08.00 hours to 14.00 hours on Saturday. No materials will be accepted at any other time, including Sundays and Public Holidays. These operating hours are generally consistent with those which previously applied when the quarry was operational (Condition No. 2 of Planning Permission Ref. No. 06/6189).
- 2.8 All heavy good vehicles (HGVs) importing inert soil and stone to the proposed recovery facility will be required to pass over a weighbridge to be installed along the access road leading into the quarry. The proposed waste recovery facility. CCTV cameras will be installed around the weighbridge and used to inspect all soil waste being imported for recovery at the facility.
- 2.9 On arrival, HGV drivers will identify themselves to the facility manager (or his authorised assistant(s)) at the weighbridge office before proceeding to the active backfilling location within the former quarry. The facility manager (or his assistant(s)) will take a copy of the weigh docket, record the time and date of arrival, the nature and origin of the imported soils, the customer / client, the truck licence plate number and relevant waste collection permit details.

### Site Roads and Parking Areas

- 2.10 All trucks delivering inert soil for quarry restoration purposes will be confined within the Applicant's landholding. Trucks will turn into the site from the R755 Regional Road and travel north over a short section of paved roadway within the application site towards a weighbridge which is to be installed at the existing infrastructure area on the western side of the quarry. After being weighed, the HGV's will turn southwards and travel over an existing unpaved haul road into the former quarry void, after which they will travel over a network of temporary haul roads to the active backfilling area.
- 2.11 At the present time, within the application area, there are concrete aprons and sealed hardstanding areas located around existing / former site infrastructure at the upper level on the western side of the quarry. These paved areas will remain in place for the duration of the waste recovery activities at the site.
- 2.12 A concrete apron has been installed at the quarry access and runs in excess of 30m to the infrastructure area. Routing exiting traffic over this surface will help minimise the volume of clay and dust transported out of the proposed recovery facility onto the public road network. Adequate provision for car parking by potential future employees and visitors will be provided at the infrastructure area, as indicated in Figure 2-2. Existing paved and unpaved haul roads around the application site are shown in Figure 2-1.

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- 2.13 It is envisaged that the existing concrete apron / hardstanding areas will be used for the occasional storage of any necessary site plant, equipment and/or materials required at the proposed waste recovery facility.

### Traffic Control

- 2.14 Traffic to and from the proposed waste recovery facility will generally travel south along the existing N11 National Primary Road from Dublin and Bray, or north along the same road from Ashford and Wicklow. It will turn off the dual carriageway at the existing grade separated junction at Kilmacanogue and onto the R755 Regional Road, before travelling through the village and west for approximately 3.8km to the quarry.
- 2.15 Planning permission requiring upgrading of the existing site access at Calary Quarry, to provide improved sightlines and visibility to both the north and south, was granted in 2008 on foot of a planning application for the continued operation of Calary Quarry (Planning Permission Ref. No. 06/6189 / An Bord Pleanála Ref. No. PL27.224400). If planning approval is obtained for the proposed quarry backfilling and inert soil waste recovery activity, upgrading work to the existing site access, in line with the previously approved design details, will be undertaken prior to commencement of any on-site recovery activity.
- 2.16 Road signage and road markings along the R755 Regional Road leading to/from the application site were also upgraded previously, in accordance with Condition No. 24 of the 2006 planning permission. Notices along the R755 provided advance warning to drivers of a quarry facility ahead (in accordance with Condition No. 25 of the same permission). Where appropriate, roadside notices will be replaced or reinstated as part of the proposed development of a recovery facility at the same site.
- 2.17 Internally, within the proposed waste recovery facility, warning notices, direction signs and speed restriction signs will be erected where appropriate along paved and/or unpaved roads leading to and from the active restoration area and/or the waste inspection and quarantine area.
- 2.18 All HGV traffic entering the application site will be required to pass over the proposed weighbridge, while all egressing HGV traffic will be routed through a planned wheelwash facility. Car and HGV / truck traffic routing through the proposed facility is indicated in Figure 2-2.

### Upgrading of R755 Regional Road

- 2.19 A review of existing public road infrastructure servicing the application site had identified a number of mitigation measures which could be implemented along the length of the R755 Regional Road to enhance the safety of road users as follows:
- At locations where the requisite forward sight visibility cannot be achieved and the width of the road is insufficient for the safe passage of HGV traffic, localised road widening could be undertaken, most notably at a location approximately 1km north of the application site (refer to Chapter 13 (Traffic) for further detail);

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- Whilst the pavement of the R755 from the application site to the N11 junction at Kilmacanogue is in generally good condition, a small number of localised pavement defects have been identified along the road which would benefit from repair / maintenance works;
- Signage could be strategically placed at approaches to bends and/or concealed junctions along the R755 to improve driver awareness of the potential danger of slow moving traffic;
- Regular trimming of vegetation at bends would enhance driver visibility and improve stopping sight distances.

2.20 In order to address and enhance the safety of road users, Roadstone Ltd. is willing to make a reasonable financial contribution in the form of a Special Contribution for any required improvement to the stretch of the R755 between the application site and the N11 junction. Roadstone envisages that the amount of such a contribution would be proportional to the volume of traffic generated by the quarry along this section of the R755 and would be agreed with the Roads Department of Wicklow County Council.

### Fuel and Oil Storage

2.21 Plant maintained on site will principally comprise mechanical excavators and/or tracked dozer. Mobile plant and equipment undertaking quarry backfilling works will be refuelled from mobile, double skin fuel bowsers within the quarry void or at a dedicated refuelling area on a concrete slab constructed immediately adjacent to a proposed new fuel storage tank (refer to Figure 2-2).

2.22 The refuelling area will be underlain by a sealed concrete slab which will fall toward a central drain / gully. All surface water run-off over this slab will flow via the on-site hydrocarbon interceptor (fitted with silt trap) for treatment prior to discharge off-site, refer to the site services layout shown on Figure 2-3.

2.23 The proposed new auto diesel fuel storage tank to be erected at the site infrastructure area will also be constructed over a concrete slab and will be surrounded by a perimeter bund providing a storage volume equivalent to 110% of the tank storage volume. Details of the fuel storage tank and bund are shown on Figure 2-4.

2.24 All oil and lubricant changes or routine servicing of wheeled or tracked plant will be undertaken over the concrete slab at the refuelling area. Oils and lubricants (and waste oils) will be stored in tanks and/or drums in a container to be placed over a concrete slab at the location indicated in Figure 2-2. All surface water run-off from this slab will be captured by gullies and drains which will carry it to an on-site hydrocarbon interceptor for treatment prior to discharge off-site, as shown on the site services layout in Figure 2-3.

### Wheelwash and Weighbridge

2.25 In order to track and record the amount of material entering the application site, all HGV traffic importing soil and stones to the waste recovery facility will be directed across a proposed weighbridge, the location of which is also indicated on the proposed site infrastructure layout in Figure 2-2. Plans and elevations of the proposed weighbridge are provided in Figure 2-5, while those of the adjoining weighbridge office are provided in Figure 2-6.

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- 2.26 Any separated non-inert construction and demolition waste inadvertently brought to site will be dispatched (in skips) to other licensed waste disposal or recovery facilities and will be weighed out at the proposed weighbridge. Records of imported soil and stone tonnages will be maintained for waste tracking and auditing purposes.
- 2.27 In order to prevent transport of clay and dust onto the public road network, a wheelwash will be installed along an egress route to be delineated over existing paved surfaces. All HGV and tipper trucks exiting the proposed facility will be required to pass through the proposed wheelwash, the location of which is indicated on the proposed site infrastructure layout in Figure 2-2. Plans and elevations of the proposed wheelwash are provided in Figure 2-7, while those for the associated pumphouse, storage tank and settlement lagoon are provided in Figure 2-8.
- 2.28 All oils and lubricants will be stored over banded / spill pallets within the storage container. Waste oils collected in tanks will be emptied at intervals by a licensed waste contractor and recovered / disposed off-site at authorised waste facilities.

### Site Offices and Welfare Facilities

- 2.29 The proposed site office, weighbridge office and staff welfare facilities will comprise a series of demountable / reusable 'portacabin' structures, all of which will remain in place for the duration of the site restoration and soil recovery activities. Plans and elevations of the proposed offices and welfare facilities are provided in Figure 2-9.
- 2.30 The site office will house all administration and management functions for the waste recovery facility. The staff changing, washing and cooking facilities will be provided at a staff welfare / canteen unit, which will also house toilets / handwashing facilities. Sinks will be supplied with water pumped from the groundwater wells to a storage tank on the site office roof. Sinks and toilet facilities will also be plumbed and connected directly to the existing septic tank.

### Waste Inspection and Quarantine Area

- 2.31 CCTV cameras mounted around the weighbridge and weighbridge office will be used to inspect all loads being imported to the recovery facility. Any waste materials that are deemed unacceptable for recovery at the facility on the basis of a visual inspection at the weighbridge will be rejected and directed offsite to an alternative authorised waste facility.
- 2.32 Visual inspection, in-situ monitoring and chemical testing of imported soil will be undertaken by the Applicant's site staff as it is end-tipped at the active infill / restoration area. Any imported waste which is accepted at the facility but subsequently suspected to be non-compliant with waste acceptance criteria for the facility will be re-loaded onto HGV trucks and transferred across the application site to a proposed waste inspection and quarantine facility for closer examination and/or testing.

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- 2.33 The proposed waste inspection facility, which essentially comprises a covered shed, will be constructed over a sealed concrete slab and located north of the site offices, at the location indicated in Figure 2-2. Plans and elevations of the proposed structure are provided in Figure 2-10.
- 2.34 As incipient rainfall will not come into contact with consignments of suspected contaminated waste stored at the covered shed, it is considered that there is no requirement to install drainage infrastructure to provide for the separate collection and storage of potentially contaminated surface water run-off arising at this location.
- 2.35 Should any subsequent inspection or testing of suspect soil waste at the inspection and quarantine facility identify any non-inert material which cannot be accepted or 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 an authorised waste disposal or recovery facility. Provision will also be made for temporary storage of any separated non-inert construction and demolition waste (including metal, timber, plastic etc.) in skips prior to removal off-site to a licensed recovery facility.

### Plant Sheds and Equipment Compounds

- 2.36 Plant and equipment used in the quarry backfilling and soil recovery activities will be stored on unsealed hardstand areas at the infrastructure area on the western side of the quarry. Given the restricted access into Calary Quarry, it is not considered necessary to provide a secure compound for plant and equipment servicing the waste recovery facility.
- 2.37 All routine servicing or maintenance of plant or equipment will be undertaken over the concrete slab to be constructed adjacent to the bunded re-fuelling tanks, at the location indicated on Figure 2-2. Any plant and equipment requiring more specialist repair or overhaul will be taken off-site via low loader to an appropriate maintenance and servicing facility.
- 2.38 Any small items of mobile or hand-held plant and equipment required at the proposed facility will be stored as required in a large container which will be brought to site and placed over a concrete slab at the location indicated in Figure 2-2. Plans and elevations of the proposed storage shed are provided in Figure 2-11.

### Site Services

- 2.39 Electrical power is currently provided to the application site and there is an existing (blockwork) transformer hut located at the application site, to the west of the proposed site office location (refer to Figure 2-2). Electricity will provide the principal source of energy for office lighting and heating.
- 2.40 Overhead electricity transmission cables run along the floor of the valley immediately west of Calary Quarry, with a spur line running east and upslope to the transformer hut at the application site. Fixed telephone lines run along the western side of the Roadstone landholding, along the side of the R755 Regional Road.



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- 2.41 Apart from short lengths of water supply and sewerage pipes running to or from existing infrastructure, no other buried water or waste water service pipes are present at the application site.
- 2.42 As part of the proposed development, new power connections will be made from the existing transformer hut to the site office, weighbridge office, staff welfare facilities and proposed wheel wash and fuel storage facilities. The plan layout of existing and/or proposed site services is shown on Figure 2-3.
- 2.43 An existing septic tank is located to the south-east of the proposed site offices (at the location indicated in Figure 2-3). Effluent from the tank is treated at a raised treatment / percolation area located near the start of the haul road / descent to the former quarry floor prior to being discharged to ground.
- 2.44 Potable water will be provided to the site via a pre-existing groundwater supply well (designated GW3), indicated in Figure 2-3. As this supply well may have collapsed, it is envisaged that it, together with other groundwater monitoring wells, will be re-drilled if required prior to commencement of waste recovery activities at the application site.
- 2.45 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 CO<sub>2</sub>) will be kept at the site office to deal with any localised small scale fires which might occur. Additional fire-fighting capacity can be provided by storing water in a mobile bowser on unsealed hardstand areas around the infrastructure area and ultimately, if required, by local fire fighting services in Bray or Wicklow.

### Sewerage and Surface Water Drainage

- 2.46 Site staff at the proposed waste recovery facility will use toilet, hand washing and welfare facilities which will be provided at the new site offices and canteen. The location of these facilities and the existing on-site septic tank servicing them are shown in Figure 2-2 and/or Figure 2-3.
- 2.47 Prior to the suspension of quarry operations in 2010, the water management system comprised a series of sumps on the quarry floor which pumped surface water run-off to a series of overground settlement tanks at the infrastructure area at the upper level. These tanks facilitated settlement of suspended solids / sediment prior to discharge off-site via a 0.38m (15") diameter concrete pipe.
- 2.48 At a point approximately 200m north of the site offices, the discharge pipe emerges into a drainage ditch running along the eastern verge of the R755 Regional Road which also collects surface water run-off from the western slopes of the Sugar Loaf. After a short distance, this drainage ditch enters a culvert which carries the flow under the R755 and discharges to another ditch running downslope to a tributary stream of the Killough River.
- 2.49 There is currently no existing surface water drainage infrastructure across the application site. Surface water run-off over any existing paved or hardstand surfaces at the infrastructure area currently falls eastward and either
- through unsealed ground into the underlying bedrock and ultimately intercepts groundwater or
  - flows into the pond in the quarry void.

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The upper groundwater surface is likely to lie at the same level as water in the flooded quarry void (approximately 245mOD). Once it hits the groundwater body, any recharge is likely to follow regional groundwater flow westwards, down to the Killough River flowing along the valley floor.

- 2.50 It is envisaged that in future any surface water run-off over sealed ground and hardstanding areas around the proposed infrastructure area will be captured by gullies and buried drains and passed through a hydrocarbon interceptor (fitted with a silt trap) prior to discharge off-site (via the existing concrete pipe) to the drainage ditch along the western site boundary which ultimately flows to the Killough River.

### *Lowering of Water Level in Quarry*

- 2.51 A discharge licence was previously issued by Wicklow County Council (Ref. No WPL87) in October 2008 and by An Bord Pleanála (on foot of a first party appeal) in December 2010. The licence provided for the discharge of treated process water from the quarry to the tributary stream of the Killough River.
- 2.52 At the present time, surface water run-off and minor groundwater inflows have created a large pond within the existing quarry void. Available survey data suggests that the depth of water in the flooded quarry void is up to 25m deep at its deepest point. Prior to commencement of backfilling, it will be necessary to dewater the quarry void by pumping. It is envisaged that the lowering of the existing groundwater pond will be undertaken over an extended period of time, most likely in the time following grant of planning permission and/or waste licence and commencement of quarry backfilling and restoration activities.
- 2.53 Pondered water in the quarry will be pumped up to the proposed infrastructure area at the top of the quarry via flexible piping. In order to treat the pondered water to achieve discharge quality standards set by the existing discharge licence (or EPA waste licence), it will be routed through proposed new settlement ponds and a hydrocarbon interceptor (fitted with a silt trap), both of which have yet to be installed. Thereafter, it will flow under gravity to the existing concrete pipe which discharges off-site.

### *Surface Water Management at Waste Inspection / Quarantine Area*

- 2.54 As previously outlined, any suspect non-inert soil / C&D waste imported to the proposed waste recovery facility will be transferred to a covered shed to be located in the north-western corner of the infrastructure area on the western side of the former quarry.
- 2.55 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*

- 2.56 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 wherever possible by the construction of drainage channels around the edge of the quarry. These channels will collect some over ground surface water flows from higher ground

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and divert them directly (without further treatment) to the existing natural drainage network surrounding the quarry (refer to Chapter 6 for further detail).

- 2.57 During the backfilling operations, the upper surface of the backfilled soil will be graded so as to ensure that surface water run-off falling over the quarry footprint falls to sumps at temporary low points. Any groundwater daylighting in the quarry faces during the backfilling phase will also be permitted to flow into the quarry and to run over filled ground to these sumps.
- 2.58 The temporary sumps will effectively function as primary settlement ponds and water collecting in them will be pumped (causing minimum agitation to ponded water) to the proposed new settlement ponds and hydrocarbon interceptor to be installed on the northern side of the infrastructure area at the upper level and will be retained there for sufficient time to allow sediments / suspended solids to fall out of solution. Thereafter run-off will be passed through the proposed hydrocarbon interceptor before being discharged off-site to the existing drainage network leading to the Killough River.
- 2.59 All surface water discharges from the proposed recovery facility to the Killough River will comply with the emission limits set by the existing discharge licence or those which may supersede them in any waste licence issued by the EPA.
- 2.60 In the longer term, toward the end of the quarry backfilling works, ground contours within and around the backfilled quarry void will be modified to ensure that surface water run-off across the area is directed to a drainage ditch / channel to be developed along the western site boundary, as indicated in the proposed final quarry restoration plan provided in Figure 2-12.

### RESTORATION AND RECOVERY ACTIVITIES

- 2.61 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.
- 2.62 The proposed backfilling of the quarry void using inert soil comprises the following classes of waste activity in accordance with the Waste Management Acts 1996 – 2015:
- *Class R3 : Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes).* This activity applies to proposed importation and use of topsoil for use in final restoration of backfilled landform.
  - *Class No. R5 - recycling and reclamation of other inorganic materials, which includes soil cleaning resulting in recovery of the soil and recycling of inorganic construction materials (Principal Activity).* This activity is limited to the recovery of inert soil and stone through deposition, for the purposes of improvement or development of land.
  - *Class No. R13 (storage of waste pending any of the operations R1 to R12).* This activity will be limited to the storage of imported wastes for recovery purposes at the facility (e.g. stockpiles of inert soil).

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- 2.63 It is envisaged that the following wastes (EWC codes) will be deposited (or recovered) at the facility :
- 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 stone from municipal facilities

### Backfilling / Restoration Schedule

- 2.64 Backfilling of the application site will progress upwards from the former quarry floor and on completion, the restored landform will merge into the surrounding landscape. An outline of the proposed restoration scheme and the final ground level contours is shown in Figure 2-12. In addition to imported materials, some 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 2-13.
- 2.65 All new, additional or replacement infrastructure required to facilitate the proposed waste recovery activities will be constructed and/or installed prior to commencement of the backfilling operations. Backfilling of the existing void will be undertaken in a number of 'lifts' from the existing quarry floor, typically ranging between 5m and 8m height.
- 2.66 On final completion of the restoration, a cover layer of subsoil (approximately 300mm thick) and topsoil (approximately 150mm thick) will be placed and graded across the backfilled mineral soil. This will then be rolled and initially seeded with a native grass mix in order to promote stability and minimise soil erosion and dust generation.
- 2.67 A short aftercare period, of between 12 and 24 months, will follow in order to ensure that vegetation becomes well established and that any bare or exposed soils are re-seeded. Thereafter, the restored lands will be left largely unattended, to be naturally recolonised by native vegetation. It is expected that over time, the infilled site will return to a heathland / grassland habitat, similar to that which originally existed prior to quarrying, and that the restored landform will ultimately merge into the surrounding local landscape which comprises a heathland / grassland mosaic and areas of gorse.

### Method and Safety Statements for Construction Works

- 2.68 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 Ltd. and/or its external work Contractors.

### Material Requirements

- 2.69 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. At the present time, it is considered that the principal sources of such materials over the lifetime of the waste recovery facility will be construction and development related activities in the South Dublin, Dun-Laoghaire-Rathdown and North Wicklow areas.

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- 2.70 The total volume of backfilled soil required to create the restored landform is approximately 1,830,000m<sup>3</sup>. The backfilled materials will be subject to a degree of compactive effort (by tracked bulldozer) and materials placed at the bottom of the quarry will be further compacted by the weight of overlying material. Assuming an average target compaction density of 1.8t/m<sup>3</sup> for tonnage assessment purposes, and allowing for approximately 20,000 tonnes of suitable material on site, gives an overall import requirement for approximately 3,280,000 tonnes of inert soil and stone.
- 2.71 When the proposed waste recovery facility is operational, no construction and demolition waste (intermixed concrete, brick, pipes, metal, timber etc.) will be imported for backfilling purposes. Only 'virgin' aggregate will be imported to the recovery facility for construction of temporary haul roads across / over backfilled materials.
- 2.72 An estimate of the material quantities required to complete backfilling of the application site is provided below:

**Table 2-1  
Material Requirements**

Material	Quantity (tonnes)	Source
Inert soil, stones and rock	3,230,000	Imported
Stockpiled soil	20,000	In-situ
Aggregate	10,000	Imported
Topsoil (150mm)	40,000	Imported

### Material Balance

- 2.73 As noted above, approximately 12,000m<sup>3</sup> (20,000 tonnes) of the inert materials required to backfill the quarry void may be sourced from existing soil stockpiles and/or screening berms around the application site. All remaining inert materials to be used in the restoration of the application site will be imported from external construction work sites.

### Laboratory Testing

- 2.74 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 and test results will typically be forwarded to site within seven to ten working days.
- 2.75 It is not intended to store environmental monitoring equipment such as pH and temperature meters, conductivity meters and dissolved oxygen meters at the site office. Any such equipment will be brought to site by an in-house environmental scientist and/or independent environmental consultant as and when required.

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## Importation of Construction Materials

- 2.76 Of the construction materials required to construct site infrastructure, hardcore, drainage stone and concrete will be sourced from the Applicant's quarries and concrete production facilities. Other elements, including portacabin offices, tanks, weighbridge, wheelwash and drainage infrastructure will be sourced from specialist suppliers and installed prior to commencement of backfilling activities.

## Removal of Materials Off-Site

- 2.77 Any non-inert waste identified within the inert soils imported for recovery purposes will be separated and transferred to the waste inspection and quarantine facility pending removal to suitably licensed waste disposal or recovery facilities. The Applicant anticipates, on the basis of its experience operating similar waste recovery facilities in the Greater Dublin Area for many years, and that the quantity of such wastes will be low.
- 2.78 Small volumes of virgin aggregate will be used for construction of temporary haul roads at the restoration site. Any concrete, brick, timber, metal, pipes, skips, tiles or other construction and demolition / quarry waste currently held at the quarry site will be removed off-site to an authorised waste recovery or disposal facility.
- 2.79 Any construction and demolition waste inadvertently brought to site once recovery operations commence will be separated using mechanical plant and stockpiled at the waste quarantine area pending transfer off-site to an authorised construction and demolition waste recovery facility.
- 2.80 Any occasional metal waste encountered on site will be separated and placed in a skip pending removal off site to a permitted (or licensed) waste recovery facility. Any other non-inert waste (timber, plastic etc.) will also be separated and placed in a skip pending removal to a permitted (or licensed) waste disposal or recovery facility.
- 2.81 Only operators and/or haulage firms holding valid current waste collection permits will be engaged to transfer these waste streams to other waste disposal or recovery facilities.

## Formation Levels and Gradients

- 2.82 The quarry void will be backfilled in several phases working upwards from the existing quarry floor level at c. 220mOD. Final formation levels on completion of the backfilling and restoration works vary on account of the sloped nature of the restored landform, from approximately 290mOD on the eastern side, to 250mD on the western side, as indicated on Figure 2-12.
- 2.83 During site restoration works the upper surface of the backfilled materials will be graded so as to ensure surface water run-off falls to sumps at temporary low points within the quarry void as it is being backfilled. Water will be pumped from these temporary sumps via the proposed settlement ponds and hydrocarbon interceptor to the existing off-site drainage network leading to the Killough River.

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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- 2.84 Temporary access ramps into and out of 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 be relatively shallow, typically of the order of 1v:5v or less.

### Stability Analyses

- 2.85 Visual inspection and available site investigation data indicates that the area to be backfilled is underlain by intact competent bedrock. Backfilling of the quarry using in-situ and imported soils will not induce overloading or failure within the underlying rock. As the increase in loading of the rock will not exceed that which existed prior to extraction, no deep seated foundation failure is anticipated.
- 2.86 Temporary side slopes in backfilled soils 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. Ongoing assessment of slope stability will be undertaken at the application site as backfilling progresses.
- 2.87 In the longer-term, once backfilling and restoration works are complete, there will be no risk of instability, as the final ground surface will be graded to a relatively flat, shallow slope. Permanent restored slopes on completion of the quarry backfilling and restoration activities will be comparable to those on surrounding lands, generally shallower than 1v:5h (11°) and everywhere shallower than 1v:2h (26°).
- 2.88 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.

### Bund Design

- 2.89 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 base or sides of the backfilled area.

### Capacity and Lifespan

- 2.90 The estimated volume of material to be placed at the application site is approximately 1,830,000m<sup>3</sup>. Of this, a relatively small volume, estimated at no more than 12,000m<sup>3</sup> will be sourced from on-site stockpiles, perimeter screening berms and general site levelling works required for the final restoration of the quarry. The remainder of the material will need to be imported.
- 2.91 The duration of backfilling activities at the quarry void will largely be dictated by the rate at which approximately 1,820,000m<sup>3</sup> (3,280,000 tonnes) of externally sourced inert soil and stone is imported to the site. There are many factors which will influence this, including, but not limited to the:
- Availability of acceptable inert materials from construction sites;
  - Prevailing economic climate and related construction industry output;

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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

2.92 In light of these and other variables, calculation of intake rates and duration is not an exact science. Over the short-to-medium term (the initial 5 years of operation), it is likely significant quantities of inert soil could be sourced from mixed residential and commercial development in the South Dublin, Dun Laoghaire Rathdown and North Wicklow areas.

2.93 It is estimated that the rate of importation of inert materials to the quarry void could average around 225,000 tonnes to 275,000 tonnes per annum, with a maximum intake of 300,000 tonnes per annum should large commercial developments) or infrastructure works proceed within the surrounding catchment area at some stage over its operational life.

2.94 If an average importation rate was between 225,000 and 275,000 tonnes per annum, the expected operational life of the facility would be between 12 and 15 years. If however the rate of backfilling is less than anticipated, the recovery facility could be operational for up to 20 years.

### Basal and Side Slope Liner Design

2.95 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.

### Leachate and Landfill Gas Management Systems

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

### Capping and Decommissioning

2.97 The application site will be fully backfilled to original ground level and restored to a heathland / grassland habitat on completion of soil recovery operations, thereby merging the application site back into the surrounding natural landscape.

2.98 During and after the final phase of the quarry backfilling works, ground contours will be modified as necessary to ensure that surface water run-off across the restored site is directed to a proposed surface water channel / drainage ditch along the western boundary of the application site.

2.99 A cover layer comprising 150mm of topsoil and approximately 300mm of subsoil shall be placed over the inert backfilled materials on completion of the backfilling activities. This will initially be seeded with a native grass mix in order to promote stability and minimise soil erosion and dust generation.

2.100 A short aftercare period of between 12 and 24 months will follow in order to ensure that vegetation becomes well established and that any bare or exposed soils are re-seeded.



## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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- 2.101 Topsoil will be imported to the site on a continual basis and shall not be used immediately in general backfilling of the quarry void. The topsoil will be stockpiled separately pending re-use toward the latter stages of the quarry backfilling works, when the top surface of the backfilled ground approaches the planned final ground levels envisaged by the restoration scheme. 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.
- 2.102 On completion of the quarry backfilling and restoration works, all mobile plant and equipment associated with the waste recovery activities will be removed off-site. Any dedicated site accommodation, infrastructure and/or services will also be progressively decommissioned and/or removed off-site.
- 2.103 Wherever necessary, sealed concrete surfaces will be broken up using a hydraulic breaker and transferred-off site to a nearby authorised construction and demolition waste recovery facility.

### WASTE ACCEPTANCE AND HANDLING

- 2.104 Only inert soil and stones shall be accepted at the application site. Inert materials shall be accepted at the site between 07.00 hours and 18.00 hours each weekday and 08.00 hours to 14.00 hours on Saturday. No materials shall be accepted at any other time including Sundays and Public Holidays.
- 2.105 Insofar as practicable, the source of each large 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 customers / clients / contractors intending to forward soil to the application site.
- 2.106 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 free of construction or demolition waste or any non-hazardous / hazardous domestic, commercial or industrial wastes.
- 2.107 CCTV cameras mounted around the weighbridge and weighbridge office and will be used to inspect all consignments being imported to the recovery facility. Any waste materials that are deemed to be unacceptable for recovery at the facility on the basis of a visual inspection at the weighbridge will be rejected and directed to an alternative authorised waste facility.
- 2.108 All inert soils imported to the site will be unloaded (end-tipped) from trucks at the active backfilling area. It will be visually inspected by site personnel at that point to confirm that there is no intermixed construction or demolition, non-hazardous or hazardous waste placed within it.
- 2.109 If, following acceptance of waste, there is any subsequent grounds for 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.

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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- 2.110 Should detailed inspection and/or subsequent testing indicate that the quarantined 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 suitably permitted (or licensed) waste disposal or recovery facilities, as appropriate.
- 2.111 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 permitted (or licensed) waste disposal or recovery facilities.
- 2.112 A representative sample shall be taken from one in every 100 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.
- 2.113 An outline Waste Handling and Acceptance Plan for this waste recovery facility is provided in Appendix 2-1 of this Environmental Impact Statement.

## ENVIRONMENTAL NUISANCE CONTROL

### General

- 2.114 Backfilling and restoration activities at the application site will require a number of environmental controls to eliminate or minimise the potential nuisance to the public arising from the importation, placement and compaction of inert soils. The planned environmental control measures are outlined in detail in the following sections.
- 2.115 The quarry backfilling and restoration works to be undertaken at the application site will ultimately be regulated by conditions attaching to any grant of planning permission issued by Wicklow County Council or waste licence issued by the Environmental Protection Agency (EPA). Any additional control measures required by these consents, in addition to those outlined below, will also be implemented.

### Bird Control

- 2.116 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.
- 2.117 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.

# DESCRIPTION OF WASTE RECOVERY FACILITY 2

## Dust Control

2.118 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:-

- water will be sprayed from a tractor drawn bowser on any dry exposed surfaces (roads and hardstand areas);
- 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 seeded with grass on a phased basis, as soon as practicable after placement of cover soils (subsoil and topsoil). This will help to minimise soil erosion and potential dust emissions;
- the area of bare or exposed soils will, insofar as practicable, be kept to a minimum. If excessive dust emissions arise, consideration will be given to establishing temporary vegetation cover over exposed soil surfaces and stockpiles pending backfilling and restoration to final ground levels;
- all HGV's exiting the site shall be routed through the proposed wheelwash facility in order to minimise transport of clay and/or fines by HGVs onto the public road network;
- stockpiling of imported soil materials will be minimized. Soils will ideally be placed and compacted in-situ immediately after being imported to site and end tipped. If and when temporary stockpiling of soil is required, it will be placed as far as practicable from nearby residences.

2.119 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 roads, if required.

## Traffic Control

2.120 The proposed backfilling operations at the Calary Quarry will entail importation of approximately 3,280,000 tonnes of material. This translates to approximately 182,200 HGV round trips (at 18 tonnes per load) over the lifetime of the facility in order to backfill the quarry void.

2.121 Based on recent operations at its Fassaroe recovery facility nearby, Roadstone Ltd has defined a relatively optimistic scenario, where it would backfill the void at Calary Quarry over a 12 to 15 year period. This scenario is considered sufficiently onerous for modelling and assessment of traffic related impacts arising from the proposed development. Notwithstanding this (and as noted previously), if soil intake rates were to be significantly lower than anticipated, the backfilling period for the quarry could extend up to 20 years.

2.122 Assuming a maximum soil intake rate of 300,000 tonnes / year generates an average of 6 HGV return trips per hour, equivalent to 12 movements into or out of the quarry per hour. Note that this assumes an average 18 tonne HGV payload, 50 working weeks in a calendar year, 5.5 working days per week and 10 hour working day.

2.123 As indicated in Chapter 13 of this Environmental Impact Statement, operation of the proposed waste recovery facility will have little or no adverse impact on

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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traffic flow along the existing R755 Regional Road and N11 National Primary Road *in an optimistic (ie. most conservative) case scenario.*

2.124 A number of potential mitigation measures are identified along the length of the R755 Regional Road from Kilmacanogue village to Calary Quarry to enhance the safety of road users. Many of these measures were approved and/or required under a previous planning permission for the quarry (WCC Ref. 06/6189 / ABP PL 27.224400) and include

- localised road widening works at the site entrance where the requisite forward site visibility cannot be achieved;
- placing signage at strategic locations at approaches to the application site to improve driver awareness of the potential dangers of slow moving traffic ahead and
- improving stopping sight distances and safety in general by regular trimming of vegetation (which would otherwise reduce or impede driver visibility), particularly around the site entrance and along the property boundary with the public road.

2.125 In order to minimise dirt and debris from being carried from the waste recovery facility onto the public road network, all traffic exiting the facility will be routed through the proposed wheelwash facility located along the paved egress route out of the recovery facility.

### Litter Control

2.126 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.

2.127 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.

### Odour Control

2.128 As the soil and stones being placed / recovered at this site are not biodegradable 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.

2.129 In the unlikely event that any biodegradable 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.

### Vermin Control

2.130 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.

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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2.131 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.

### Fire Control

2.132 The inert soil and stone material being placed / recovered at this site is free of flammable materials and biodegradable waste which could create a fire or explosion risk. Site activities will not therefore present a fire risk for the duration of the restoration works. Accordingly, no specific fire control measures shall be implemented at the site.

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

- (i) any biodegradable or flammable waste identified or suspected in waste 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
- (ii) plant and equipment will be removed if they exhibit signs of overheating etc.

2.134 In the unlikely event that a fire does occur, the local fire stations in Bray and Wicklow will be contacted and emergency response procedures will be implemented. Fire extinguishers (water / foam / CO<sub>2</sub>) will be provided at the site office to deal with any small outbreaks which may occur.

## ENVIRONMENTAL MONITORING

### General

2.135 When it was operational previously, there was an environmental monitoring programme in place at Calary Quarry. This monitoring complied with the requirements of conditions attaching to a planning permission obtained in February 2008 of foot of the Section 261 registration process (WCC Ref. 06/6189, An Bord Pleanála PL27 224400).

2.136 In addition, Roadstone Ltd. operates an environmental management programme to monitor and manage emissions from established waste recovery operations at other facilities. It is anticipated that limit values for environmental emissions arising from waste recovery activities at the application site will be similar to those applying at other facilities and that these will be reviewed and confirmed / amended by the EPA in the event that it decides to issue a waste licence in respect of the proposed inert waste recovery facility.

2.137 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.

### Dust Monitoring

2.138 Dust emissions associated with former aggregate production activities within Roadstone's landholding were monitored on a quarterly (ie. three monthly)

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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basis using Bergerhoff dust gauges at 2 No. locations (designated D1 and D2) close to the site boundary, shown on Figure 2-14. These gauges are also located close to the existing regional road and are therefore likely to represent an upper bound on dust emission levels from proposed site activities.

- 2.139 One additional monitoring point (designated D3), shown in Figure 2-14, will be established along the north-eastern site boundary to identify any downwind / upslope dust emissions impacts.
- 2.140 The three dust monitoring stations will be monitored for the duration of the proposed waste recovery activity and for a short duration thereafter.

### Ecological Monitoring

- 2.141 In the absence of any rare or protected species within the application site, it is considered that there is no requirement for ongoing ecological monitoring of other species during quarry backfilling and restoration operations.
- 2.142 In light of observations made in the course of the ecological baseline assessment, the application site will be checked for any signs of possible nesting peregrine falcons before works in respect of the recovery facility commence at the site. Where evidence of nesting is recorded, the Applicant will adhere to guidance provided by Notice Nature guideline - *Wildlife Habitats and the Extractive Industry* for the avoidance of disturbance to any breeding peregrine falcon. This will include the establishment of a suitable buffer and no working zone up to a minimum of 150m from the nest site, allowing birds which may be nesting on quarry faces to be left undisturbed until chicks have fledged.

### Groundwater Monitoring

- 2.143 Three pre-existing groundwater monitoring wells are located within Calary Quarry. These wells are currently blocked / collapsed and will be re-drilled prior to commencement of the proposed recovery activities.
- 2.144 Groundwater sampling and testing of these wells will be undertaken on a bi-annual (ie. twice yearly) basis. Groundwater levels will also be recorded on a bi-annual basis. The location of the existing groundwater monitoring wells is indicated in Figure 2-14.
- 2.145 Groundwater samples will be tested for a range of physical and chemical parameters in order to assess water quality and detect possible contamination arising from proposed recovery activities. Further detail on existing baseline water quality is presented in Chapter 6 of this EIS.
- 2.146 The groundwater monitoring regime will remain in place for the duration of the quarry backfilling and restoration works. Regular groundwater sampling and monitoring will be undertaken as long as backfilling activities continue and for a short period thereafter.

### Leachate and Landfill Gas Monitoring

- 2.147 In the absence of biodegradable waste amongst the inert materials used to backfill and restore the application site, no leachate or landfill gas can be

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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generated and accordingly no provision has been made for leachate or landfill gas monitoring at this facility.

### Meteorological Monitoring

2.148 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 Casement Aerodrome, at Baldonnell in south County Dublin, approximately 25km north-west of the application site. It is currently envisaged that representative meteorological data will be acquired from the existing weather station at Casement Aerodrome, as and if required.

### Noise Monitoring

2.149 Noise emissions associated with former quarrying activities within the Applicant's landholding was previously monitored on a quarterly (ie. three monthly) basis at 4 No. locations (designated N1, N2, N3 and N4), around the former quarry boundary.

2.150 Noise monitoring will be reinstated at these locations and will continue for the duration of the proposed quarry backfilling activities and for a short period thereafter.

2.151 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 2-14.

### Odour Monitoring

2.152 As the materials being placed or recovered at this site are not biodegradable 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.

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

### Surface Water Monitoring

2.154 Surface water sampling and testing will be undertaken as per the requirements of any waste licence issued by the EPA. Sample locations will likely include any temporary surface water ponds or features which may either be created or form naturally at low points within the application site.

2.155 Surface water sampling and testing will also be undertaken at the discharge point downstream of the proposed settlement ponds and silt trap / hydrocarbon interceptor to be installed at the infrastructure area and immediately upstream of the buried concrete pipe running to the local surface water drainage network which flows toward the tributary stream of the Killough River. Surface water monitoring locations within the application site are shown on Figure 2-14.

2.156 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 Chapter 6 of this EIS.

## DESCRIPTION OF WASTE RECOVERY FACILITY 2

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2.157 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.

### Stability and Settlement Monitoring

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

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

### FINAL RESTORATION AND AFTERCARE

2.160 The principal activity which will be undertaken at the application site is backfilling and restoration of lands within an existing hard rock quarry. As previously noted, the application site will be backfilled to original ground level and restored to a heathland / grassland habitat, refer to the proposed site restoration plan provided in Figure 2-12.

2.161 A cover layer comprising 150mm of topsoil and approximately 300mm of subsoil shall be placed over the inert backfilled materials on completion of the backfilling activities. This will be initially seeded with a native grass mix in order to promote stability and minimise soil erosion and dust generation.

2.162 On completion, the final landform will be modified as necessary to ensure that any surface water run-off across the application site is intercepted close to the western site boundary and diverted / channelled (via unlined channels excavated in natural soils) to the existing discharge point and/or modified natural drainage network which runs along the north-western property boundary and R755 Regional Road.

2.163 On completion, the restored lands will be left largely unattended, to be naturally recolonised by native vegetation. Over time, the infilled site will return to a heathland / grassland habitat in keeping with that of the surrounding rural landscape and similar to that which existed prior to quarrying.

2.164 On completion, all mobile plant and equipment associated with the waste recovery activities will be removed off-site. Any dedicated site accommodation, infrastructure and/or services will also be progressively decommissioned and/or removed off-site.

2.165 Wherever necessary, sealed concrete surfaces will be broken up using a hydraulic breaker and transferred-off site to a local authorised construction and demolition waste recovery facility.

2.166 Following final 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.



# DESCRIPTION OF WASTE RECOVERY FACILITY 2

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## CONTINGENCY ARRANGEMENTS

2.167 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.

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# DESCRIPTION OF WASTE RECOVERY FACILITY 2

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## FIGURES

Figure 2-1  
Existing Site Layout

Figure 2-2  
Site Infrastructure Layout

Figure 2-3  
Site Services Layout

Figure 2-4  
Proposed Bunded Fuel Storage Tank

Figure 2-5  
Proposed Weighbridge

Figure 2-6  
Proposed Weighbridge Office

Figure 2-7  
Proposed Wheelwash

Figure 2.8  
Proposed Wheelwash Lagoon

Figure 2-9  
Proposed Site Office / Staff Welfare Facilities

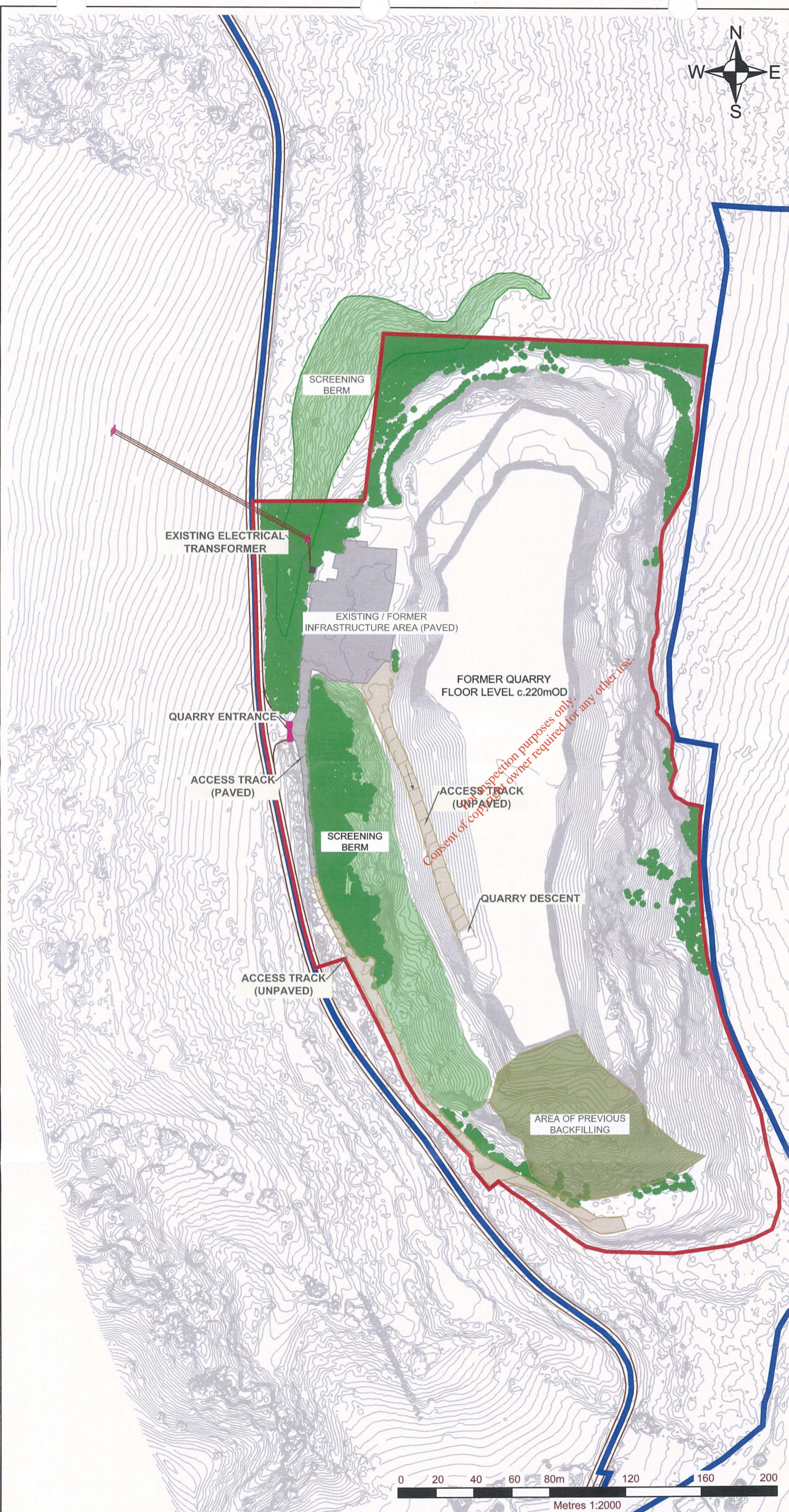
Figure 2-10  
Proposed Waste Quarantine / Inspection Shed

Figure 2-11  
Proposed Equipment Storage Shed

Figure 2-12  
Final Restoration Surface

Figure 2-13  
Restoration Cross Sections

Figure 2-14  
Environmental Monitoring Locations



**NOTES**

1. 'Orthomosaic produced from Aerial Photography flown February 2015 by SLR Consulting Ireland (IAA Permit No. 04/2015) www.slrconsulting.com Tel. +353-1-2964667. Orthomosaic produced using Ground Control Points; Related to Irish Transverse Mercator Coordinate System and OS Main Head Level Datum.

The accuracy of the orthomosaics and the digital elevation models (DEM) strongly depends on the flight height, lighting conditions, availability of textures, image quality, overlap, and type of terrain. Contours / 3D data relates to the surface model and not terrain levels. Typical accuracies: E: 0.05 m; N: 0.05 m; Levels: 0.30 m.

All Dimensions and Levels are to be checked on site.

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**LEGEND**

	ROADSTONE LIMITED LAND INTEREST (c.25.4 Hectares)
	PLANNING APPLICATION AREA (c.9.1 Hectares)

EXISTING ELECTRICAL TRANSFORMER

SCREENING BERM

EXISTING / FORMER INFRASTRUCTURE AREA (PAVED)

FORMER QUARRY FLOOR LEVEL c.220mOD

QUARRY ENTRANCE

ACCESS TRACK (PAVED)

ACCESS TRACK (UNPAVED)

SCREENING BERM

QUARRY DESCENT

ACCESS TRACK (UNPAVED)

AREA OF PREVIOUS BACKFILLING

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00180.00109.0.FIG\_2-1.Existing Site Layout.dwg

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**SLR**

**ROADSTONE LIMITED  
ENVIRONMENTAL IMPACT STATEMENT  
INERT SOIL WASTE RECOVERY FACILITY  
CALARY QUARRY,  
KILMACANOGE, CO. WICKLOW**

**EXISTING SITE LAYOUT**

**FIGURE 2-1**

Scale 1:2,000 @ A3	Date MAY 2016
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**NOTES**

1. 'Orthomosaic produced from Aerial Photography flown February 2015 by SLR Consulting Ireland (IAA Permit No. 04/2015) [www.slrconsulting.com](http://www.slrconsulting.com) Tel. +353-1-2964667.

Orthomosaic produced using Ground Control Points; Related to Irish Transverse Mercator Coordinate System and OS Main Head Level Datum.


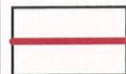



The accuracy of the orthomosaics and the digital elevation models (DEM) strongly depends on the flight height, lighting conditions, availability of textures, image quality, overlap, and type of terrain. Contours / 3D data relates to the surface model and not terrain levels. Typical accuracies: E: 0.05 m; N:0.05 m; Levels: 0.30 m.

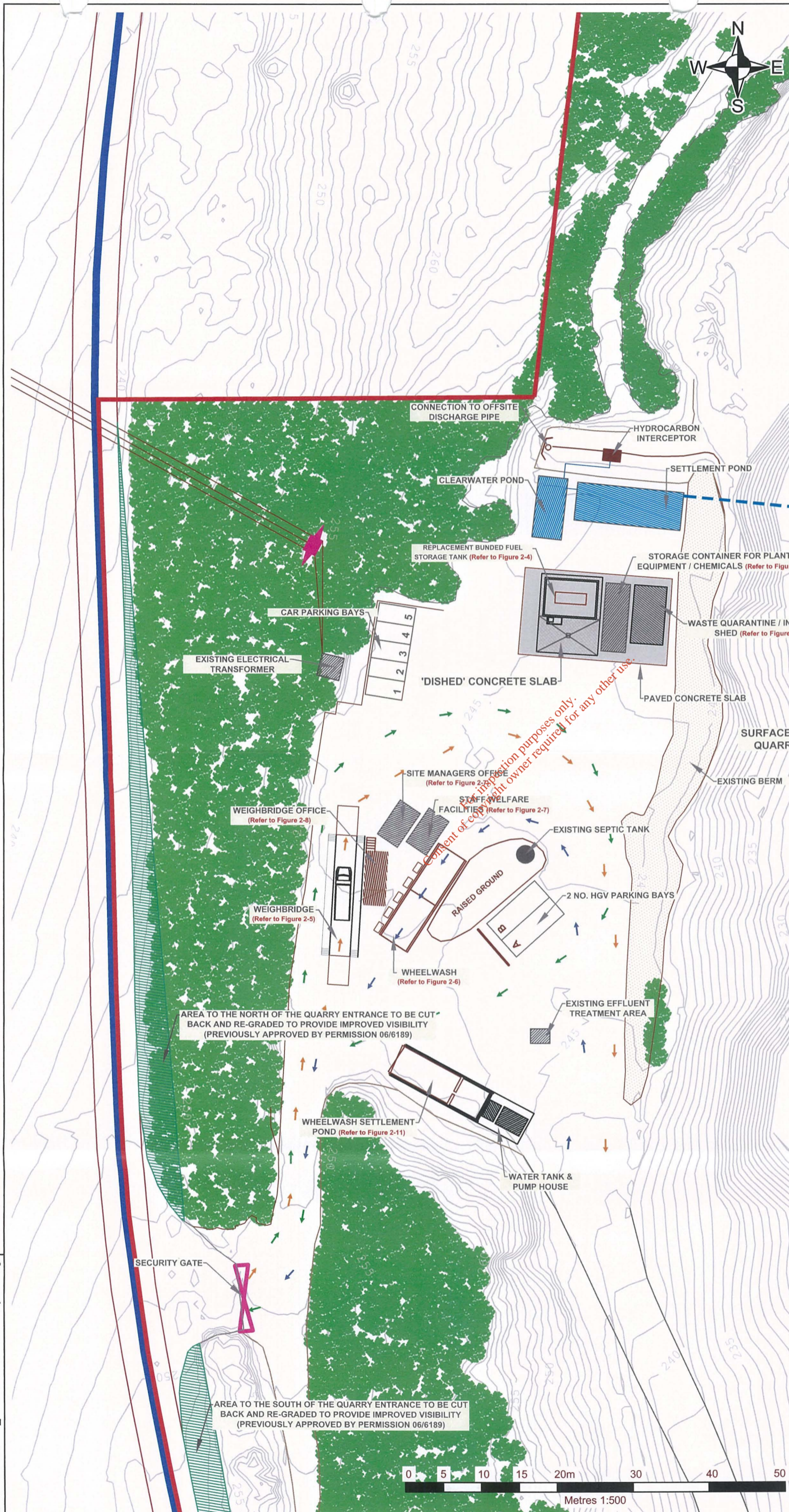
All Dimensions and Levels are to be checked on site.

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-  ROADSTONE LIMITED LAND INTEREST (c.25.4 Hectares)
-  PLANNING APPLICATION AREA (c.9.1 Hectares)
-  HGV TRAFFIC IN
-  HGV TRAFFIC OUT
-  CAR / LGV TRAFFIC IN/OUT



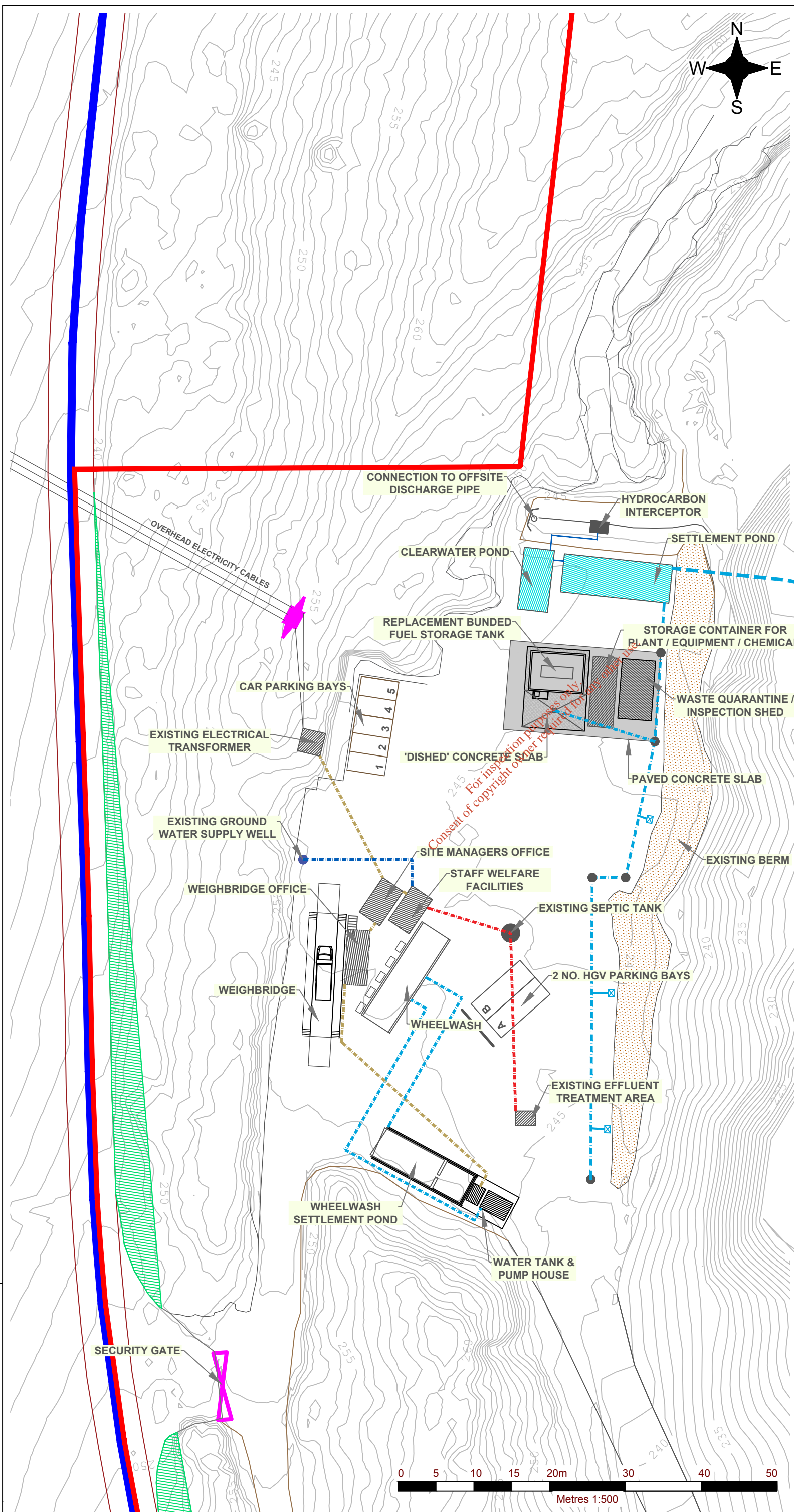
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KILMACANOGE, CO. WICKLOW  
SITE INFRASTRUCTURE LAYOUT**

**FIGURE 2-2**

Scale 1:500 @ A3 Date MAY 2016

00180.00109.0.FIG\_2-2.Site Infrastructure Layout.dwg



**NOTES**

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2. TOPOGRAPHIC / AERIAL SURVEY SUPPLIED BY SLR CONSULTING IRELAND

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	WATER SUPPLY
	POWER / ELECTRICITY
	PROPOSED MANHOLE
	PROPOSED GULLY

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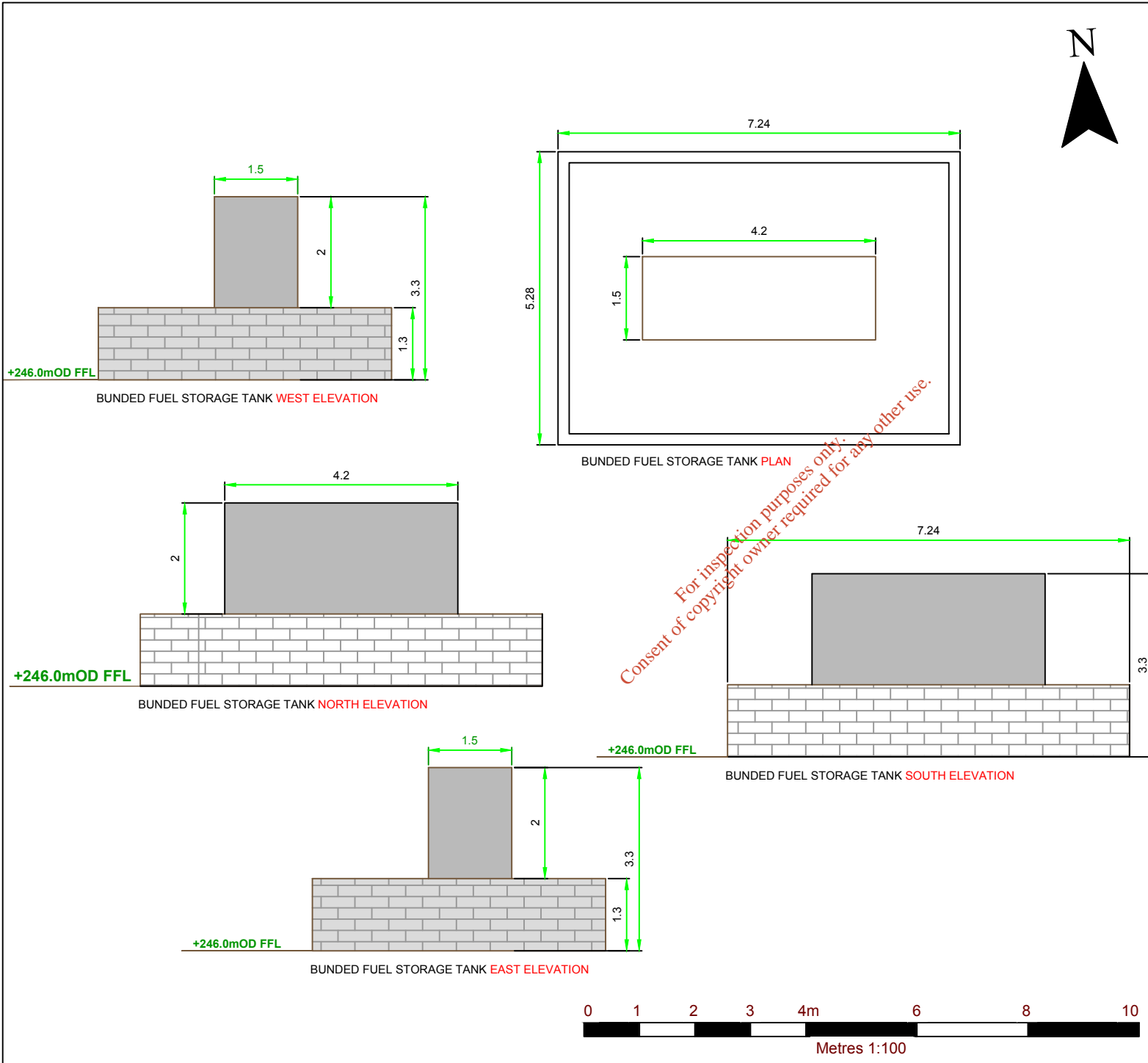
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**SITE SERVICES LAYOUT**

**FIGURE 2-3**

Scale 1:500 @ A3 Date MAY 2016

00180.00109.0.FIG\_2-3.Site Utilities Layout.dwg

00180.00109.0.FIG\_2-4.Proposed Bunded Fuel Storage Tank.dwg



**NOTES**

- REFER TO **FIGURE 2-2** FOR LOCATION OF PROPOSED BUNDED FUEL STORAGE TANK
- ALL DIMENSIONS IN METERS

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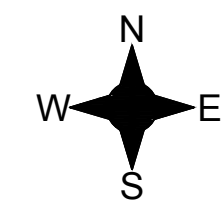
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**PROPOSED BUNDED FUEL STORAGE TANK**

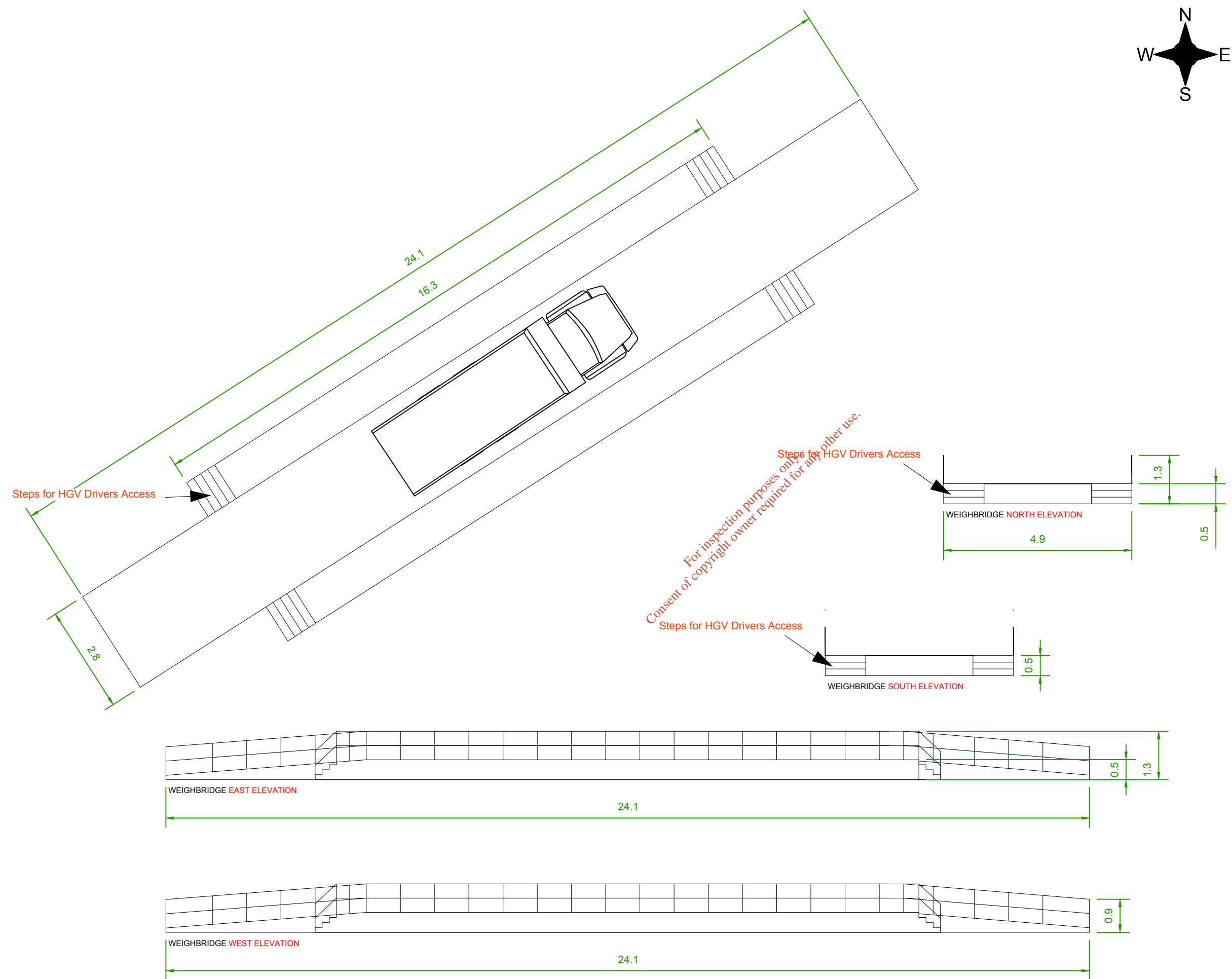
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**FIGURE 2-4**

Scale 1:100 @ A4	Date MAY 2016
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- NOTES
1. REFER TO **FIGURE 2-2** FOR LOCATION OF PROPOSED WEIGHBRIDGE
  2. ALL DIMENSIONS IN METERS



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**PROPOSED WEIGHBRIDGE PLAN / ELEVATIONS**

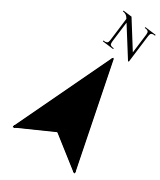
**FIGURE 2-5**

Scale 1:100 @ A3 Date MAY 2016

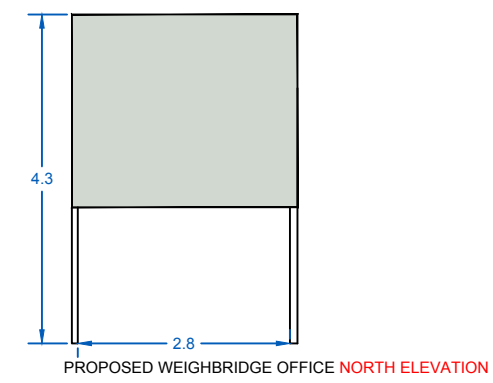
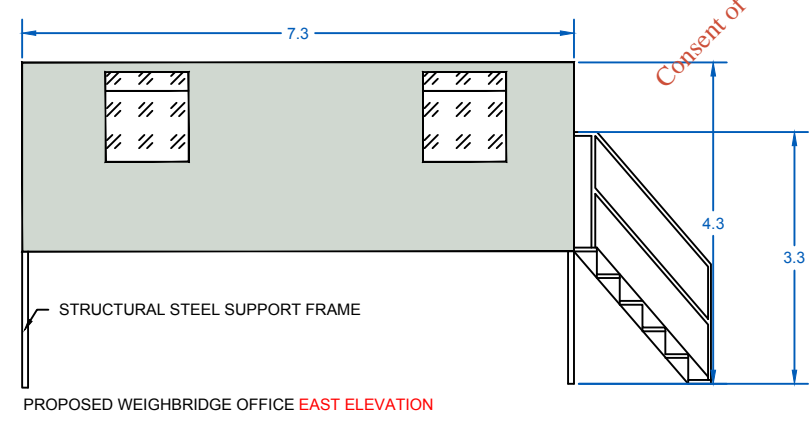
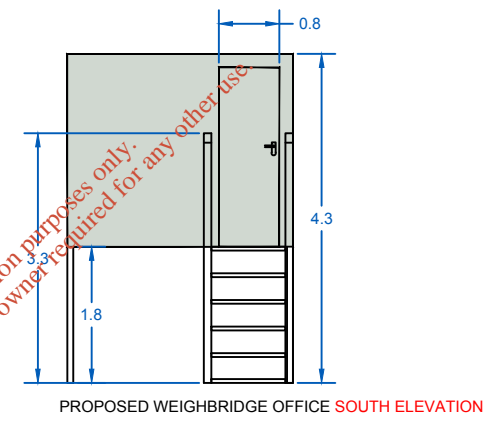
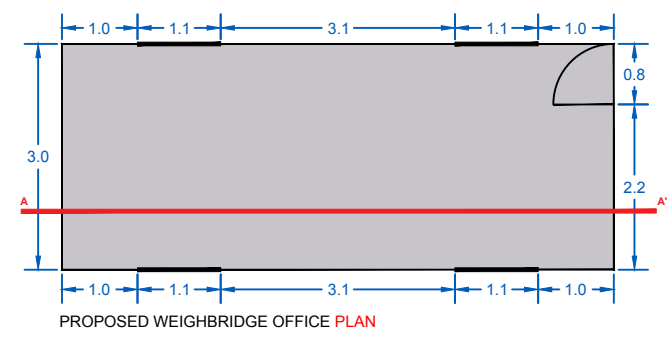
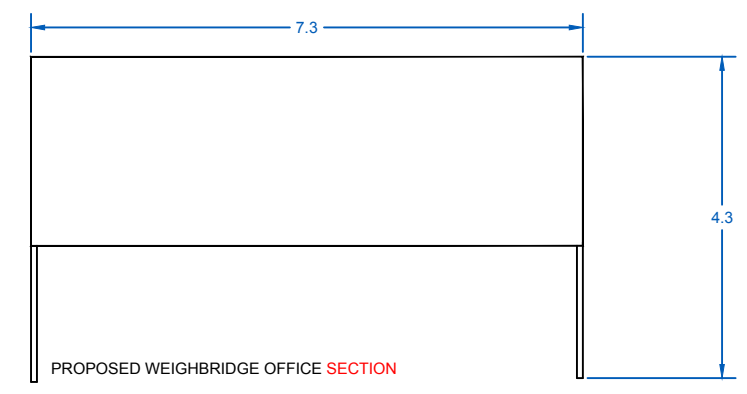
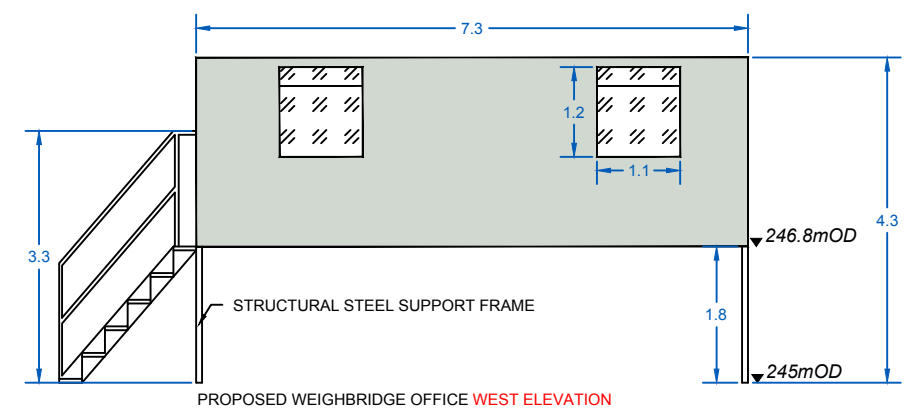
00180.00109.0.FIG\_2-5.Proposed Weighbridge Plan & Elevations.dwg



00180.00109.0.FIG\_2-6.Proposed Site\_Weighbridge Office.dwg



- NOTES
1. REFER TO **FIGURE 2-2** FOR LOCATION OF PROPOSED WEIGHBRIDGE OFFICE
  2. ALL DIMENSIONS IN METERS
  3. WEIGHBRIDGE OFFICE: AREA OF INTERNAL FLOOR = 27.7m<sup>2</sup>



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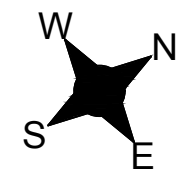
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PLANS AND ELEVATIONS

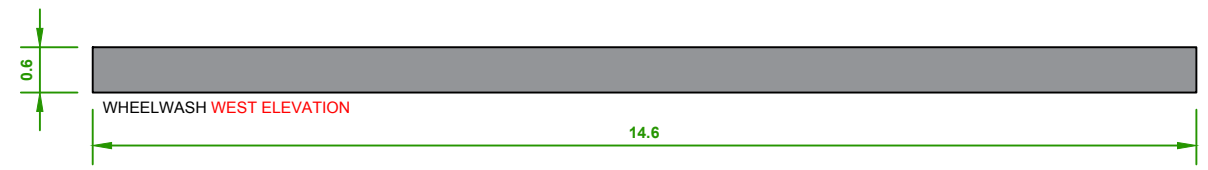
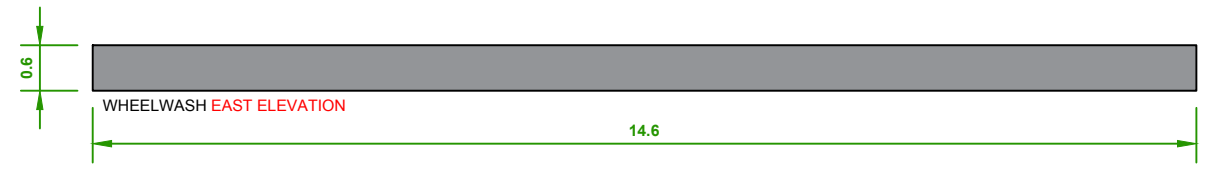
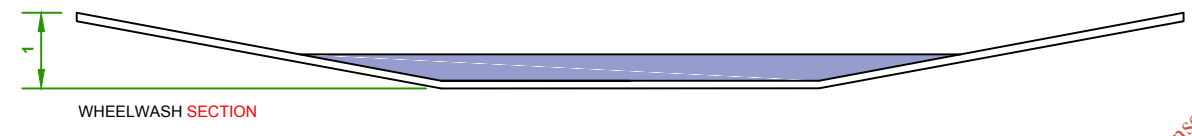
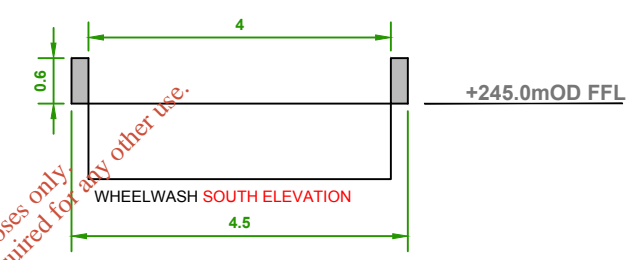
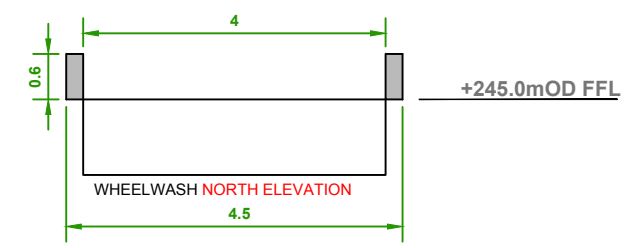
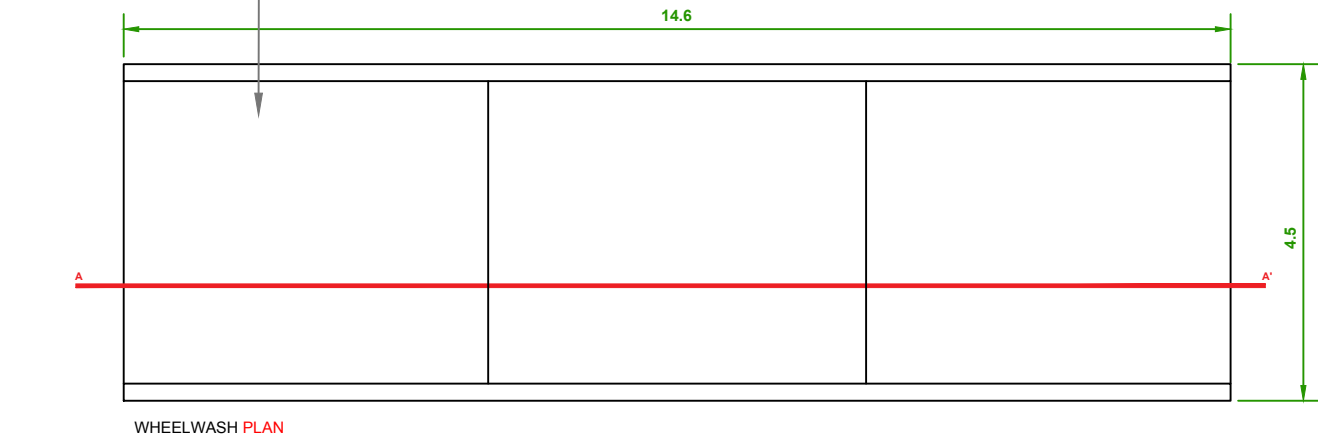
**FIGURE 2-6**

Scale 1:100 @ A3 Date MAY 2016

00180.00109.0.FIG\_2-7.Proposed Wheelwash Plan & Elevations.dwg



**WHEELWASH**



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- NOTES
1. REFER TO **FIGURE 2-2** FOR LOCATION OF PROPOSED WHEELWASH
  2. ALL DIMENSIONS IN METERS
  3. WHEELWASH: AREA OF INTERNAL FLOOR = 58.5m<sup>2</sup>



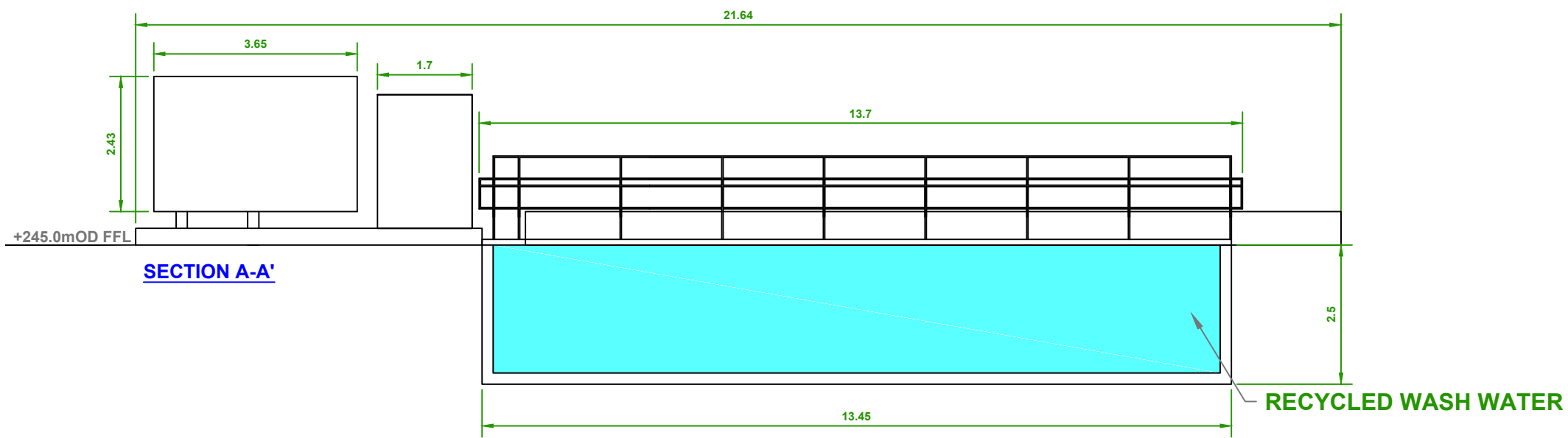
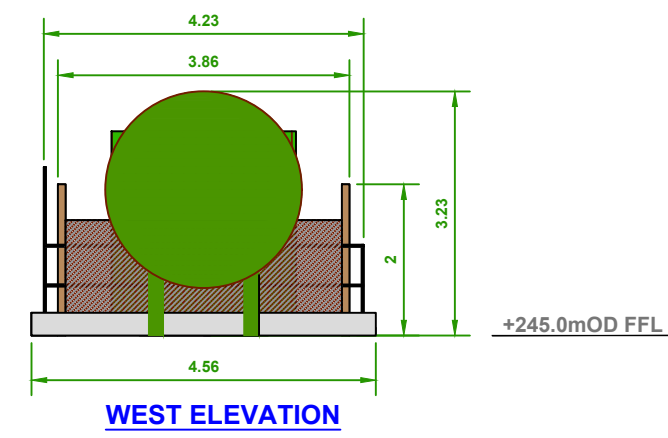
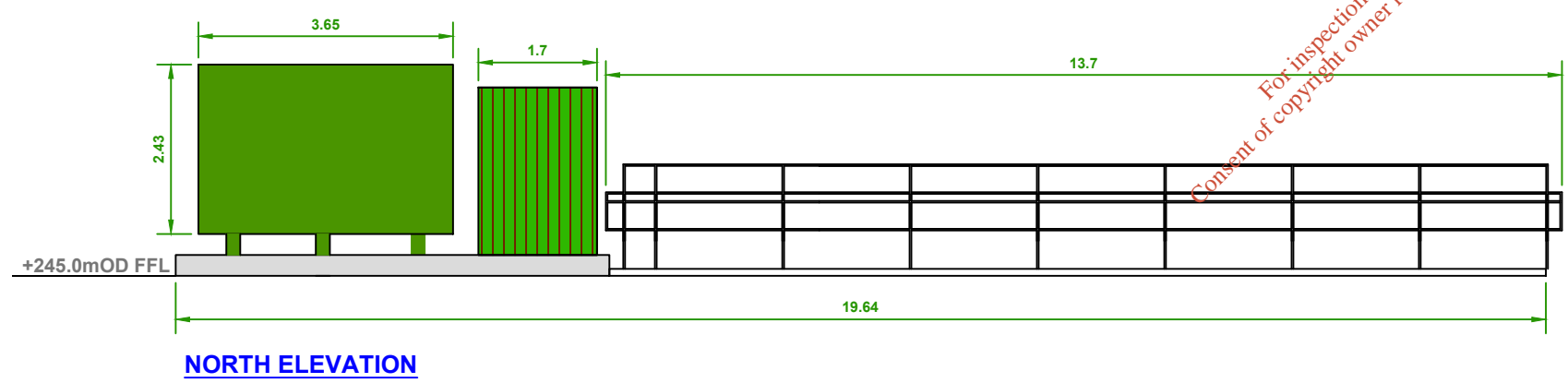
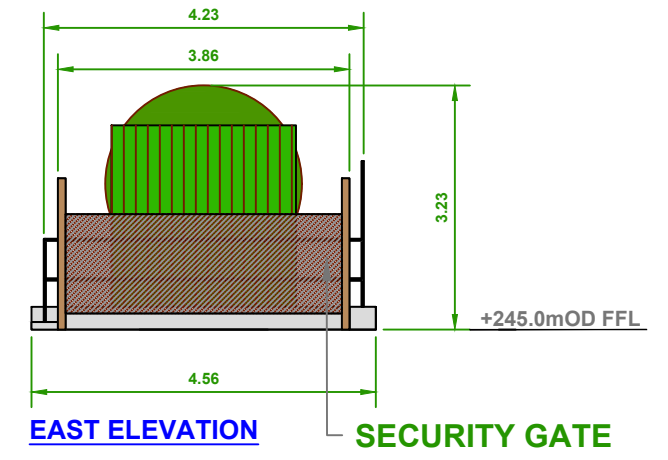
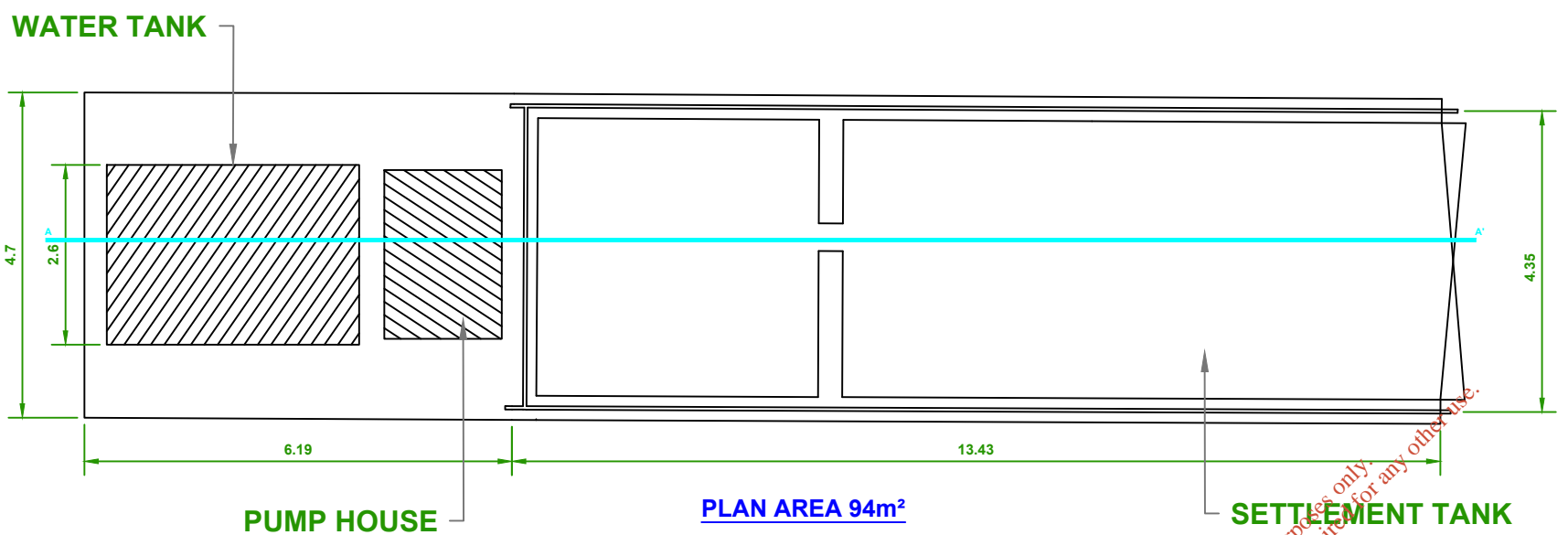
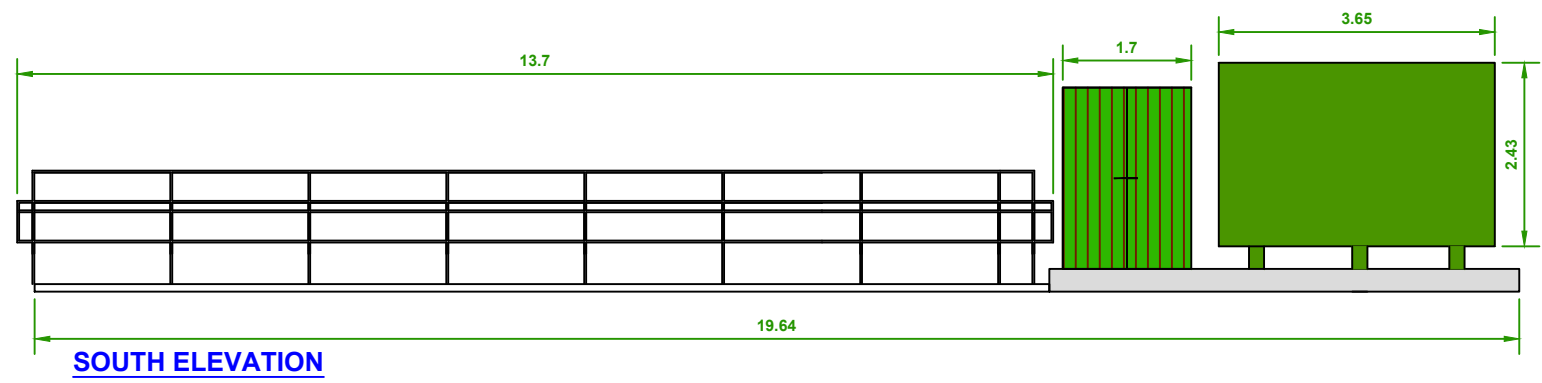
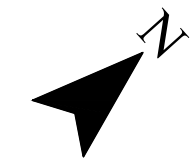
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**PROPOSED WHEELWASH DETAILS**

**FIGURE 2-7**

Scale 1:100 @ A3	Date MAY 2016
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- NOTES**
1. REFER TO **FIGURE 2-2** FOR LOCATION OF PROPOSED WHEELWASH LAGOON SYSTEM
  2. ALL DIMENSIONS IN METERS
  3. WHEELWASH: AREA OF LAGOON SYSTEM = 92m<sup>2</sup>



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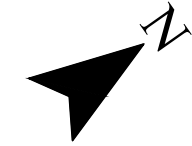
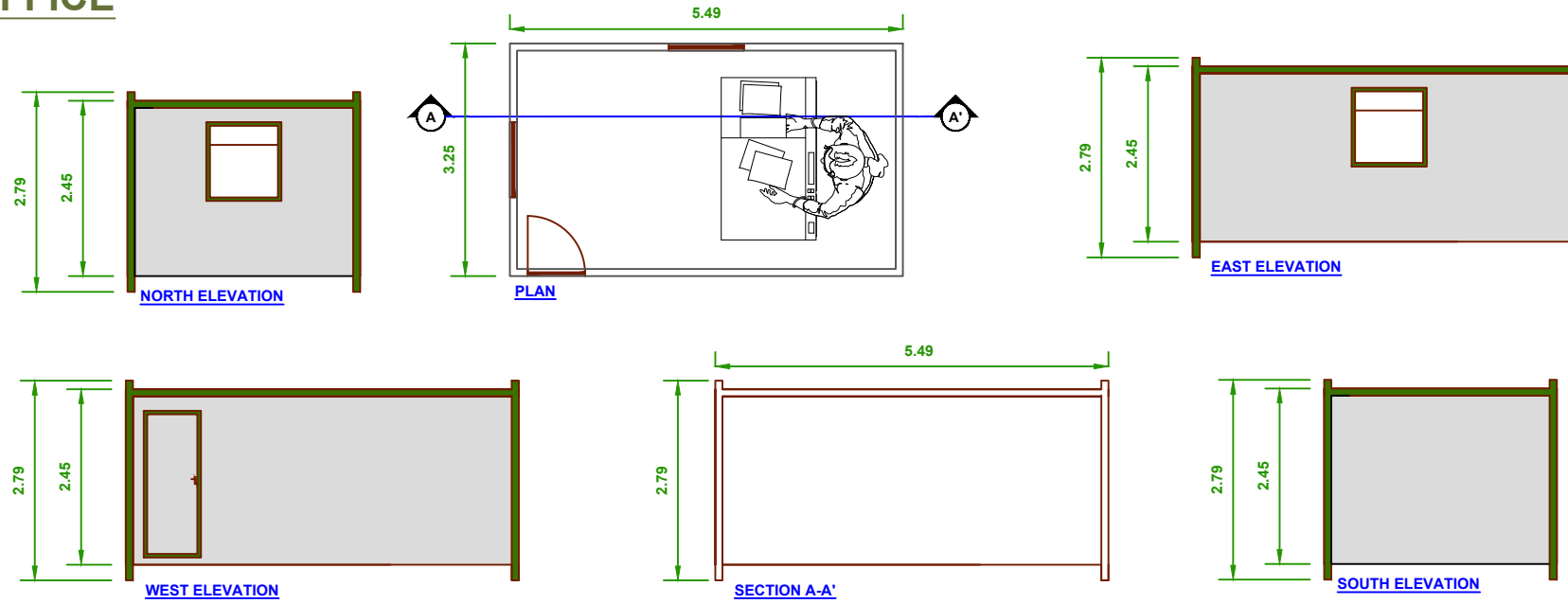
**PROPOSED WHEELWASH LAGOON**  
**SYSTEM PLAN AND ELEVATIONS**

**FIGURE 2-8**

Scale 1:100 @ A3 Date MAY 2016

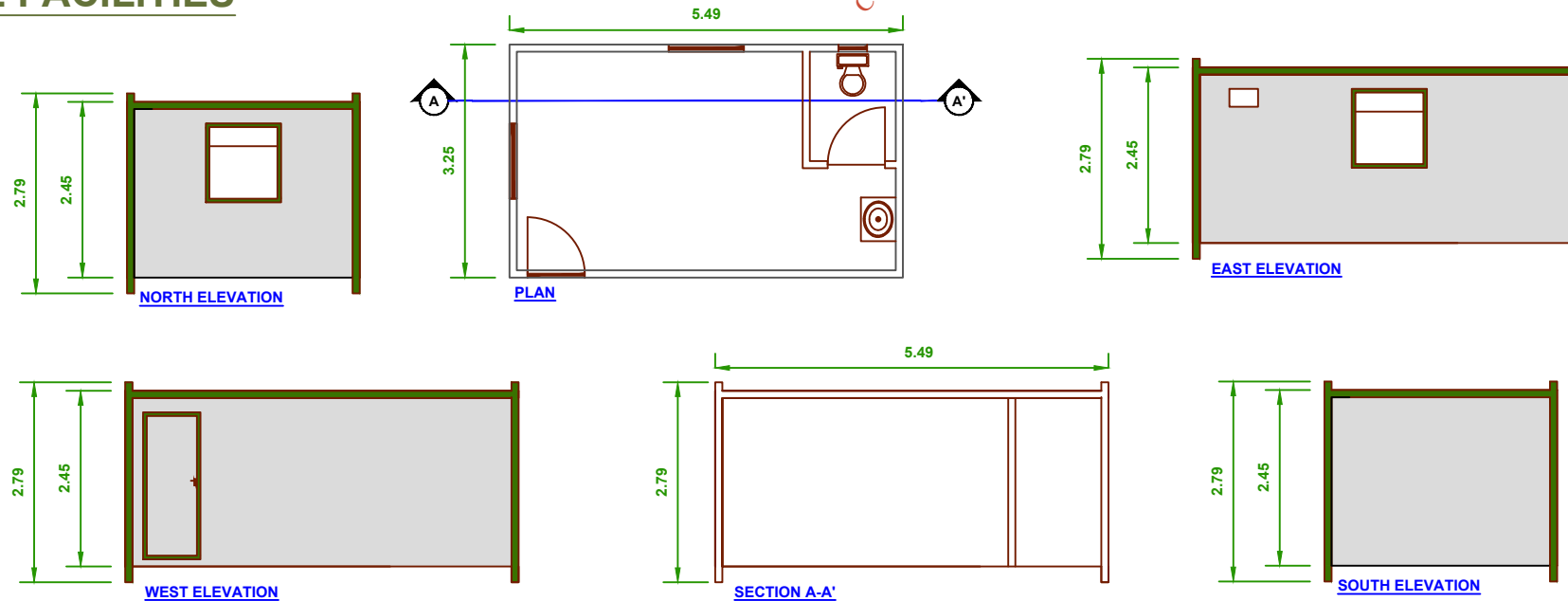
00180.00109.0.FIG\_2-8.Proposed Wheelwash Lagoon System.dwg

# MANAGERS OFFICE



- NOTES**
1. REFER TO **FIGURE 2-2** FOR LOCATION OF PROPOSED SITE OFFICE
  2. ALL DIMENSIONS IN METERS
  3. MANAGERS OFFICE: AREA OF INTERNAL FLOOR = c.16.1m<sup>2</sup>
  4. STAFF WELFARE FACILITIES: AREA OF INTERNAL FLOOR = c.16.1m<sup>2</sup>

# STAFF WELFARE FACILITIES



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---

**PROPOSED MANAGERS OFFICE &  
STAFF WELFARE FACILITIES**

---

**FIGURE 2-9**

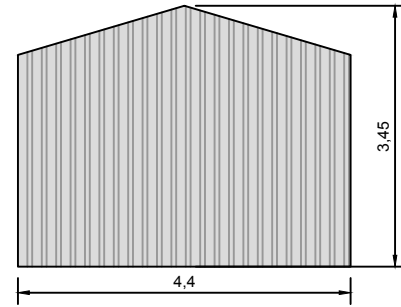
Scale 1:100 @ A3	Date MAY 2016
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00180.00109.0.FIG\_2-9.Proposed Site Office & Welfare Facilities.dwg

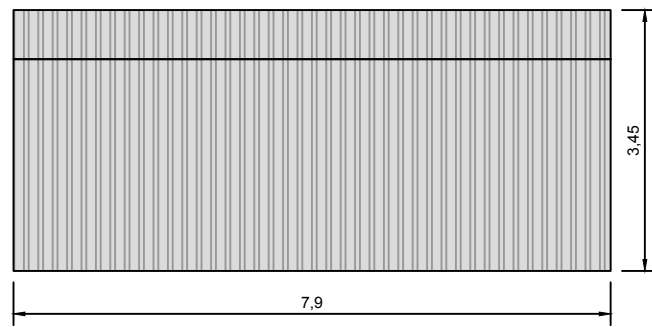
00180.00109.0.FIG\_2-10.Proposed Waste Quarantine Inspection Shed.dwg



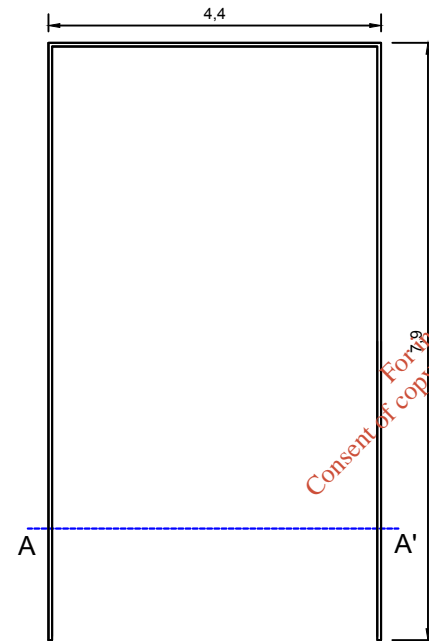
- NOTES
1. REFER TO **FIGURE 2-2** FOR LOCATION OF PROPOSED QUARANTINE INSPECTION SHED
  2. ALL DIMENSIONS IN METERS
  3. QUARANTINE INSPECTION SHED: AREA OF INTERNAL FLOOR = 35m<sup>2</sup>



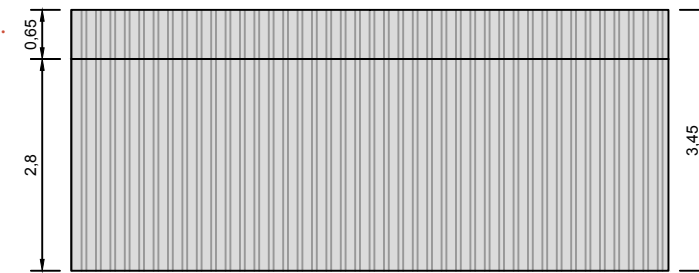
INSPECTION SHED FRONT ELEVATION



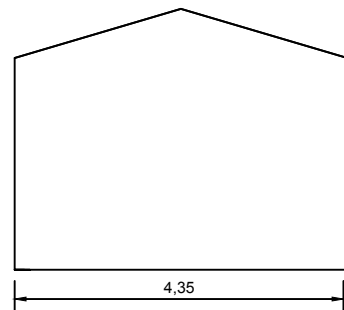
INSPECTION SHED SIDE ELEVATION



INSPECTION SHED OPEN FRONT ELEVATION



INSPECTION SHED SIDE ELEVATION



INSPECTION SHED SECTION A-A'

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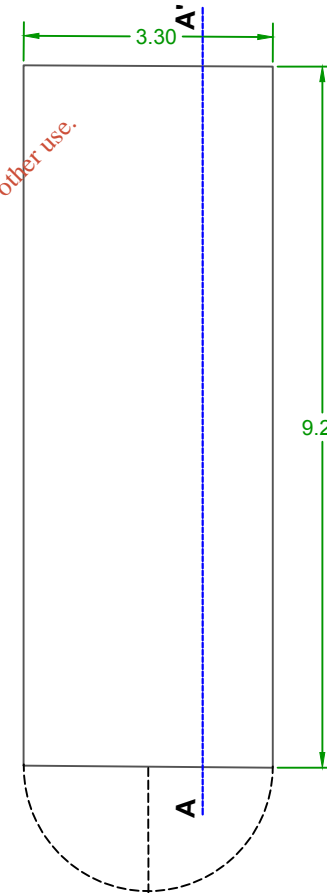
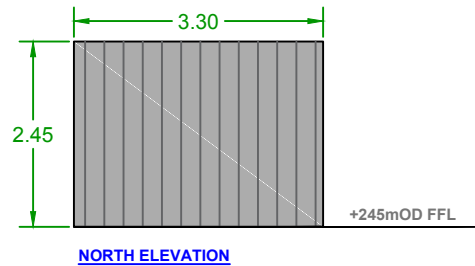
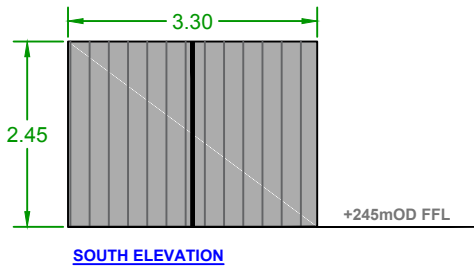
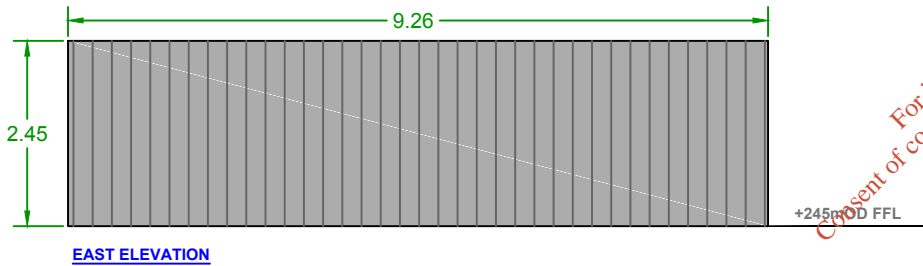
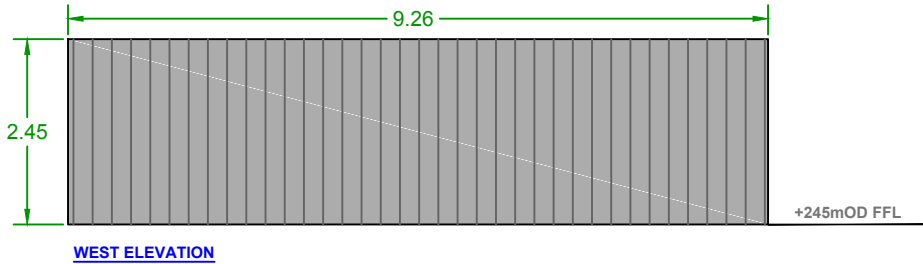
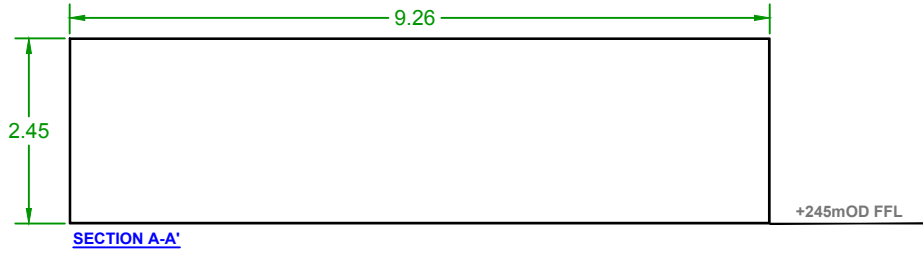


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PROPOSED WASTE QUARANTINE  
INSPECTION SHED

FIGURE 2-10

Scale 1:100 @ A3 Date MAY 2016



NOTES

1. REFER TO **FIGURE 2-2** FOR LOCATION OF PROPOSED STORAGE CONTAINER
2. ALL DIMENSIONS IN METERS
3. STORAGE CONTAINER : AREA OF INTERNAL FLOOR = 30.7m<sup>2</sup>

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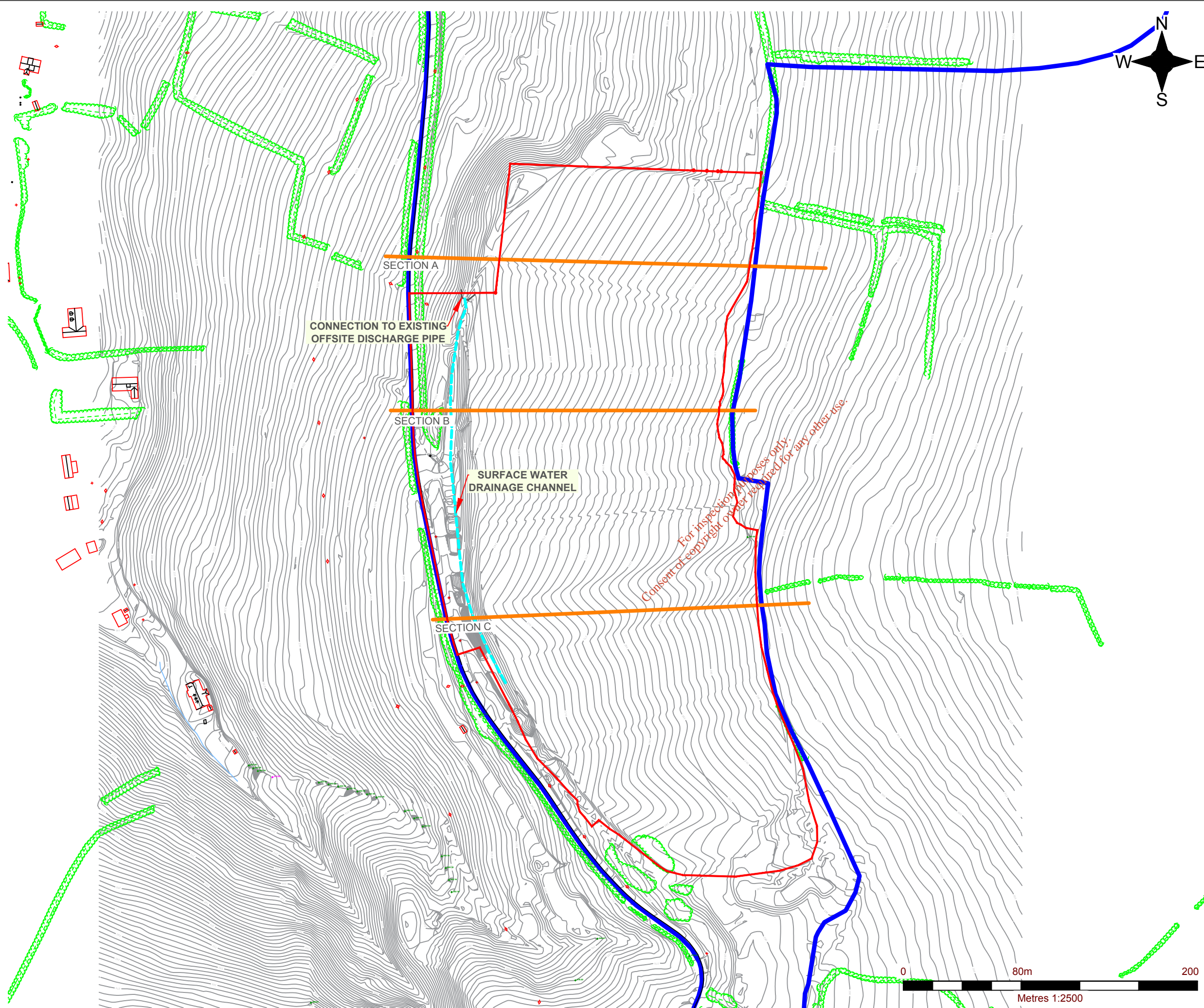
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**PROPOSED EQUIPMENT STORAGE SHED**

**FIGURE 2-11**

Scale 1:100 @ A4

Date MAY 2016

00180.00109.0.FIG\_2-12.Final Restoration Surface.dwg



NOTES

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	PROPOSED SURFACE WATER DRAINAGE CHANNEL

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FINAL RESTORATION SURFACE**

**FIGURE 2-12**

Scale 1:2,500 @ A3	Date MAY 2016
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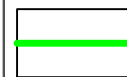
NOTES

1. REFER TO **FIGURE 2-12** FOR CROSS SECTION LOCATIONS

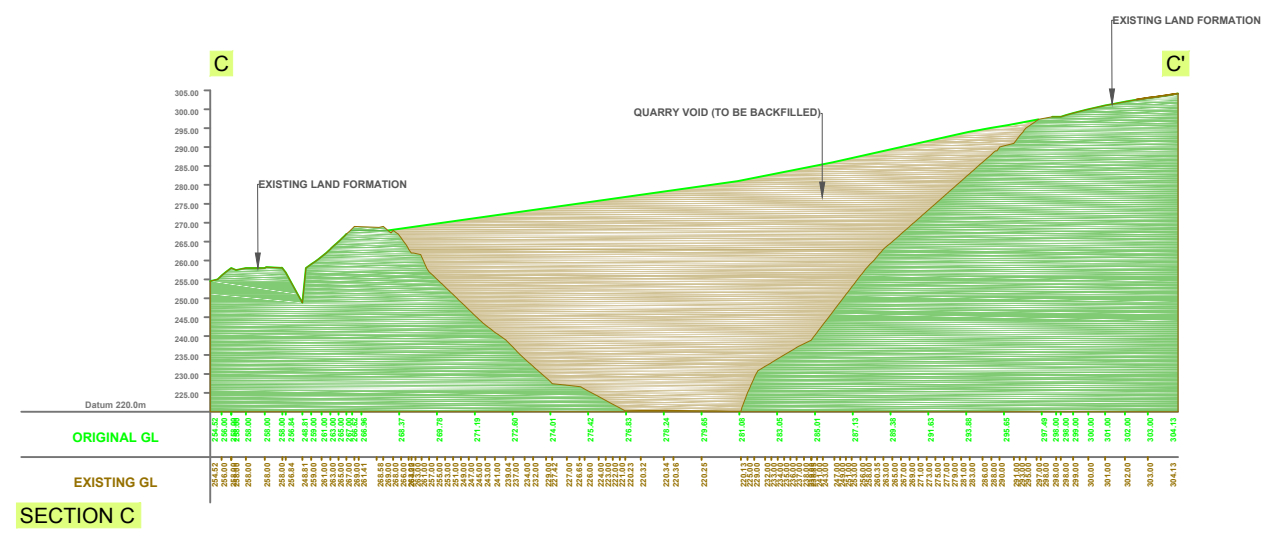
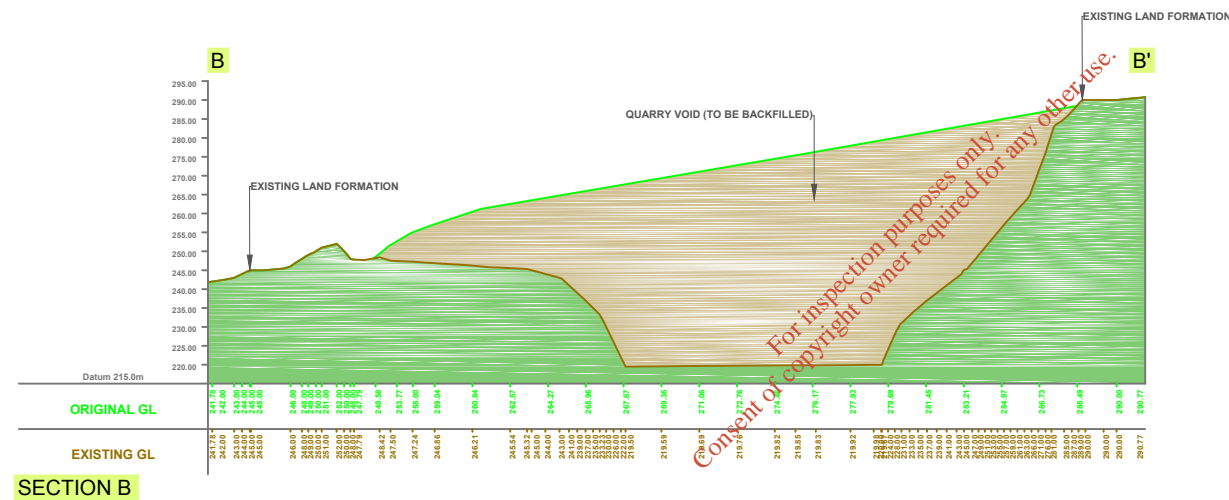
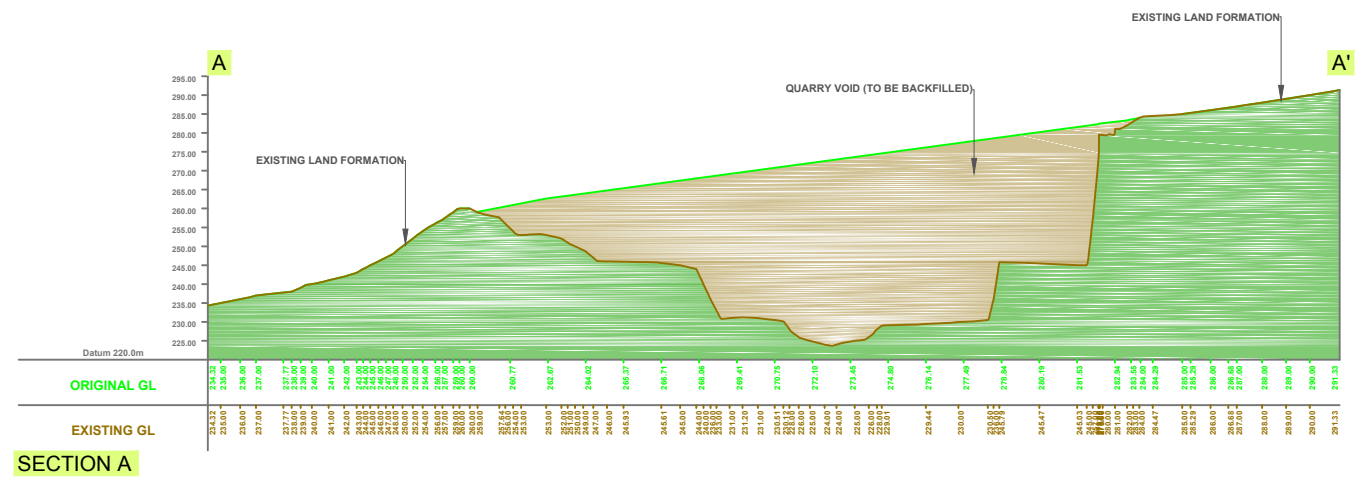
LEGEND



QUARRY VOID



PROPOSED INFILL LEVEL



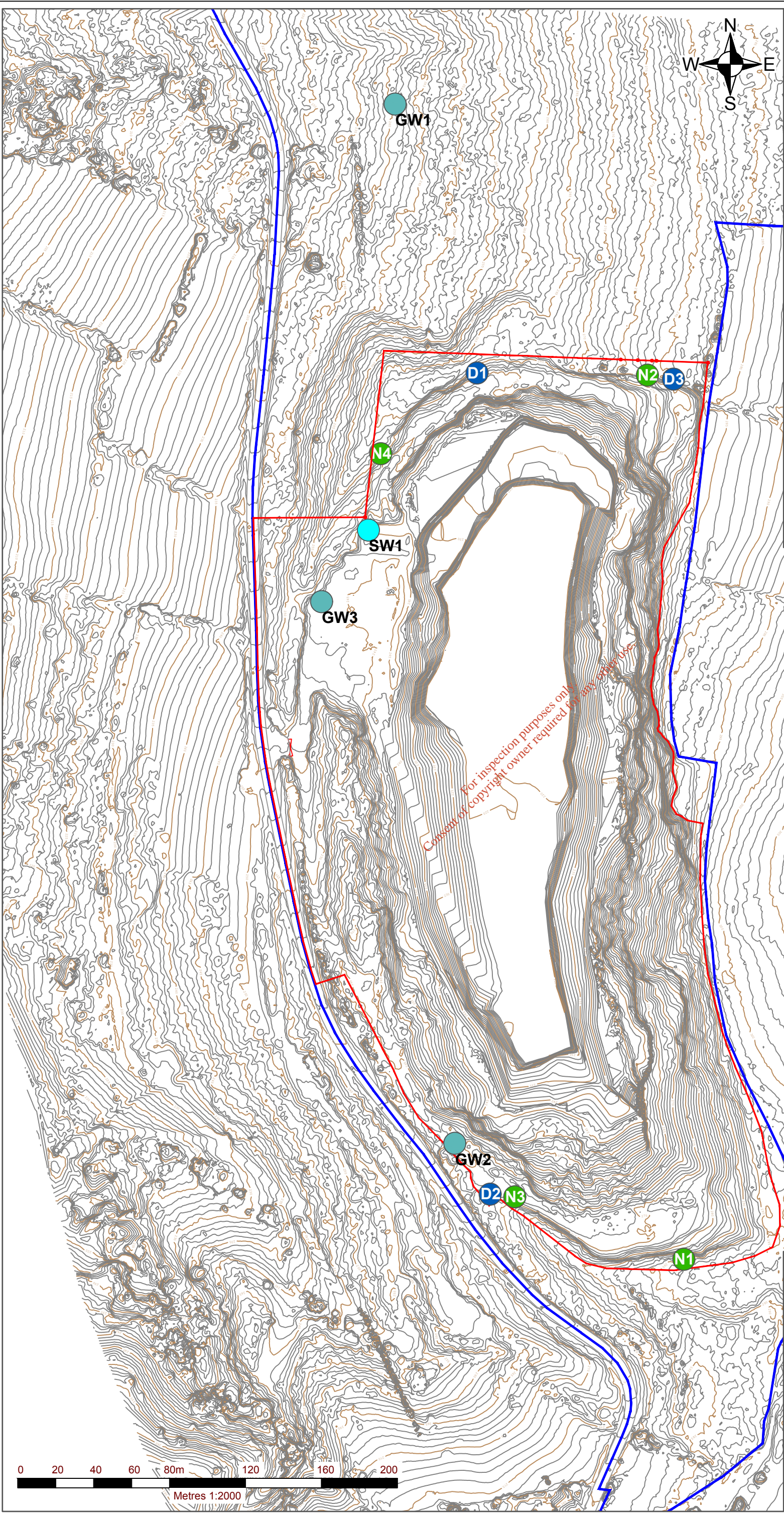
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RESTORATION CROSS SECTIONS**

**FIGURE 2-13**

Scale 1:2,000 @ A3 Date MAY 2016





**NOTES**

1. 'Orthomosaic produced from Aerial Photography flown February 2015 by SLR Consulting Ireland (IAA Permit No. 04/2015) [www.slrconsulting.com](http://www.slrconsulting.com) Tel. +353-1-2964667. Orthomosaic produced using Ground Control Points; Related to Irish Transverse Mercator Coordinate System and OS Malin Head Level Datum.

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	DUST MONITORING LOCATION
	GROUNDWATER MONITORING LOCATION
	SURFACE WATER MONITORING LOCATION

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INERT SOIL WASTE RECOVERY FACILITY  
CALARY QUARRY,  
KILMACANOGE, CO. WICKLOW

**ENVIRONMENTAL MONITORING LOCATIONS**

**FIGURE 2-14**

Scale 1:2,000 @ A3	Date MAY 2016
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## APPENDIX 2.1 WASTE ACCEPTANCE AND HANDLING PLAN

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**Calary Quarry, Kilmacanogue, Co. Wicklow**

**Proposed Inert Soil Recovery Facility  
Restoration and Backfilling of Calary Quarry**

**WASTE ACCEPTANCE AND HANDLING PLAN**

SLR Ref: 501.00180.00109.3

May 2016



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## 1. INTRODUCTION

Roadstone Ltd. proposes to establish an inert waste (soil) recovery facility at its site at Calary Quarry, Killough Upper, Kilmacanogue, Co. Wicklow at Irish National Grid Reference E322800 N212800. The principal waste activity at the facility is the importation, placement and compaction of inert waste soils in an existing large quarry void. The proposed recovery activity will provide for the ultimate backfilling of the quarry to its original ground level and its restoration to former land use(s).

Activities at the proposed waste recovery facility include

- (i) Use of approximately 1,830,000 tonnes of imported inert natural materials, principally excess soil, stones and/or broken rock to backfill and restore a large existing void created by previous extraction of bedrock;
- (ii) Construction of temporary site infrastructure including, site office and staff welfare facilities, weighbridge, wheelwash, hardstand areas, fuel storage facilities, waste inspection and quarantine area and storage sheds;
- (iii) Separation of any construction and demolition waste (principally concrete, metal, timber, PVC pipes and plastic) unintentionally imported to site prior to removal off-site to licensed waste disposal or recovery facilities;
- (iv) Temporary stockpiling of topsoil and subsoil pending re-use as cover material for final restoration of the site;
- (v) Restoration of the backfilled void (including placement of cover soils and seeding) and return to use as agricultural grassland / natural habitat;
- (vi) Environmental monitoring of noise, dust, surface water and groundwater for the duration of the site restoration works and for a short period thereafter.

Backfilling and restoration of the quarry requires placement, compaction and capping of approximately 1,830,000m<sup>3</sup> (1.83 million cubic metres), equivalent to approximately 3,300,000 tonnes of inert soil and stone and minor quantities of aggregate for temporary haul road construction.

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## 2. WASTE ACCEPTANCE

The existing quarry at Calary was originally opened and operated by Wicklow County Council. Roadstone acquired the quarry in 1973. Quarry operations were suspended in 2010 in response to the sharp downturn in activity in the construction sector at that time. This current proposal to backfill the quarry void with imported inert soil and stones is part of the quarry restoration proposal.

Only inert waste is recovered at this waste recovery facility. Soil and stones are generally recovered directly at the facility without any further processing. Minor quantities of aggregate are imported to the facility for re-use in construction of temporary internal haul roads over and across backfilled soil.

### 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 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 intake.

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

EWC Code	Waste Description
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 for intake to inert waste landfills 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 in principle for recovery at the waste recovery 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.

The following intake restrictions shall apply at this facility:

- (i) consignments containing peat shall not be accepted
- (ii) consignments containing soil from known or suspect contaminated sites or sites having a potentially high risk of contamination (eg. garage forecourts or former industrial sites) shall not be accepted
- (iii) consignments which could potentially contain asbestos, chemicals or any hazardous materials shall not be accepted
- (iv) waste from unknown and/or unrecorded sources shall not be accepted
- (v) all inert soil accepted at the facility must have minimal quantities (<2%) of other construction and demolition wastes intermixed with it (eg. metals, plastic, wood, rubber etc.) shall not be accepted.

Although an exemption on soil testing may apply, there is nonetheless a requirement to collect and record some basic characterisation information in advance which clearly demonstrates that the imported waste is inert. In these circumstances, a letter of suitability will be required from an appropriately qualified or competent person which provides the following information to Roadstone prior to forwarding waste consignments to this waste facility

- (i) a declaration that the waste is natural, undisturbed soil and stone;
- (ii) a description of the source and nature of the soil and stone;
- (iii) details of the source location for the soil and stone (including a plan showing the source site boundary)
- (iv) a declaration that the material is suitable for use as backfill at the facility
- (v) a declaration that the material will not cause environmental pollution at the facility.

The producer of the waste and/or the waste collector will be responsible for ensuring that the information provided is correct and pertains to the soil waste being imported to the facility.

Once Roadstone is satisfied on the basis of the information provided to it that the soil wastes to be imported to the facility 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.

## 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 for intake to inert waste landfills 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. Notwithstanding this exemption however, it is considered that there is still a requirement to check the imported wastes to ensure compliance with the basic characterisation information provided (which often may not have included any soil testing).

All 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 based operative employed directly by Roadstone, either at the weighbridge or the tipping face.

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.

In order to verify that the waste being accepted and used for restoration purposes at this recovery facility is inert, Roadstone will undertake some limited compliance testing on soil and stones which have been imported to site. A representative sample of waste shall be taken from one in every 100 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
- Poly Aromatic Hydrocarbons (PAH's)

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.

If any waste consignment forwarded to the waste recovery facility

- (i) fails to comply with the acceptance policy outlined 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 Rejection Book. If records indicate that consignments from a particular waste producer and/or waste collector are being repeatedly rejected, Roadstone will review whether or not to withdraw approval for its continued use of the recovery facility.

### 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 / hazardous waste or excessive construction or demolition waste (>2%) intermixed with it.

If some contamination of soil and stones is immediately evident from visual inspection (unusual colour, smell etc.) or if excessive quantities of other construction and demolition waste materials (like metals, plastic, concrete, bricks, 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 and substantially free of other waste materials. 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.

Any excessive quantities of inert construction and demolition wastes (most notably concrete and brick) inadvertently imported and accepted at the site will be segregated, stockpiled and transferred to storage skips at the waste quarantine area pending removal off-site to a local authorised construction and demolition waste recovery facility.

Should minor quantities of non-inert wastes (principally metal, timber, PVC pipes and plastic) be inadvertently imported amongst the soil and stones, it too shall be separated out (mechanically or by hand, as appropriate), stockpiled and temporarily stored in skips at the waste quarantine area prior to removal off-site to appropriately authorised waste disposal or recovery facilities

In the unlikely event that suspected contamination of the soil matrix is subsequently 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 permitted (or licensed) waste disposal or recovery facility.

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## APPENDIX 2-2 CONTINGENCY PLAN

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**Calary Quarry, Kilmacanogue, Co. Wicklow**

**Proposed Inert Soil Recovery Facility  
Restoration and Backfilling of Calary Quarry**

**ENVIRONMENTAL CONTINGENCY PLAN**

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## 1 ACCIDENTS AND THEIR CONSEQUENCES

### 1.1 Introduction

This document is the Contingency Plan for the proposed inert waste recovery facility operated by Roadstone Ltd. at Calary Quarry in the townlands of Killough Upper and Glencap Commons Upper, Kilmacanogue, Co. Wicklow. The principal waste activity at the facility is the importation, placement and compaction of inert waste soils in an existing large quarry void. The proposed recovery activity will provide for the ultimate backfilling of the quarry to its original ground level and its restoration to former land use(s).

All inert soils and stones are imported to site from external construction and development sites. Virgin aggregate will be imported to the facility and 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 are 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.

### 1.3 Out of Hours Contact

A member of company staff will be nominated as an out-of-hours contact person who will be available at night and weekends and during holiday periods to implement contingency / emergency response procedures in the event of an accident or environmental incident at the facility.

The contact number will be notified to all site based personnel and/or retained security contractors, the Local Authority, the Environmental Protection Agency and any locally based emergency responders (including Garda, fire and ambulance service).

## 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*

Spill kits with a supply of materials suitable for absorbing and containing any minor spillage will be available on site at all times.

#### **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.

Spill kits with a supply of materials suitable for absorbing and containing any minor spillage will be available on site at all times.

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 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 infrastructure area, will have the benefit of a security alarm and CCTV to discourage intruders.

#### *Lighting*

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

#### *Fencing*

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

#### *Security Gates*

Security gates, which span the full width of the access road into the facility are provided at the entrance. 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.