

## SECTION 2 : DESCRIPTION OF RESTORATION SCHEME

### 2.1 PRINCIPAL ELEMENTS

The proposed restoration scheme at Blackhall, Punchestown, Naas, Co. Kildare provides for

- (i) Use of imported inert natural materials, principally excess soil, stones and/or broken rock excavated on construction sites, to backfill and restore a large existing void created by previous extraction of sand and gravel
- (ii) Recovery of imported inert construction materials, including stones, granular fill, concrete, blocks, bricks and ceramic tile, using crushing and screening equipment to generate secondary (recycled) aggregate
- (iii) Separation of any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) unintentionally imported to site prior to removal off-site to appropriately licensed waste disposal or recovery facilities
- (iv) Use of secondary aggregate to construct internal haul roads within the application site and to backfill existing groundwater ponds
- (v) Export of secondary aggregate off-site for re-use by others
- (vi) Phased restoration of the backfilled void (including placement of cover soils and seeding) and return to former use as agricultural grassland
- (vii) Temporary stockpiling of topsoil and subsoil pending re-use as cover material for phased restoration of the site
- (viii) Environmental monitoring of noise, dust, surface water and groundwater for the duration of the site restoration works.

The existing void will only be infilled using inert materials imported from pre-approved external construction sites and secondary aggregate generated on site. No peat, contaminated soils intermixed construction and demolition waste or non-hazardous waste will be accepted at the application site. Non-inert construction and demolition wastes will be removed off-site. The location and layout of the existing site are indicated on Figure 2.1.

### 2.2 SITE INFRASTRUCTURE

#### 2.2.1 Site Security

Access to the application site can only be gained via an access road leading off the existing local road between Beggars End Crossroads and Newtown Great. All vehicular traffic accessing the site must stop at a security barrier in front of the temporary site office before gaining access by means of a swipe card. The swipe cards identify the Client forwarding the waste and facilitate electronic recording of time and date inert waste is received at the site.

Aside from the access road to the existing facility, the entire site boundary is closed off by post and wire fences and 6No. agricultural field gates, the locations of which are shown on Figure 2.1. All agricultural gates will remain padlocked for the duration of the site restoration activities and will only be opened occasionally to facilitate agricultural related activity, principally grazing of sheep, on restored grassland within the application site, remote from restoration backfilling or recovery operations.

The only vehicles accessing the site at the present time are heavy good vehicles (HGV's) carrying inert soil for backfilling or construction and demolition waste for recycling. The existing waste permit provides for up to 60 truck movements in and out of the site each day. No further increase in traffic levels, over and above this level, is envisaged in future years.

Inert materials are accepted at the site between 08.00 hours and 18.00hours each weekday and 08.00hours to 14.00hours on Saturday. No materials are accepted at any other time.

#### 2.2.2 Site Roads and Parking Areas

All trucks delivering inert waste to this site will be confined within the Applicant's landholding. Trucks will initially travel over a paved road surface between the site security barriers and the existing temporary wheelwash facility before travelling over a network of unpaved internal roads to get to the active restoration area or the recycling area. Existing paved and unpaved haul roads across the application site are indicated on the existing site layout drawing in Figure 2.2.

Provision for employee and visitor car parking is currently provided on a paved area adjacent to the temporary site office, before the site security barrier.

### 2.2.3 Hardstanding Areas

A temporary hardstanding area constructed of secondary aggregate is provided in the centre of the application site for the recovery of inert construction and demolition waste imported to site and for separation and storage (in skips) of any separated non-inert construction and demolition wastes inadvertently mixed with it, most likely to comprise metal, timber, PVC pipes, plastic etc. This hardstanding area also provides for the storage of plant, equipment and materials.

At the present time, the hardstanding area is not sealed and any rain falling over this area either percolates downwards into the underlying soils or runs-off over the existing ground surface toward the main haul road through the site and into the groundwater pond in the closed depression at the western site boundary.

It is envisaged that the eastern side of the existing recovery area will in future be sealed by a 100mm thick reinforced concrete slab over 150mm of granular sub-base and used as a waste inspection and quarantine area.

### 2.2.4 Wheelwash and Weighbridge

In order to prevent transport of soil on public roads, a temporary wheelwash facility has been installed close to the site entrance, as shown on the site infrastructure layout in Figure 2.2. All egressing site traffic will be required to pass through the wheelwash.

In order to track and record the amount of material entering the application site, it is proposed to install a weighbridge along the internal access road in front of the temporary site office. Secondary aggregate exported off-site and any non-inert construction and demolition waste dispatched to other licensed waste disposal or recovery facilities will also be weighed. Records of waste and secondary aggregate tonnages will be maintained for waste auditing purposes.

### 2.2.5 Laboratory Testing

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

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

### 2.2.6 Fuel and Oil Storage

It is not intended to provide bunded fuel storage tanks at the application site. Fuel for plant and equipment undertaking the site restoration works and/or the construction and demolition waste recovery activity will be stored in double skin bowzers located on the hardstanding area. The effect of the double skin is to minimise the potential for fuel spillage on account of leakage / accidental piercing of bowser.

A small bunded tank for waste oils will be provided on the concrete slab at the waste quarantine area. This tank will be emptied at intervals by a licensed waste contractor and disposed off-site at a suitably licensed waste facility.

No re-fuelling of HGV trucks will take place on site. Oil and lubricant changes for wheeled or tracked plant will be undertaken on-site at the existing hardstanding area.

Plant maintained on site principally comprises mechanical excavators and/or bulldozers, mobile crushing and screening plant. Both tracked and wheeled plant will be serviced as necessary at the hardstanding area or, if necessary, on the concrete slab at the waste quarantine area.

### 2.2.7 Waste Inspection and Quarantine Area

A temporary waste inspection and quarantine area will be constructed to the east of the existing recycling area, at the location shown on Figure 2.2. The waste inspection and quarantine area will be sealed by a 100mm thick reinforced concrete slab over 150mm of granular sub-base and bunded to a design storm volume.

Any suspect or unacceptable waste identified in this area will be placed in skips and covered with plastic sheeting in order to minimise potential contamination of surface water run-off.

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

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

### 2.2.8 Traffic Control

All traffic to and from the application site will enter and leave via the existing entrance which fronts onto the local road between Beggars End Crossroads and Newtown Great. All traffic will travel to / from Beggars End Cross Roads. It is expected that 95% of traffic will travel along the R410 Regional Road to/from either Blessington or Naas. No more than 5% of the remaining traffic is expected to travel along the existing local road between Beggars End Crossroads and Ballymore Eustace

Internally within the application site, warning notices, direction signs and speed restriction signs will be established along paved and/or unpaved roads leading to and from the active restoration areas and the construction and demolition waste recycling area.

All HGV traffic egressing the application site will be required to pass through a temporary wheelwash facility and weighbridge at the end of the paved internal road, shown on Figure 2.2.

### 2.2.9 Sewerage and Surface Water Drainage Infrastructure

At the present time, site staff uses toilet, hand washing and welfare facilities provided off-site at the adjoining residence of Mr. John Behan, a director of Behan's Land Restoration. A temporary portaloo is currently provided on the hardstanding area and is emptied / replaced as required by an approved waste Contractor. It is envisaged that this arrangement will continue for the duration of the site restoration works.

With the exception of the sealed concrete slab at the waste inspection and quarantine area, it is not intended to provide any site drainage infrastructure to collect and remove surface water run-off at the application site. During the infilling of the restoration site, surface water will be allowed to run over the existing ground surface to collect in surface ponds and discharge to groundwater. Some rainfall may also percolate downwards through the backfilled soil to the underlying groundwater table. At no time during the restoration works will surface water run-off be directed to watercourses or ponds beyond the site boundary.

The temporary waste inspection and quarantine area, will be sealed by a 100mm thick reinforced concrete slab over 150mm of granular sub-base and bunded to a design storm volume. Any surface water running over the surface of the concrete slab will be directed toward buried storage tanks with double skin protection located on the western side of the hardstanding area, as shown

on Figure 2.2. Surface water will only be collected in the buried tanks when suspect waste consignments are stored at the quarantine facility.

At all other times, surface water run-off from the sealed slab will either percolate directly through the ground to the underlying groundwater table or will be directed over the existing ground surface to ponds in low lying areas, at which point it is effectively discharged to groundwater. Should it be necessary to prevent high concentrations of suspended solids entering existing groundwater ponds, intermediate temporary surface water ponds will be constructed to hold run-off and encourage settling out of suspended solids prior to discharge to groundwater ponds at a lower level.

Any wastewater collected in the buried tanks will be emptied by licensed waste collectors and transferred to a collection tanker for disposal off-site at an approved waste water treatment facility.

### 2.2.10 Site Services

Electric power, lighting and heating will be provided to the temporary site office near the entrance to the application site.

Key personnel overseeing site backfilling and recovery operations at the application site will be contactable by mobile phone. It is not intended to install permanent telephone, fax and email facilities at the temporary site office.

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

The main Ballymore-Dublin water supply pipeline passes close to the north-eastern corner of the application site as indicated on Figure 2.3, thus explaining why granular materials in this area were never extracted. No other buried services are understood to occur across the application site.

Overhead high voltage (220kV) electricity transmission cables traverse the north-eastern corner of the application site, as indicated on Figure 2.3. Lower voltage overhead distribution cables run along the north-western boundary of the site, as also indicated on Figure 2.3. Telegraph (telephone) cables run along the existing local road along the western site boundary. The health and safety implications of working in close proximity to the above listed cables will be addressed in implementing phased restoration of the application site.

### 2.2.11 Plant Sheds and Equipment Compounds

Plant and equipment used in the backfilling and/or recovery activities will be stored on the temporary hardstanding area in the centre of the application site. Given the limited access into the site, it is not considered necessary to provide a security fence around this area to create a secure compound.

No workshops will be provided on site. Any plant or equipment which requires specialist repair or overhaul will be removed off-site if required.

Small items of mobile or hand-held plant and equipment will be stored in closed metal containers at the hardstanding area.

### 2.2.12 Site Accommodation

At the present time, there is only a small security hut at the entrance to the application site. It is intended to replace this hut with a portacabin office. All site administration and management functions will be based at this office. Changing facilities will also be provided at the replacement portacabin. It is envisaged that staff will continue to access handwashing and cooking facilities at the adjoining residence of John Behan, a director of Behan's Land Restoration Ltd.

### 2.2.13 Waste Recovery Infrastructure

Inert construction and demolition waste imported to site will be recycled at the hardstanding area in the centre of the site, refer to Figure 2.2. Any metal waste will be separated and placed in a skip pending removal off site to a licensed recovery facility. Any other non-inert waste (timber, plastic etc.) will also be separated off and placed in a skip pending removal off-site by permitted waste collectors to a licensed disposal or recovery facility.

Construction and demolition waste will be recycled by passing it through a mobile crushing plant in order to create a particulate, granular fill which may be used to construct hardstanding areas or temporary haul roads.

## 2.3 RESTORATION AND RECOVERY ACTIVITIES

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

### 2.3.1 Backfilling / Restoration Schedule

Backfilling of the application site will proceed in several phases and on completion, will merge into the surrounding undulating pastoral landscape. A summary of the proposed phasing and the final ground level contours are shown in Figure 2.4.

It is currently envisaged that the eastern side of the site will continue to be backfilled in a north-easterly direction up to the former landholding boundary (shown in Figure 1.3). This is deemed to constitute Phase 1 of the project. The final restored Phase 1 area is shown as Figure 2.5. Any temporary additional or replacement infrastructure required to facilitate the proposed restoration works will be constructed and/or installed at the outset of Phase 1.

Thereafter, backfilling of the western side of the application site will commence, with works progressing from north to south, as indicated on the phasing drawing in Figures 2.6 to 2.9. These works are deemed to constitute Phases 2 and 3 of the project.

Phase 4 of the project will comprise infilling of the large open void to the rear of the application site, as indicated in Figures 2.10 to 2.13. Phase 5 will comprise removal of the construction and demolition recycling facilities and infilling / re-contouring of the eastern half of the site to its finished profile, as indicated in Figures 2.14 and 2.15.

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

### 2.3.2 Method and Safety Statements for Construction Works

Any additional infrastructure be 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 external works Contractors. In preparing such plans, regard will be had to safety risks and potential conflicts presented by ongoing site restoration and recovery activities.

### 2.3.3 Material Requirements

The only material requirements in respect of the proposed restoration scheme are the inert soil, stone and rock used in backfilling the existing void and site-won secondary aggregates used for backfilling ponds and in the construction of temporary internal haul roads. Clean, inert soil and stone is likely to be sourced from greenfield development sites. Intermixed soil, stones and inert construction waste (concrete, block and brick) will be sourced from re-development sites.

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

MATERIAL	QUANTITY	SOURCE
Inert soil, rock and stones / Subsoil	3,475,000 tonnes	Imported
Recycled secondary aggregate	400,000 tonnes	Imported / site-processed
Topsoil (150mm)	125,000 tonnes	Imported

**Table 2.1 Material Requirements**

### 2.3.4 Materials Balance

All of the inert materials to be used in the restoration of the application site will be imported from external construction and demolition works sites. This includes secondary aggregate used to construct temporary haul roads across and through the site and to backfill groundwater ponds up to and above design groundwater level.

### 2.3.5 Stability Analyses

The available site investigation data indicates that the area to be backfilled is underlain by relatively competent sand and gravel strata. The increase in loading applied to these soils (below existing formation level) will not exceed that which existed prior to extraction of sand and gravel. As a consequence, no deep seated failure of temporary slopes is anticipated.

Temporary side slopes in backfilled soils (above formation level) will be graded at an angle no steeper than 35° (approximately 1v:1.5h), sufficient to ensure no instability arises. It is envisaged that a stability assessment of side slopes at the application site will be undertaken on an annual basis. In the longer-term, there will be no risk of instability as the restored site will be graded to a relatively flat, shallow slope.

### 2.3.6 Importation of Construction Materials

Most construction materials required to construct site infrastructure, principally drainage stone, holding tanks and concrete will be sourced externally and imported to site. It is expected that low grade granular fill recovered on site from construction and demolition waste can be used for hardcore and/or hardstanding areas.

### 2.3.7 Removal of Materials Off-Site

Any non-hazardous or hazardous wastes identified within the inert soils imported to site for restoration purposes or the construction and demolition waste imported for recovery purposes will be transferred off-site by permitted waste collectors to suitably licensed waste disposal or recovery facilities. It is anticipated, on the basis of experience in operating the existing facility to date, that these waste quantities will be very low.

Inert construction and demolition waste recovered on site, not re-used for haul road construction or backfilling of groundwater ponds up to and above design groundwater level, will be supplied as low grade hardcore to construction companies in the Kildare and Greater Dublin area. Any non-inert construction and demolition waste (principally scrap metal, plastic and timber) will be removed off-site by permitted waste collectors to appropriately licensed recovery or disposal facilities.

Any surface water run-off collecting in holding tanks while suspect waste is stockpiled at the waste quarantine and inspection area (pending removal off-site) will be pumped to a mobile tanker and transferred off-site to an approved wastewater treatment facility.

### 2.3.8 Formation Levels and Gradients

The application site has been sub-divided into five separate phases to facilitate progressive restoration and reinstatement of agricultural grassland. Some of these phases have been further subdivided to provide for continual ongoing restoration as indicated on Figures 2.5 to 2.15.

Formation levels for backfilling across the application site are taken to be equivalent to existing ground levels, as indicated on Figure 2.1. During each restoration phase, the backfilled surface

will be graded so as to ensure surface water run-off falls toward a local low point. In order to prevent high concentrations of suspended solids entering existing groundwater ponds, intermediate unlined temporary surface water ponds will be constructed to hold run-off and encourage settling out of suspended solids prior to discharge to groundwater ponds.

Temporary access ramps into and out of the active backfilling areas will generally be constructed at a gradient of 1v:10h. Temporary side slopes will be constructed at gradients no greater (steeper) than 1v:1.5h in order to ensure stability. On completion, final gradients across the restored site will be very shallow, generally no greater than 1v:15h, as indicated on Figure 2.14.

### **2.3.9 Bund Design**

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

### **2.3.10 Capacity and Lifespan**

The estimated volume of material to be placed at the application site is approximately 2,240,000m<sup>3</sup>. Allowing for backfilling at a rate of approximately 550m<sup>3</sup> per day, equivalent to 151,250m<sup>3</sup> per year, the estimated lifespan of the proposed waste facility is approximately 15 years. Recovery of construction and demolition waste will only continue as long as backfilling activities are undertaken at the site.

### **2.3.11 Basal and Side Slope Liner Design**

Given the inert nature of the materials being used to restore the application site, no provision is made for installation of a basal liner or side slope liners at this facility, nor is any provision made for a drainage blanket at the base of the backfilled materials.

Groundwater ponds occur at a number of locations across the application site. In order to minimise the impact of the site restoration on the groundwater table, it is envisaged that these ponds will be backfilled up to a design groundwater level using inert recovered construction and demolition waste (principally stones, concrete and brick). These materials will largely be of coarse granular (cobble and gravel) size, have a high porosity, holding groundwater in the intergranular pore space rather than displacing it (which would be the case for a fine grained fill material such as clay). The same materials also have high permeability and will facilitate transmission of groundwater through and beneath the site.

### **2.3.12 Leachate Management System**

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

### **2.3.13 Landfill Gas Management System**

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

### **2.3.14 Capping and Decommissioning**

The application site will be restored on a phased basis to give a landform similar to that existed prior to extraction of sand and gravel. On completion, the final landform will be profiled to give a domed shape in order to facilitate surface water run-off into the in-situ sand and gravels along the site boundary, refer to final site contour map in Figure 2.4.

A cover layer comprising 150mm of topsoil and approximately 850mm of subsoil shall be placed over the inert backfilled materials on completion of each phase of restoration. This will be immediately planted with grass in order to promote stability and minimise soil erosion and dust generation. The lands will then be progressively returned to use as agricultural grassland. Topsoil and subsoil will be imported to the site on a continual basis and shall not be used in the general backfilling of the site. The topsoil and subsoil shall be stockpiled pending re-use in the

phased restoration of the site. They 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.

In the course of the fifth (and final) phase of the site restoration works, all mobile plant and equipment will be removed off site and any temporary site accommodation, infrastructure and services will be progressively removed off-site or decommissioned.

Wherever possible, hardstanding surfaces will be broken up using a hydraulic breaker and subjected to validation testing to confirm the materials are acceptable for re-use in ongoing land restoration works. Any materials which are found to exceed inert waste criteria will be transferred-off site to a suitably licensed waste disposal or recovery facility.

## 2.4 WASTE ACCEPTANCE AND HANDLING

Only inert, uncontaminated soils and construction and demolition waste shall be accepted at the application site. Inert materials shall be accepted at the site between 08.00 hours and 18.00hours each weekday and 08.00hours to 14.00hours on Saturday. No materials shall be accepted at any other time.

### 2.4.1 Backfilling Activities

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

All inert soils imported to the site shall be unloaded (end-tipped) from trucks at the active backfilling face. It will be visually inspected by site personnel at that point to ensure that there is no intermixed non-hazardous or hazardous waste placed within it. Should there be any concern about the nature of the waste being end-tipped it will be segregated (if required), re-loaded onto the truck and directed to the waste inspection and quarantine area for closer inspection and classification. A detailed record will be kept of all such inspections. Should inspections and/or subsequent testing indicate that the materials are non-inert and cannot be accepted and used for restoration purposes at this site, they will be placed in skips and covered pending removal off-site by permitted waste collectors to a suitably licensed / permitted waste disposal or recovery facility.

In addition to the above, a representative sample shall be taken from one in every 200 loads of inert soil accepted at the facility and subjected to a less extensive scope of testing (compliance testing) focusing 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.

### 2.4.2 Recovery Activities

It is envisaged that the processing and/or recovery of construction and demolition waste activities at the application site will be restricted to stones, granular fill, concrete, blocks, bricks and ceramic tiles. Should any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) occur amongst the waste imported to site, it shall be separated out and temporarily stored in skips prior to removal off-site to appropriately licensed waste disposal or recovery facilities

It is a requirement of the existing operation that all construction and demolition waste forwarded to the site for recovery purposes has been pre-sorted at source, that it is inert and largely free of any non-hazardous / hazardous domestic, commercial or industrial wastes. Any consignments of construction and demolition waste which have such materials intermixed in them will be immediately rejected and removed off site.



## 2.5 ENVIRONMENTAL NUISANCE CONTROL

### 2.5.1 General

The ongoing restoration activities at the application site require a number of environmental controls to eliminate or minimise the nuisance to the public arising from the importation, placement and compaction of inert soils, the importation and recovery of construction and demolition waste and export of processed materials from the application site. The proposed environmental control measures are outlined in detail in the following sections.

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

### 2.5.2 Bird Control

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

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

### 2.5.3 Dust Control

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

- (i) water from a tractor drawn bowser will be sprayed on dry exposed soil surfaces (including unpaved road surfaces) as and when required;
- (ii) the site shall be restored in a phased manner and each phase shall be grassed as soon as practicable after placement of cover soils in order to minimise soil erosion and potential dust emissions;
- (iii) the area of bare or exposed soils will, insofar as practicable, be kept to a minimum. Consideration will be given to establishing temporary vegetation cover over temporary slopes pending final backfilling and restoration to original ground level.
- (iv) all HGV's exiting the site shall be routed through a temporary wheelwash facility at the end of the paved internal access road (refer to Figure 2.2). This measure will prevent transport of fines on both the paved access road and the public road network by HGVs exiting the site.
- (v) Stockpiling of imported soils will be minimized. Soils will ideally be placed and compacted in-situ immediately after being unloaded. If and when temporary stockpiling of soils is required, they will be placed as close as practicable to the centre of the application site, away from nearby residences.

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

### 2.5.4 Litter Control

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

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

### 2.5.5 Odour Control

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, it is not intended to implement any specific odour control measures at the site.

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.

### 2.5.6 Vermin Control

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

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

### 2.5.7 Fire Control

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

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

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

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

## 2.6 ENVIRONMENTAL MONITORING

### 2.6.1 General

There is an established programme of environmental monitoring at the application site which complies with requirements of the waste permit issued by Kildare County Council. No limit values for environmental emissions arising from established activities are identified by the existing waste permit. It is expected that such limits will be set by the EPA should it decide to issue a waste licence in respect of the application site.

Environmental sampling, monitoring and testing will largely be undertaken by independent external consultants as required. Records of environmental monitoring and testing will be maintained on-site and will be forwarded to the EPA as required under the terms of the waste licence.

### 2.6.2 Dust Monitoring

Dust emissions from established restoration activities at the application site are measured using Bergerhoff dust gauges at 3 No. locations across the site, shown on Figure 2.1. These gauges are located along the boundary of the application site, close to the nearest sensitive receptors, all of which are private residential property.

It is currently envisaged that the existing dust monitoring regime will remain in place for the duration of the site restoration works and will continue for a short aftercare period thereafter.

### **2.6.3 Ecological Monitoring**

In the absence of any rare or vulnerable species of flora or fauna at, or in the immediate vicinity of, the application site, it is not intended to undertake any ecological monitoring during the site restoration works.

### **2.6.4 Groundwater Monitoring**

At the present time, groundwater sampling and testing is undertaken by external consultants on a quarterly basis at 3 No. groundwater monitoring wells and 1 No. groundwater supply well installed within the application site. Groundwater levels are also recorded on a quarterly basis. The location of existing groundwater monitoring wells is indicated in Figure 2.1.

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

It is currently envisaged that the existing groundwater monitoring regime will remain in place for the duration of the site restoration works and for a short aftercare period thereafter.

### **2.6.5 Landfill Gas Monitoring**

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

### **2.6.6 Leachate Monitoring**

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

### **2.6.7 Meteorological Monitoring**

At the present time, no meteorological monitoring is undertaken at the application site. It is understood that temperature, rainfall, sunshine, wind speed and direction are recorded at a nearby synoptic weather station in Naas, approximately 5km north-west of the application site. Other climatic data is recorded at the weather station at Casement Aerodrome, approximately 15km north-northeast of the application site.

It is currently envisaged that representative meteorological data will be acquired from weather stations at Naas and Casement Aerodrome, as and if required.

### **2.6.8 Noise Monitoring**

Noise emissions from established restoration and recovery activities are currently monitored on a quarterly basis (i.e. three monthly) basis at 3 No. noise sensitive sites along the boundary of the application site, close to the nearest sensitive receptors, all of which are private residential property. The existing noise monitoring locations are indicated in Figure 2.1. It is currently envisaged that the existing noise monitoring regime will remain in place for the duration of the site restoration works and will continue for a short aftercare period thereafter.

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).

### 2.6.9 Odour Monitoring

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.

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

### 2.6.10 Surface Water Monitoring

At the present time, surface water sampling and testing is undertaken by external consultants on a quarterly basis (i.e. three monthly) basis at 2 No. locations at the application site, one at the spring emergence near the north-eastern corner, the other at the groundwater pond in the north-western corner of the site. The locations of the existing surface water monitoring stations are indicated on Figure 2.1. It is envisaged that this surface water monitoring programme will be extended to include 1 No. additional monitoring location at the groundwater pond in the closed depression inside the western site boundary, the location of which is also indicated on Figure 2.1.

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

It is currently envisaged that the surface water monitoring regime will remain in place for as long as these surface water bodies remain at the application site (i.e. until they are backfilled with inert materials).

### 2.6.11 Stability and Settlement Monitoring

On completion of each phase of restoration, a number of fixed stations will be set into the ground surface across the restored area and will be surveyed annually in order to assess the magnitude of settlement and instability (lateral movement), if any, which may subsequently arise.

Temporary slopes, both in natural in-situ soil along the perimeter of the former extraction area and in the restoration soils will be visually inspected on an ongoing basis, at least once a month by site staff and a record will be kept of same. Should these inspections give cause for concern, an inspection of the affected area will be undertaken by a qualified geotechnical engineer and measures will be implemented to address any instability identified. A detailed visual inspection and stability assessment will be undertaken on an annual basis by a qualified geotechnical engineer for as long as the facility remains operational.

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

## 2.7 RESTORATION AND AFTERCARE

The principal activity undertaken at the application site is restoration of lands within a former sand and gravel quarry. As previously noted in Section 2.3.14, the application site will be restored on a phased basis to give a landform which merges into the surrounding undulating pastoral landscape, refer to final site contour map in Figure 2.4. Details of the phasing plan are also provided on Figures 2.4.

On completion, the final landform will be profiled to give a domed shape in order to facilitate surface water run-off into the in-situ sand and gravels along the site boundary, refer to final site contour map in Figure 2.4. It will then be planted with grass in order to promote stability and minimise soil erosion and dust generation and the lands will be progressively returned to their former use as agricultural grassland.

All construction and demolition waste recovery activity shall cease in the course of the fifth (and final phase) of the site restoration works. All mobile plant and equipment will be removed off site and any temporary site accommodation, infrastructure and services will be progressively removed off-site or decommissioned.

Wherever possible, hardstanding surfaces will be broken up using a hydraulic breaker and subjected to validation testing to confirm the materials are acceptable for re-use in ongoing land restoration works. Any materials which are found to exceed inert waste criteria will be transferred-off site to a suitably licensed waste disposal or recovery facility.

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

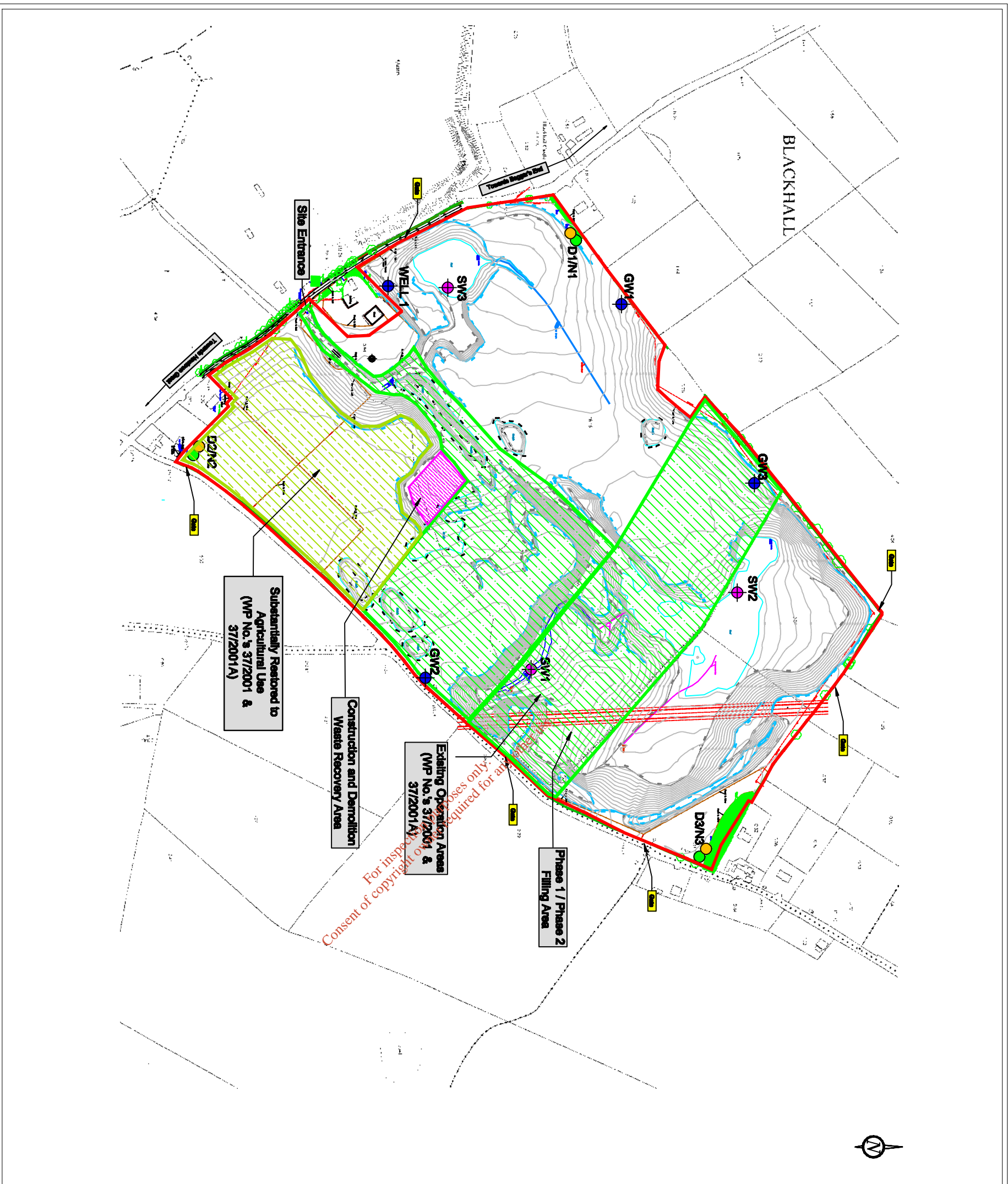
## **2.8 CONTINGENCY ARRANGEMENTS**

Details of existing contingency arrangements at the application site are provided in the contingency plan, a copy of which is provided in Appendix 2.1 of this report.

For inspection purposes only.  
Consent of copyright owner required for any other use.

**FIGURES**

For inspection purposes only.  
Consent of copyright owner required for any other use.



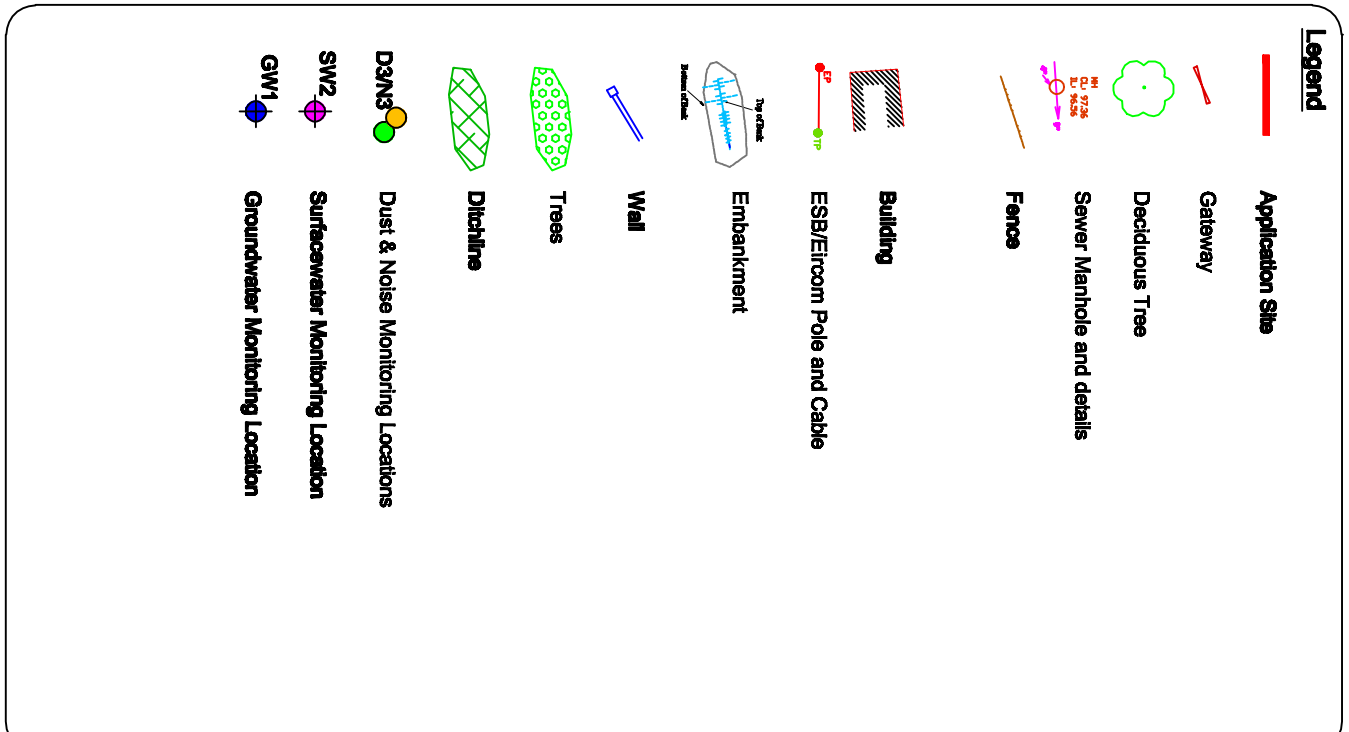
BEHAN'S LAND RESTORATION LTD.  
 BLACKHALL, PUNCHEDOWN  
 NAAS, CO. KILDARE

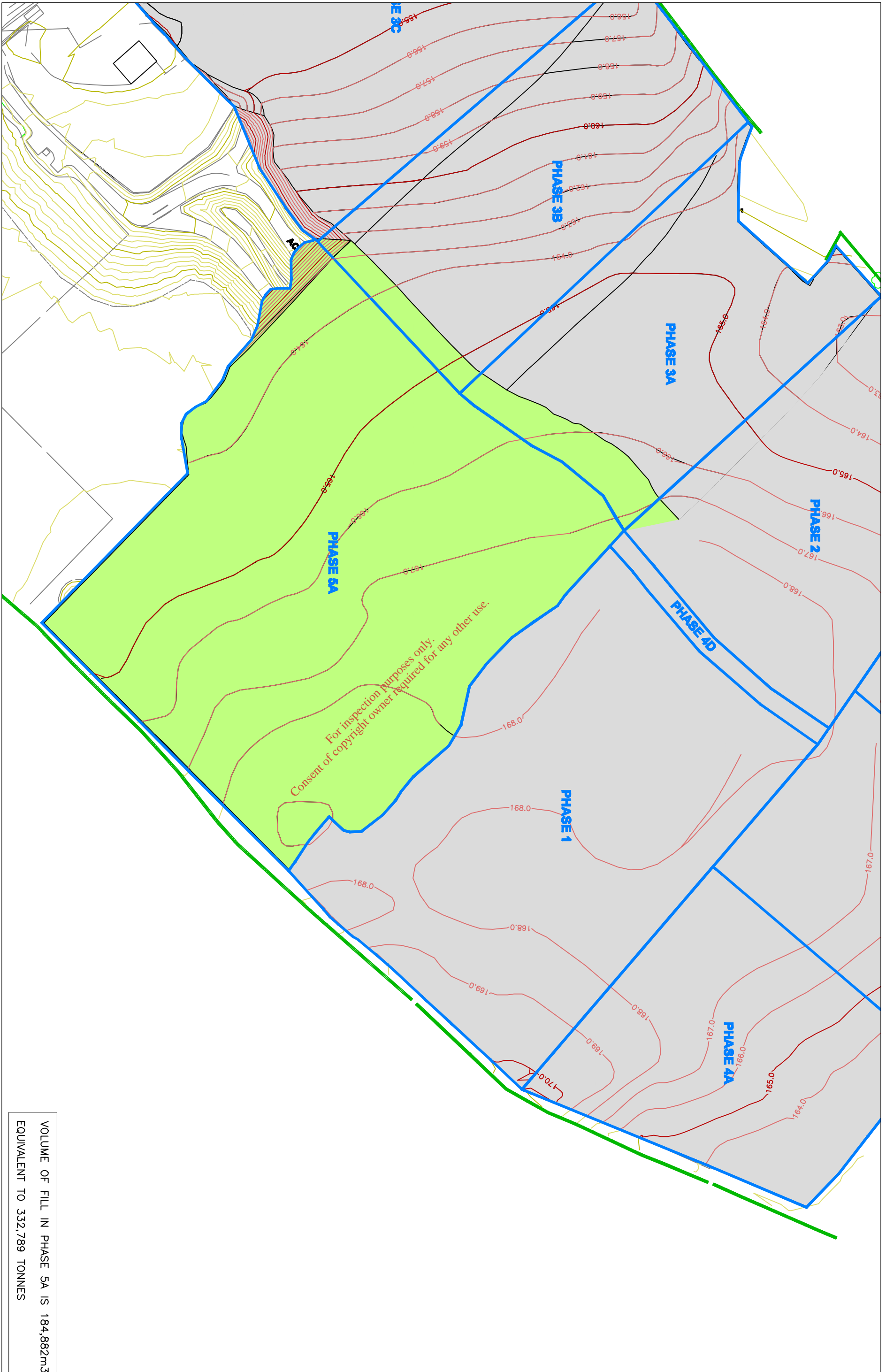
**JBA**  
 JOHN BARNETT & ASSOCIATES  
 7 DUNDRIUM BUSINESS PARK  
 WINDY ARBOUR  
 DUBLIN 14

**LEGEND AND NOTES:**  
 Current Operational Areas  
 Restored Area  
 Current Recovery Area

Rev.	Date	By	Description
1	FEB 08	MK	
0	FEB 08	LNC	

Site: LANDS AT BLACKHALL, CO. KILDARE  
 Project: RESTORATION OF FORMER GRAVEL PIT  
 Title: EXISTING SITE LAYOUT  
 Drawn: MK  
 Scale: 1:5000  
 Job. No: 3746  
 Date: March 2008





For inspection purposes only.  
 Consent of copyright owner required for any other use.

VOLUME OF FILL IN PHASE 5A IS 184,882m<sup>3</sup>  
 EQUIVALENT TO 332,789 TONNES

BEHANS LAND RESTORATION LTD.  
 BLACKHALL, PUNCHESTOWN  
 NAAS  
 CO. KILDARE

JBA  
 JOHN BARNETT & ASSOCIATES  
 7 DUNDRUM BUSINESS PARK  
 WINDY ARBOUR  
 DUBLIN 14

SLR  
 JOHN BARNETT & ASSOCIATES  
 7 DUNDRUM BUSINESS PARK  
 WINDY ARBOUR  
 DUBLIN 14

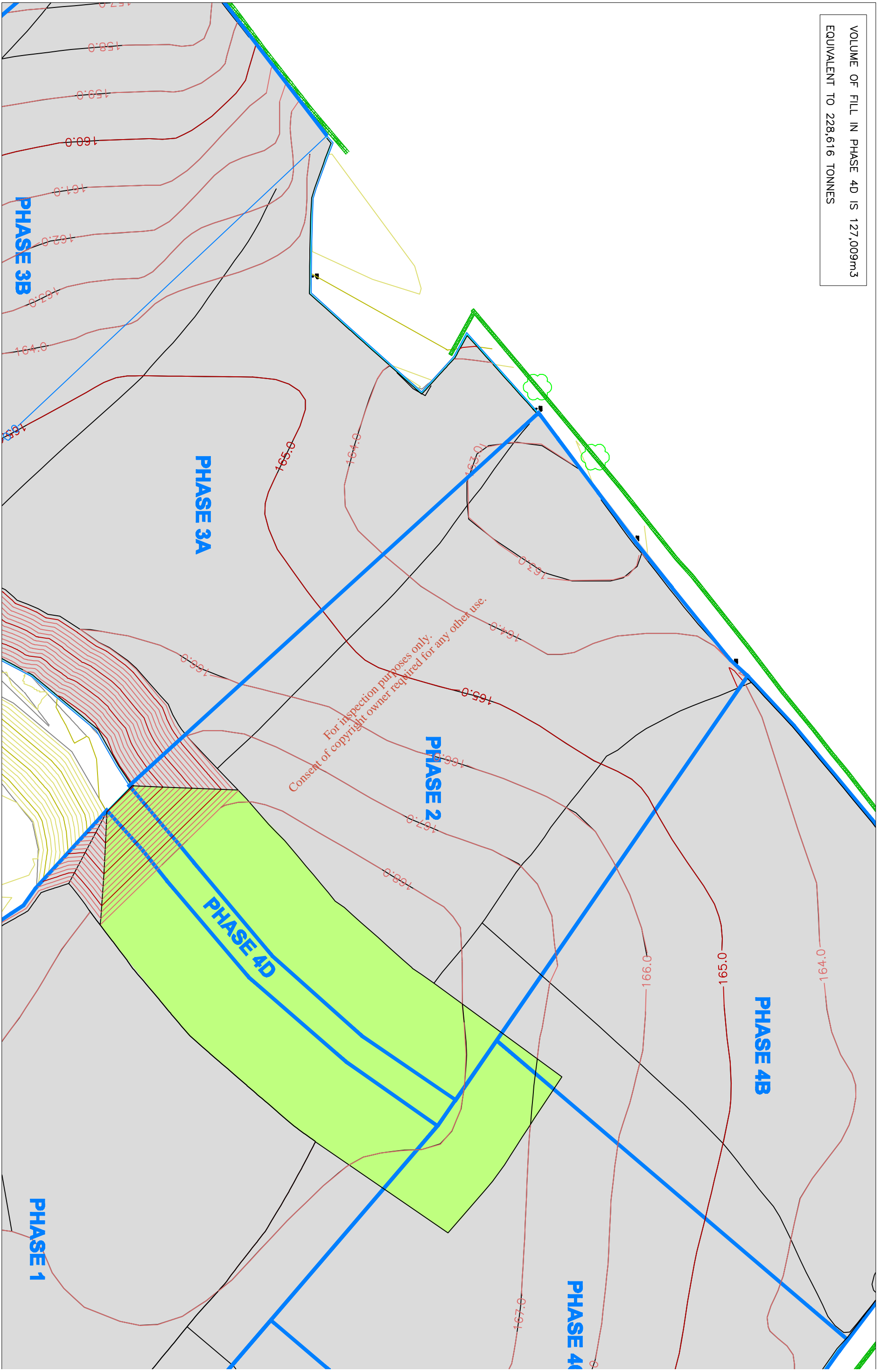
Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

<b>Site:</b>	LAND AT BLACKHALL, CO. KILDARE
<b>Project:</b>	RESTORATION OF FORMER GRAVEL PT
<b>Title:</b>	PHASE 5A FILLED TO FINAL LEVELS
<b>Drawn:</b>	SLR/4039W
<b>Scale:</b>	1:2000
<b>Job. No.:</b>	JBA/3748
<b>Date:</b>	March 2008

FIGURE 2.



VOLUME OF FILL IN PHASE 4D IS 127,009m<sup>3</sup>  
EQUIVALENT TO 228,616 TONNES



BEHANS LAND RESTORATION LTD.  
BLACKHALL, PUNCHESTOWN  
NAAS  
CO. KILDARE

**JBA**  
JOHN BARNETT & ASSOCIATES  
7 DUNDRUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

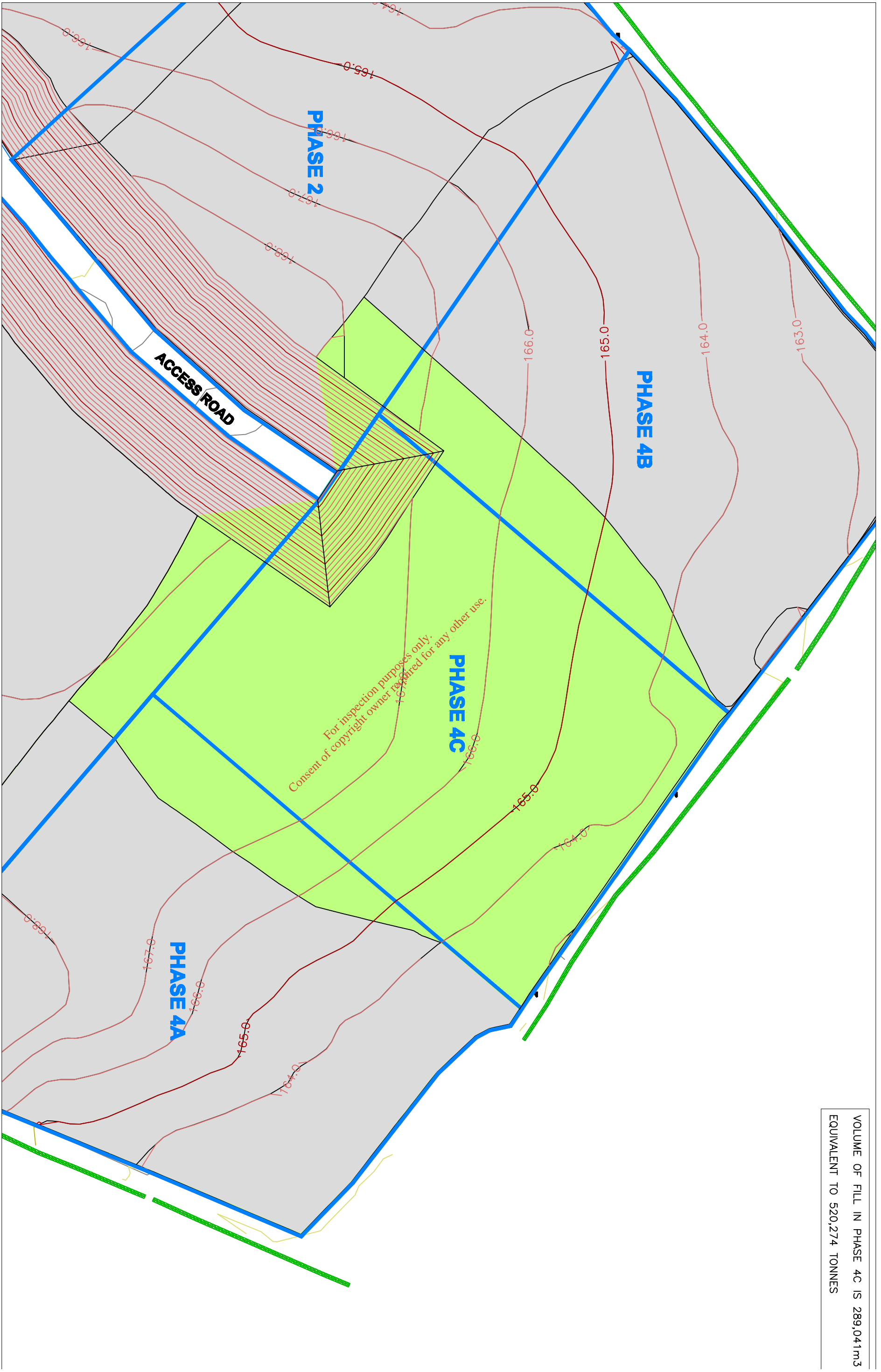
**SLR**  
SLR/JO

Rev.	Date	By	Description
2	FEB 2008	SLR/JO	TEXT CHANGES
1	FEB 2008	SLR/JO	REVISED VOLUMETRICS
0	JAN 2008	SLR/JO	VOLUMETRICS

**Site:** LAND AT BLACKHALL, CO. KILDARE  
**Project:** RESTORATION OF FORMER GRAVEL PIT  
**Title:** PHASE 4D FILLED TO FINAL LEVELS  
**Drawn:** SLR/4039W  
**Scale:** 1:1250  
**Job. No.:** JBA/3748  
**Date:** March 2008

**FIGURE 2.**

VOLUME OF FILL IN PHASE 4C IS 289,041m<sup>3</sup>  
EQUIVALENT TO 520,274 TONNES



BEHANS LAND RESTORATION LTD.  
BLACKHALL, PUNCHESTOWN  
NAAS  
CO. KILDARE

**JBA**  
JOHN BARNETT & ASSOCIATES  
7 DUNDRUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

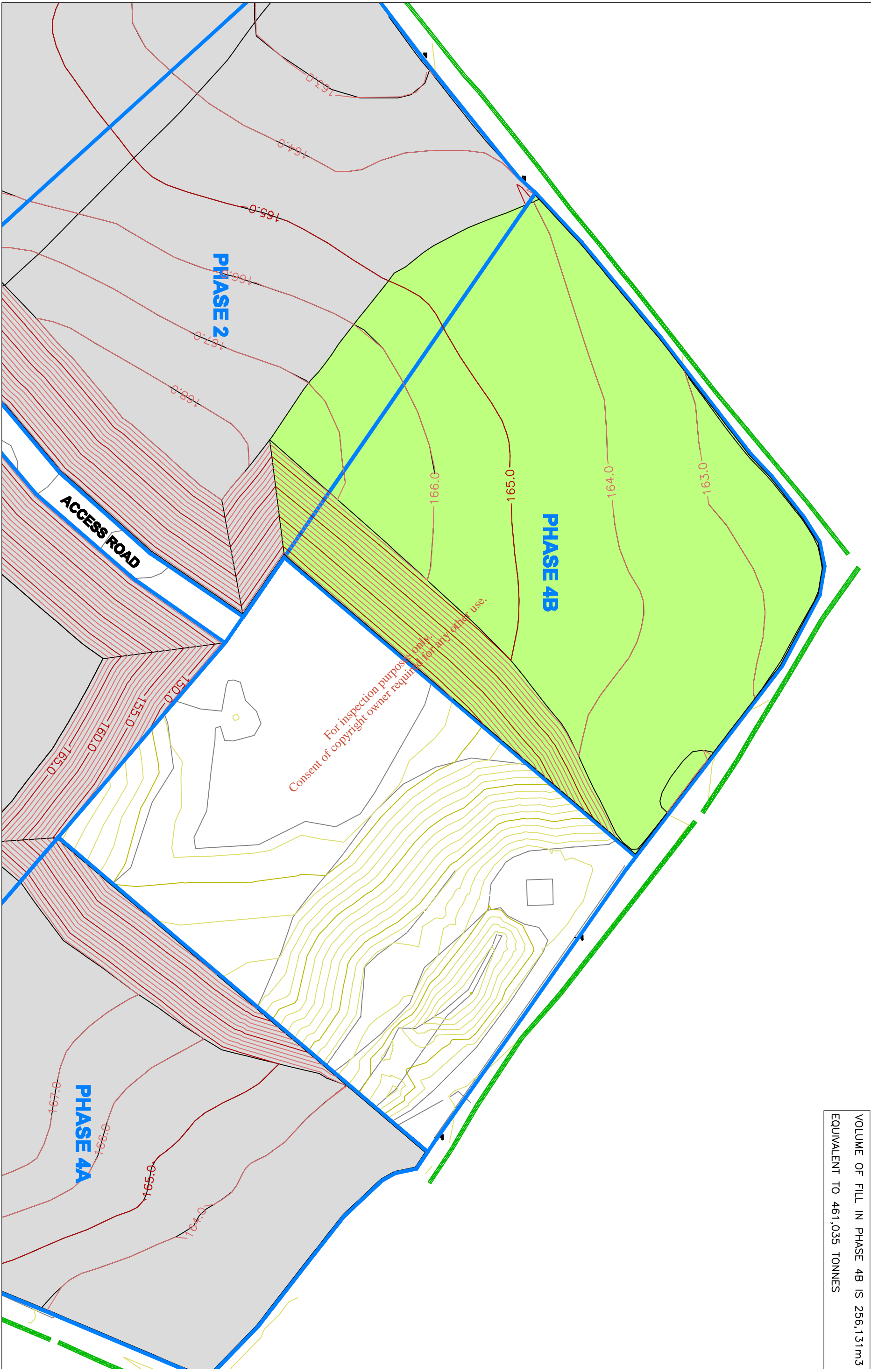
**SLR**

Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

<b>Site:</b>	LAND AT BLACKHALL, CO. KILDARE
<b>Project:</b>	RESTORATION OF FORMER GRAVEL PIT
<b>Title:</b>	PHASE 4C FILLED TO FINAL LEVELS
<b>Drawn:</b>	SLR/4039W
<b>Scale:</b>	1:1250
<b>Job. No.:</b>	JBA/3748
<b>Date:</b>	March 2008

**FIGURE 2.1**

VOLUME OF FILL IN PHASE 4B IS 256,131m<sup>3</sup>  
EQUIVALENT TO 461,035 TONNES



**BEHANS LAND RESTORATION LTD.**  
BLACKHALL, PUNCHESTOWN  
NAAS  
CO. KILDARE

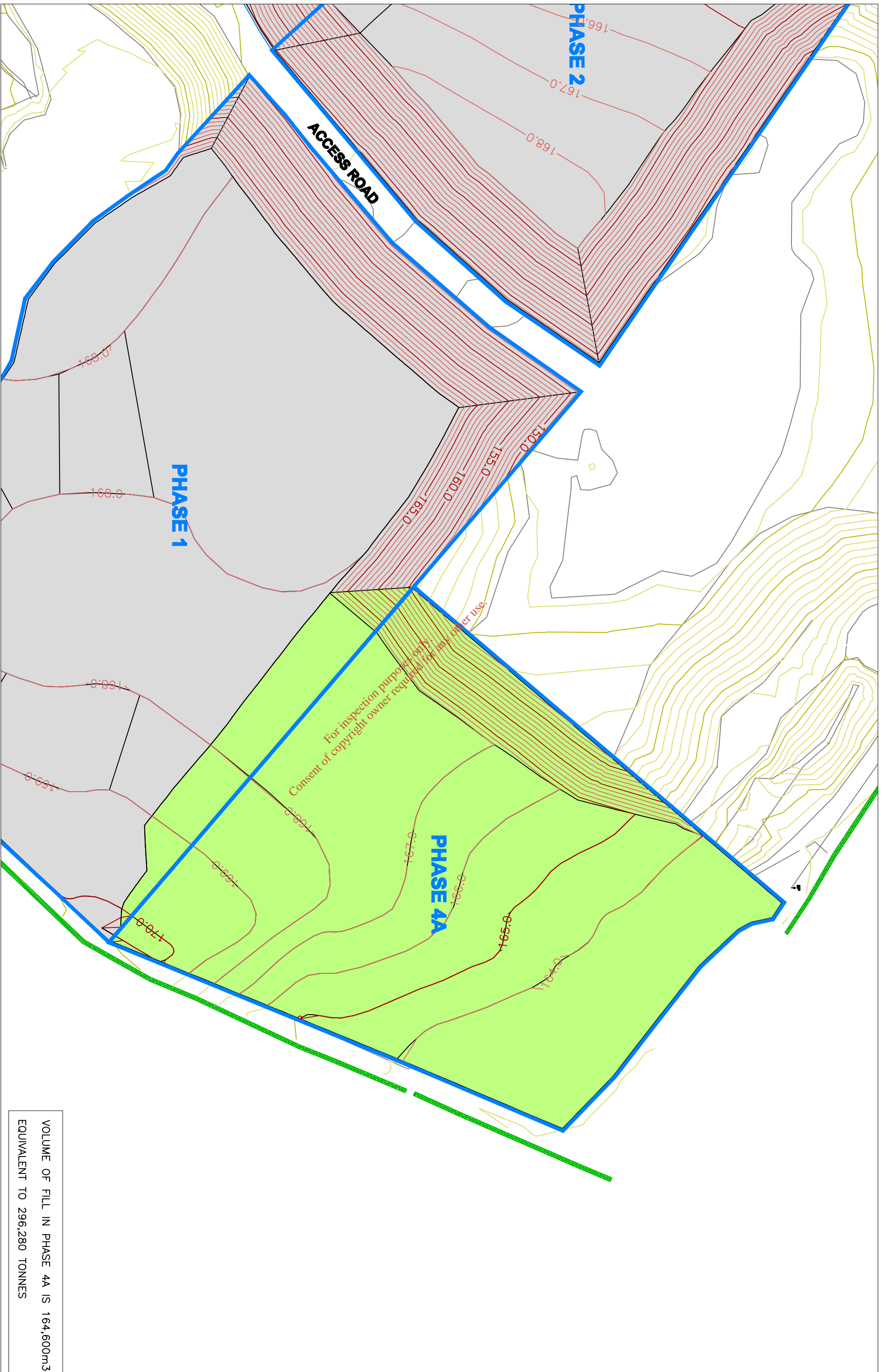
**JBA**  
JOHN BARNETT & ASSOCIATES  
7 DUNDRUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

**SLR**  
SLR

Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

**Site:** LAND AT BLACKHALL, CO. KILDARE  
**Project:** RESTORATION OF FORMER GRAVEL PIT  
**Title:** PHASE 4B FILLED TO FINAL LEVELS  
**Drawn:** SLR/4039W **Scale:** 1:1250  
**Job. No:** JBA/3748 **Date:** March 2008

**FIGURE 2.**



VOLUME OF FILL IN PHASE 4A IS 164,600m<sup>3</sup>  
EQUIVALENT TO 296,280 TONNES

BEHANS LAND RESTORATION LTD.  
BLACKHALL, PUNCHESTOWN  
NAAS  
CO. KILDARE

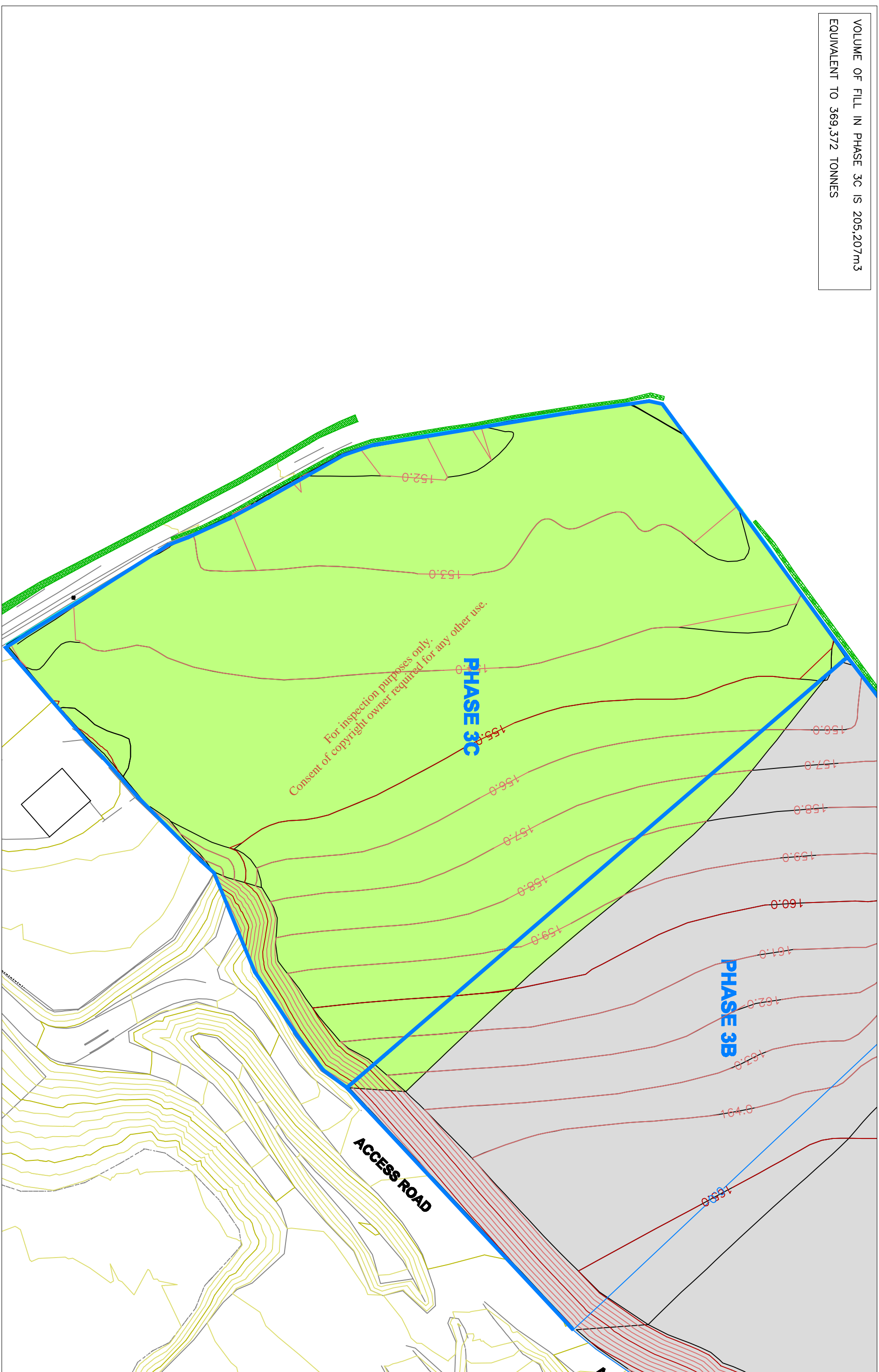
**JBA**  
**SLR**  
JOHN BARNETT & ASSOCIATES  
7 DUNDRUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

<b>Site:</b>	LAND AT BLACKHALL, CO. KILDARE
<b>Project:</b>	RESTORATION OF FORMER GRAVEL PT
<b>Title:</b>	PHASE 4A FILLED TO FINAL LEVELS
<b>Drawn:</b>	SLR/4039W
<b>Scale:</b>	1:1250
<b>Job. No.:</b>	JBA/3746
<b>Date:</b>	March 2008

**FIGURE 2.**

VOLUME OF FILL IN PHASE 3C IS 205,207m<sup>3</sup>  
EQUIVALENT TO 369,372 TONNES



BEHANS LAND RESTORATION LTD.  
BLACKHALL, PUNCHESTOWN  
NAAS  
CO. KILDARE



JOHN BARNETT & ASSOCIATES  
7 DUNDRUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

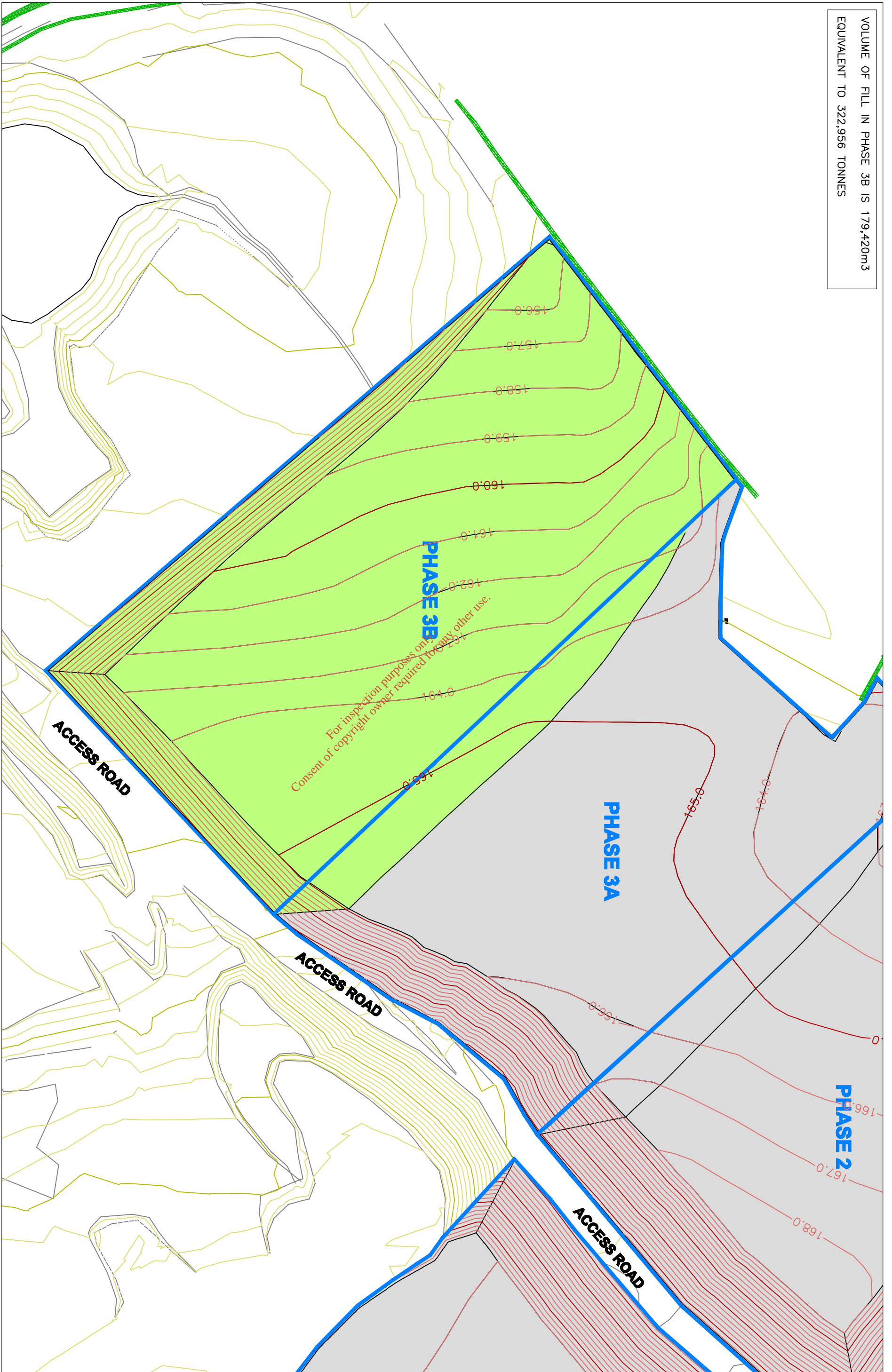


Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

<b>Site:</b>	LAND AT BLACKHALL, CO. KILDARE
<b>Project:</b>	RESTORATION OF FORMER GRAVEL PIT
<b>Title:</b>	PHASE 3C FILLED TO FINAL LEVELS
<b>Drawn:</b>	SLR/4039W
<b>Scale:</b>	1:1250
<b>Job. No.:</b>	JBA/3746
<b>Date:</b>	March 2008

**FIGURE 2.**

VOLUME OF FILL IN PHASE 3B IS 179,420m<sup>3</sup>  
EQUIVALENT TO 322,956 TONNES



BEHANS LAND RESTORATION LTD.  
BLACKHALL, PUNCHESTOWN  
NAAS  
CO. KILDARE

**JBA**  
JOHN BARNETT & ASSOCIATES  
7 DUNDRUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

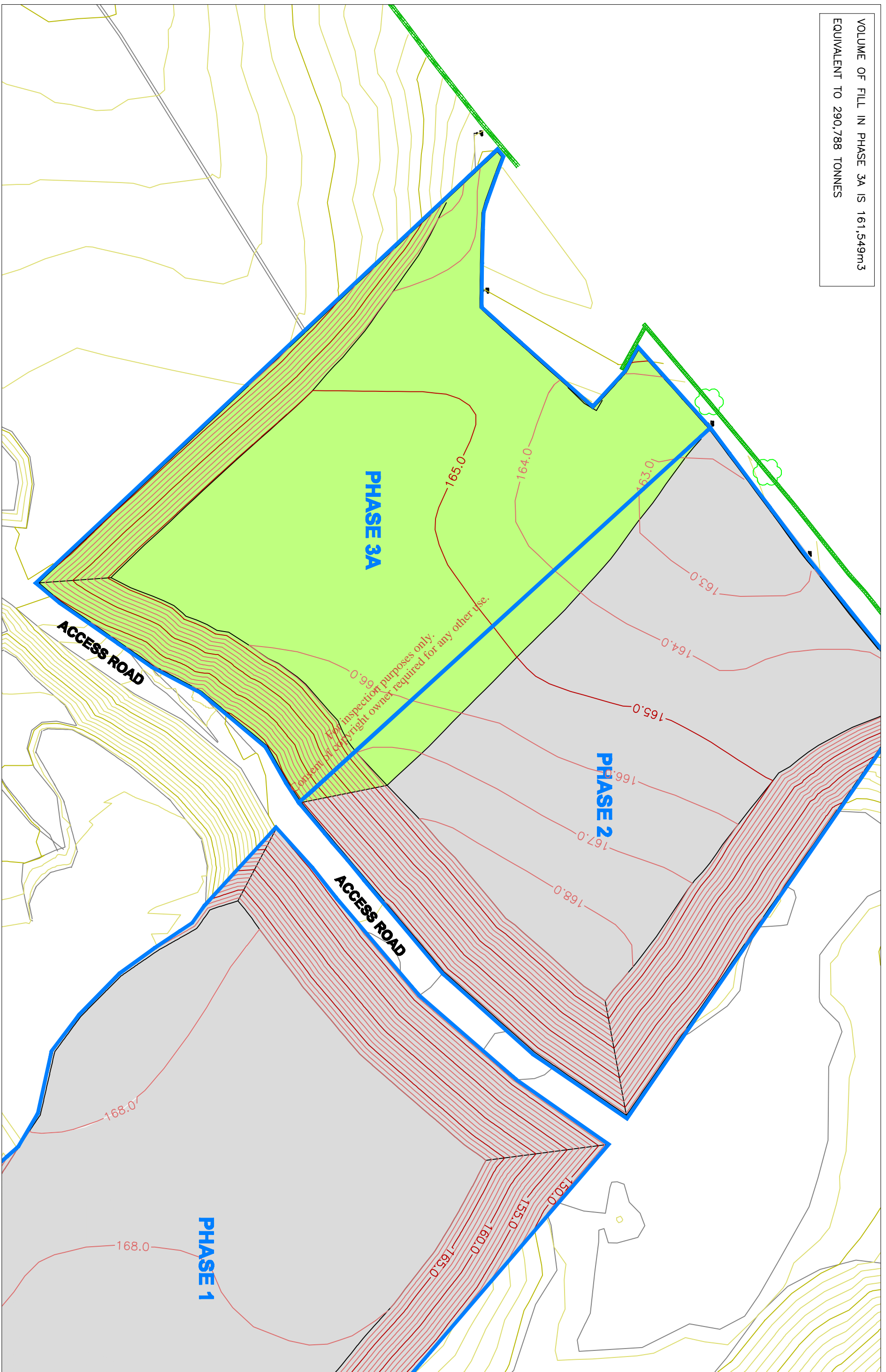
Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

<b>Site:</b>	LAND AT BLACKHALL, CO. KILDARE
<b>Project:</b>	RESTORATION OF FORMER GRAVEL PIT
<b>Title:</b>	PHASE 3B FILLED TO FINAL LEVELS
<b>Drawn:</b>	SLR/4039W
<b>Scale:</b>	1:1250
<b>Job. No.:</b>	JBA/3746
<b>Date:</b>	March 2008

**FIGURE 2.**

VOLUME OF FILL IN PHASE 3A IS 161,549m<sup>3</sup>  
EQUIVALENT TO 290,788 TONNES



BEHAN'S LAND RESTORATION LTD.  
BLACKHALL, PUNCHESTOWN  
NAAS  
CO. KILDARE



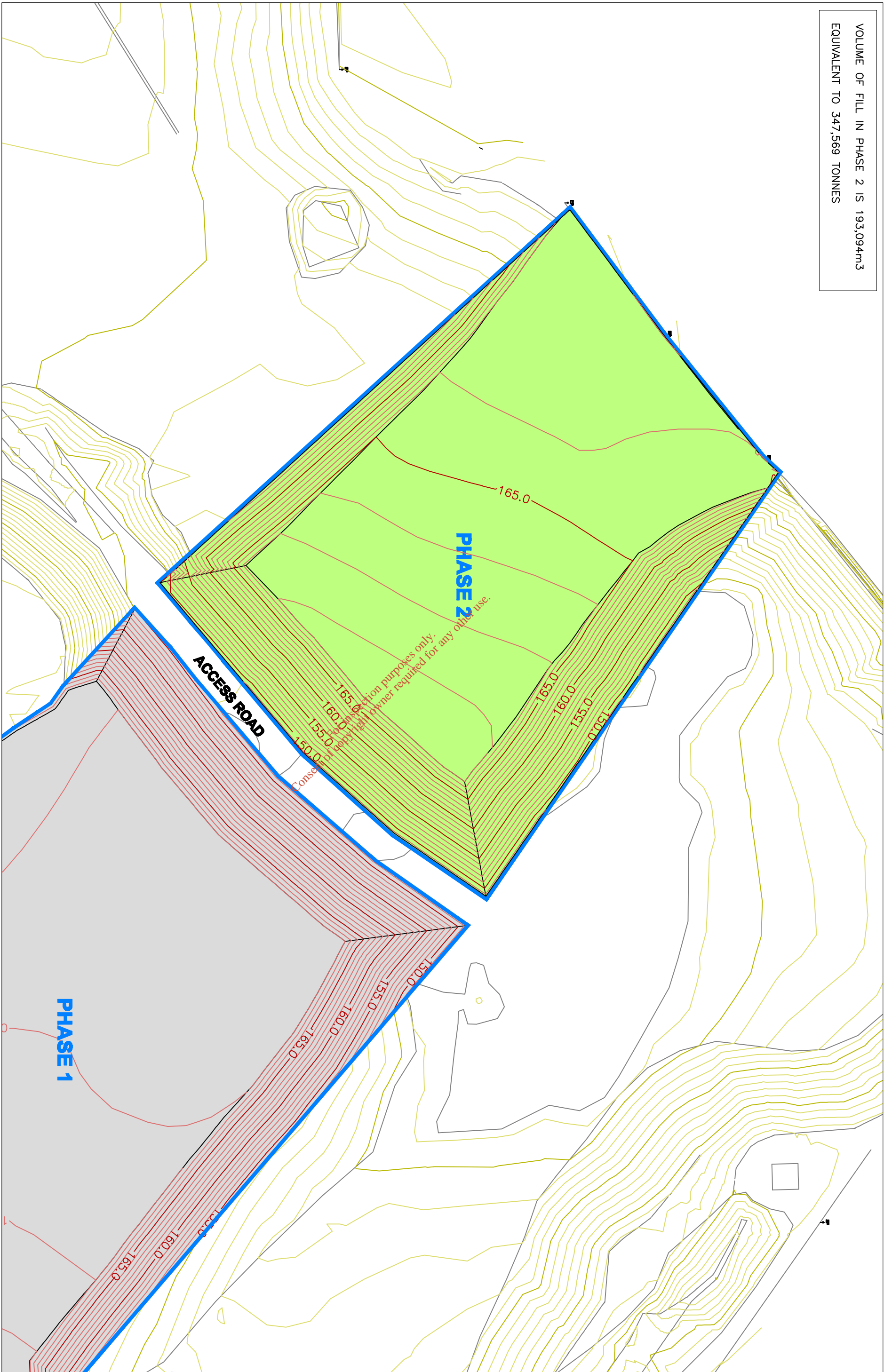
JOHN BARNETT & ASSOCIATES  
7 DUNDRUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

<b>Site:</b>	LAND AT BLACKHALL, CO. KILDARE
<b>Project:</b>	RESTORATION OF FORMER GRAVEL PIT
<b>Title:</b>	PHASE 3A FILLED TO FINAL LEVELS
<b>Drawn:</b>	SLR/4039W
<b>Job. No.:</b>	JBA/3748
<b>Date:</b>	March 2008

**FIGURE 2.**

VOLUME OF FILL IN PHASE 2 IS 193,094m<sup>3</sup>  
EQUIVALENT TO 347,569 TONNES



BEHANS LAND RESTORATION LTD.  
BLACKHALL, PUNCHESTOWN  
NAAS  
CO. KILDARE



JOHN BARNETT & ASSOCIATES  
7 DUNDRUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

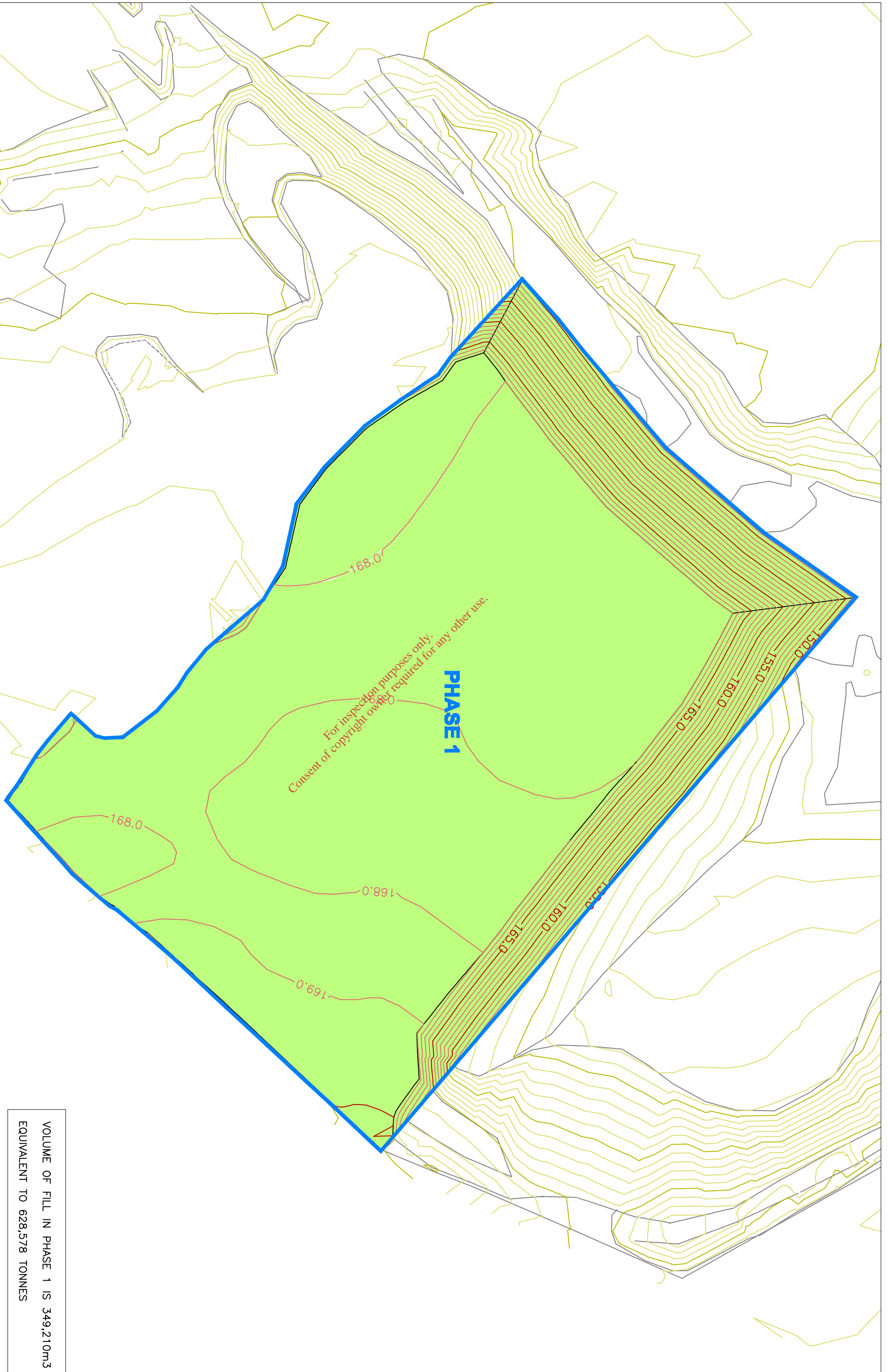


Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

<b>Site:</b>	LAND AT BLACKHALL, CO. KILDARE
<b>Project:</b>	RESTORATION OF FORMER GRAVEL PIT
<b>Title:</b>	PHASE 2 FILLED TO FINAL LEVELS
<b>Drawn:</b>	SLR/4039W
<b>Scale:</b>	1:1250
<b>Job. No.:</b>	JBA/3748
<b>Date:</b>	March 2008

**FIGURE 2.**





VOLUME OF FILL IN PHASE 1 IS 349,210m<sup>3</sup>  
EQUIVALENT TO 628,578 TONNES

BEHAN'S LAND RESTORATION LTD.  
BLACKHALL, PUNCHESTOWN  
NAAS  
CO. KILDARE

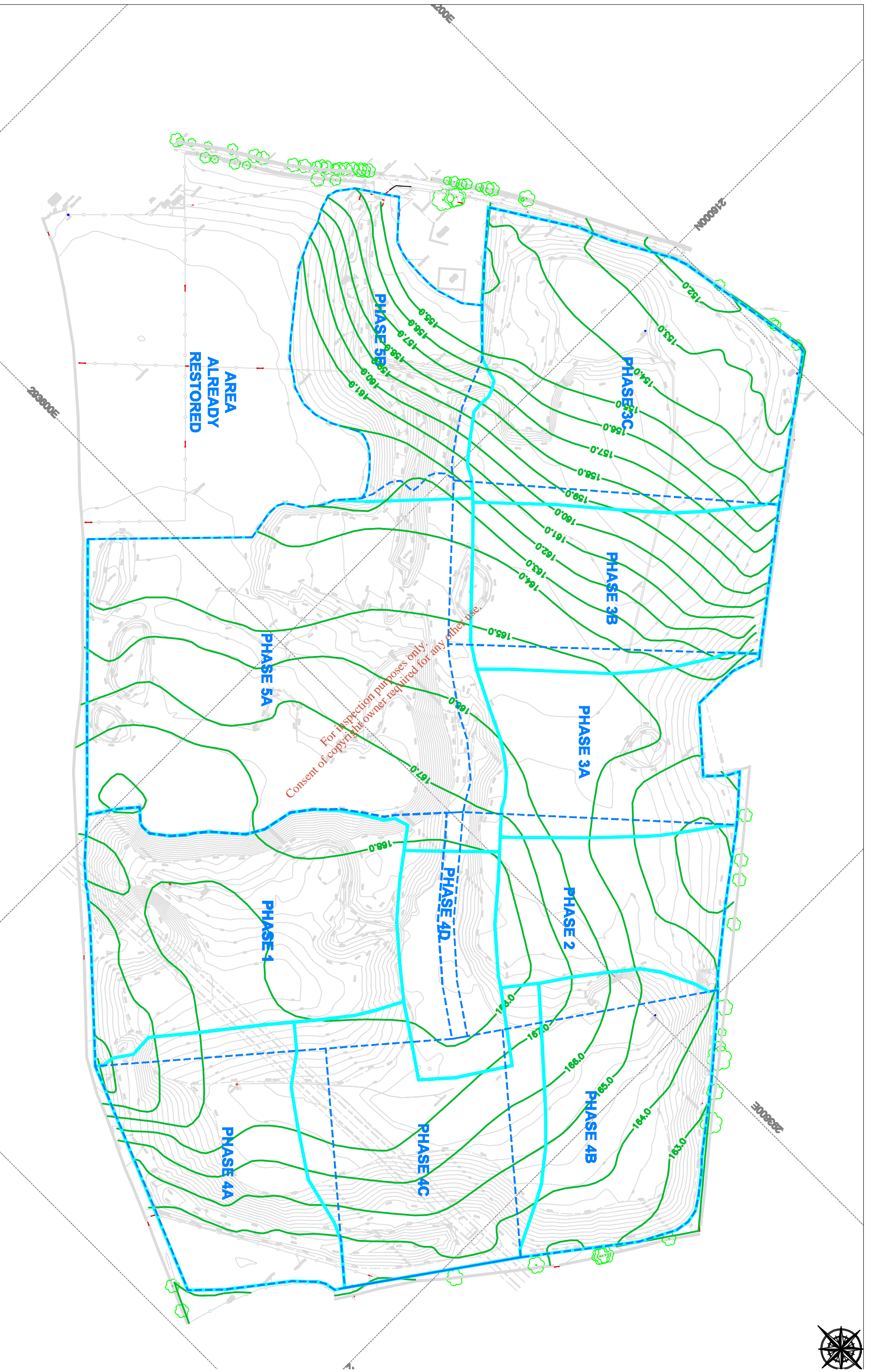


SLR  
JOHN BARNETT & ASSOCIATES  
7 DUNDRUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

<b>Site:</b>	LAND AT BLACKHALL, CO. KILDARE
<b>Project:</b>	RESTORATION OF FORMER GRAVEL PIT
<b>Title:</b>	PHASE 1 FILLED TO FINAL LEVELS
<b>Drawn:</b>	SLR/4039W
<b>Scale:</b>	1:1250
<b>Job. No.:</b>	JBA/3748
<b>Date:</b>	March 2008

**FIGURE 2.**



BEHANS LAND RESTORATION LTD.  
 BLACKHALL, PUNCHESTOWN  
 NAAS  
 CO. KILDARE

**JBA**  
 JOHN BARNETT & ASSOCIATES  
 7 DUNDRUM BUSINESS PARK  
 WINDY ARBOUR  
 DUBLIN 14

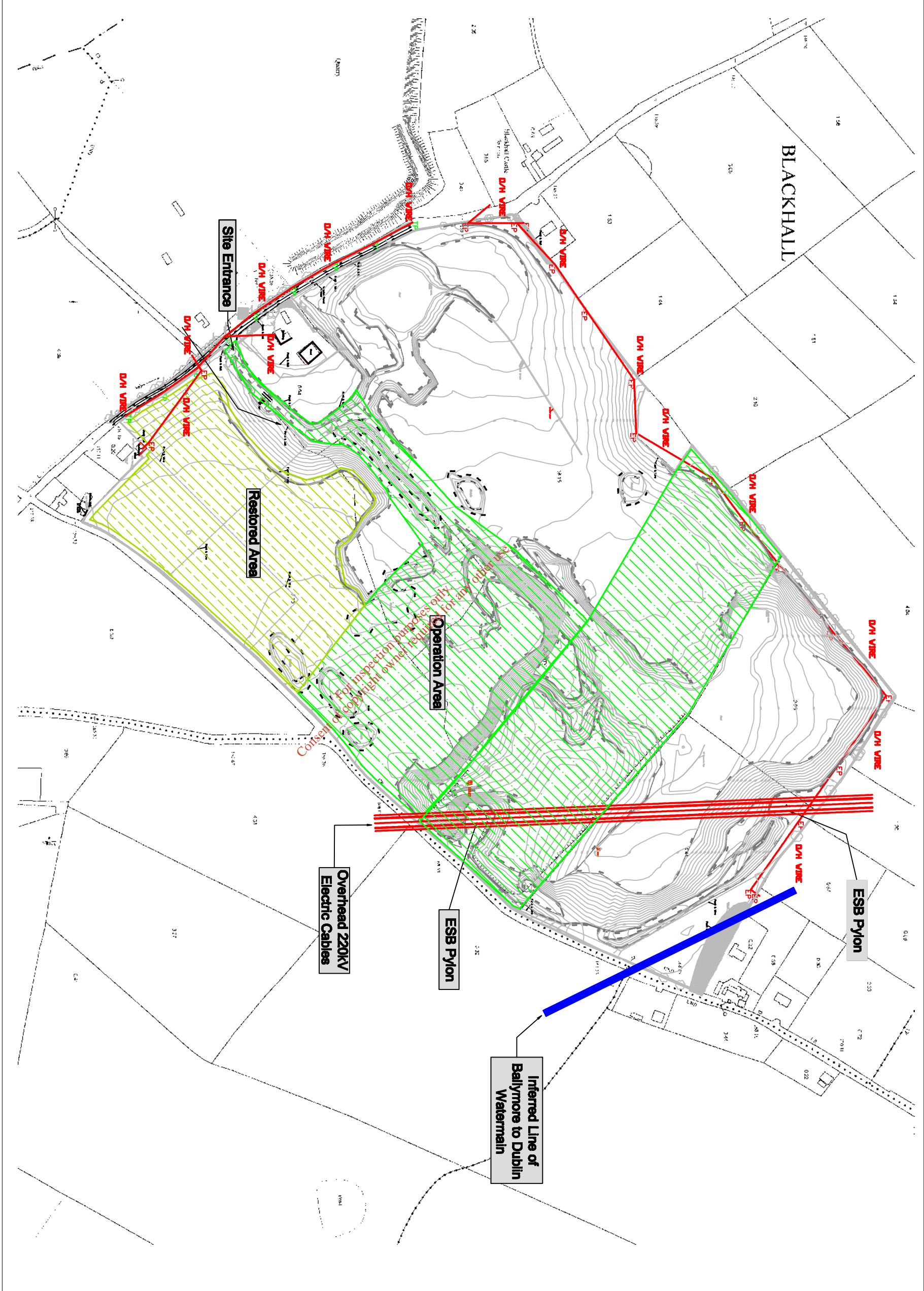
**Key**

	FILLING AREA
	RESTORATION AREA
	RESTORATION CONTOURS

Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

**Site:** LAND AT BLACKHALL, CO. KILDARE  
**Project:** RESTORATION OF FORMER GRAVEL PT  
**Title:** RESTORATION SURFACE  
**Drawn:** SLR/4039W **Scale:** 1:2500  
**Job. No.:** JBA/3746 **Date:** March 2008

**FIGURE 2.**



BEHAN'S LAND RESTORATION LTD.  
 BLACKHALL, PUNCHEDOWN  
 NAAS, CO. KILDARE

**JBA**  
 JOHN BARNETT & ASSOCIATES  
 7 DUNDRIUM BUSINESS PARK  
 WINDY ARBOUR  
 DUBLIN 14

**LEGEND & NOTES:**  
 EP ESBI/EI room Pole and Cable  
 D/M VIRE Sewer Manhole and Details

Rev.	Date	By	Description
1	FEB 08	MK	
0	FEB 08	LMC	

<b>Site:</b>	LANDS AT BLACKHALL, CO. KILDARE
<b>Project:</b>	RESTORATION OF FORMER GRAVEL PIT
<b>Title:</b>	SITE UTILITIES LAYOUT
<b>Drawn:</b>	MK
<b>Job. No.:</b>	3746
<b>Date:</b>	March 2008
<b>Scale:</b>	1:4000

**FIGURE 2.3**

BEHAN'S LAND RESTORATION LTD.  
BLACKHALL, PUNCHEDOWN  
NAAS, CO. KILDARE



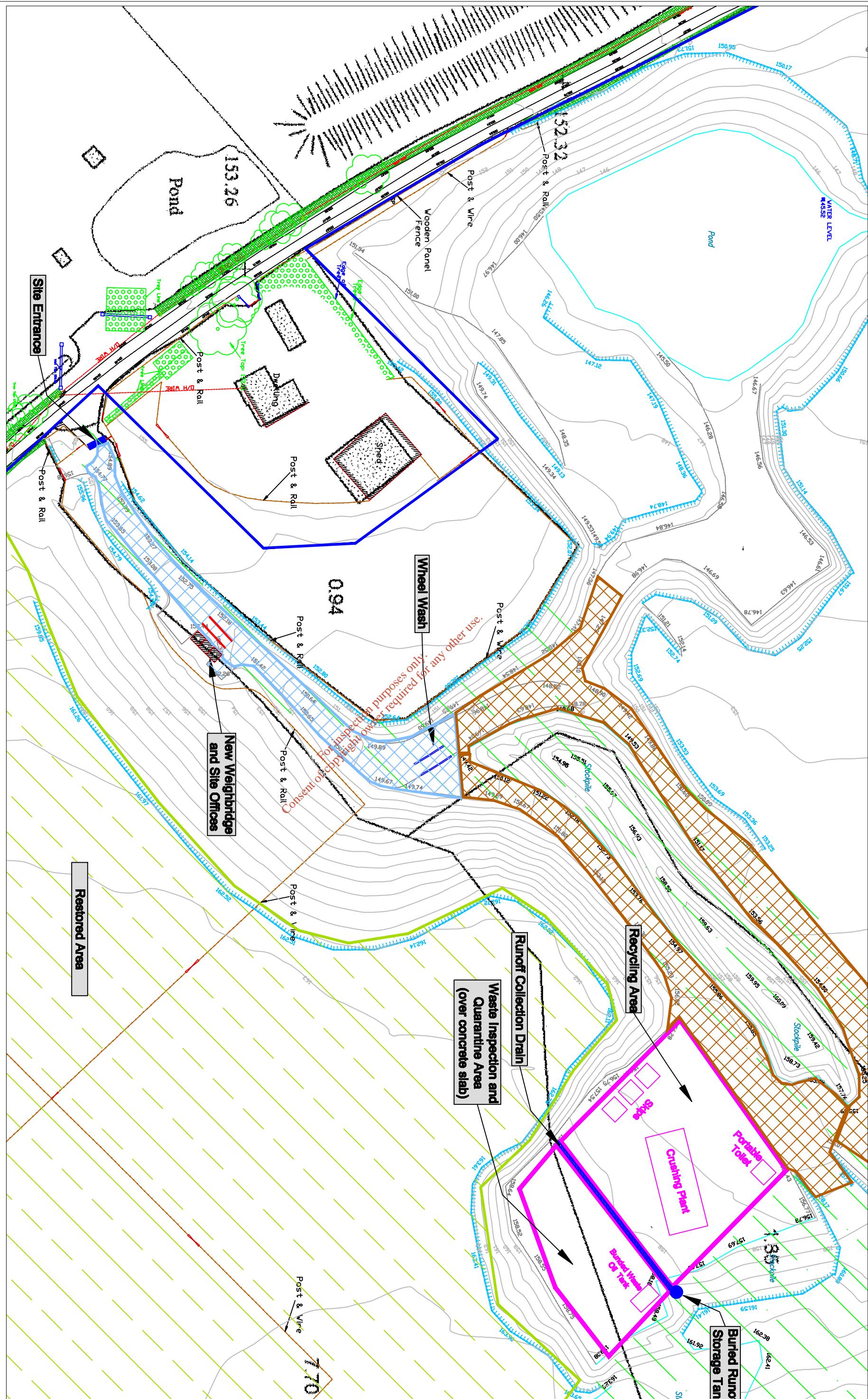
JOHN BARNETT & ASSOCIATES  
7 DUNDRIUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

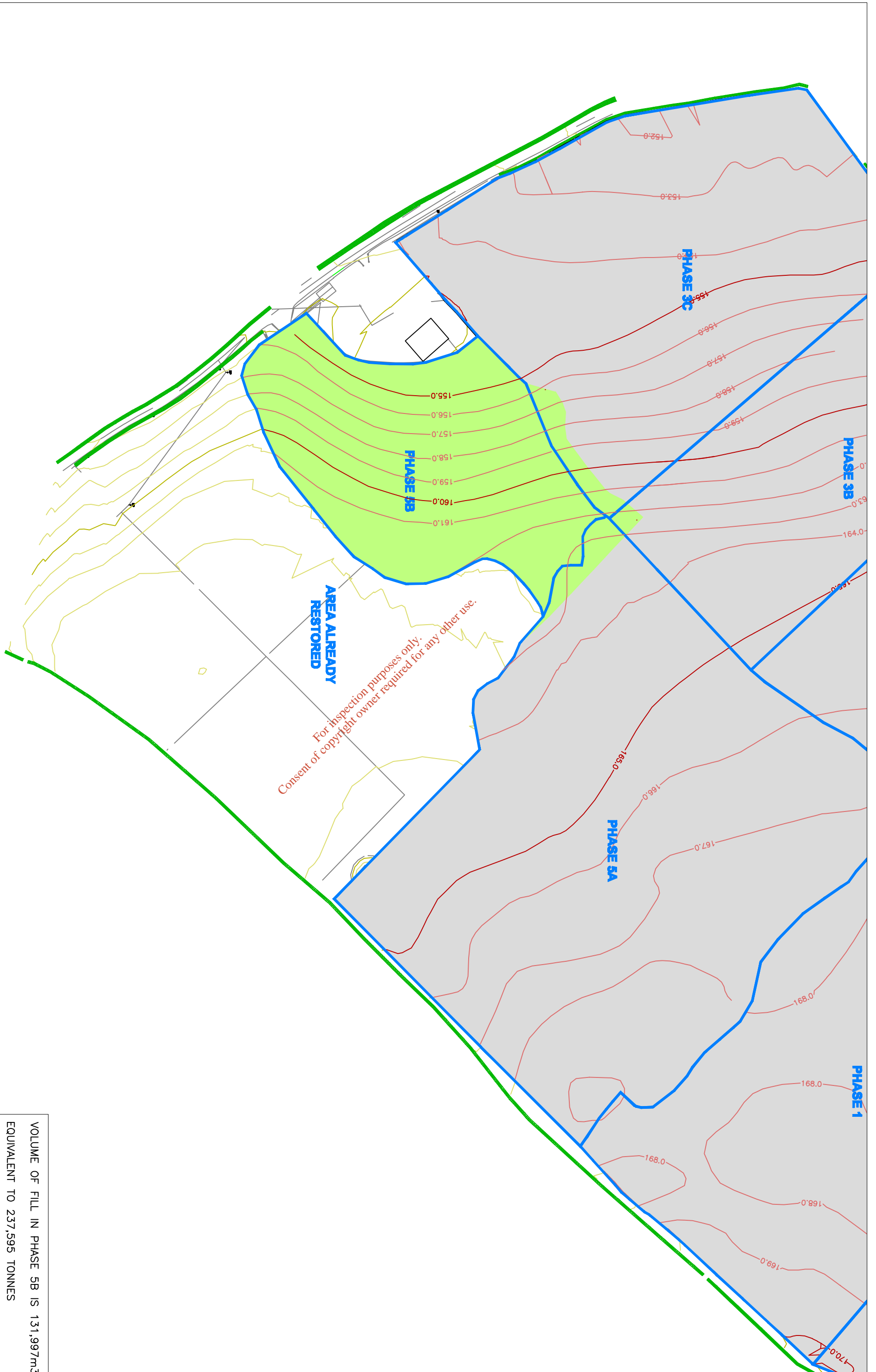
- LEGEND & NOTES:
- Paved Access Track
  - Unpaved Access Track
  - Restored Area
  - Handstanding Area

Rev.	Date	By	Description
1	FEB 08	MK	
0	FEB 08	LMC	

Site:	LANDS AT BLACKHALL, CO. KILDARE
Project:	RESTORATION OF FORMER GRAVEL PIT
Title:	SITE INFRASTRUCTURE LAYOUT
Drawn:	MK
Job. No:	3746
Scale:	1:1000
Date:	March 2008

FIGURE 2.2





VOLUME OF FILL IN PHASE 5B IS 131,997m<sup>3</sup>  
EQUIVALENT TO 237,595 TONNES

BEHAN'S LAND RESTORATION LTD.  
BLACKHALL, PUNCHESTOWN  
NAAS  
CO. KILDARE

JBA  
JOHN BARNETT & ASSOCIATES  
7 DUNDRUM BUSINESS PARK  
WINDY ARBOUR  
DUBLIN 14

SLR

Rev.	Date	By	Description
2	FEB 2008	SLR/JC	TEXT CHANGES
1	FEB 2008	SLR/JC	REVISED VOLUMETRICS
0	JAN 2008	SLR/JC	VOLUMETRICS

Site: LAND AT BLACKHALL, CO. KILDARE  
Project: RESTORATION OF FORMER GRAVEL PIT  
Title: PHASE 5B FILLED TO FINAL LEVELS  
Drawn: SLR/4039W Scale: 1:2000  
Job. No: JBA/3748 Date: March 2008

**FIGURE 2.**

**APPENDIX 2.1**  
**CONTINGENCY PLAN**

For inspection purposes only.  
Consent of copyright owner required for any other use.