

**BEHANS LAND RESTORATION LIMITED**

**RESTORATION OF FORMER GRAVEL QUARRY  
AT BLACKHALL, PUNCHESTOWN, CO. KILDARE**

**ENVIRONMENTAL IMPACT STATEMENT  
NON-TECHNICAL SUMMARY**

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**MAY 2008**



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## 1.0 INTRODUCTION

This Environmental Impact Statement (EIS) provides supporting information to accompany a Waste Licence Application (WLA) to the Environmental Protection Agency (EPA) by Behan's Land Restoration Ltd. for continued operation and extension of its existing inert waste facility at Blackhall, Punchestown, Naas, Co. Kildare. The principal waste activities at the site comprise

- (i) backfilling and restoration of a former quarry using imported inert soil and stone and
- (ii) recycling of construction and demolition waste.

The location of the site is indicated on an extract from the 1:50,000 scale Ordnance Survey Discovery series map of the area, reproduced as Figure 1. At the present time, the site is accessed via a local road running from the R410 Regional Road at Beggars End Crossroads to Blackhall townland.

The amount of inert material to be imported and placed at the facility over a 15 year period is approximately 4,000,000 tonnes (approximately 2,240,000m<sup>3</sup>). A total of 600,000 tonnes of inert construction and demolition waste will also be recycled at the facility over the same time period. Inert materials to be placed and recovered at the facility will be sourced from construction and/or demolition sites where prior testing has indicated that no soil / material contamination is present.

The application area comprises worked out quarry of approximately 38.1 hectares (91.7 acres). The south-eastern quadrant of the former quarry has been almost completely backfilled to former ground level using inert natural soils in accordance with Kildare County Council waste permits. Only partial backfilling has been undertaken to date in the south-western quadrant. No backfilling has been undertaken in the large deep open void in the north-western and north-eastern quadrants, refer to Figure 2.

The ongoing works at the former sand and gravel quarry at Blackhall will eventually result in complete infilling of a large open void and restoration of the landscape to its original pre-extraction condition. It will also provide for better protection of the underlying groundwater resource, which is currently extremely vulnerable due to the absence of any protective soil cover

## 2 RESTORATION SCHEME

### 2.1 Principal Elements

The proposed restoration scheme 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 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.

### 2.2 Site Infrastructure

Inert materials are accepted at the site between 08.00 hours and 18.00hours each weekday and 08.00hours to 14.00hours on Saturday. All vehicular traffic arriving at the site must stop at a security barrier in front of the temporary site office before gaining access to the site. In order to

record the amount of material entering the site, it is proposed to install a weighbridge along the internal access road in front of the temporary site office. Within the site, trucks travel to and from the active restoration and recycling areas over a network of paved and unpaved roads. Trucks must pass through an existing wheelwash facility before exiting the site.

A temporary hardstanding area constructed of recycled aggregate is provided in the centre of the 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 waste. Fuel for site plant and equipment will be stored in bowsers located on the hardstanding area. No re-fuelling of HGV trucks will take place on site. Oil and lubricant changes for wheeled plant will be undertaken off-site, while those for tracked plant will be undertaken at the hardstanding area.

A temporary waste inspection and quarantine area, comprising a concrete slab, will be constructed to the east of the existing recycling area, at the location shown on Figure 3. Visual inspection, in-situ monitoring and testing of imported waste materials will be undertaken by site based 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 loaded onto a truck and re-directed to the waste inspection and quarantine area for closer examination and inspection. Any suspect or unacceptable waste identified will be placed in skips and covered with plastic sheeting in order to minimise potential contamination of surface water run-off.

Most rain falling over the site will percolate through backfilled or natural soils to the underlying groundwater table. 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 surface water run-off. Any surface water run-off at the site will be allowed to run over the existing ground surface to collect in surface ponds and discharge to groundwater. Surface water running over 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 3. Surface water will only be collected in the buried tanks when suspect waste consignments are stored at the quarantine facility. Any wastewater collected in the buried tanks will be removed off-site for disposal off-site at an approved waste water treatment facility. A temporary portaloo is provided on the hardstanding area and is emptied / replaced as required by an approved waste Contractor.

Inert construction and demolition waste imported to site will be recycled at the hardstanding area in the centre of the site, refer to Figure 3. 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 within the site or alternatively, may be exported as secondary aggregate off-site. 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.

## 2.3 Restoration Works

Backfilling of the 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 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. This is deemed to constitute Phase 1 of the project. Thereafter, backfilling of the western side of the site will commence, with works progressing from north to south, as indicated on the phasing drawing in Figure 3. 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 site. 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.

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. 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.

At the end of the restoration works, the site will be profiled to give a domed shape to facilitate surface water run-off into in-situ sand and gravels along the site boundary. The final landform will be similar to that existed prior to extraction of sand and gravel.

The estimated volume of material to be placed at the 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 recovery facility is approximately 15 years.

## 2.4 Environmental Monitoring

There is an established programme of environmental monitoring at the site which complies with requirements of the waste permit issued by Kildare County Council. It is envisaged that this programme will be expanded in accordance with requirements set by the waste licence issued by the Environmental Protection Agency. Environmental sampling, monitoring and testing for noise, dust, surface water and groundwater will 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.

## 3 HUMAN BEINGS

As waste activities have been established at the site for some considerable time, its continued operation will have little or no additional impact on human beings living in the immediate vicinity of the site. The impact of the proposed restoration scheme on human beings will arise mainly through environmental factors, most notably noise and air quality (including dust).

There may be some limited additional noise and dust impact at the two residences nearest to the site (one at the north-east corner and the other at the south-west corner) when soil is being placed and backfilled in close proximity to each. Noise and dust control measures will be implemented to minimise nuisance caused to residents.

There will be no adverse implications for existing traffic levels or travel patterns as it is envisaged that traffic levels to and from the waste facility will remain essentially unchanged.

The long-term impact of backfilling and restoration of the site, beyond its 15 year operational life, will be the elimination of established traffic movements over the local road network going to and from the site, with consequent improvement of the human environment.

## 4 ECOLOGY

Although a variety of habitats, including abandoned quarry faces, recolonising ground and artificial lakes and ponds occur across much of the site, these habitats support little flora of interest and are of low conservation interest or value. Areas of improved agricultural grassland at the site have been heavily grazed and this has led to a low level of biodiversity in these areas also. Hedgerows, which form an almost continuous belt around the perimeter of the site, are of a high conservation value. Over the years they have become biologically diverse and support a large range of both native and non-native floral species.

No mammals, birds, amphibians or invertebrates of conservation value were recorded by ecological surveys of the site. All the birds recorded on site are widespread throughout Ireland in rural locations.

Backfilling of the existing void space and the improved agricultural grassland to the south and west of the site will disturb flora and fauna that have colonised these areas. Removal of existing groundwater ponds at the floor of the former sand and gravel quarry will result in the loss of wetland habitat which may support wintering birds and breeding birds during the summer periods

In order to retain landscape connectivity and minimise loss of potential nesting sites for birds, existing boundary hedgerows will be retained and reinforced where necessary. Retention and reinforcement of boundary hedgerows will also serve as a noise and visual barrier. In order to ensure the continued survival of boundary hedgerows, a 10m buffer zone will be maintained between the hedgerows and the infilling works insofar as practicable to do so. Backfilling and

restoration operations in close proximity to existing hedgerows will also be of minimum duration possible.

As backfilling works are completed, the site will be progressively restored to agricultural pasture lands. This will be in keeping with the surrounding area which is composed predominately of improved agricultural land. This process will result in the former quarry site being returned to its original land use.

## 5 SOILS AND GEOLOGY

Published geological maps indicate that natural soils at the site principally comprise sands and gravels of limestone and that the underlying rock comprises siltstones and shales. The available ground investigation information indicates that the general subsoil profile across the site comprises varying depths of inert fill materials overlying in-situ sand and gravel deposits at or close to groundwater table. Little, if any, soil contamination is present in backfilled soils placed at the site to date.

The Geological Survey of Ireland has confirmed that there are no proposed geological National Heritage (pNHA) sites in the vicinity of the site. No sites of geological interest or importance are identified in the Kildare County Development Plan (2005 – 2011).

Topsoil (the upper layer of soil capable of sustaining vegetation and crop growth) was previously stripped from the site in order to facilitate the development of the former quarry. Soils in the vicinity of the site typically have a wide use range of agricultural uses, including tillage, pasture, meadow and forestry.

The backfilling and restoration of the site to former ground level will eliminate ongoing soil erosion and the risk of potential instability in slopes at the northern end of the site. It will also provide for the re-establishment of agricultural soils across the site.

The importation of soil, stones and inert construction and demolition waste introduces a risk of potential soil contamination at the site. In light of the ground investigation findings, and assuming continued good management of the existing facility, this risk is considered to be small.

## 6 WATER

Prior to its development as a quarry, the site was located on lime rich soils which were generally well draining. The Geological Survey of Ireland indicates that the area is underlain by glaciofluvial sands and gravels, which are laterally extensive and typically in excess of 20m thick. Recent site investigations at the site have confirmed that the deposits are greater than 19m thick in the vicinity of the site.

Published data suggests that the bedrock inhibits groundwater flow (in that it has low permeability) and is dominated by secondary fissure permeability in the upper weathered zone. The overlying sand and gravel aquifer is considered to be permeable, a locally important aquifer, and allows a high level of recharge (infiltration by rainwater). The aquifer also supports local private water supplies in the area.

A groundwater spring was observed at the base of the existing quarry floor and is associated with the sand and gravel aquifer. Groundwater is exposed in ponds in low lying areas of the site. Groundwater contours constructed using groundwater levels recorded in boreholes at the site suggest that groundwater flows from south-east to north-west across the site. Groundwater quality is shown to be very good at the site, with existing operations shown to have no significant impact on down gradient groundwater quality.

The proposed filling area is not in close proximity to local watercourses. Public records from the Office of Public Works indicate that the site is not at risk of flooding.

Potential impacts of infilling the former sand and gravel quarry with inert materials have been assessed and it is considered that in the absence of mitigation measures, the development could have the potential to affect groundwater quality and groundwater flow.

It is therefore proposed that a number of mitigation measures be incorporated into the scheme, including site management measures, placement of specific waste types in particular areas, review of waste types entering the site and construction of a soakaway and extension to an existing concrete pipe to allow discharge of spring waters into groundwater beneath the site. With the incorporation of the proposed mitigation measures the residual risk to groundwater is low to near zero.

## 7 AIR QUALITY

Given the inert nature of the materials being used to restore the site and the absence of biodegradable (organic) wastes, no landfill gas emissions will arise at this site.

The principal air quality impact associated with the continued operation of the inert waste recycling facility is fugitive dust emission. Emissions are likely to arise during

- (i) trafficking by HGVs over unpaved surfaces
- (ii) end-tipping of inert soil or construction and demolition waste
- (iii) stockpiling, handling and compaction of inert soils and
- (iv) processing (crushing / screening) of construction and demolition waste

In order to control dust emissions, a number of measures will be implemented, principally

- (i) spraying of water from a tractor drawn bowser on dry exposed soil surfaces
- (ii) planting with grass as soon as practicable after placement of cover soils to minimise soil erosion and dust emissions and
- (iii) construction of internal haul roads using recycled aggregate (with low silt and clay content)
- (iv) routing all HGVs leaving site through a temporary wheelwash facility at the end of the access road.

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

## 8 NOISE

Noise monitoring at the site indicates that average ambient noise levels typically range between 45 dBA  $L_{Aeq}$  and 50 dBA  $L_{Aeq}$ . These noise levels are consistent with daytime levels in rural areas in and around the Greater Dublin Area and are below the threshold limit for daytime noise emissions (55dBA  $L_{Aeq}$ ) recommended by the EPA Environmental Management Guidelines for the Extractive Sector (2006).

In the absence of noise mitigation measures, average ambient noise levels at the two closest residences to the site (in the north-eastern and south-western corners) may exceed the EPA upper threshold limit for daytime noise levels for a short period while restoration works are proceeding in the immediately beyond the site boundary. This is a worst case scenario and assumes plant and machinery will be running for 100% of the time rather than intermittently. In reality this will not occur and noise levels would be expected to be significantly lower.

It is proposed to monitor average ambient noise levels as site activities near residences at the north-eastern and south-western boundaries. Should these indicate that threshold average ambient noise limits are exceeded (or likely to be exceeded), provision will be made for a combination of one or more of the following in order to reduce noise levels:

- (i) construction of a temporary screening embankment,
- (ii) installation of a temporary noise barrier between noise source and receptor(s)
- (iii) reduction of noise emissions at source
- (iv) management of activities to minimise vehicular movements and/or duration of activities in the vicinity of affected residences.

While the noise levels experienced at the affected residences will be above existing levels, any impact will be short-term in nature, of the order of a few weeks. This impact is considered acceptable in view of the overall environmental improvement that the site restoration works will effect.

## 9 CULTURAL HERITAGE

The area of proposed development is formed by a sub-rectangular area which comprised 13 individual plots prior to development. Review of historical and present day mapping indicates that the area of land interest has remained largely undeveloped but for a single reference to a mill is noted on Taylor's Map of 1783 and several gravel pits which were identified on aerial photographs. Field inspection revealed that due to heavy quarrying of the area there are no remains of these features.

A ringfort (KD024-012) is located immediately outside the NW boundary separated by a 5m buffer which was initially established in 1976 by Kildare County Council, prior to any quarrying works. As a further condition of this planning permission, ground excavated in the vicinity of the ringfort was to be gradually graded from the original to final ground level (over c. 50m distance). This has provided some protection to the enclosure.

It was noted, however, during field inspection that some damage has been sustained by the enclosure on the SE section at some point in history. Furthermore map representations of the ringfort in early Ordnance Survey maps show it as a substantial bi-vallate enclosure (with two banks and ditch). Due to the shallow gradient of the excavations in the vicinity of the buffer zone it is possible that an outer ditch may have partially survived the quarrying works.

It is considered that an adverse impact may be caused by plant tracking and soil placement activities associated with the proposed site restoration works if additional subsurface features of the ringfort exist. Therefore it is recommended that the pre-existing 5m buffer be extended to 10m in order to protect any surviving subsurface remains associated with the ringfort.

It is also recommended that during reinstatement of land that the surrounding ground level be graded suitably so as to not interfere with the commanding location of the ringfort within the landscape.

## 10 LANDSCAPE

The existing inert waste facility is located within an undulating rural landscape. The predominant land use in the surrounding area is agricultural, principally pasture, with very limited tillage or forestry. Mineral extraction activities constitute a locally significant land use in the immediate vicinity of the site. There are also a number of isolated residences immediately surrounding the site.

The site is located amongst undulating hills which rise and extend eastwards into neighbouring County Wicklow. These hills form the western foothills of the Wicklow Mountain complex. As a result of previous extraction of sand and gravel at the site, it currently constitutes a large, irregular closed depression or void within the landscape. Given the undulating nature of the landscape surrounding the site and the presence of hedgerows along the site boundary, there are only limited long-distance views into the site. The principal views into the site are from local roads where breaks occur in the boundary hedgerows.

The restoration works, and backfilling activities in particular, are expected to have only limited temporary visual impact due to the natural screening afforded the site by the surrounding landscape elements, a combination of the undulating topography and existing hedgerows. The phasing of the restoration scheme will minimise the area being actively restored and open to public view at any time.

Ultimately, the entire site will be returned to former ground level and restored to beneficial use as agricultural pasture. On completion, the site will blend into the surrounding landscape, eliminating any negative visual impact which currently arises.

Landscape mitigation measures will be put in place to minimise any potential visual impact associated with the proposed restoration scheme. These include

- i) retaining and reinforcing all hedgerows along the site boundary;
- ii) removing all buildings, plant, infrastructure and paved surfaces on completion of restoration works and
- iii) grading the final landform at a shallow angle to merge with the surrounding landscape.



## 11 TRAFFIC

A detailed investigation of the traffic impact of the proposed development was undertaken on the adjacent public road network relative to a base year, 2008 and a forecast year, 2018. In order to assess the future operation of nearby junctions, the computer programme PICADY was used. The analysis undertaken relative to the 2008 and 2018 PM peak hour indicated that all junctions will operate well within capacity as the existing waste facility continues to operate. The proposed development therefore will have no impact in traffic terms on the surrounding road network.

Trucks exiting the waste facility onto the public road will continue to use the wheel-wash located within the waste facility.

Warning signs will be put in place on the approaches to the development to alert drivers of HGV movements at the development entrance.

## 12 MATERIAL ASSETS

The site fronts onto a relatively lightly trafficked local road which has a number of one-off residential units located intermittently along it. There is no other transport infrastructure in the vicinity of the site.

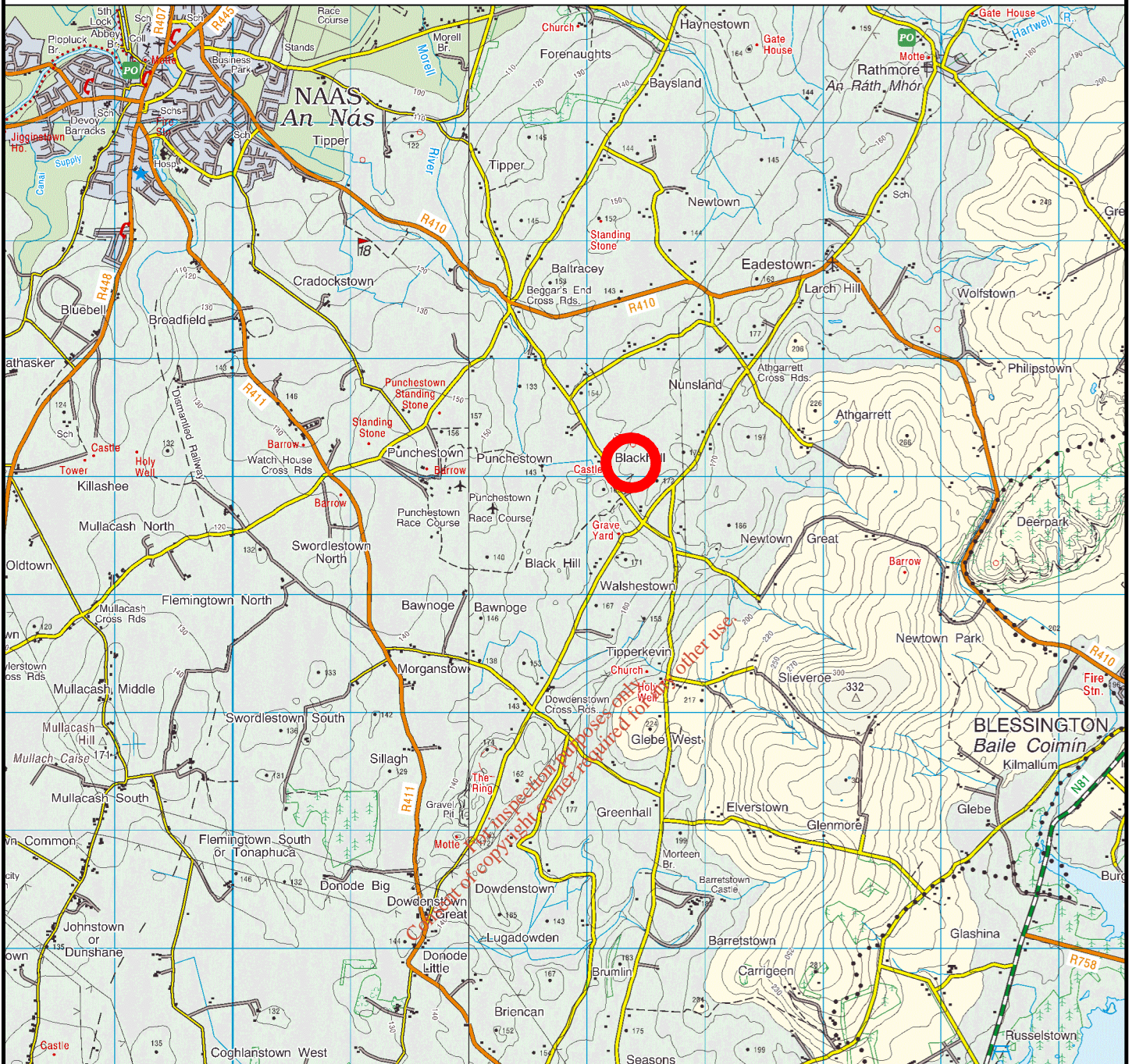
The north-eastern corner of the site is traversed by 220kV electrical cables. Overhead electrical supply and telephone cables run along the local road beyond the south-western boundary and also parallel to the hedgerows on along the western and northern boundaries. It is understood that the main Ballymore to Dublin water supply pipeline also crosses the north-eastern corner of the site, beneath a triangular area of undisturbed ground.

There are no tourist attractions or sites of interest in the immediate vicinity of the site. The only facility of any recreational or leisure interest is Punchestown Racecourse which is located approximately 1km west of the site.

There are several isolated houses in the immediate vicinity of the site, mainly located along the side of existing local roads. The sand and gravel deposits beneath the site are classified as a locally important gravel aquifer. It is likely that many of the local houses in the vicinity of the site source drinking water from this aquifer as there is no mains water supply in the area.

The level of HGV movements to and from the site will remain largely unchanged, at present levels. Backfilling activities at the site present a number of risks to groundwater quality. However a number of measures, outlined in Section 6, will be implemented to minimize these risks. There may be some short-term impacts at the two residences adjacent to the site boundary, most notably increased ambient noise and dust emissions. A number of measures, outlined in Sections 7 and 8, will be implemented to minimize these emissions.

In the long-term, backfilling of the site with inert material will increase protection to, and reduce the vulnerability of, the existing groundwater aquifer. It will also have a neutral, possibly beneficial, impact on land values and/or residential property values.

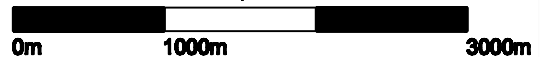


**Legend**

 Location of Site

Extract from 1:50,000 O.S. Discovery Series Map No. 56

1:50,000



Ordnance Survey Ireland Licence No. SU 0000707 (c)  
Ordnance Survey Ireland & Government of Ireland



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

**Site: LANDS AT BLACKHALL, CO. KILDARE**

**Title: SITE LOCATION PLAN**

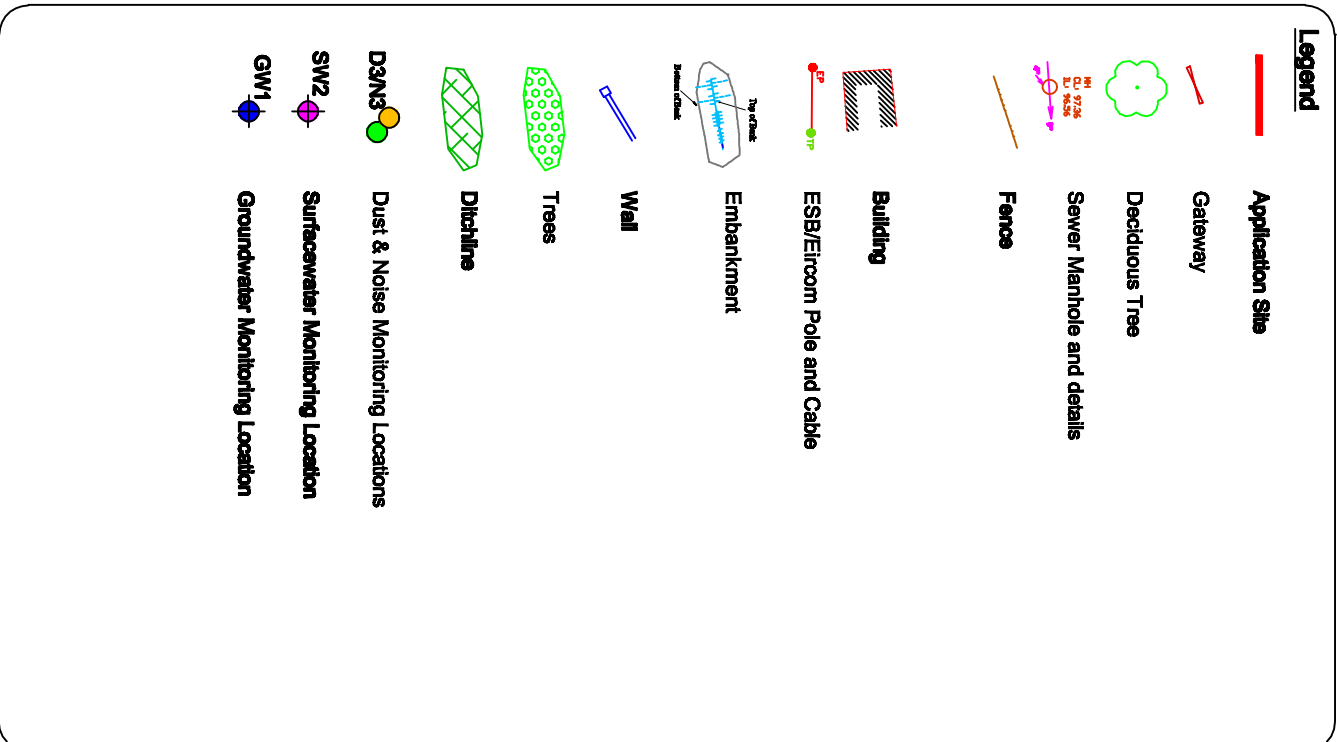
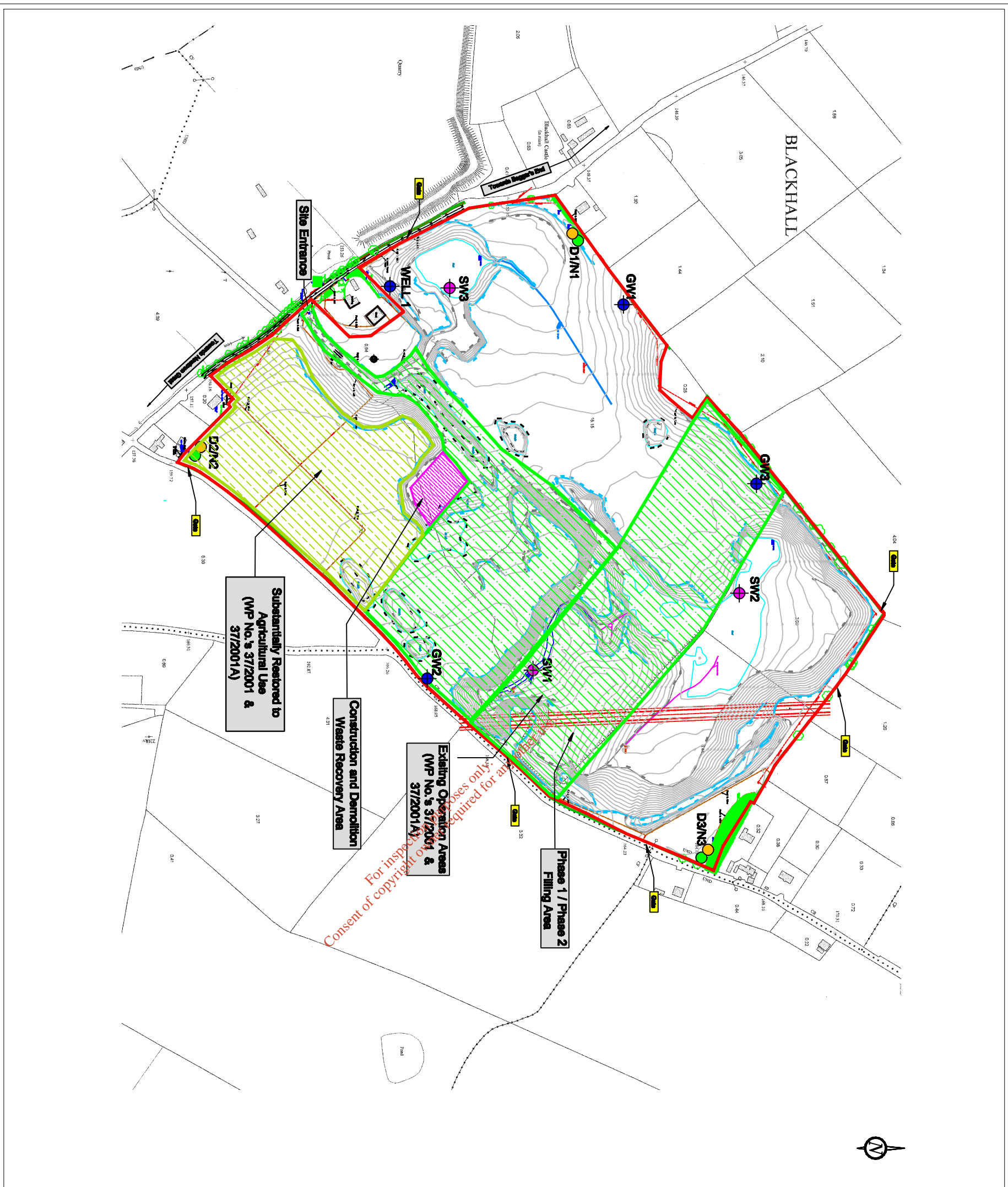
**Drawn: PM/MK**

**Scale: 1: 50,000**

**Job. No: 3746**

**Date: March 2008**

**FIGURE 1**



**BEHAN'S LAND RESTORATION LTD.**  
 BLACKHALL, PUNCHSTOWN  
 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	

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

**FIGURE 2**

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



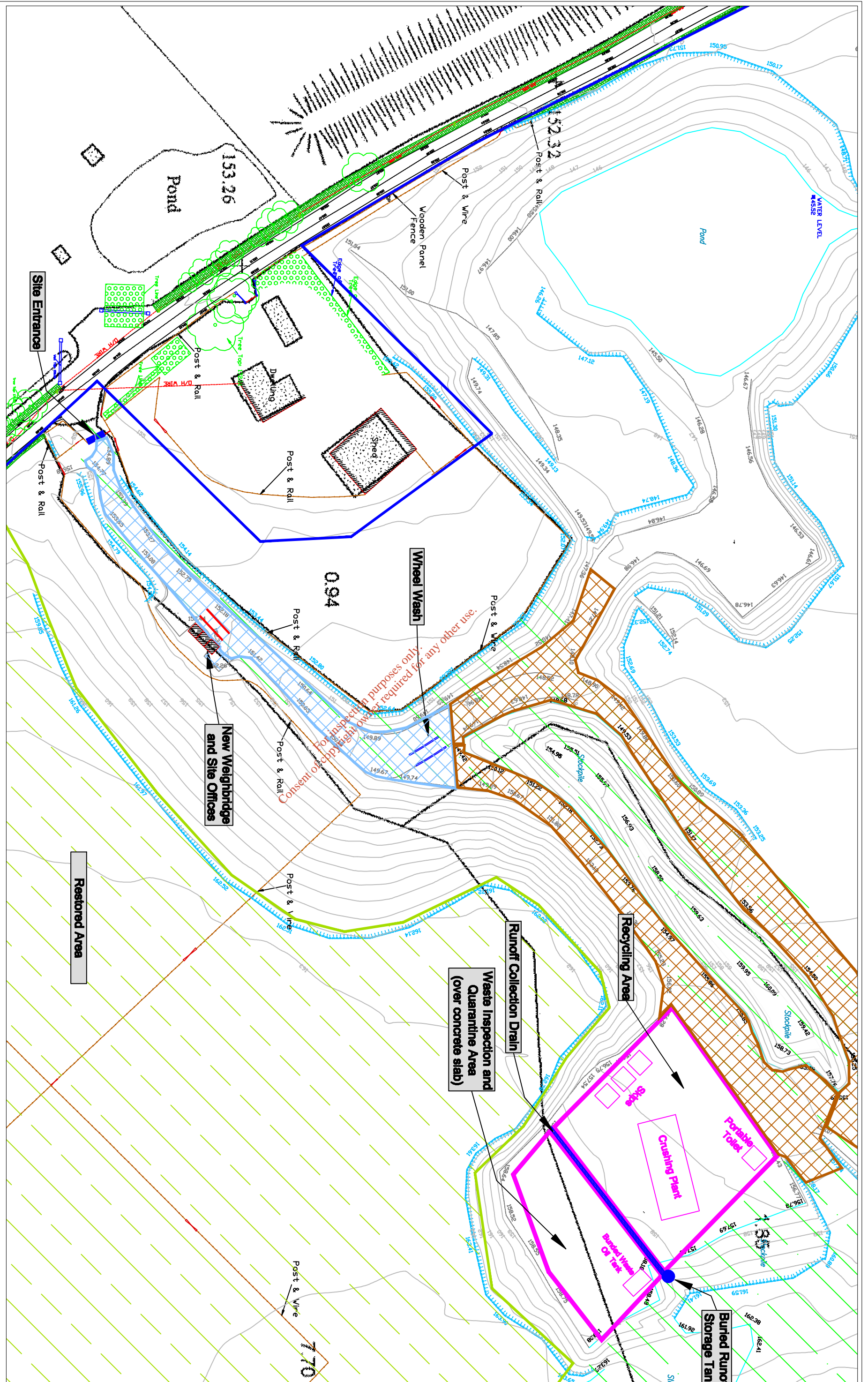
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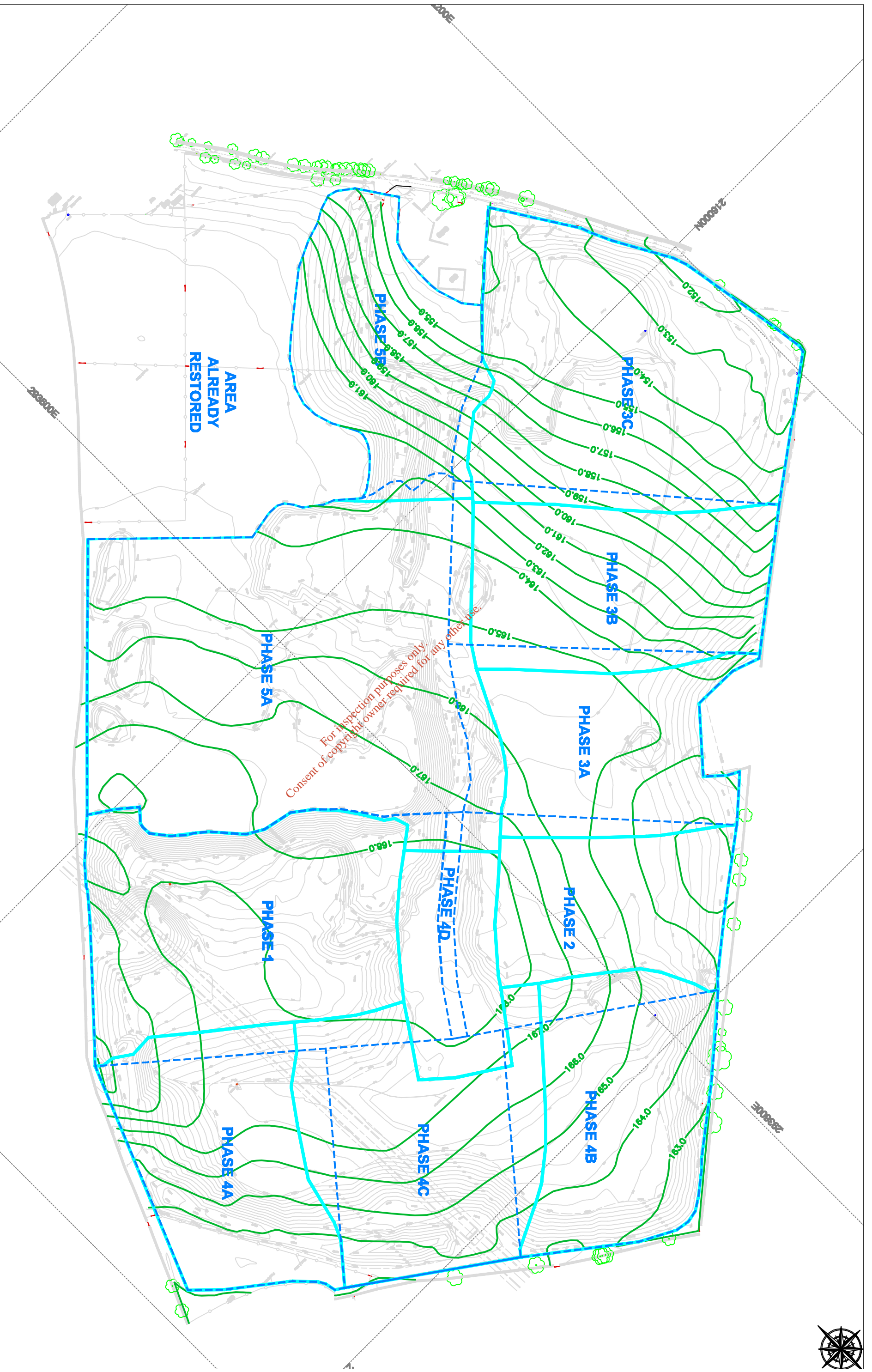
LEGEND & NOTES:  
 Paved Access Track  
 Unpaved Access Track  
 Restored Area  
 Handstanding Area

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 3





BEHANS LAND RESTORATION LTD.  
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 CO. KILDARE

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**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 PIT  
**Title:** RESTORATION SURFACE  
**Drawn:** SLR/4039W **Scale:** 1:2500  
**Job. No.:** JBA/3746 **Date:** March 2008

**FIGURE 4**