

5569



**RED INDUSTRIES LIMITED**

**WALLEYS LANDFILL SITE**

**DUST MANAGEMENT AND MONITORING PLAN**

**AUGUST 2018**

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Prepared for  
Red Industries Limited



Prepared by  
Egniol Environmental Ltd.  
Tre Felin  
Bangor  
Gwynedd  
LL57 4LH

## **Document Review**

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## 1.0 INTRODUCTION

In accordance with the Minerals Policy Statement 2 (MPS)<sup>1</sup> Controlling and Mitigating the Environmental Effects of Mineral Workings, the key general consideration for this Dust Management and Monitoring Plan is that ‘... *dust emissions should, as far as possible, be controlled, mitigated or removed at source*’. Planning condition 29 of the Review Of Mineral Planning (ROMP) permission IDO/N/1 (Decision Notice of 26.05.16) on land at Walleys Quarry, Cemetery Road, Silverdale, Newcastle under Lyme, refers to control of dust emissions and soil handling arrangements, as follows:

*29. Within 6 months of the date of this Decision Notice, details of a revised Dust Management Scheme (‘the Scheme’) shall be submitted for the written approval of the Mineral Planning Authority. The Scheme shall be based on the approved management details (ref.IDO/N/1 D1 dated 19 January 2001) and the Environmental Statement (Section 4.3). The updated scheme shall include but may not be limited to the following details:*

- a) The precise arrangements for the monitoring of wind speed on the Site;*
- b) The dust monitoring points around the boundary of the Site;*
- c) The equipment to be used to monitor dust which shall be both directional and non-directional gauges;*
- d) The monitoring frequency and periods;*
- e) The steps to be taken to establish the background / baseline dust levels;*
- f) The steps to be taken in the event that the measured dust exceeds the permitted limits; and,*
- g) The steps to review the dust monitoring scheme from time to time.*

*Dust monitoring and management shall thereafter be carried out in accordance with the approved updated scheme.*

*Reasons: To minimise the potential dust nuisances and environmental impacts of the development on the local community and surrounding area in accordance with the Staffordshire and Stoke-on-Trent Minerals Local Plan (saved policy 12); the emerging Staffordshire Mineral Local Plan (policy 4); the Staffordshire and Stoke on-Trent Waste Local Plan (policy 4.2); and the National Planning Policy Framework (sections 9 and 13).*

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<sup>1</sup> Controlling and Mitigating the Environmental Effects of Minerals Extraction in England. Annex 1: Dust. Office of the Deputy Prime Minister 2005  
Egniol Environmental Ltd.  
Job Number 5569

## 2.0 DUST RISK ASSESSMENT

The potential sources of fugitive dust at Walleys landfill include the operational activities:

- Waste haulage and on site traffic;
- Tipping of wastes from vehicles esp. fine particulate type wastes;
- Handling of wastes and application of daily cover;
- Site engineering works;
- Restoration operations, and
- Wind erosion of operational surfaces, stockpiles and haul roads.

Due to the nature of the wastes accepted at the site the generated dust will comprise general particulate matter and generation of bioaerosols is unlikely. Similarly, no asbestos fibres will be released at the site. Bonded asbestos a stable non-reactive hazardous waste material, is permitted to be accepted at the site, however no asbestos waste has been deposited at the site to date and there are no current plans for asbestos to be tipped at Walleys.

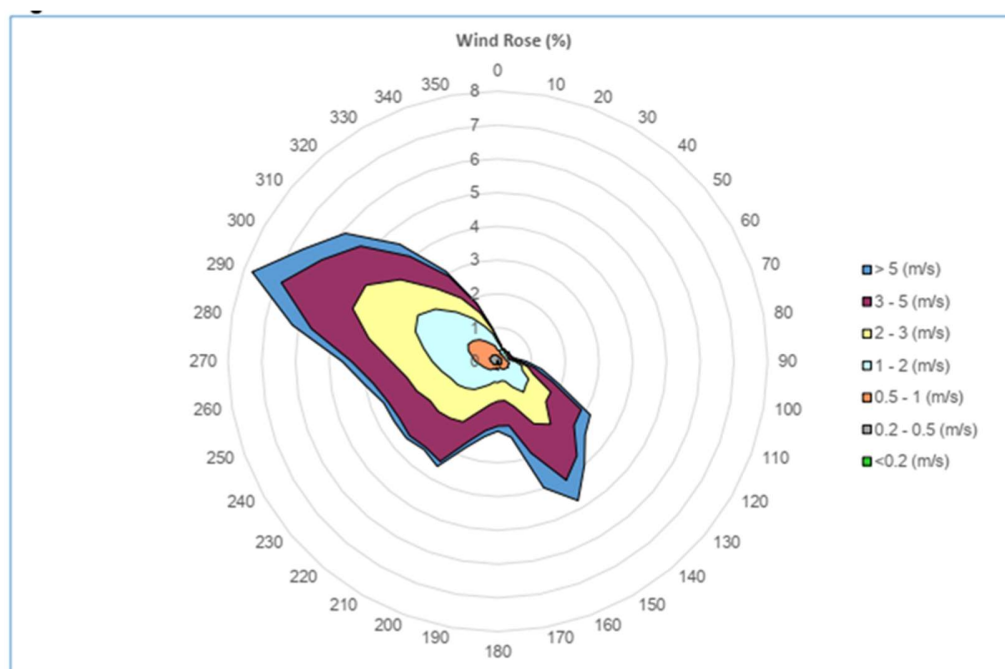
Potential sensitive receptors have been identified through a desk top assessment of the locality and the corresponding minimum distance from the site boundary. Human receptors are identified within a 500m radius of the site are listed below.

	Dust Receptor	Min Distance, m	Direction
1	Silverdale Residential Dwellings 1	300	North
2	Knutton Residential Dwellings along the B5044	110	North
3	Garner's Garden Centre	20	North
4	Knutton St Mary's Primary School	260	North, NE
5	Warehouse/Depot	300	NE
6	Newcastle under Lyme residential areas	230	South, SE
7	Consented Residential Development Area	30	South, SE
8	Thistleberry Parkway	190	SE
9	Silverdale Holidays Park	30	South
10	Rosemary Wood Cottage	300	South
11	Recreational Grounds	250	SW
12	Silverdale Residential Dwellings 2	260	West
13	Allotments	80	West, SW
14	Cemetery	60	West
15	Silverdale Business Park	60	West
16	Silverdale Housing Estate	90	East
17	Keele Road & Orme Road Housing Estate	270	East
18	Industrial Area	220	NW
19	Silverdale Residential Area	400	North
20	Ironbridge Drive Residential Area	450	NE

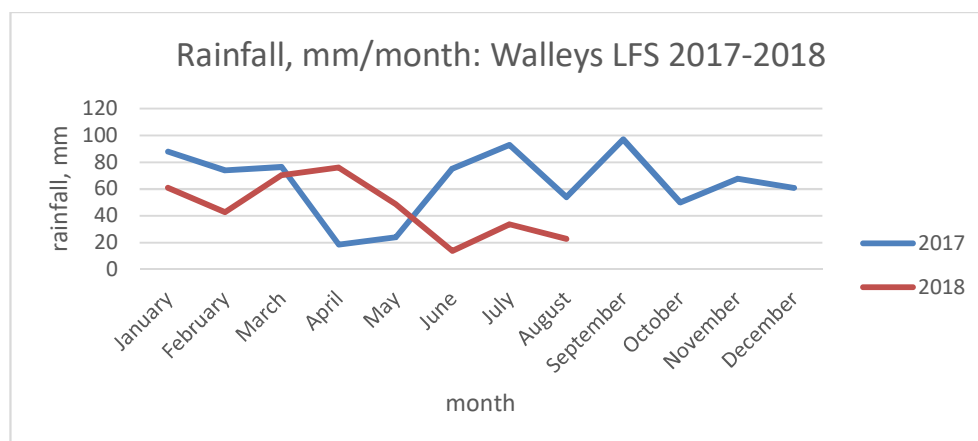
These receptors are shown on the enclosed plan Walleys Landfill – Dust Sensitive Receptors (Appendix 3).

Meteorological conditions and, in particular the local wind conditions and precipitation, are key factors in dust dispersion. At Walleys landfill site the prevailing wind directions are from 130-160° (generally south easterly wind) for 16% of the time, and from 230-320° (SW to NW) for about 50% of the time. During about 15% of time there is light or no wind (0-1m/s). For most of the time the wind speed varies between 1m/s/ to 5m/s.

The wind rose for July 2017- February 2018 (224 days) is shown below (source Environment Agency, AMU Report AAM/TR/2018/04).



Precipitation is measured at the on-site Skylink Pro weather station. The data here assessed for 2017-2018 (up to August) shows that on average the levels of rainfall vary from below 20 mm/month to up to 100 mm/month. There is a clear seasonal variability of the rainfall however the duration of the dry weather spells varies considerably from year to year (see monthly distribution chart below).



The on-site precipitation and wind data are used as a reference source of information in the routine planning of the dust management measures, and if required to investigate dust related nuisance complaints.

#### Local air quality

As a potential source of ambient dust, Walleys landfill site was assessed in a recent study carried out by the Environment Agency: Study of Ambient Air Quality at Silverdale Road (Report AAM/TR/2018/04). A mobile monitoring facility was deployed on the grounds of Severn Trent Pumping Station on Silverdale Road, Silverdale between the 6 July 2017 and 14 February 2018 (224 days). Walleys landfill site is situated to the south ( $130^{\circ}$  –  $240^{\circ}$ ) from the monitoring station.

Ambient concentrations of the regulated particles size PM10 and PM2.5 were measured. The results showed that their highest average concentrations were seen for wind sectors  $100^{\circ}$  -  $120^{\circ}$ , with other marked contributions from wind sectors  $300^{\circ}$ - $310^{\circ}$  and  $10^{\circ}$ . The overall local air quality was shown to be compliant with the UK Air Quality Strategy objectives for both PM10 and PM2.5.

The study showed that in the local area, Walleys landfill site cannot be attributed as a significant source of ambient dust. The study showed that there are other local activities providing continuous sources of particulates emissions.

#### Assessment of Potential Risks

The consequence of dust emissions is a potential annoyance caused to local residents if dust fall on cars, gardens, amenity areas, roads etc. Probability of potential dust related nuisance among the local residents and other areas users depends on a combination of all above stated factors (distance to site, waste loads received on site and housekeeping procedures in place, wind speed and direction during the works, rainfall and resultant ground condition).

In recognition of the fact that the Site does not have a history of dust related complaints, and the site operator implements appropriate measures to minimise potential dust emissions, the probability of exposure to dust and the resultant dust related nuisance, is considered as Moderate to Low.

### **3.0 DUST MANAGEMENT PLAN**

#### **3.1 General Considerations**

This dust management plan comprises a set of control measures and working procedures designed to minimise the risks from dust emission off site. The control measures for abating dust emissions will be based on best management practices which cover the following aspects:

- Waste haulage and on site traffic;
- Waste acceptance, tipping and compaction;
- Site engineering works, and
- Wind erosion of operational surfaces, stockpiles and haul roads.

#### **3.2 Waste Haulage and On-site Traffic**

To minimise emissions of dust from the use of on-site access and haul roads, the speed limit on site is limited to 15mph on the access road and 10mph on internal haul roads and is imposed for all vehicles using the Site.

The site access road is tarmacked from the site entrance to the wheel wash facility and internal haul roads are surfaced with hardcore materials beyond this point. The main access road will be swept with a mechanical road sweeper as and when conditions require controlling fugitive dust. In dry weather conditions, the site haul roads will be sprayed with water to suppress dust using the water bowser.

The on-site wheel wash facility is used by all HGVs leaving the site to ensure no tracking of mud on the public highway. Internal haul roads will be maintained in good condition, and free of pot holes.

All vehicles using the facility will be instructed to ensure that their loads are adequately sheeted, or otherwise contained, in order to avoid the escape of dust on route to the site.

#### **3.3 Waste Acceptance, Tipping and Compaction**

Dust management at the Site is integrated into operational management procedures, which are part of the Operator's Integrated Management System. The management system is externally certified to ISO9001:14001 and OHSAS 18001.

The condition of waste loads and in particular, the presence of particulates, is determined as part of the pre-assessment procedure Red/MS/MC009. On receipt on site, the waste is inspected as per procedure Red/MS/MC010 to ensure it is conforming with the pre-acceptance checks. This involves verification of the characteristics of the load, both at the weighbridge and the tipping face. The deposited waste once tipped, will be immediately compacted. Dusty loads may be sprayed with water to minimise dust re-suspension; the working area will be covered with soil and/or other suitable cover materials at the end of the day. The



vehicles unloading of inherently dusty wastes and ground materials will be instructed to reduce drop heights as far as practicable.

The on-site water bowser will be used to minimise dust generation from operational areas, and haul roads, as required. A water bowser is permanently available on site and will be deployed at short notice to suppress dust. A sufficient supply of water will be maintained on the site to enable wetting of operational areas.

### **3.4 Engineering Works**

Operational activities involving soil handling and storage will be managed to suppress fugitive dust at the source.

Stockpiles of cover materials will be clearly delineated and located away from areas where they may be traversed by mobile plant. They will also be profiled and maintained to a smooth surface and thus minimise soil erosion and windblown dust emissions.

The works involving handling of large quantities of soil, clay and other ground material as part of the site capping and restoration, will be dampened down with water as required. The works will be closely supervised and managed to ensure no resultant nuisance effects. These works will be pre-planned taking into account the prevailing weather conditions. Any long-term stockpiles of ground materials will be compacted/ sealed and seeded as soon as is practicable.

### **3.5 Site Management**

The Site Manager will have a responsibility for implementation of this Dust Management Plan, and that its contents are communicated to all site operatives and contractors, as part of the Site Induction.

The Site Manager has an appropriate technical WAMITAB competence qualification to manage the facility. The manager will apply a prior knowledge of the waste materials delivered to the site, carry out advanced planning of the engineering works and activities that can be dusty, and consult on-site weather data, to apply the relevant dust management measures and working procedures.

The Site Manager is responsible for the daily site inspection, which covers items such as condition of operational areas, haul roads and control of dust. Site operational procedures OPS006A Site Inspection and FRM195 Landfill Check List are followed daily.

The Site Manager will maintain a daily record of the site operations, the observations of the wind patterns, rainfall, atmospheric temperature and factors which contribute to dust generation potential at the site, and the controls used, if necessary. Also, any complaints received will be logged and actions taken to rectify them as per Dust Action Plan (Section 5.0 of this Plan).

## **4.0 DUST MONITORING PLAN**

### **4.1 Monitoring of Meteorological Conditions**

The site benefits from access to the real-time meteorological data provided by the on-site Skylink Pro weather data system. It provides the following data: wind speed and direction, temperature and humidity, barometric pressure, rainfall measurement, dew point. All data is recorded at 30-min intervals and stored on the site computer for management purposes and for record purposes. The site manager will access this data as part of the daily site management and for the forward planning of the activities especially those which are likely to generate dust, in order to ensure the relevant control measures are put into place.

A windsock will be also installed on site to indicate the wind direction and approximate wind strength.

### **4.2 Visual Monitoring**

All personnel employed on site have a responsibility to undertake visual monitoring of dust conditions throughout the working day. Any observed emissions of dust beyond the site boundary will be reported to the site manager, who will investigate the cause and implement the necessary remedial action. The site manager will also carry out a daily visual inspection of the site, the operational areas and haul roads and assess the dust generation potential.

### **4.3 Deposited Dust Monitoring**

Monitoring of particulate matter on site will be in the form of nuisance dust, i.e. the fraction of the particulate matter which is deposited onto surfaces of buildings and other property. Deposited dust at Walleys Landfill will be monitored at the locations along the site boundary which are close to the nearby receptors. The deposited dust gauges will be equipped with directional dust gauges designed to distinguish between the on-site and external sources of dust.

Dust monitoring points D1, D2, D3 and D4 will be at the following locations:

<b>Monitoring Point</b>	<b>Location</b>	<b>Justification / Representative receptors</b>
<b>D1</b>	Walleys W	Allotments, Cemetery, Silverdale Business Park, The upwind dust gauge /Background dust monitoring location
<b>D2</b>	Walleys South	Silverdale Holidays Park, Consented Residential Development Area, Thistleberry Parkway, Recreational Grounds
<b>D3</b>	Walleys E	Silverdale Housing Estate
<b>D4</b>	Walleys North	Garner's Garden Centre, Newcastle under Lyme residential areas

These are shown on the Dust Monitoring Locations Plan (Appendix 1). The dust monitoring techniques and procedures are described in Appendix 2.

The monitoring schedule is shown below.

Particulate Matter Type	Frequency of Sampling	Sampling Period	Determinant
Deposited dust, total	Monthly*	4-weeks	Deposition rate (mg/m <sup>2</sup> /day)
Deposited dust, directional flux	Weekly*	7 days	% EAC

\*during the periods of dry weather condition.

#### 4.4 Data Management and Reporting

All dust monitoring data will be compiled into a spreadsheet, and include the following:

- Particulate matter measured (directional and total deposited dust);
- Sampling Duration (days);
- Units of measurement (mg/m<sup>2</sup>/day and %EAC);
- Reference period (e.g. weekly and monthly averages).

The information will be retained on site and used (along with the visual dust monitoring) to assess the performance of the dust suppression measures and in response to complaints.

Trigger levels for deposited dust will be adopted in line with the 'custom and practice' limits set in England and Wales in the Environment Agency Technical Guidance Document M17 Monitoring of particulate matter in ambient air around waste facilities. The directional deposited dust will be assessed in terms of the Effective Area Coverage (EAC) calculated for the number of days' exposure (%EAC/day) and using the Beaman & Kingsbury<sup>2</sup> approach to the complaint thresholds, as quoted in M17.

The proposed trigger levels are shown below.

Parameter	Trigger Level	Reference Period
Deposited dust (Frisbee Gauge)	200mg/m <sup>2</sup> /day	Monthly average
Directional dust flux (by sticky pad)	%EAC/day Response: 0.2 Noticeable 0.5 Possible complaints 0.7 Objectionable 2.0 Probable complaints 5.0 Serious complaints	7-days

Exceedance of the trigger levels will initiate further investigation into the cause of excessive dust and/or complaints received, and if necessary to adopt additional control measure and/or additional monitoring. The Dust Action Plan is described in Section 5.0 below.

<sup>2</sup> Beaman, A.L. & Kingsbury, R.W.S.M. (1981), "Assessment of nuisance from deposited dust particulates using a simple and inexpensive measuring system", Clean Air, Vol.11, No.2, pp.77-81.

## 5.0 DUST ACTION PLAN

This Dust Action Plan will be actioned in the event of the following dust related 'non-conformances' at the Site:

- 1) Exceedance of the trigger level(s) for deposited dust;
- 2) Receipt of dust related complaint.

Any exceedances of the trigger level for deposited dust will initiate further investigation, following the key steps as outlined below:

1. Dust monitoring results from all monitoring points on site will be compiled and compared with the relevant trigger levels to assess the spatial extent of fugitive dust;
2. Determine the nature and location(s) of the site activities over the relevant period and the dust management/suppression measures used at the time;
3. Determine the wind pattern and weather conditions at the site over the relevant period;
4. Investigate whether there have been any reported dust incidents on site and complaints, and actions taken;
5. Investigate the local area for any activity (construction, agricultural etc) which may have contributed to or caused increased deposition rates.

Where the investigation indicates that the exceedance was caused (likely to have been caused) by the site operations, additional suitable dust suppression measures and management procedures will be put into place. The effectiveness of these measures will be assessed by undertaking more detailed dust monitoring.

The following procedures will be followed to record and act upon receiving a complaint about dust (and other public nuisance issues):

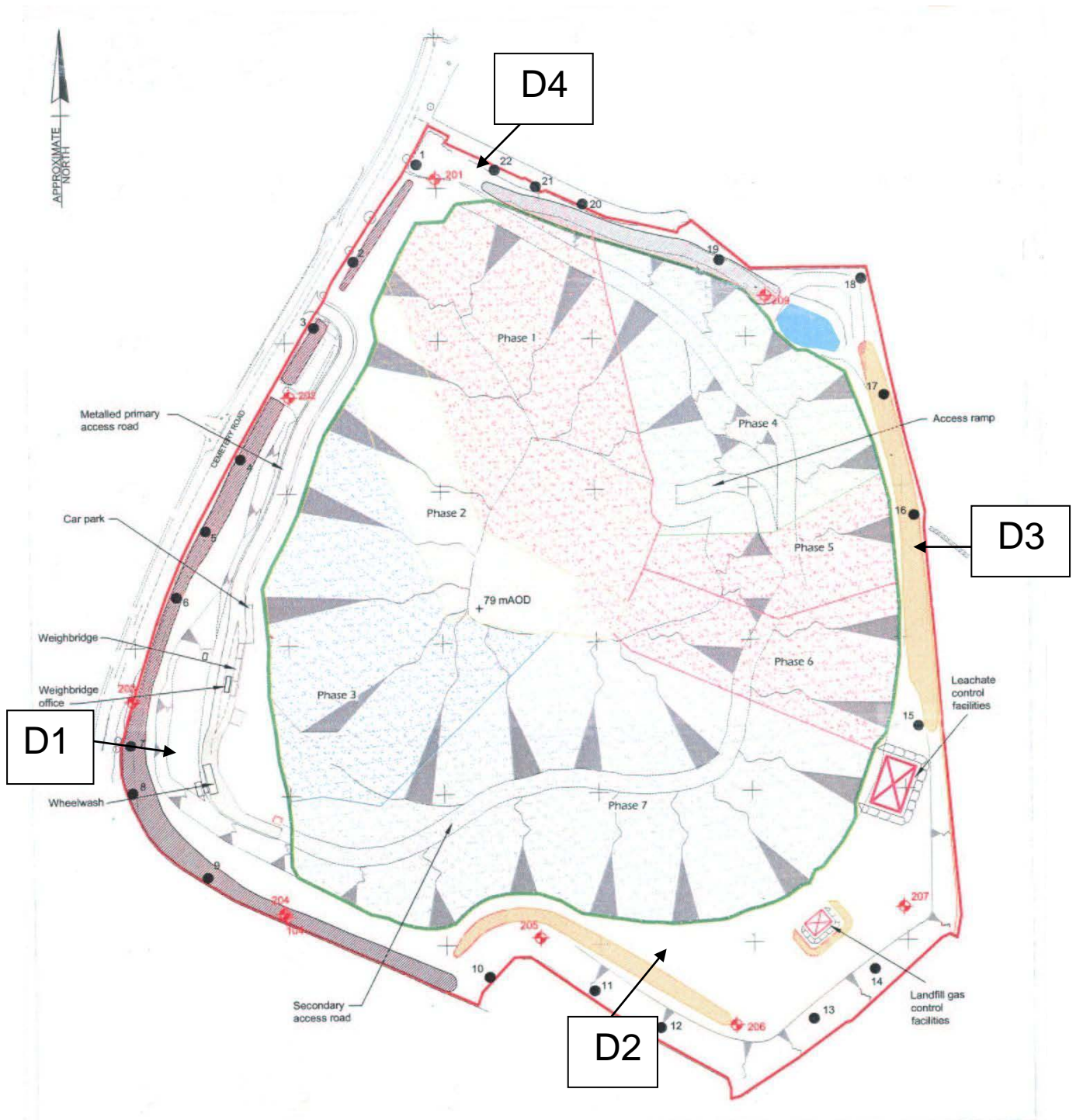
1. Any complaints received will be logged as received typically via the Environment Agency. Details of the dust complaint (location, date and time, the name, address and telephone number of the caller (if available) will be logged. The complaints will be recorded within scope of the company non-conformance and corrective action procedure. The form will be completed, signed and dated by the Site Manager.
2. The site manager will undertake a Dust Investigation by reviewing:
  - Wind speed and direction, and general weather condition;
  - Site operations and other activities at the time of the dust complaint;
  - Dust monitoring results for the relevant period (if available at the time);
  - Dust management measures in place of the dust complaint.
3. The findings of the complaint investigation will be forwarded to the Environment Agency. The Site Manager will follow Non-conformances and Corrective Actions Procedure SYS008 and will discuss this matter with the Operations Manager, before responding to the Environment Agency.

The provisions of this Dust Management Plan will be reviewed annually. As part of the review the performance of the dust management measures and operational procedures will be assessed and revised if necessary to improve the site environmental performance. The non-conformance and corrective action procedure will be reviewed as necessary.

## **APPENDICES**

<b>Appendix 1</b>	<b>Dust Monitoring Locations – Walleys Landfill Site</b>
<b>Appendix 2</b>	<b>Dust Monitoring Techniques and Procedures</b>
<b>Appendix 3</b>	<b>Dust Sensitive Receptors</b>

## **Appendix 1                      Dust Monitoring Locations – Walleys Landfill Site**



Walleys Landfill Site

Dust Monitoring Locations





## **Appendix 2                    Dust Monitoring Techniques and Procedures**

### Frisbee Gauge

Frisbee Dust Deposit Gauge is the standard method for measurement of deposition of particulate matter. A Frisbee shaped dish acts as a collection surface, is placed on a tripod stand 1.7m above the ground. The sampling implies that rain washes the particulate matter into a collection bottle. The sampling period is typically one month after which the sample is collected and sent to the laboratory where the water in the bottle is filtered through a pre-weighed equilibrated filter paper to allow measuring the quantity of dust deposited. A simple equation gives the rate of deposition per square metre per day ( $\text{mg}/\text{m}^2/\text{day}$ ).

Changing the sample bottles should be carried out using the following procedures:

1. Loosen the grub screw holding the bird guard to the tripod, then remove the complete collector/bird guard assembly. Raise the inner PVC pipe sufficiently for the bottle to be removed.

or

Unscrew the cap of the bottle and slide it up the white PVC tube, then carefully tilt and withdraw the bottle from within the tripod.

or

Raise the central stem of the tripod sufficiently for the bottle to be removed.

(It is a good idea to rinse the bottles, collector and foam pad with clean water before using for the first time. If algal growth is a problem during the summer months, it can be reduced by excluding sunlight from the bottle by using a black bin-liner or black adhesive tape around the bottle. When siting the gauge, ensure that the central stem of the tripod is truly vertical, so as to avoid water standing in the collector).

2. Label the collecting bottle and replace it with a clean one containing a suitable biocide.
3. Return the Frisbee and collecting bottle to the laboratory.

(courtesy of <http://www.hanby.co.uk/New%20Frisbee%20Gauge.htm>)



## Directional Gauge

The primary purpose of this instrument is to assess the nuisance from deposited or wind-blown dust particles. Suitable exposure periods are usually between 2 and 7 days.

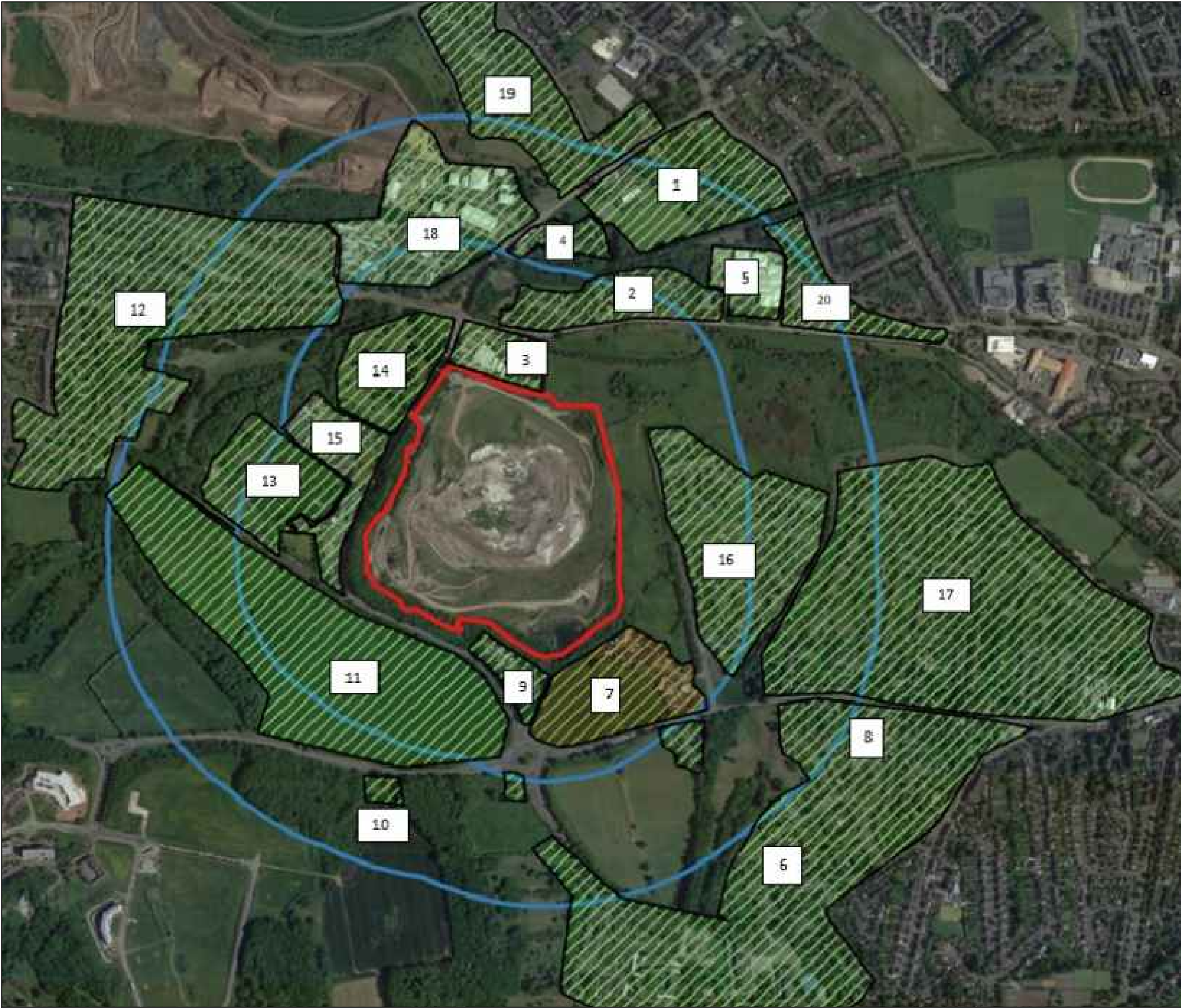
A directional dust gauge consists of a sticky pad wound around a circular cylinder with a vertical axis. Sticky Pad Adaptor is used as follows:

1. The gauge is prepared by mounting the Fablon on flat boards approx 200mm x 200mm, or on the cylinder, with the protective layer outermost. Using a scalpel or craft knife, the backing paper is cut in such a way as to enable a small section of this backing to remain in place whilst removing the remainder.
2. Align the adaptor so that the scribed line is facing North and lock in position using Allen Key;
3. Peel the backing paper from the sticky pad and retain for future use;
4. Fix the sticky pad as shown in the photograph, sticky side outwards, using insulating tape or similar and mark the pad with suitable identification;
5. After exposure, remove the sticky pad from the adaptor and cover with the retained backing paper, using the correct side of the paper. The four clean patches underneath the insulating tape can usually be used as a reference during subsequent analysis. Be careful not to crease the sticky pad, or apply any labels to the pad (even on the reverse side), as this will give rise to false readings.
6. After exposure, the pad should be covered to prevent further pick-up and returned for analysis. It is recommended that the original backing paper be saved and used to cover the exposed sample, but care should be taken to use the correct side of the backing paper. The section which remained covered is eventually uncovered in the laboratory as a clean reference area.
7. Return the sample(s) to the laboratory (Hanby Ltd, 4 Elston Hall, Elston, Newark, NG23 5NP, UK [www.hanby.co.uk](http://www.hanby.co.uk)) where the Effective Area Coverage (EAC) is calculated by subtracting the instrument reading from the reference area reading, and then dividing by the number of days' exposure (%EAC/day).



## **Appendix 3            Dust Sensitive Receptors**

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Notes

- OS data provided by Ordnance Survey.
- Do not scale from this drawing.
- Any anomalies on this drawing should be brought to the attention of Egniol Environmental Ltd.
- Key.

Site Boundary.

250m and 500m from site boundary.

Consented residential development site.

Receptor area.

Rev	Modifications	By	Chk	App	Date
Red Industries Ltd.					
Walleys Quarry Landfill Site					
Dust Sensitive Receptors					
Drawn by GOJR		Checked by AC		Approved by AC	
Date 22.08.2018		Scale @ A3 Not To Scale		Revision -	
Status Final					
Drawing Number 5569.GA.D11					
<div><div>ENGINEERING ENVIRONMENTAL HEALTH &amp; SAFETY</div><div></div></div>					

### Walleys Landfill Site – Local Receptors to Dust

	Odour Receptors	Min Distance, m	Direction
1	Silverdale Residential Dwellings 2	300	North
2	Knutton Residential Dwellings along the B5044	110	North
3	Garner's Garden Centre	20	North
4	Knutton St Mary's Primary School	260	North, NE
5	Warehouse/Depot	300	NE
6	Newcastle under Lyme residential areas	230	South, SE
7	Consented Residential Development Area	30	South, SE
8	Thistleberry Parkway	190	SE
9	Silverdale Holidays Park (residential)	30	South
10	Rosemary Wood Cottage (residential)	300	South
11	Recreational Grounds	250	SW
12	Silverdale Residential Dwellings 1	260	West
13	Allotments	60	West, SW
14	Cemetery	60	West
15	Silverdale Business Park	60	West
16	Silverdale Housing Estate	60	East
17	Keele Road & Orme Road Housing Estate	270	East
18	Industrial Area	220	NW
19	Silverdale Residential Area	400	North
20	Ironbridge Drive Residential Area	450	NE

**North Wales Office:**

Llys Onnen, Ffordd y Llyn,  
Parc Menai  
Bangor, Gwynedd  
LL57 4DF

**Cheshire Office:**

Suite E, West Barn  
Rouge Farm, Bentley's Farm Lane  
Higher Whitley, Cheshire  
WA4 4QW

**Southern Office:**

6 Canon Harnett Court  
Warren Park  
Wolverton, Milton Keynes,  
MK12 5NW

T: 01248 355 996

[www.egniol.com](http://www.egniol.com)