

# Attachment F

## Control & Monitoring

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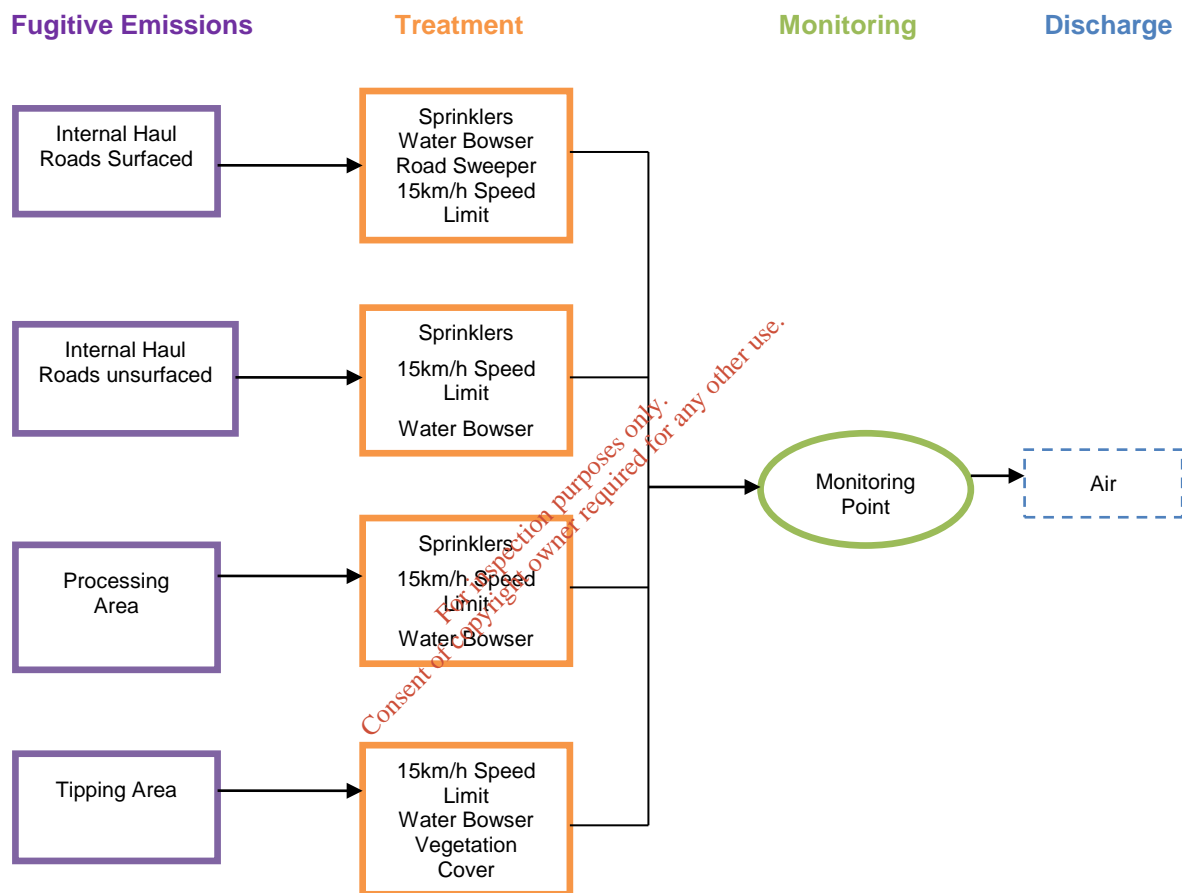
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## F.1 Treatment, Abatement and Control Systems

The following section details the techniques for preventing, or reducing the emissions from the proposed material recovery facility including treatment/abatement systems as necessary.

### F.1.1 To Atmosphere

The following flow diagram shows the sources of fugitive dust emissions arising on site and the methods of treatment/ abatement to be employed.



### ***Emissions***

Within the application area, the following site activities may give rise to potential fugitive dust emissions:

- Internal movement of vehicles
- Tipping and levelling of placed materials
- Loading and Unloading of Vehicles
- Processing Area

The impact of fugitive dust will be direct, temporary and non-cumulative and largely confined to the application site.

### **Abatement**

A number of measures have been adopted to minimise dust emissions to the atmosphere from general site activity, internal haulage and tipping operations as follows:

- During dry weather the haul roads and stockpiles will be sprayed with water to dampen any likely dust blows. A water bowser will be maintained on site for this purpose.
- Consideration will be given to location of mobile plant so as to ensure that any principle dust sources cannot adversely affect sensitive off-site locations.
- Static and mobile wet dust suppression systems will be located at strategic points in the process if required.
- Drop heights will be kept to a minimum by using short conveyors and maintaining stocks under the head drum load out points.
- The site access road between the site entrance and wheelwash has been provided with an asphalt surface. There is no evidence of mud and debris being carried out on to the public road.
- Imported clean construction and demolition waste (concrete and brick) will be used to construct internal haul roads as required.
- A wheel wash facility has been installed on site and all vehicles are required to pass through the wheel wash on exiting the site.
- A sprinkler system has been installed on the site access road and is in operation during periods of dry weather.
- Main site haulage routes within the site shall be maintained with a good temporary surface, as is the case at present.
- All internal roadways will be adequately drained, to prevent ponding.
- A tractor with a road sweeper attachment will be provided to ensure that the site entrance and adjoining public roadway is regularly cleaned. The sweeper will be readily available at short notice to sweep up any materials which may accidentally fall onto the public roadway.
- Suitable vegetation is to be provided on restored areas at the earliest opportunity.

**TABLE F.1.1: ABATEMENT / TREATMENT CONTROL - Air**

**Emission point reference number :** Fugitive Dust Emissions (Location Varies dependent on area of site being restored)

Control <sup>1</sup> parameter	Equipment <sup>2</sup>	Equipment maintenance	Equipment calibration	Equipment back-up
Air Quality – Fugitive Dust	Water Bowser	Routine	Not Applicable	Not Applicable
	Sprinklers	Daily - Visual	Not Applicable	Not Applicable
	Wheel Wash	Daily - Visual	Not Applicable	Not Applicable
	Road Sweeper	Routine	Not Applicable	Not Applicable
	Dust Suppression	Daily - Visual	Not Applicable	Not Applicable

Control <sup>1</sup> parameter	Monitoring to be carried out <sup>3</sup>	Monitoring equipment	Monitoring equipment calibration
Air Quality – Fugitive Dust	Bi-annually	Bergerhoff gauges	Analysis by accredited Laboratory

<sup>1</sup> List the operating parameters of the treatment / abatement system which control its function.

<sup>2</sup> List the equipment necessary for the proper function of the abatement / treatment system.

<sup>3</sup> List the monitoring of the control parameter to be carried out.

### **F.1.2 To Surface water/Sewer/Ground (water)**

#### ***Emissions***

As the only material to be imported to site is “Soil and stone” and inert construction and demolition waste there will be no source of possible contamination of surface and/or ground waters.

There are no surface water courses adjoining the site. Surface water-off within the site percolates to ground through the floor of the sand and gravel pit into the underlying bedrock. There is no discharge of surface water run-off from the site.

No surface water monitoring is proposed as there are no natural water features at or close to the site.

On site activities will not discharge to any sewerage system. It is proposed to continue using the existing toilet facility which discharges to a c. 2m diameter holding tank to the rear of the site office. The holding tank is periodically emptied and disposed of offsite by a licensed waste disposal contractor to an appropriate disposal facility. The location of the holding tank is shown on the attached Figure D.11.

#### ***Abatement***

A mobile double skinned (integrated bunding) fuel bowser will be used to refuel mobile plant on site (Refer to EIS Section 2.4.4 - Fuel Storage Areas). The bowser will be provided with a spill tray and spill kit. The fuel bowser will be kept within an existing surfaced aggregate bay with surface runoff from the hard standing directed to a silt trap with discharge to ground via a Class I Full retention separator (Refer to Drawing D.1.7).

No waste oil products are stored on site. Waste oils will be disposed of by a licensed waste contractor and removed off site (Refer also to EIS Section 3.7.4).

All oil barrels and lubricants will be stored on spill pallets/ spill trays.

Spill kits will be maintained on site and the Company will put in place an emergency response procedure for hydrocarbon spills and appropriate training of site staff in its implementation.

Surface water run-off from the quarantine area will be directed to a silt trap with discharge to ground via a Class I Full retention separator (Refer to Drawing D.1.7). Plant and machinery used on site will be parked on the hard standing outside of normal operating hours.

The wash-water from the existing wheel-wash is recycled within a self-contained holding tank with overflow to settlement tank. The tank is periodically cleaned out and the dried silt incorporated within the restoration scheme.

On site activities will not discharge to any sewerage system. It is proposed to continue using the existing toilet facility which discharges to a c. 2m diameter holding tank to the rear of the site office. The holding tank is periodically emptied and disposed of offsite by a licensed waste disposal contractor to an appropriate disposal facility. The location of the holding tank is shown on the attached Figure D.1.1.

A detailed Geological and Hydrogeological Assessment has been carried out as part of the Waste Licence Application. This report assesses the potential impacts of the proposed restoration infilling on the environment and provides suitable mitigation measures for the proposed extraction works; and input into developing the restoration plan for the pit in terms of minimising both potential hydrogeological and hydrology impacts (Refer to Attachment I.2).

A groundwater monitoring programme will also be put in place to ensure that there is no impact on water quality as a result of the recovery operations.

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**TABLE F.1.2: ABATEMENT / TREATMENT CONTROL – Surface water/Sewer/Ground (water)**

**Emission point reference number :** Not Applicable

Control <sup>1</sup> parameter	Equipment <sup>2</sup>	Equipment maintenance	Equipment calibration	Equipment back-up

Control <sup>1</sup> parameter	Monitoring to be carried out <sup>3</sup>	Monitoring equipment	Monitoring equipment calibration

<sup>1</sup> List the operating parameters of the treatment / abatement system which control its function.

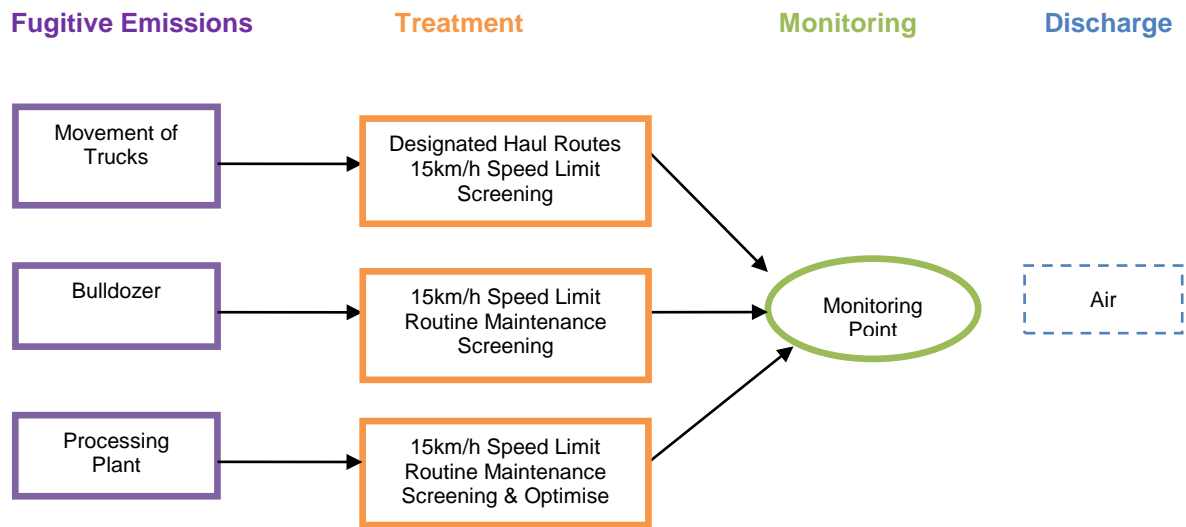
<sup>2</sup> List the equipment necessary for the proper function of the abatement / treatment system.

<sup>3</sup> List the monitoring of the control parameter to be carried out.

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### F.1.3 Noise Emissions

The following flow diagram shows the main sources of noise emissions arising on site and the methods of treatment/abatment employed.



### Emissions

The main source of noise and vibration on site is from:

- Movement of trucks on internal haul roads and tipping of material
- Bulldozer placing and grading the infill material
- Processing Plant

### Abatement

A number of noise containment measures are proposed:

- The provision of temporary peripheral screen banks to screen site activities from outside views.
- General site activity will be within the existing pit and below the level of the nearest residences.
- The use of designated haul roads to ensure that site traffic is removed from nearest noise sensitive receptors.
- Regular maintenance of all plant and machinery is an integral part of site management and is important in helping to minimise noise impact.



- All machinery used will be CE certified for compliance with EU noise control limits.
- Other further noise-reducing modifications for any machinery will be fitted wherever practical (e.g., rubber – decked screens, rubber chute linings, etc.)
- Internal haul road gradients will be kept as low as possible to reduce engine / brake noise from heavy vehicles.
- All plant and machinery is switched off when not in use.
- A noise management programme will be defined as part of the EMS.

It is proposed that noise monitoring will be carried out at three noise monitoring stations (N1 to N3) in the vicinity of the nearest noise sensitive properties (Refer to Figure F 1) in accordance with any monitoring programme agreed with the EPA (Refer also to Section F.6 below).

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**TABLE F.1.3: ABATEMENT / TREATMENT CONTROL - NOISE****Emission point reference number :**           N1 to N3          

Control <sup>1</sup> parameter	Equipment <sup>2</sup>	Equipment maintenance	Equipment calibration	Equipment back-up
Air - Noise	Trucks	Routine	Not Applicable	Not Applicable
	Bulldozer	Routine	Not Applicable	Not Applicable
	Processing Plant	Routine	Not Applicable	Not Applicable

Control <sup>1</sup> parameter	Monitoring to be carried out <sup>3</sup>	Monitoring equipment	Monitoring equipment calibration
Air - Noise	Annually	Sound Level Meter	Annually

<sup>1</sup> List the operating parameters of the treatment / abatement system which control its function.

<sup>2</sup> List the equipment necessary for the proper function of the abatement / treatment system.

<sup>3</sup> List the monitoring of the control parameter to be carried out.

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## F.2 Monitoring & Sampling Points - Air

Condition No. 24 of Planning Permission P.A. Reg. Ref. 03/1773 states that *“the total dust emission arising from the on-site operations associated with the proposed development shall not exceed 130 milligrams per square meter per day, averaged over a continuous period of 30 days, when measured as deposition of insoluble particulate matter at any position along the boundary of the site”*.

The Planning Authority has specified that the dust emissions arising from the development associated with the proposed development shall not exceed 130 mg/m<sup>2</sup>/day measured at the site boundary. **This limit is considered to refer to insoluble particulate matter.**

There are currently no Irish statutory standards or EPA guidelines relating specifically to dust deposition thresholds for inert dust. There are a number of methods to measure dust deposition but only the German TA Luft Air Quality Standards specify a method of measuring dust deposition – The Bergerhoff Method (German Standard VDI 2119, 1972). Dust monitoring was carried out at the site using a Bergerhoff dust deposition gauge.

The normal recommended standard for dust emissions for this type of development is that “dust deposition shall not exceed 350 mg/m<sup>2</sup>/day measured at the site boundaries and averaged over 30 days”. This limit refers to total dust (using DIN method).

The above standard of 350 mg/m<sup>2</sup> per day is also in accordance with guidance issued by both the Department of the Environment and the EPA in relation to dust deposition monitoring for these types of developments. As such it is considered that this is more appropriate emission limit value to apply with respect to the proposed development.

A series of three Bergerhoff dust monitoring stations (D1 to D3) have been established on site as part of the baseline study for the Waste Management Licence Application. Refer also to EIS Section 3.1 - Air. The locations of the stations are shown on Environmental Monitoring Plan Figure F 1.

The results of recent dust monitoring are provided in Attachment I.1. The results show that the dust levels at the site boundary are within the recognised TA Luft dust deposition limit value of 350 mg/m<sup>2</sup> per day which refers to “total dust”. The results are also below the 130 mg/m<sup>2</sup>/day specified by the Council which is taken to relate to insoluble particulate matter only.

This programme will allow on-going monitoring of fugitive dust emissions from the site, thereby assisting in ensuring compliance with any future requirements or regulations.

**TABLE F2: ENVIRONMENT MONITORING AND SAMPLING LOCATIONS - Fugitive Dust****Monitoring Point Reference No (s):**           D1 to D3          

Parameter	Monitoring frequency	Accessibility of Sampling point
mg/m <sup>2</sup> /day	Bi-annually	Accessible via site entrance

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### F.3. Monitoring & Sampling Points – Surface Water

There are no mapped streams/ivers in the vicinity of the site, however the Slate River exists ~2.4km north of the site. The Grand Canal is located ~1.76km north of the site.

There is no discharge of surface water run-off from the site. It is not considered necessary to monitor surface water in the area.

**TABLE F.3: EMISSIONS MONITORING AND SAMPLING POINTS - Surface Water**

**Emission Point Reference No(s).** : Not Applicable

Parameter	Monitoring frequency	Accessibility of Sampling Points
NOT APPLICABLE		

### F.4. Monitoring & Sampling Points – Sewer Discharge

On site activities will not discharge to any sewerage system. It is proposed to continue using the existing toilet facility which discharges to a c. 2m diameter holding tank to the rear of the site office. The holding tank is periodically emptied and disposed of offsite by a licensed waste disposal contractor to an appropriate disposal facility. The location of the holding tank is shown on the attached Figure D.1.1.

**TABLE F.4: EMISSIONS MONITORING AND SAMPLING POINTS – Sewer**

**Emission Point Reference No(s).** : \_\_\_\_\_

Parameter	Monitoring frequency	Accessibility of Sampling Points
NOT APPLICABLE		

## F.5. Monitoring & Sampling Points – Groundwater

A detailed Geological and Hydrogeological Assessment has been carried out as part of the Waste Licence Application. This report assesses the potential impacts of the proposed restoration infilling on the environment and provides suitable mitigation measures for the proposed works; and input into developing the restoration plan for the pit in terms of minimising both potential hydrogeological and hydrology impacts (Refer to Attachment I.2.1).

A number of measures are proposed in order to monitor any potential impact of the proposed operations on groundwater at the site.

At the present time, it is envisaged that groundwater sampling and testing will be undertaken on a bi-annual basis at the 3 No. groundwater monitoring wells. Groundwater levels in the wells will also be recorded on a bi-annual basis. The existing groundwater monitoring well locations are shown on the attached Environmental Monitoring Plan Figure F.1.

Baseline sampling indicates elevated indicator parameters in MW15-01. In order to assess ongoing water quality in this area of the site it is important to continue to monitor local groundwater quality to establish seasonal trends. Sampling of well MW15-01 should be completed on a quarterly basis.

Groundwater samples will be tested for a range of physical and chemical parameters in order to assess water quality and detect possible contamination at the site. The groundwater quality in the monitoring wells will be tested for a number of parameters as listed in Table F5 below.

During backfill operations MW15-02 and PW-01 will need to be replaced as these will be covered over. Prior to this occurring each well will be decommissioned and back grouted to ensure the well annulus does not act as a pathway for migration to the groundwater system.

Groundwater sampling and monitoring will continue as long as backfilling activities continue and for a short period thereafter.

It is proposed to monitor these wells in accordance with the conditions as attached to the waste licence for the facility. Refer also to Table F5 below with respect to suite of parameters and monitoring frequency.

**TABLE F.5: EMISSIONS MONITORING AND SAMPLING POINTS - Groundwater**  
**Emission Point Reference No(s) : MW15-01, MW15-02, PW1**

Parameter	Monitoring frequency	Accessibility of Sampling Points
pH [pH value]	MW15-01 (Quarterly) MW15-02, PW1 (Bi-annual)	Wells- Contact Facility Manager to facilitate access.
Suspended Solids (mg/l)		
COD (mg/l)		
Total Coliforms (cfu/100mls)		
Ammonia (mg/l NH <sub>3</sub> -N)		
Nitrate (mg/l NO <sub>3</sub> )		
Nitrite (mg/l)		
Oils, Fats & Grease (mg/l)		
Phosphorus, total (mg/l as P)		
Ortho Phosphate (mg/l as P)		
Heavy metals (µg/L)		
TPH (mg/l)		
PRO (mg/l)		
DRO (mg/l)		
Water level (m OD)		

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## F.6. Monitoring & Sampling Points - Noise

The operator has established an environmental monitoring programme to include noise monitoring. Noise levels will continue to be monitored in accordance with ISO 1996/1 – “Acoustics – Description and measurement of environmental noise”.

It is proposed that noise monitoring will be carried out at three noise monitoring stations (N1 to N3) in the vicinity of the nearest noise sensitive properties (Refer to Figure F 1) in accordance with any monitoring programme agreed with the EPA.

It is proposed that the applicant shall carry out a noise survey of the site operations on at least an annual basis and bi-annually when undertaking works near the southern and western boundaries. The survey programme shall be undertaken in accordance with the methodology specified in the Agency publication Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).

The results of monitoring to date shows that the development can comply with the noise level thresholds as specified and as a consequence the development will have no significant effects regards noise levels in the area.

This programme will allow on-going monitoring of noise emissions from the site, thereby assisting in ensuring compliance with any future requirements or regulations. A noise management programme will be defined as part of the EMS.

Through implementation of the proposed mitigation measures it is considered the development will continue to have no significant effects with regard to noise levels on the local residences, their property, livestock and amenity.

**TABLE F6: ENVIRONMENT MONITORING AND SAMPLING LOCATIONS - Noise**

**Monitoring Point Reference No (s):** N1, N2, N3,

Parameter	Monitoring frequency	Accessibility of Sampling point
L(A) <sub>Eq</sub> [30 minutes] L(A) <sub>10</sub> [30 minutes] L(A) <sub>90</sub> [30 minutes] Frequency Analysis (1/3 Octave band analysis)	Annually Annually Annually Annually	Accessible via site entrance



**F.7. Monitoring & Sampling Points - Meteorological Data**

As the only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste it is considered that the proposed development will not have any direct or indirect impacts on the regional or local climatic conditions. Therefore, no site monitoring is considered necessary with respect to recording of Meteorological Data.

**F.8. Monitoring & Sampling Points - Leachate**

As only inert materials are being used to restore the lands, no leachate will be created and therefore no monitoring of leachate is required.

**F.9. Monitoring & Sampling Points - Landfill Gas**

As only inert materials are being used to restore the lands, no landfill gas will be created and therefore no monitoring is required.

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## FIGURES

### F.1 Environmental Monitoring Plan

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### Legend

- Applicants Ownership (c.6.6 ha)
- Waste Licence Application Area (c. 6.6 ha)  
(Planning Permission Area ( Ref. 03/1773 &12/373))
- Buildings/Structures
- Concrete Hardstanding
- Aggregate Storage
- Residential Property (within 250m)
- Contours (mAOD)
- + 114.1 Spot Levels (mAOD)
- + 99.1 Water Levels (mAOD) (Top of Casing)
- Tree
- D1 Dust Monitoring Points
- N1 Noise Monitoring Points
- Groundwater Monitoring Points & Wells
- Pit Area
- Scrubland
- Agricultural Land
- Fence
- Gate
- Sprinkler
- Hedgerow
- Asphalt Surface
- Grass Track
- Ponds
- Traffic In
- Traffic Out

OSI Map Series:  
1:2500  
3445-C  
REVISION DATE = 14-Feb-2014  
SURVEY DATE = 01-Jul-1996  
3445-D  
REVISION DATE = 14-Feb-2014  
SURVEY DATE = 02-Jan-1996  
3506-A  
REVISION DATE = 27-Mar-2015  
SURVEY DATE = 02-Jan-1996

Monitoring Point	Easting	Northing
N1/D1	277562	223051
N2/D2	277562	223213
N3/D3	277838	223144
MW15-01	277777	223119
MW15-02	277610	223217
PW-01	277652	223205
GW-01(Spring)	277610	223217

- NOTES:**
- All Dimensions in metres (m)
  - Elevation Levels - metres Above Ordnance Datum (mAOD)
  - For Planning Purposes Only. Do not scale for setting out.
  - Survey derived from point-cloud survey (06/11/15)

Scale 1:2,000



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CLIENT	<b>N&amp;C Enterprises Ltd</b>
DRAWING	<b>Environmental Monitoring Plan</b>
LOCATION	<b>Killmeage, Naas, Co. Kildare.</b>

Drawn by	<b>John Sheils</b>	Scale	<b>1: 2000</b>
Checked by	<b>John Sheils</b>	Job No.	<b>JSPE 236</b>
Date	<b>8/06/16</b>	Figure No.	<b>F.1</b>
		Rev.	<b>0</b>