

EMISSIONS COMPLIANCE REPORT

The planned backfilling and restoration of the former sand and gravel pit at Usk, Kilcullen, Co. Kildare and the operation of an inert soil recovery facility provides for the importation and use of approximately 1,240,000 tonnes of natural material, principally inert excess soil, stones and/or broken rock, principally from construction and development projects, to backfill the existing disturbed landform and reinstate it to former ground level. Planning permission for the proposed facility was granted by Kildare County Council in August 2020 subject to 32 conditions.

Site Description

At the present time, the application site principally comprises the lands which were previously worked for extraction of near surface sand and gravel. These workings extended down into the underlying rock in some areas of the site. The application site comprises the former extraction areas, a hardstanding area (which previously housed site infrastructure), the existing site access, an existing shed and some residual site infrastructure (principally water / power supply).

Past extraction activities at the application site were concentrated at its western end, where existing worked faces are highest (approximately 15m high) and generally extended to within a few meters of the groundwater table. Excavations along around the north-western corner of the application site however extended locally a few meters below the seasonal maximum groundwater table. Following cessation of pumping / dewatering, this excavation subsequently flooded, giving rise to a minor groundwater pond (at or below 130mOD) on the pit floor in this corner of the site.

The lands at the eastern end of the application site have generally been worked to shallower depth, principally for sand and gravel extraction. There has been no extraction of rock across this area and there are several large in-situ mounds of undisturbed sand or stockpiles of excavated sand. Excavations in this area generally terminated above the groundwater table, but did extend locally below it in a number of places, giving rise to shallow groundwater ponds at or below 125mOD.

The site infrastructure for the former extractive operation was previously located across a hardstand area in the north-eastern area of the application site, the bulk of which has been decommissioned and removed off-site. Within the application site, there is also some disused farmyard sheds. It is not intended to disturb or demolish these structures as part of this development proposal and it is possible they may be upgraded and brought back into service once the backfilling and restoration works are completed.

There is also an abandoned derelict farmyard cottage located in the centre of the application site, at the edge of the former extraction area. It is intended that this will remain in-situ and will not be disturbed by the proposed backfill and restoration works.

Current Land Use

There is no existing activity at the application site and it is understood that it has remained largely unused since sand and gravel / rock extraction activities ceased some time after 2010, following the downturn in activity in the Irish construction industry following the global financial crisis of 2008. It is likely that some of the lands within the application site are periodically used for grazing, principally by sheep.

Rain falling over the site generally recharges directly to ground and the underlying groundwater table. Any surface water run-off that does occur, runs over the ground surface to shallow seasonal ponds which are located across the site and recharges to ground there.

Planning History

It is unclear when sand and gravel extraction activities first commenced at the application site at Usk. While the original workings were quite small, it is understood that activity intensified significantly in the late 1990's / early 2000's. As required by Section 261 of the Planning and Development Act of 2000 (as amended), the sand and gravel pit at Usk was registered with Kildare County Council by the then operator, William Browne Sand and Gravel Ltd., in April 2005 (Quarry Ref. QR58).

On foot of a subsequent review of its planning status and in accordance with powers assigned to it under Section 261(7)(a) of the Planning and Development Act, Kildare County Council directed the pit operator to submit a planning application accompanied by an Environmental Impact Statement (EIS) in order to regularise the historical pit development within the registered site area.

At that time, the pit operator had identified additional sand and gravel reserves to the west / north-west of the established pit and therefore took the opportunity when applying for planning permission to regularise the past extractive activity to also apply for retention of some established site structures and infrastructure (not provided for within the scope of the Section 261 registration process) and for planned future development of the pit. The planning application (Ref 07/795) was submitted on 16 April 2007 and following submission of additional information in August 2007 was ultimately granted planning permission in November 2007, subject to 21 conditions.

Many of the conditions attaching to the above permission relate to installation of site infrastructure and to control of extractive operations. Following the cessation of extractive activities at the site and the demise of the business which previously operated it, many of the planning conditions are no longer applicable or enforceable, and any review of emissions or compliance at this site must be viewed in that light.

Notwithstanding this, we have provided below a brief overview of current emissions and /or environmental quality standards pertaining to the application site

AIR QUALITY

Condition 5 of the previous planning permission in respect of extractive activities at Usk (Ref 07/795) requires that

- (a) *'The developer shall ensure that all operations on site are carried out in a manner such that air emissions and/or odours do not result in significant impairment of, or significant interference, with, amenities or the environment beyond the site boundary.*
- (b) *The number and location of dust deposition monitoring stations shall be agreed with the Environment Section of Kildare County Council within two months of the granting of planning permission. The method of dust monitoring shall be by the Standard Method VDI2119 (Measurement of Dustfall using Bergerhoff Instrument (Standard Method) German Engineering Institute). Dust deposition rates measured at any of the agreed monitoring stations shall not exceed 350mg/m²/day averaged over 30 days. A report containing the dust monitoring results and a non-technical summary confirming compliance or non-compliance shall be submitted within 14 days of the end of each quarter and contain all information relating to dust monitoring for the previous three months.*

For the purposes of the recent planning application and this waste permit application, baseline dust monitoring was undertaken at 2 locations around the application site boundary. These are identified as D1 (at the northern site boundary) and D2 (at the eastern site boundary, close to the nearest residential property) in Figure 7-1-3-1-A.

Dust deposition surveys were undertaken at and around the application site for a period from January 2018 to August 2018. The results of the dust deposition monitoring are presented in Table 1 below.

Table 1
Baseline Dust Deposition at Usk

| Date | Dust Deposition | |
|---------------------|-----------------------------|-----------------------------|
| | D1 (mg/m ² /day) | D2 (mg/m ² /day) |
| 30/01/18-20/03/18 | <1 | 10 |
| 20/03/18 – 20/0/18 | 8 | 32 |
| 20/04/18 – 22/05/18 | 8 | 4 |
| 22/05/18 – 25/06/18 | 18 | 27 |
| 25/06/18 - 03/08/18 | 3 | 23 |

As will be noted, the recorded dust deposition rates at the application site at Usk over the monitoring period, which included extended dry periods over the relatively dry summer of 2018, are quite low and significantly below emission limit values (ELVs) of 350mg/m²/day guideline emission limit.

Although this waste licence application provides for re-commencement of on-site activities and the ultimate backfilling and restoration of the site over a 4 to 6 year period, it is considered that with implementation of proposed mitigation measures, dust emissions will remain below the dust emission limit of 350mg/m²/day set by the previous planning permission.

NOISE

Condition 6 of the previous planning permission in respect of extractive activities at Usk (Ref 07/795) requires that

Activities at the site shall not give rise to noise levels off-site, at noise sensitive locations which exceed the following ground pressure limits (Leq, T)

Day 55dB(A) Laeq (30 minutes) (06.00 to 22.00 hours)

There shall be no audible tonal component or impulsive component in the noise emission from the activity at any noise sensitive location.

For the purposes of the recent planning application and this waste permit application, baseline noise monitoring was undertaken at 3 locations around the application site boundary. These are identified as N1 (at the northern site boundary), N2 (at the eastern site boundary, close to the nearest residential property) and N3 (at the southern site boundary) in Figure 7-1-3-1-A.

Noise monitoring results for the baseline survey on are provided in Table 2 below.

Table 2
Summary of Measured Noise Levels, Free Field dB

| Location | Receptors | Period | Date | Time | L _{Aeq,T} | L _{A90} | L _{A10} |
|----------|---------------------------------|---------|----------|-------------|--------------------|------------------|------------------|
| BN1 | R7,R10, R11,R12, R14, R15 | Daytime | 30/01/18 | 10:03-10:18 | 59.1 | 49.3 | 36.5 |
| | | | 30/01/18 | 11:16-11:31 | 61.8 | 59.5 | 37.0 |
| | | | 30/01/18 | 12:42-12:57 | 58.8 | 52.0 | 36.7 |
| BN2 | R16,R17,R18 | Daytime | 30/01/18 | 10:22-10:37 | 65.2 | 59.8 | 38.6 |
| | | | 30/01/18 | 12:03-12:18 | 59.9 | 58.3 | 41.3 |
| | | | 30/01/18 | 13:24-13:39 | 69.0 | 62.2 | 35.0 |
| BN3 | R24, R25, R26, R27 | Daytime | 30/01/18 | 10:41-10:56 | 55.1 | 55.8 | 34.1 |
| | | | 30/01/18 | 12:20-12:35 | 59.0 | 55.9 | 40.7 |
| | | | 30/01/18 | 13:42-13:57 | 56.2 | 55.3 | 40.3 |

At present the noise environment around the application site is dominated by road traffic noise emanating from the adjoining local road network. Locally, natural sounds such as farmyard animals or barking dogs, agriculture activities are also audible when traffic noise abates.

Pre-existing noise levels around the application site are at or exceed the noise emission limits set by the former planning permission and those set out in the EPA's NG4 Guidance Note for Noise Assessments for scheduled activities.

Although this waste licence application provides for re-commencement of on-site activities and the ultimate backfilling and restoration of the site over a 4 to 6 year period, it is considered that with implementation of proposed control and mitigation measures, any resultant increase in noise emissions at nearby sensitive receptors can be minimised.

GROUND / GROUNDWATER

Condition 19 of the previous planning permission in respect of extractive activities at Usk (Ref 07/795) requires that

- (a) *The Applicant shall ensure that activities on the site are carried out in such a manner so as not to have any adverse effect on groundwater, watercourses, field drains, the drains of adjacent lands or any other drainage system, including that of the public roadway. Systems shall be put in place so that only clean surface water from the site can gain access to any watercourse.*
- (b) *The developer shall carry out routine monitoring of surface water and groundwater in the vicinity of the site to include information on groundwater levels. The monitoring locations sampling procedure and suite of water quality parameters to be tested shall be agreed in advance with the Planning Authority. Monitoring shall be carried out on a quarterly basis and the results of the monitoring shall begin prior to the commencement of the authorised activity. The results of the monitoring shall be submitted to the Planning Authority four weeks after the end of every quarter being reported on.*

All rain which falls across the application site recharges to ground and the underlying groundwater table. The groundwater recharge is largely diffuse and there is no point recharge to the underlying groundwater table. There are a number of surface water bodies within the application site. These

are essentially groundwater ponds and were formed by former extraction operations, when excavations / sumps extended down below the groundwater table.

Although there is currently no off-direct off-site discharge to any nearby open drain or watercourse around the application site, it is likely that the channel of the River Greese which flows immediately beyond the eastern site boundary of the application site is fed by groundwater flow beneath the application site.

Four groundwater monitoring boreholes, designated BH01 to BH04, were installed at the application site in November 2018 to investigate ground conditions and provide for groundwater monitoring in the sand and gravel across lower lying ground. The 4 No. boreholes extend to depths of between 8m and 12m below existing ground level (bgl). They encountered sand and gravel at all locations and monitoring / sampling cones are within this stratum. Groundwater was encountered at each of boreholes BH01 to BH03, with groundwater strikes encountered between 3.0m and 8.5m depth below existing ground level. Groundwater was not encountered at borehole BH04. The location of the boreholes is shown in Figure 7-1-3-2B of this licence application (and Figure 7-7 of the EIAR which accompanied the recent planning application).

Groundwater samples were taken at the monitoring wells in November 2018 and forwarded to an independent laboratory to test for standard inorganics and metals as well as a wider range of parameters including mineral oil, gasoline range organics and hydrocarbons. The laboratory results are presented in Table 3 below.

Table 3
Baseline Groundwater Quality Results (November 2018)

| Parameter | Unit | GW Threshold Values ¹ | BH01 | BH02 | BH03 |
|-----------------------------|----------|----------------------------------|-------|-------|-------|
| Ammoniacal Nitrogen as NH3 | mg/l | | <0.2 | <0.2 | <0.2 |
| Ammoniacal Nitrogen as NH4 | mg/l | | <0.3 | <0.3 | <0.3 |
| BOD | mg/l | | <1.5 | <1 | <1 |
| Chloride | mg/l | 24-187.5 | 14 | 15.4 | 14.4 |
| COD | mg/l | | 67.3 | <7 | 13 |
| Total Dissolved Solids | mg/l | | 470 | 297 | 265 |
| Fluoride | mg/l | | <0.5 | <0.5 | <0.5 |
| Dissolved Oxygen | mg/l | | 9.33 | 9.97 | 10.7 |
| pH | pH Units | | 7.16 | 7.7 | 7.61 |
| Phosphate (Ortho as P) | mg/l | | <0.02 | <0.02 | <0.02 |
| Phosphate (Ortho as PO4) | mg/l | | <0.05 | <0.05 | <0.05 |
| Sulphate | mg/l | 187.5 | 16.8 | 12.6 | 13.6 |
| Surfactants, Anionic (MBAS) | mg/l | | <0.05 | <0.05 | <0.05 |
| Total Suspended solids | mg/l | | 2580 | 345 | 118 |

¹ S.I. No. 9 of 2010. European Communities Environmental Objectives (Groundwater) Regulations, 2010.

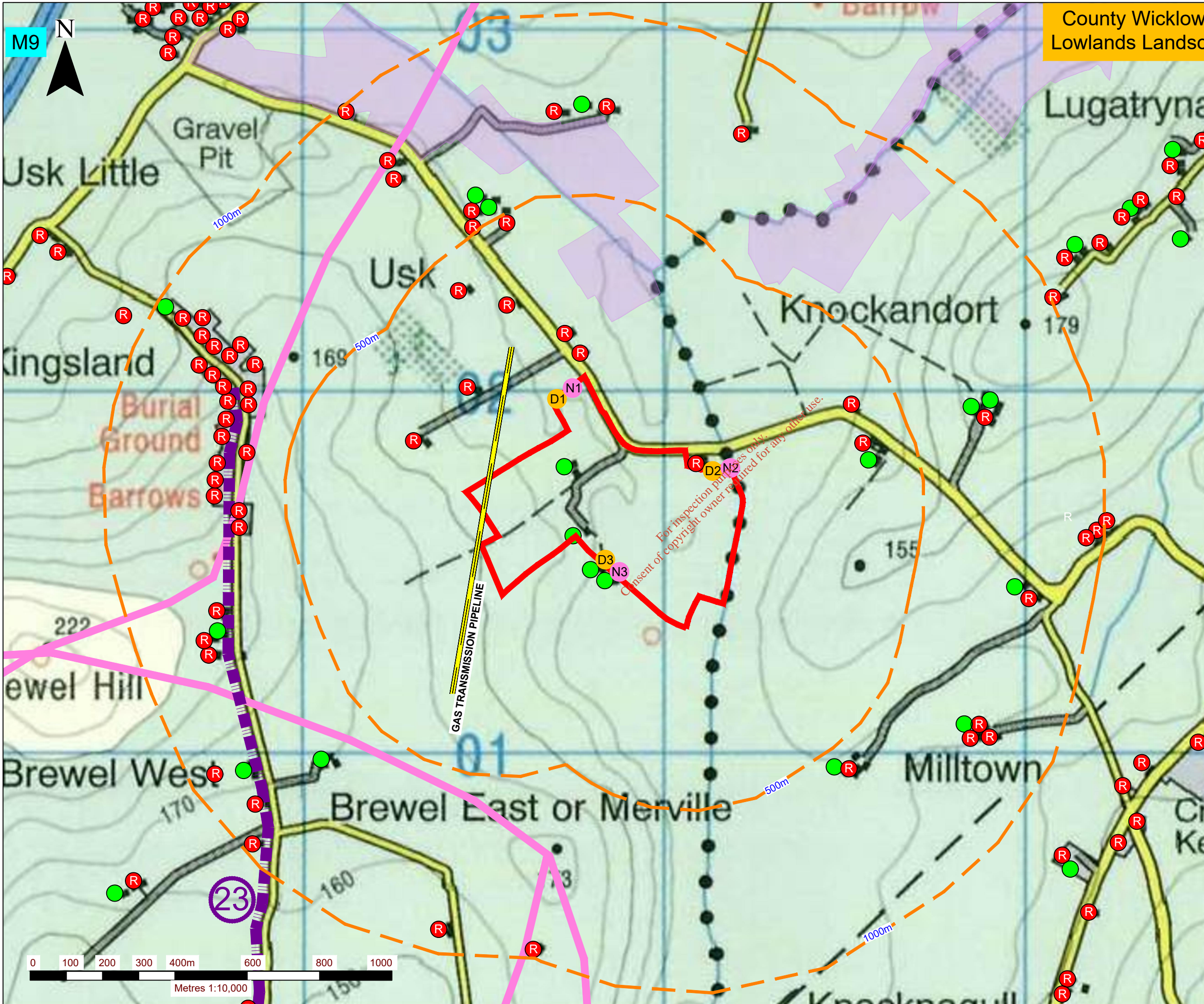
| Parameter | Unit | GW Threshold Values ² | BH01 | BH02 | BH03 |
|--|------|----------------------------------|------------|-------|-------|
| <i>Dissolved Metals</i> | | | | | |
| Antimony | µg/l | | <1 | <1 | <1 |
| Arsenic | µg/l | 7.5 | <0.5 | <0.5 | <0.5 |
| Barium | µg/l | | 67.7 | 32.2 | 43.9 |
| Cadmium | µg/l | 3.75 | <0.08 | <0.08 | <0.08 |
| Chromium | µg/l | 37.5 | <1 | <1 | <1 |
| Copper | µg/l | 1500 | 0.459 | 0.329 | <0.3 |
| Iron | mg/l | | <19 | <19 | <19 |
| Lead | µg/l | 18.75 | <0.2 | 0.221 | <0.2 |
| Magnesium | mg/l | | 9.63 | 8.62 | 9.72 |
| Manganese | µg/l | | <3 | <3 | <3 |
| Mercury | µg/l | 0.75 | <0.01 | <0.01 | <0.01 |
| Molybdenum | µg/l | | <3 | <3 | <3 |
| Nickel | µg/l | 15 | 0.428 | <0.4 | <0.4 |
| Selenium | µg/l | | <1 | <1 | <1 |
| Zinc | µg/l | | 3.93 | 8.64 | 2.79 |
| <i>Mineral Oil / Oils & Greases</i> | | | | | |
| Mineral oil >C10 C40 (aq) | µg/l | | 120 | <100 | <100 |
| <i>Gasoline Range Organics (GRO)</i> | | | | | |
| EPH (C6-C10) | µg/l | | <100 | <100 | <100 |
| GRO >C10-C12 | µg/l | | <10 | <10 | <10 |
| GRO >C5-C10 | µg/l | | <10 | <10 | <10 |
| GRO >C6-C8 | µg/l | | <10 | <10 | <10 |
| GRO >C8-C10 | µg/l | | <10 | <10 | <10 |
| <i>EPH (Extractable Petroleum Hydrocarbons)</i> | | | | | |
| EPH Band >C12-C16 (aq) | µg/l | | <100 | <100 | <100 |
| EPH Band >C16-C21 (aq) | µg/l | | <100 | <100 | <100 |
| EPH Band >C21-C40 (aq) | µg/l | | 263 | <100 | <100 |
| EPH Range >C10 - C40 (aq) | µg/l | | 306 | <100 | <100 |
| <i>TPH Criteria Working Group (TPH CWG)</i> | | | | | |
| Total EPH (C6-C40) (aq) | µg/l | | 306 | <100 | <100 |

² S.I. No. 9 of 2010. European Communities Environmental Objectives (Groundwater) Regulations, 2010.

The groundwater quality results from the three sampled boreholes indicate that the groundwater in the sand and gravel deposits is generally of good quality with low ammonia, phosphate and metals. In borehole BH01, mineral oil and some (trace) hydrocarbons were recorded just above detection limits and are highlighted in bold in the table above. It is noted that Borehole BH01 is close to the site entrance and the former hardstand and weighbridge area where site HGV traffic movements would have been highest.

Additional detail on groundwater sampling and testing is provided in Chapter 7 of the EIAR which accompanies this waste licence application.

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County Wicklow
Lowlands Landscape

NOTES

1. Extract from 1:50,000 Ordnance Survey Discovery Maps No. 55
2. Ordnance Survey Ireland Licence No. SU 0000720 (c) Ordnance Survey Ireland and Government of Ireland

LEGEND

| | |
|--|---|
| | PLANNING APPLICATION AREA (c. 26.6 Hectares) |
| | DISTANCE OFF-SET FROM PLANNING APPLICATION BOUNDARY |
| | RESIDENCE LOCATIONS |
| | AGRICULTURAL BUILDINGS |
| | PROPOSED NATURAL HERITAGE AREAS (pNHA) |
| | SCENIC ROUTES (KILDARE COUNTY DEVELOPMENT PLAN 2017-2023: CHAPTER 14.6) |
| | RIDGELINES (KILDARE COUNTY DEVELOPMENT PLAN 2017-2023: MAP 14.2) |
| | DUST MONITORING LOCATION |
| | NOISE MONITORING LOCATION |

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**DUNLAVIN LAND RESTORATION LTD.
WASTE LICENCE APPLICATION**

LANDS AT USK TOWNLAND,
KILCULLEN, CO. KILDARE

ENVIRONMENTAL MONITORING LOCATIONS

FIGURE 7-1-3

Scale 1:10,000 @ A3 Date SEPTEMBER 2020