North City Operations Depot
St. Margaret's Road, Ballymun, Dublin 11

Waste Licence Application

Site Condition Report

Prepared by

TOBIN Consulting Engineers

Site Condition Report

PROJECT:

North City Operations Depot

Waste Licence Application

CLIENT:

Dublin City Council
Civic Offices,
Wood Quay,
Dublin 8.
D08 RF3F

COMPANY

TOBIN Consulting Engineers
Block 10-4,
Blanchardstown Corporate Park,
Dublin 15.
D15 X98N

Tel: 01-8030406

www.tobin.ie

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1 INTRODUCTION

Dublin City Council (DCC) is developing a new North City Operations Depot (NCOD) at St. Margaret's Road, Ballymun, Dublin 11 to consolidate its operations for the north city area, replacing a number of existing depots. The NCOD site will include the provision of facilities for the management and handling of waste materials as part of the DCC daily operations.

DCC is applying to the Environmental Protection Agency (EPA) for a Waste Licence for the operation of a Waste Transfer Station at the NCOD. The activities proposed at the facility are outlined herein. This Site Condition Report has been prepared for submission with the Waste Licence application and in accordance with the guidance outlined in the *Licence Application Form Guidance* published by the Agency in 2018[1].

1.1 SITE DESCRIPTION

The NCOD was granted planning permission by Fingal County Council (FCC) (Reg. Ref. F17A/0686) in January 2018 and construction of the development is scheduled for commencement in mid-2019.

The NCOD site is approx. 5.03 hectares (ha) in area and the proposed Waste Licence boundary occupies an area of 0.47 ha (see Figure 1.1). The redline boundary in Figure 1.1 signifies the boundary for the waste transfer station and the blue line signifies the DCC site ownership boundary.

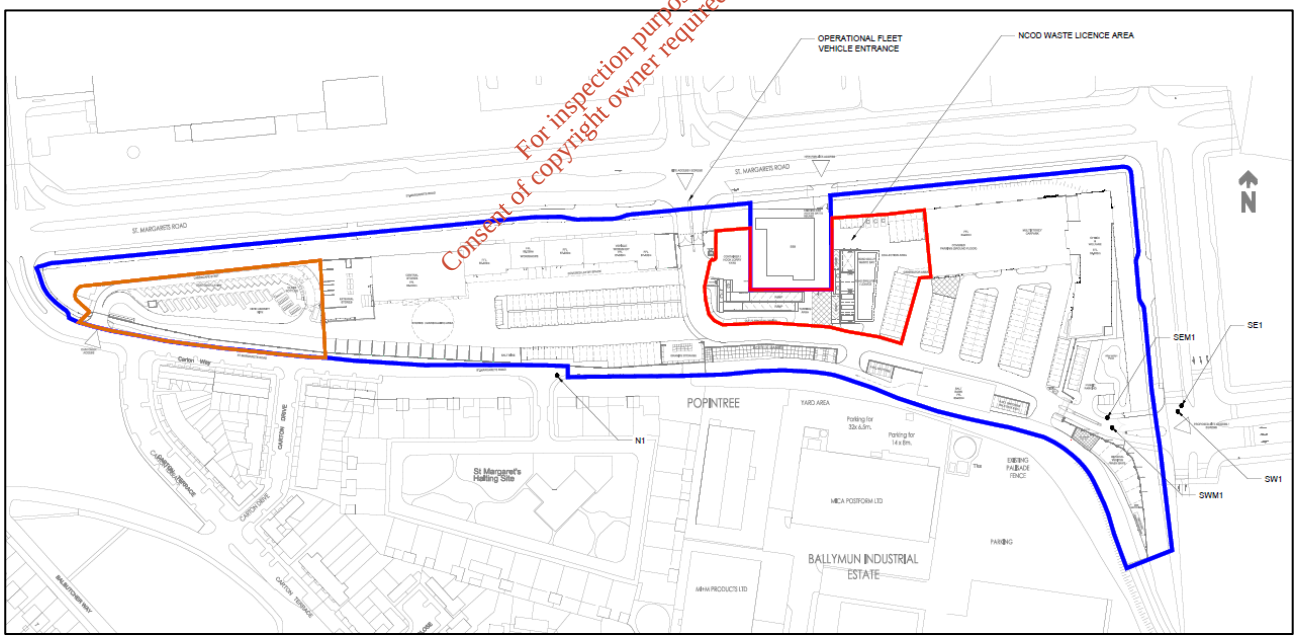


Figure 1.1: Waste Licence Facility at NCOD (extract from Site Plan) (Ballymun Recycling Centre facility outlined in orange)

2 WASTE ACTIVITIES

The new DCC depot will bring together under a single corporate facility the following existing operational departments:

[1] EPA, *Licence Application Form Guidance – Industrial Emissions (IE), Integrated Pollution Control and Waste Version 2* (March 2018)

- Housing Maintenance;
- Roads Maintenance;
- Surface Water and Drainage (excluding foul drainage/Irish Water activities);
- Public Lighting and Electrical;
- Signage;
- Traffic Management; and
- Waste Management.

The depot will provide a range of buildings and facilities to service all of the departments including:

- Administration offices and welfare facilities (open plan offices with a small number of cellular offices, changing, locker and shower facilities, meeting and briefing rooms, welfare room, storage, canteen facilities and plant areas);
- Covered parking facilities (multi-storey type for fleet and private staff vehicles as well as bicycle parking);
- Workshops (welding/metalwork, painting, carpentry, electrical, vehicle repair and signage);
- Stores Warehouse;
- Salt Barn;
- Security Kiosks;
- External material and equipment storage bays;
- External fleet vehicle parking areas;
- Vehicle wash bays;
- Waste compaction and collection areas;
- Waste receptacle storage area (for large items);
- Grit box storage area; and
- Antique granite storage bay.

The operations of a number of the teams listed above will generate waste materials which are required to be handled, temporarily stored and transferred off-site for disposal or recovery from the depot. Accordingly, the waste activities are consigned to a dedicated area of the site which will be governed under this Waste Licence.

The waste activities can be summarised as:

- Compaction of waste collected from litter bins throughout the city;
- Management of waste collected by road sweepers and gulley cleaners; and
- Management of waste generated from roads maintenance, housing maintenance and river cleaning.

3 SITE CONDITION

This section of the report describes the current condition of the site based on a desktop review of available information and the results of site investigations carried out in preparation of the Environmental Considerations Report submitted with the planning application for the NCOD.

The Environmental Considerations Report is provided with this Waste Licence application and the relevant information from the report is reproduced here, where appropriate.

3.1 SOIL

The Geological Survey of Ireland (GSI) Geology Maps illustrate a complex geology in the region. The site is underlain by the Tober Colleen Formation and Lucan Formation. The bedrock is gently folded and dips towards the north-east.

A site investigation programme was undertaken at the NCOD site to acquire site-specific data on the nature and characteristics of the underlying ground conditions and identify any contamination that may exist. The site investigation programme was undertaken in accordance with the following documents:

- BS10175:2011+A2:2017 – *Investigation of potentially contaminated sites – Code of Practice* (2011):
- UK Specification for Ground Investigation (2nd Edition) [2] :
- BS 5930:2015 – *Code of practice for site investigations* (2015):
- IS EN1997-2:2007 – Eurocode 7: Geotechnical design - Part 2: Ground investigation and testing (2007): and
- Specification and Related Documents for Ground Investigation in Ireland [3].

This enabled the site investigation programme to be undertaken in a systematic manner and provided details of a process of site investigations and interpretation methodology to characterise the underlying ground conditions. Laboratory testing was conducted in accordance with BS 1377-2:1990 [4], BS EN ISO 17892-1:2014 [5], and BS EN ISO 17892-2:2014 [6].

Site investigations, which were conducted between 7 June and 7 July 2017, included:

- Six light cable percussion boreholes;
- Ten boreholes by dynamic (windowless) sampling methods;
- A standpipe installation in one of the boreholes; and

[2] Institute of Civil Engineers (ICE), *UK Specification for Ground Investigation* (2015)
[3] Institute of Engineers Ireland (IEI) and Geotechnical Society of Ireland (GSI), *Specification and Related Documents for Ground Investigation in Ireland* (2016)
[4] British Standards Institute (BSI), *BS 1377-2:1990 Methods of test for soils for civil engineering purposes. Classification tests* (1990)
[5] BSI, BS EN ISO 17892-1:2014, *Geotechnical investigation and testing. Laboratory testing of soil. Determination of water content* (2014)
[6] BSI, BS EN ISO 17892-2:2014, *Geotechnical investigation and testing. Laboratory testing of soil. Determination of bulk density* (2014)

- 15 no. trial pits.

The locations of trial pits and boreholes across the overall NCOD site are shown on Drawing No. NCOD-TOB-ZZ-XX-DR-CE-2001 (Site Investigation Plan Locations) in Appendix A and four of these intrusive investigation locations (BH9, BH10, TP10 and TP11) are within the proposed waste licence boundary.

The site investigation was undertaken by Causeway Geotech Ltd. and the full Site Investigation Report is provided in Appendix 6.1 to the Environmental Considerations Report.

Windowless boreholes were taken typically to depths in the order of 6.2 – 7.2m below ground level (bgl) where they were terminated on encountering virtual refusal on obstructions including large boulders. Borehole BH05 was terminated at 0.2m bgl on encountering virtual refusal on concrete.

Six cable procession boreholes (BH01 to BH05 and BH05A) were put down to completion in minimum 200mm diameter casing using Dando 2000 light cable percussion boring rigs. The boreholes were taken typically to depths in the order of 2.8 – 4.0m bgl where they were terminated on encountering virtual refusal on obstructions including large boulders. Borehole BH15 was terminated at 1.65m bgl on encountering virtual refusal on concrete.

Environmental samples were taken at depths of 0.5m and 1.5m bgl in each trial pit with an additional sample taken at 2.0m bgl in Trial Pits TP12 and TP15. Disturbed (small jar and bulk bag) samples were taken at standard depth intervals and at changes in strata. No significant water inflows were encountered during excavation.

A summary of the subsoil encountered in the exploratory holes is presented below, in approximate stratigraphic order:

- Topsoil: encountered typically in 150 – 300mm thickness in most exploratory holes.
- Made Ground (sub-base material): 50 – 200mm of aggregate fill (sandy silty gravel) present in Borehole BH05 from ground level and Trial Pit TP09 beneath 200mm of topsoil.
- Made Ground (fill): reworked clay fill with localised pockets of debris was encountered in the majority of boreholes and trial pits across the site. Typically, sandy gravelly clay with fragments of brick, concrete, ceramic, glass, plastic and ash extending to a depth of 0.50 – 3.45m bgl.
- Glacial Till: sandy gravelly clay, frequently with low cobble and occasional boulder content, typically firm or stiff in upper horizons, becoming very stiff with increasing depth.

The results of chemical tests (pH and water-soluble sulphate contents) on soil samples indicate Design Sulphate Class DS-1 and ACEC Class AC-1 (Table C1 of BRE Special Digest 1) [7]. The Special Digest does not require any measures to protect underground concrete elements greater that 140mm thick.

[7] Building Research Establishment (BRE), *Special Digest 1 – Concrete in aggressive ground* (2005)

Waste acceptance criteria (WAC) testing and asbestos screening was carried out on 20 no. soil samples. Results of environmental laboratory testing are presented in the Site Investigation Report (Appendix I). No asbestos was encountered in any sample. No hydrocarbon contamination was encountered on the site. Mineral oil concentrations reported are less than 500 mg/kg.

A total of 20 no. samples were submitted to Chemtest (a UKAS accredited laboratory in the UK) for testing in accordance with the Landfill Directive WAC parameters. Testing was undertaken to assess the condition of the soil on-site and classify the material for removal off-site for recovery or disposal. 17 no. samples were classified as Inert and two samples (BH10 and TP1) were classified as Non-Hazardous in accordance with the Landfill Directive WAC. BH10 is located within the proposed waste licence boundary.

Total Organic Carbon (TOC) concentrations in TP6 (0.5m bgl) were elevated above the Inert WAC threshold. However, as no other contamination was encountered in TP6 it is considered that the sample contained topsoil giving the elevated TOC result. Elevated polycyclic aromatic hydrocarbons (PAHs) and TOC were encountered in BH10 at 1.5m bgl. Fluoride concentrations at TP1 (0.5m bgl) were also elevated above the Inert WAC threshold.

3.2 GROUNDWATER & SURFACE WATER

The topography of the NCOD site is gently sloping towards the east and is surrounded by existing industrial premises, infrastructure and future development sites. The site is located in the Liffey and Dublin Bay Catchment (Hydrometric Area 09) within the Eastern River Basin District (ERBD).

The site is located in the Santry River (EPA Ref. 09-1502) catchment. The Santry River flows 0.5km to the north of the site. All drains in the vicinity of the NCOD site are culverted. The Santry River discharges to Dublin harbour via Raheny Strand approximately 8km south-east of the site.

As there are no surface waterbodies located adjacent to the site, there was no surface water quality data obtained during site investigations. In accordance with the Water Framework Directive (WFD) classification status (2010 – 2015), the Santry River is determined as being of *Poor* quality and *At Risk* of not achieving the WFD objectives.

The most recent biological quality sample obtained by the Agency on the Santry River in 2016 at Clonshaugh Road Bridge (Station ID: RS09S010300) reported the river quality as *Moderately Polluted* (Q-Value = 3). This monitoring location is approx. 3.4km east of the NCOD site.

Figure 3.1: Watercourses in the vicinity of the NCOD Site

The underlying bedrock aquifer is capable of supplying small abstractions (e.g. domestic supplies, small group schemes) or moderate to low yields. The majority of the overall NCOD site is underlain by 'Calp' limestone (Lucan Formation) and is classified by the GSI as a Locally Important (LI) Bedrock Aquifer that is *Moderately Productive only in Local Zones*. A small area to the west of the site is underlain by the Tober Colleen Formation which is classified as a Poor (PI) Bedrock Aquifer which is *Generally Unproductive except for Local Zones*.

The groundwater vulnerability at the site is defined by the GSI as *Low* which indicates a typical depth of 10m of low permeability till above the bedrock. There is no drinking water source protection zone delineated in the vicinity of the site.

During the site investigation works, groundwater was encountered as seepage at one borehole location (BH07) approx. 2 – 3m below existing ground level. Details of the groundwater strike are presented in the respective borehole log in the Site Investigation Report.

In accordance with the above, it is considered that the requirements of the *European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010)* can be achieved.

3.3 FLOOD RISK ASSESSMENT

Hydraulic modelling of the Santry River by TOBIN in November 2017 estimated the 100 and 1000-year Mid-range future scenario (MRFS) flood levels adjacent to the site as 57.73m above ordnance datum (AOD) and 57.81m AOD, respectively.

The NCOD site has existing an existing ground level ranging from 71.4m OD to 64.2m OD and therefore, at a minimum, is 6.4m above the estimated 1000-year MRFS flood level; i.e. the site is located in Flood Zone C. According the Office of Public Works' (OPW's) Planning System and Flood Risk Management (PSFRM) guidelines [8], commercial developments (such as the NCOD) are appropriate in this flood zone.

In the event of the culvert on the Santry River under the R108 (to the north-east of the site) becoming fully blocked, it is predicted that the resulting afflux in flood water upstream of the road will not impact on the site. Surface water arising on-site will be managed by a dedicated storm sewer network. Furthermore, the landscaping and topography of the site shall provide safe exceedance flow paths in the event of extreme flood events or in the case of a blockage of the drainage system, so as to minimise risks to people and property.

Based on a review of the Preliminary Flood Risk Assessment (PFRA) study [9] and surveyed site levels, it is predicted that pluvial flooding will not impact the NCOD site. It is predicted that flood risk to the development will be minimal.

3.4 AIR QUALITY

As part of the implementation of the *Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002)*, four air quality zones have been defined in Ireland for air quality management and assessment purposes. Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 no. towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D. The NCOD site is located within Zone A.

With regard to nitrogen dioxide (NO_2), continuous monitoring data from the EPA at suburban background locations in Dún Laoghaire, Swords, St. Anne's Park and Ballyfermot show that current levels of NO_2 are below both the annual and 1-hour limit values (see Table 3.1), with average long term annual mean concentrations ranging from 13 – 16µg/m^3 in 2015. Sufficient data is available for Swords to observe trends over the period from 2011 to 2015. Swords had an average annual mean NO_2 concentration of 14µg/m^3 over this period.

[8] Office of Public Works (OPW), *Planning System and Flood Risk Management: Guidelines for Planning Authorities* (2009)
[9] OPW, *Preliminary Flood Risk Assessment* (2012)

Table 3.1: Trends in Zone A Air Quality – Nitrogen Dioxide (NO_2)

Station	Station Classification Council Directive 96/62/EC	Averaging Period [1, 2]	Year				
			2011	2012	2013	2014	2015
Rathmines	Urban Background	Annual Mean NO_2 ($\mu g/m^3$)	20	21	19	17	18
		$99.8^{th\%ile}$ 1-hr NO_2 ($\mu g/m^3$)	98	96	92	105	95
Dún Laoighaire	Suburban Background	Annual Mean NO_2 ($\mu g/m^3$)	18	18	16	15	16
		$99.8^{th\%ile}$ 1-hr NO_2 ($\mu g/m^3$)	101	107	92	86	91
Blanchardstown	Urban Traffic	Annual Mean NO_2 ($\mu g/m^3$)	31	30	29	31	25
		$99.8^{th\%ile}$ 1-hr NO_2 ($\mu g/m^3$)	163	136	119	134	141
Swords	Suburban Background	Annual Mean NO_2 ($\mu g/m^3$)	14	15	15	14	13
		$99.8^{th\%ile}$ 1-hr NO_2 ($\mu g/m^3$)	105	99	87	137	93
St. Anne's Park	Suburban Background	Annual Mean NO_2 ($\mu g/m^3$)	-	-	12	14	14
		$99.8^{th\%ile}$ 1-hr NO_2 ($\mu g/m^3$)	-	-	63	63	67
Ballyfermot	Suburban Background	Annual Mean NO_2 ($\mu g/m^3$)	-	-	16	16	16
		$99.8^{th\%ile}$ 1-hr NO_2 ($\mu g/m^3$)	-	-	81	93	94

Note 1 Annual average limit value - 40µg/m³ (EU Council Directive 2008/50/EC & S.I. No. 180 of 2011).
Note 2 1-hour limit value - 200µg/m³ as a 99.8th%ile, i.e. not to be exceeded >18 times per year (EU Council Directive 2008/50/EC & S.I. No. 180 of 2011)

Continuous PM_{10} monitoring carried out at the suburban background locations of Ballyfermot, Dún Laoghaire and St. Anne's Park showed annual mean concentrations ranging from 12 – 15µg/m³ in 2015 (see Table 3.2), with, at most, three exceedances of the daily limit value of 50µg/m³ (35 no. exceedances are permitted per year). Sufficient data is available for Dún Laoghaire to observe trends over the period from 2011 to 2015. Dún Laoghaire had an average annual mean PM_{10} concentration of 14µg/m³ over the period from 2011 to 2015. PM_{10} results from the urban background location in the Phoenix Park show similarly low levels over the period from 2011 to 2015 with concentrations ranging from 11 – 14µg/m³.

Table 3.2: Trends in Zone A Air Quality – PM_{10}

Station	Station Classification Council Directive 96/62/EC	Averaging Period [1, 2]	Year				
			2011	2012	2013	2014	2015
Rathmines	Urban Background	Annual Mean PM_{10} ($\mu g/m^3$)	16	14	17	14	15
		24-hr Mean >50$\mu g/m^3$ (days)	2	8	8	3	5
Dún Laoighaire	Suburban Background	Annual Mean PM_{10} ($\mu g/m^3$)	15	12	17	14	13
		24-hr Mean >50$\mu g/m^3$ (days)	11	1	5	2	3
Blanchardstown	Urban Traffic	Annual Mean PM_{10} ($\mu g/m^3$)	16	-	20	18	17
		24-hr Mean >50$\mu g/m^3$ (days)	11	-	11	5	9
Phoenix Park	Urban Background	Annual Mean PM_{10} ($\mu g/m^3$)	12	11	14	12	12
		24-hr Mean >50$\mu g/m^3$ (days)	3	0	3	0	2
St. Anne's Park	Suburban Background	Annual Mean PM_{10} ($\mu g/m^3$)	-	-	19	17	15
		24-hr Mean >50$\mu g/m^3$ (days)	-	-	0	1	3
Ballyfermot	Suburban Background	Annual Mean PM_{10} ($\mu g/m^3$)	-	-	12	11	12
		24-hr Mean >50$\mu g/m^3$ (days)	-	-	2	2	3

Note 1 Annual average limit value - 40$\mu g/m^3$ (EU Council Directive 2008/50/EC & S.I. No. 180 of 2011).
Note 2 24-hour limit value - 50$\mu g/m^3$ as a 90.4th%ile, i.e. not to be exceeded >35 times per year (EU Council Directive 1999/30/EC & S.I. No. 180 of 2011).

Continuous $PM_{2.5}$ monitoring carried out at the Zone A locations of Rathmines, Finglas and Marino showed average levels of 8 - 10$\mu g/m^3$ in 2015. The annual average level measured in Rathmines in 2015 was 10$\mu g/m^3$, with an average $PM_{2.5}/PM_{10}$ ratio of 0.67. Based on this information, a ratio of 0.67 was used to generate a background $PM_{2.5}$ concentration in the region of the NCOD site in 2017 of 10 $\mu g/m^3$.

In terms of benzene, the annual mean concentration for the Zone A station in Rathmines for 2015 was 0.92$\mu g/m^3$. This is well below the limit value of 5$\mu g/m^3$. Based on this Agency data, a conservative estimate of the background benzene concentration at the NCOD site in 2017 is 1$\mu g/m^3$.

The results of carbon monoxide (CO) monitoring carried out at Coleraine Street (Zone A) in 2015 showed no exceedances of the 8-hour limit value, with average levels of 0.4mg/m^3. Based on this information, a conservative estimate of the background CO concentration for the region of the NCOD site in 2017 is 0.5mg/m^3.

In terms of the existing air quality environment, data available from similar environments indicates that the levels of NO_2, CO, PM_{10}, $PM_{2.5}$ and benzene are well within the National and European Union (EU) ambient air quality standards.

3.5 NOISE

The main source of noise in the existing environment at the NCOD site is road traffic from the R104, St. Margaret's Road, the R108 to the east and the M50 to the north.

A baseline noise survey was undertaken in the vicinity of the site as part of the planning submission. Noise levels were monitored at one location to the north of the site to obtain noise levels representative of the site and the surrounding environment. The monitoring position was located at roof level of the adjacent IKEA retail store overlooking the site of the NCOD site (N1). Figure 3.2 indicates the location of the monitoring position relative to the NCOD site.

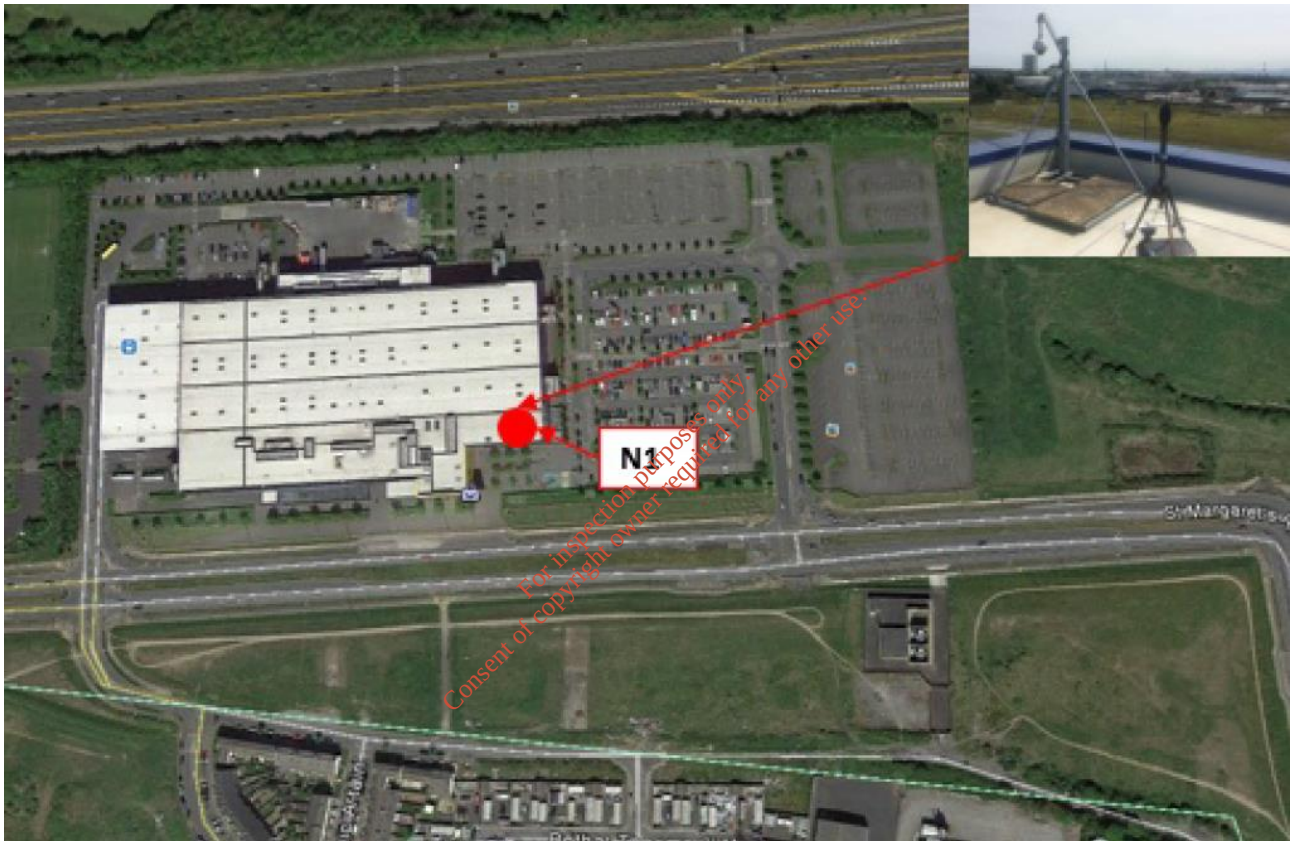


Figure 3.2: Noise Monitoring Location adjacent to NCOD site

The monitoring equipment was set to log continuously over 15-minute intervals between 14:00hrs on 18 July and 10:50hrs 19 July 2017. The surveys were undertaken using a Larson Davis Type 831 Sound Level Meter.

The following parameters are reported for the purpose of this study:

$L_{Aeq,T}$ This is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period (T).

L_{AFmax} The maximum RMS A-weighted sound pressure level occurring within a specified time period. Measured using the "Fast" time weighting.

L_{AF10} Refers to those A-weighted noise levels in the top 10 percentile of the sampling interval. It is the level which is exceeded for 10% of the measurement period. It is used to determine the intermittent high

noise level features of locally generated noise and usually gives an indicator of the level of road traffic. Measured using the "Fast" time weighting.

L_{AF90} Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval. It is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to describe a background level. Measured using the "Fast" time weighting.

Survey results at the monitoring location are summarised in Table 3.3 below for the daytime (07:00 to 19:00hrs), evening (19:00 to 23:00hrs) and night-time (23:00 to 07:00hrs) periods.

Noise levels at this position were dominated by road traffic along St Margaret's Road, the M50 Motorway and the R108 Road.

Table 3.3: Measured Noise Levels – Location N1

Time Period	dB L_{Aeq}		dB L_{Amax}		dB L_{A10}		dBL_{A90}	
	Range	Average	Range	Average	Range	Average	Range	Average
Daytime	60 - 66	63	68 – 78	72	62 – 68	65	58 – 62	61
Evening	60 - 63	62	65 – 76	67	62 – 64	63	57 – 61	59
Night-time	54 - 64	59	63 - 80	67	57 - 65	60	48 - 62	54

Further information relating to the baseline noise environment is taken from the Dublin Agglomeration Environmental Noise Action Plan December 2013 – November 2018 [10] . Detailed noise maps have been calculated as part of the noise action plan process. The noise maps present calculated road traffic noise levels in proximity to major roads in Dublin. The NCOD site is included within the produced noise maps. The overall L_{den} [11] value for the NCOD site is in the range of 65 to 70dB L_{den}.

[10] DCC, FCC, Dún Laoighaire-Rathdown County Council (DLRCC) and South Dublin County Council (SDCC), *Dublin Agglomeration Environmental Noise Action Plan December 2013 – November 2018* (2013)

[11] L_{den} is the Is the 24-hour noise rating level determined by the averaging of the L_{day} with the $L_{evening}$ plus a 5dB penalty and the L_{night} plus a 10dB penalty.

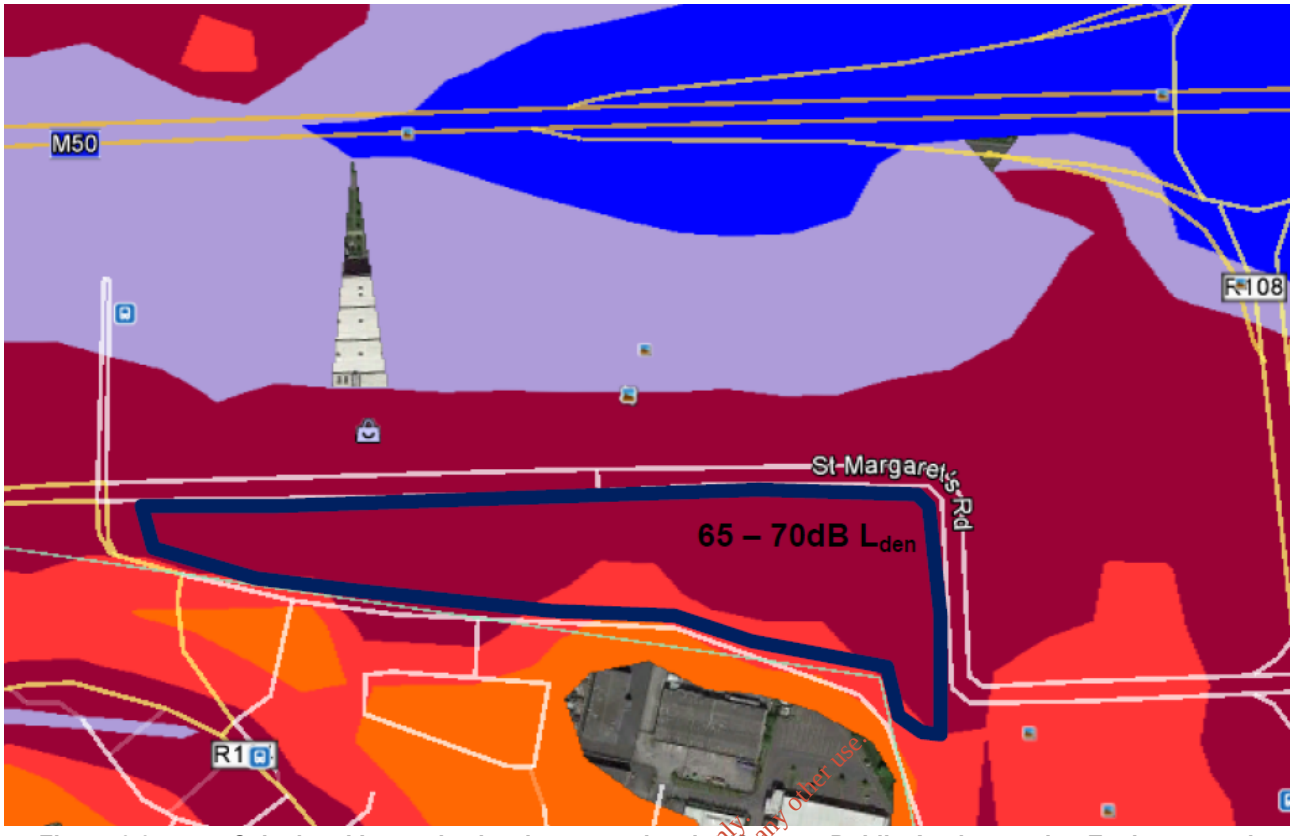


Figure 3.3: Calculated L_{den} noise levels across the site (Source: Dublin Agglomeration Environmental Noise Action Plan December 2013 – November 2018)

For environments with steady road traffic noise, the L_{day} (i.e. the L_{Aeq} between 07:00 and 19:00hrs) value is typically 1 – 2dB lower than an L_{den} value. In this instance, the L_{day} value at the site is calculated as 63dB L_{Aeq}. This is in line with noise measurements made at the monitoring location N1.

4 SITE HISTORY

The NCOD site is a greenfield site and available historical mapping does not show any previous activities on or adjacent to the site with the potential to cause pollution of the soil or groundwater.

As per Section 3.1, there was no evidence of site contamination detected from soil quality sampling during site investigation works. Previous site walkovers have identified some illegal dumping of rubbish along the southern boundary of the main depot site. This waste material and any other rubbish or litter on the site will be removed prior to the commencement of construction works.

5 CONCLUSION

Dublin City Council are developing a new operational depot in Ballymun which will facilitate the daily operations of the Council in the north of the city. The facility will include provision for the management and handling of waste material collected in the city from daily operations. This waste handling area will be regulated by the EPA in accordance with the requirements of a Waste Licence.

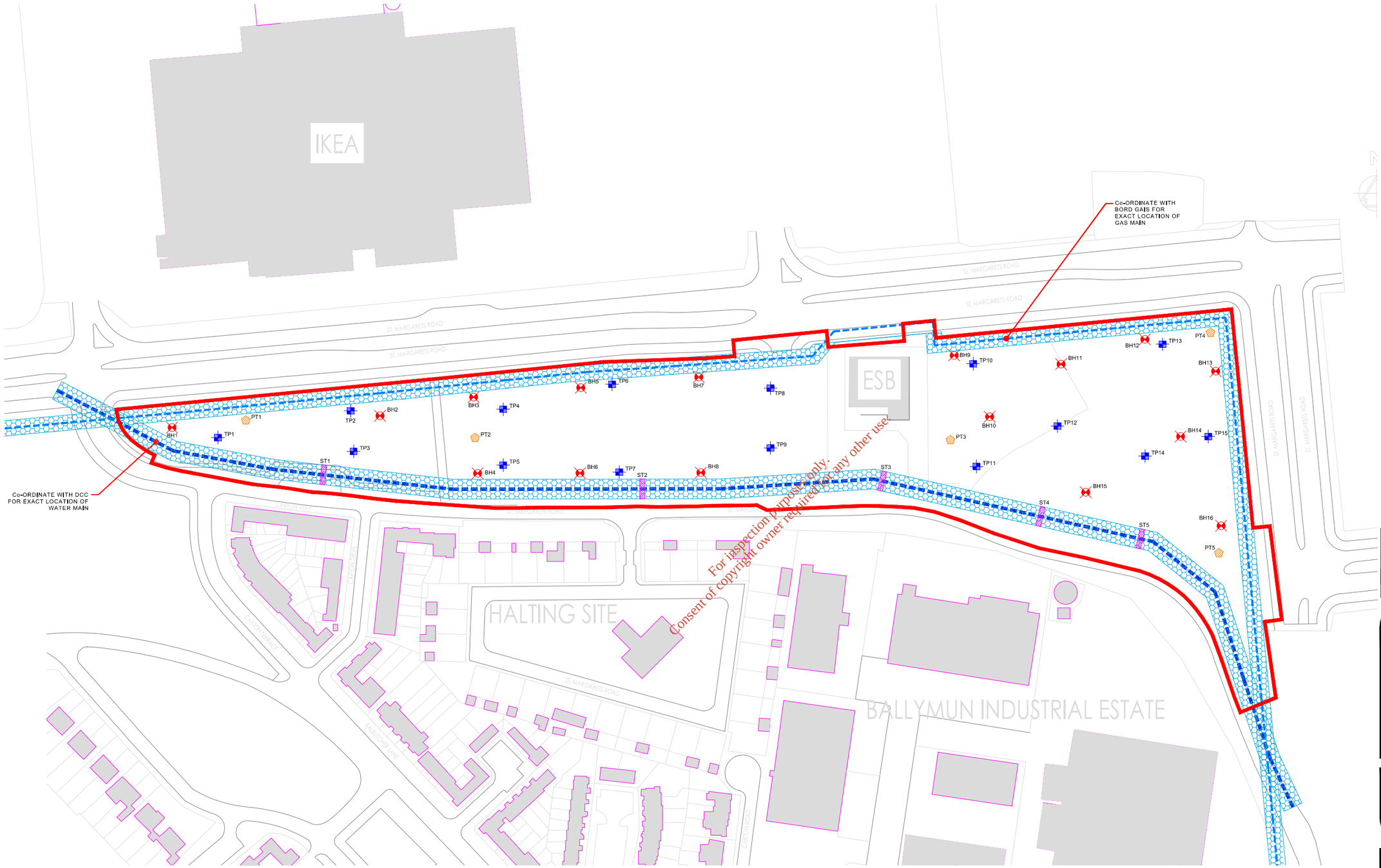
As set out in this report, there is no current or known historical contamination of the site that is causing a negative impact on soil and/or groundwater quality. Additionally, the current noise and air quality

environment at the site have been described to allow for future comparison once operation of the proposed facility has commenced.

APPENDIX A

Drawings

NCOD-TOB-ZZ-XX-DR-CE-2001 – Site Investigation Plan Locations



Site Layout For Site Investigation
(Scale 1:1000)

NOTES:

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE.
3. ENGINEER/EMPLOYERS REPRESENTATIVE, AS APPROPRIATE, TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES.
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD.

LEGEND:

- SITE BOUNDARY LINE
- BH — PROPOSED BOREHOLE LOCATION
- TP — TRIALPIT LOCATIONS (TO INCLUDE CBRs AS PER BOQ)
- PT — PERCOLATION TEST LOCATION
- ST — SLIT TRENCH
- WATER MAINS 10MTR WAY LEAVE
- EXISTING GAS MAIN & 8MTR WAY LEAVE

GENERAL NOTES:

1. WAC AND SUITE 1 TEST ON ALL TP's → 0 - 1m
   → 1 - 2m
2. WAC AND SUITE 1 TEST ON:
   - BH1
   - BH7
   - BH8
   - BH10
   - BH11
   - BH13
   - BH15
   - BH16

   → 0 - 1m
   → 1 - 2m
   → 2 - 3m
3. STANDING WATER PIPES TO BE LEFT IN PLACE AT BH2, BH7 AND BH16.
4. SLIT TRENCH TO DETERMINE DEPTH TO TOP OF PIPE.

Rev	Date	Description	By	Chkd.
P03	NOV-17	ISSUED FOR PLANNING	PK	AM

Client: Comhairle Cathrach Bhaile Átha Cliath Dublin City Council

Project:
NORTH CITY OPERATIONS DEPOT
BALLYMUN
FOR DUBLIN CITY COUNCIL

Title:
SITE INVESTIGATION PLAN LOCATIONS

Scale @ A1: 1:1000

Prepared by: PK | Checked: AM | OCT-17

Project Director: Michael McDonnell

Suitability Status: S3

TOBIN
Patrick J. Tobin & Co. Ltd.
TOBIN Consulting Engineers,
Block 10-4, Blanchardstown Corporate Park,
Dublin 15, Ireland.
tel: +353-(0)1-8030406
fax:+353-(0)1-8030409
e-mail: dublin@tobin.ie
www.tobin.ie

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TOBIN
Consulting Engineers

NATIONAL NETWORK

Galway
Fairgreen House,
Fairgreen Road,
Galway.
Ph +353 (0)91 565211
Fax +353 (0)91 565398
E-mail galway@tobin.ie

Dublin
Block 10-4,
Blanchardstown Corporate
Park,
Dublin 15.
Ph +353 (0)1 803 0406
Fax +353 (0)1 803 0409
E-mail dublin@tobin.ie

Castlebar
Market Square,
Castlebar,
Co. Mayo.
Ph +353 (0)94 902 1401
Fax +353 (0)94 902 1534
E-mail castlebar@tobin.ie

United Kingdom
17 Bowling Green Lane
Clerkenwell
London EC1R 0QB
Ph +44 (0)20 391 56301
E-mail info@tobin-uk.com

visit us @ www.tobin.ie