PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT

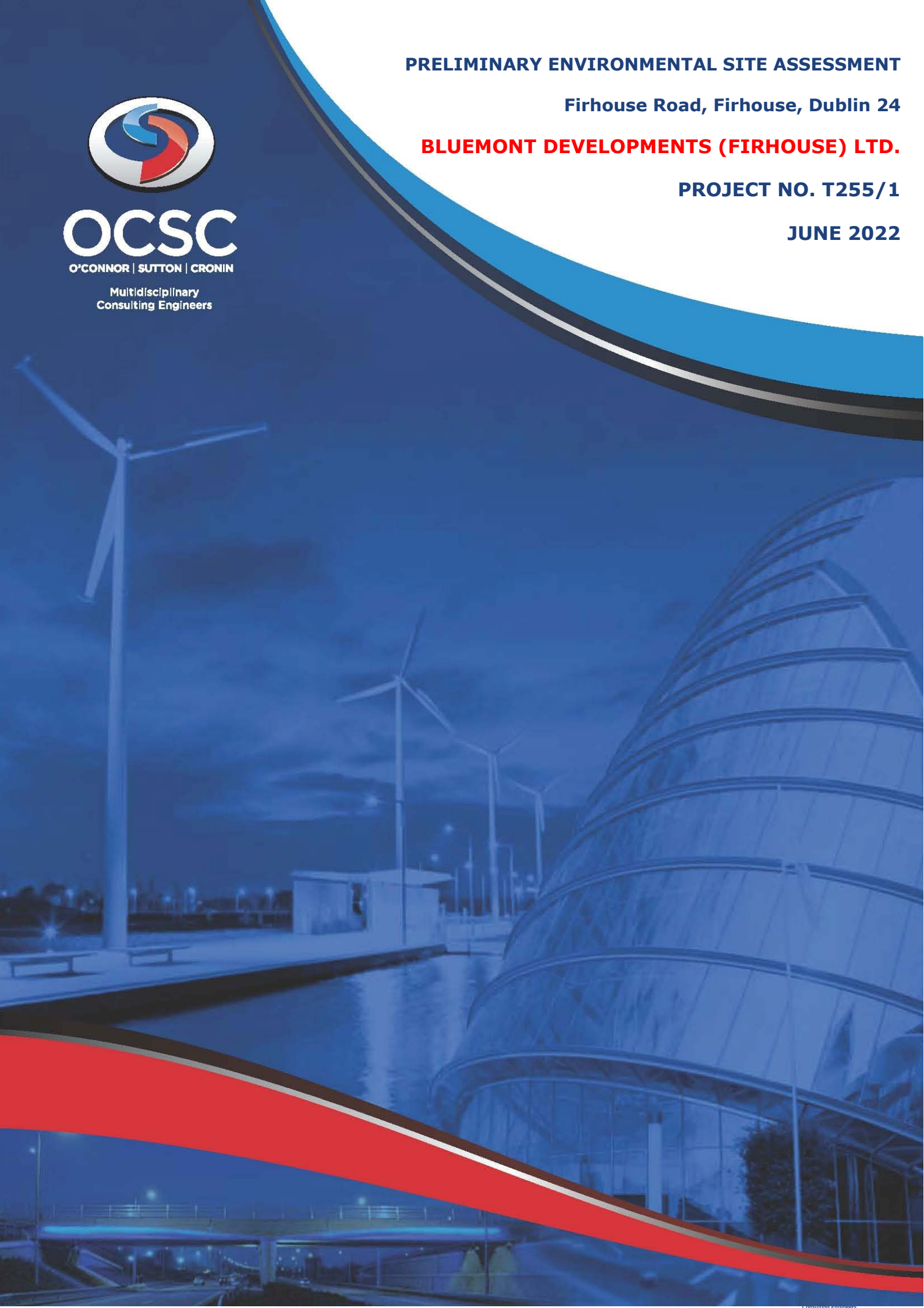
Firhouse Road, Firhouse, Dublin 24

BLUEMONT DEVELOPMENTS (FIRHOUSE) LTD.

PROJECT NO. T255/1

JUNE 2022

OCSC
O'CONNOR | SUTTON | CRONIN
Multidisciplinary
Consulting Engineers



Preliminary Environmental Site Assessment

Firhouse Road, Firhouse, Dublin 24

for

Bluemont Developments (Firhouse) Limited

OCSC Job No.: T255/1	Project Code	Originator	Zone Volume	Level	File Type	Role Type	Number	Status / Suitability Code	Revision
	T255/1	OCSC	ZZ	ZZ	RP	ENV	801	S2	3

Rev.	Status	Authors	Checked	Authorised	Issue Date
P3	S2	KS	EB	EB	09/06/2022
P2	S2	KS	EB	EB	07/06/2022
P1	S2	KS	EB	EB	15/09/2021
P0	S2	KS	EB	EB	10/09/2021

NOTICE

This document represents the findings from a Preliminary Environmental Site Assessment for the above referenced site. Best practice was followed at all times and within the limitations stated. This document has been produced by O'Connor Sutton Cronin & Associates for Bluemont Developments (Firhouse) Limited. It may not be used for any purpose other than that specified by any other person without the written permission of the authors.

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1. INTRODUCTION

1.1. Project Contractual Basis & Parties Involved

This report has been prepared by O'Connor Sutton Cronin & Associates Ltd. (OCSC) appointed by Bluemont Developments (Firhouse) Limited, the client, and in accordance with the proposal dated 6th May 2021. The site for assessment is located on lands located at No. 2 Firhouse Road and the former 'Morton's The Firhouse Inn', Firhouse Road, Dublin 24.

The report was written by Kate Santos, Environmental Engineer with OCSC. The report was reviewed by Eleanor Burke, Chartered Scientist (CSci) and Member of the Institution of Environmental Sciences (MIEnvSc) who is the Environmental Division Manager of OCSC.

1.2. Background Information

Bluemont Developments (Firhouse) Limited intend to apply to An Bord Pleanála (the Board) for permission for a strategic housing development with a total site area of c. 0.46 ha on lands located at No. 2 Firhouse Road and the former 'Morton's The Firhouse Inn', Firhouse Road, Dublin 24.

The proposed development will consist of: the demolition of the existing single and two-storey buildings on the site (c. 1,326 sq m), including the former 'Morton's, The Firhouse Inn' public house and off-licence, barbers, betting office, cottage and other ancillary structures, and the provision of 2 blocks (Blocks 01 and 02) ranging between 3 and 5 storeys in height, over lower ground floor and basement levels, comprising residential over commercial ground floor uses, all over a basement level.

The regional site location is shown in Figure 1.1. It is in an area of a mixture of residential, commercial, educational and recreational land use.

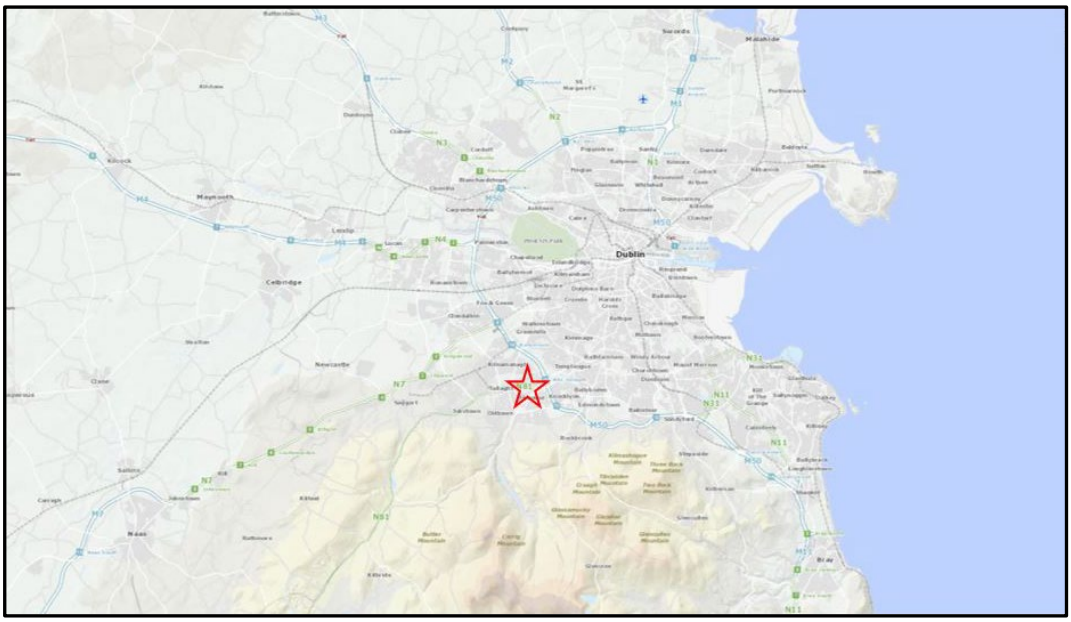

Figure 1.1: Site Location (approximate site location in red. Source: OSI, 2021)

The site and its area surrounds are shown in an aerial photograph in Figure 1.2.

Figure 1.2: Aerial Image of the site (Source: Google Earth)

Bluemont Developments (Firhouse) Limited intend to apply to An Bord Pleanála (the Board) for a Strategic Housing Development with a total site area of c.0.46 ha, on lands located at No. 2 Firhouse Road and the former 'Morton's The Firhouse Inn', Firhouse Road, Dublin 24.

The development will consist of the demolition of all existing structures on site (c. 1,326 sq m), including:

- Two storey building formally used as public house, ancillary off-licence and associated structures (c. 972 sq m);
- Two storey building comprising an existing barber shop and betting office (c. 260 sq m);
- Single storey cottage building and associated structures (c. 94 sq m); and
- Eastern boundary wall and gated entrance from Mount Carmel Park.

The development with a total gross floor area of c. 11,638 sq m, will consist of 100 no. residential units arranged in 2 blocks (Blocks 01 and 02) ranging between 3 and 5 storeys in height, over lower ground floor and basement levels, comprising:

- 96 no. apartments (consisting of 2 no. studio units; 45 no. one bedroom units; 10 no. two bedroom (3 person) units; 34 no. two bedroom (4 person) units; and 5 no. three bedroom units), together with private (balconies and private terraces) and communal amenity open space provision at podium and roof levels; and

- 4 no. duplex apartments (consisting of 2 no. one bedroom units and 2 no. two bedroom units (4 person) located within Block 01, together with private balconies and terraces.

The development will also consist of non-residential uses (c. 355 sq m), including:

- 1 no. café (c. 58 sq m) and 1 no. office (c. 30 sq m) located at ground floor level of Block 01;
- 1 no. medical unit (c. 59 sq m) and 1 no. betting office (c. 66 sq m) located at ground floor level of Block 02;
- 1 no barber shop (c. 28 sq m) located at ground floor level between Blocks 01 and 02; and
- 1 no. crèche (c. 114 sq m) located at lower ground floor level of Block 01 and associated outdoor play area to the rear.

Vehicular access to the site will be from the existing access off Firhouse Road. The proposal includes minor alterations to the existing access, including the provision of new and enhanced pedestrian infrastructure.

The development will also consist of the provision of public open space and related play areas; hard and soft landscaping including internal roads, cycle and pedestrian routes, pathways and boundary treatments, street furniture, basement car parking (80 no. spaces in total, including accessible spaces); motorcycle parking; electric vehicle charging points; bicycle parking (long and short stay spaces including stands); ESB substations, piped infrastructural services and connections to existing public services, (including relocation of existing surface water sewer and water main from within the application site onto the public roads area along Firhouse Road and Mount Carmel Park); ducting; plant; waste management provision; SuDS measures; stormwater management and attenuation; sustainability measures; signage; changes in levels; public lighting; and all ancillary site development and excavation works above and below ground.

Figure 1.3: Proposed Site Layout Plan

1.3. Project Objectives

The overall project objectives include:

- Provide environmental information on the site including:
  - · historical land use;
  - · superficial/structural geology;
  - · groundwater;
  - · topography;
  - · existing services;
  - · existing structures/buildings; and
  - · aquifers.

1.4. Methodology and Approach

The methodology and approach for the proposed work will follow:

- BS 10175:2011+A2:2017, Investigation of potentially contaminated sites, Code of Practice;
- EPA, 2020, Guidance on waste acceptance criteria at authorised soil recovery facilities;

- EPA, 2015, Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-hazardous;
- EPA 2013, Guidance on the Management of Contaminated Land and Groundwater at EPA Licensed Sites;
- EPA 2007, Code of Practice, Environmental Risk Assessment for Unregulated Waste Disposal Sites;
- EA, 2015, Guidance on the classification and assessment of waste, Technical Guidance WM3;
- EA, 2004, Model Procedures for the Management of Land Contamination (CLR11);
- Environment Agency (2004) Model Procedures for the Management of Land Contamination. Contaminated Land Report 11; and
- DoELG, EPA and GSI, 1999. Groundwater Protection Schemes. Department of Environment and Local Government, Environmental Protection Agency and Geological Survey of Ireland, Dublin, Ireland.

1.5. Scope of Works

To meet the project objectives the following scope of works were completed:

- Obtain, where possible, records of past spillages which could potentially have impacted upon the soil and/or groundwater, and any environmental reports on the site's historic operations and condition;
- Undertake and present a historical site and area review, primarily referring to old Ordnance Survey Ireland (OSI) Maps but utilising other sources as appropriate and readily available including previous site investigations and data available;
- Present a discussion of the current site status and key environmental influences around the site;

1.6. Limitations

This Preliminary Environmental Site Assessment (ESA) Report has been prepared for the sole use of Bluemont Developments (Firhouse) Limited (the Client). No other warranty, expressed or implied, is made as to the professional advice included in this report or any other services provided by OCSC. This report is confidential and may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of OCSC.

This report has been prepared in line with best industry standards. The methodology adopted and the sources of information used by OCSC in providing its services are outlined in this Report. The scope of this Report and the services are accordingly factually limited by these circumstances.

OCSC disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to OCSC's attention after the date of the Report.

The conclusions presented in this report represent OCSC's best professional judgement based on a review of the relevant information available at the time of writing. The opinions and conclusions presented are valid only to the extent that the information provided was accurate and complete.

2. ENVIRONMENTAL SITE SETTING

2.1. Site Location

The site is located in Firhouse, Dublin 24. The site currently compriseof the existing single and two-storey buildings on the site including the former 'The Firhouse Inn' public house and off-licence, barbers, betting office, cottage and other ancillary structures.

The regional site location is illustrated in Figure 2.1 by the red star.

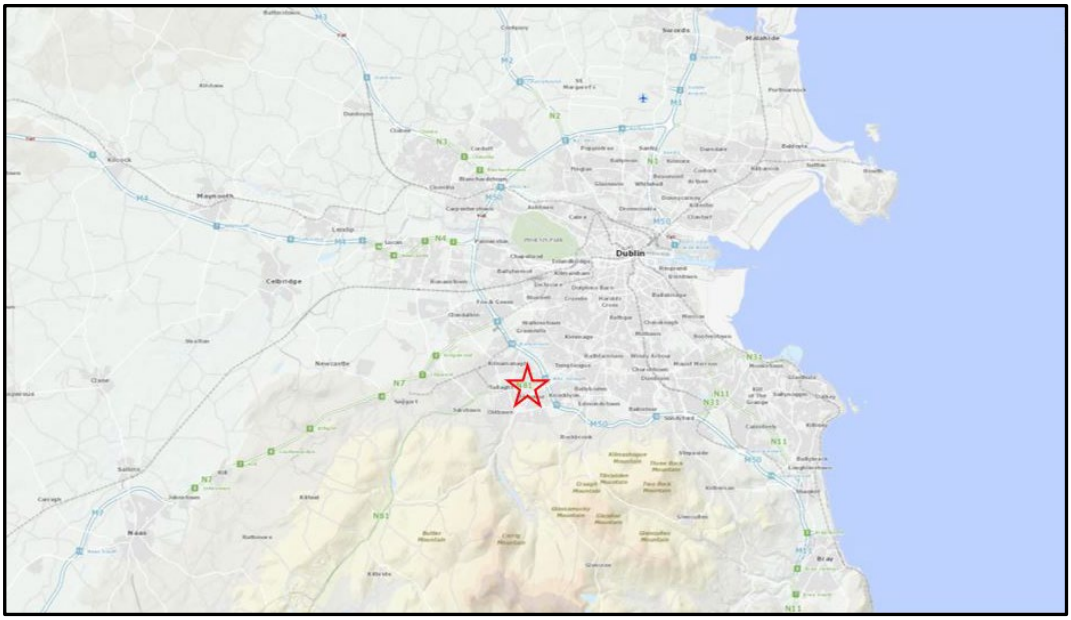

Figure 2.1 Regional Site Location (approximate site location indicated by red star. Source: OSI, 2021)

2.2. Surrounding Land Use

The surrounding area is a mixture of residential, recreational, educational, and commercial/retail land use. To the immediate north of the site lies the Dodder Riverbank Park recreational lands, River Dodder, areas of vegetation along the river, further north Kilsaran Tallaght (Concrete industry), commercial, recreative, residential structures and Circle K Balrothery. Directly south of the site lies the Firhouse Road (R114) and further south residential and commercial structures and recreational areas. East of the site lies residential and commercial structures, the Mount Carmel Park, recreational land and M50. West of the site is vacant plots, the Dodder Riverbank Park, residential and commercial structures. Refer to Figure 1.1 in Section 1 for an aerial photograph of the site. The adjacent land uses are listed in Table 2.1 below.

Table 2.1 – Adjacent Land Uses

BOUNDARY	LAND USE
North	Recreational areas (Dodder Riverbank Park), River Dodder, areas of vegetation along the river, Kilsaran Tallaght (Concrete industry), commercial, residential structures and Circle K Balrothery
South	Residential and commercial structures and recreational areas.
East	Residential and commercial structures, the Mount Carmel Park, vacant lands and M50
West	Recreational areas, Dodder Riverbank Park, vacant sites, residential and commercial structures

2.3. Site History

An understanding of the site history was gained by undertaking a review of the following primary sources including:

- Review of available extracts of historical Ordnance Survey of Ireland (OSI) maps;
- Review of information held by the Environmental Protection Agency (EPA) EnVision online Mapping;
- Aerial images available of the site (OSI, Google Earth and Google Maps);
- Geological Survey of Ireland (GSI) online map tool; and
- National Parks and Wildlife Service online map tool.

2.4. Site Development

The 6" historical map (1837-1842) (Figure 2.2) shows the site comprised of an L shaped building. North of the site is vacant land, a river, beyond which lie gravel pits. East of the site is Firhouse, vacant and agricultural lands.. South of the site is Sally Park, agricultural and vacant lands. West of the site is agricultural and vacant lands, the Firhouse Convent, with the Balbrook Paper Mill located beyond the river.

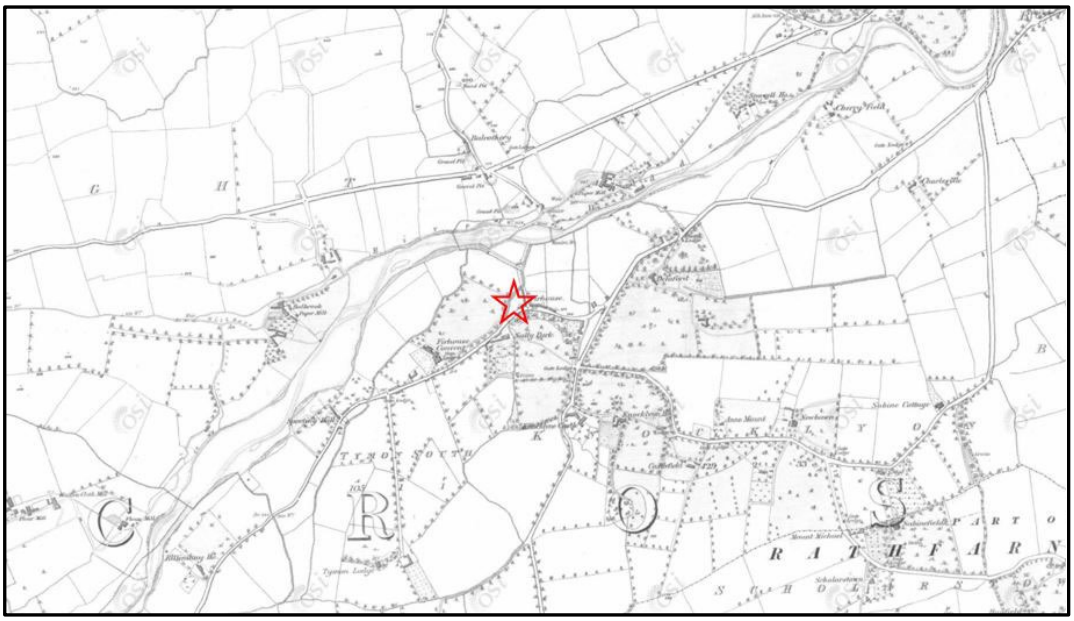

Figure 2.2. Approximate site location indicated by a red star on a 6 inch historical map dated 1837-1842 (Source: OSI, 2021).

The 25" historical map (1888-1913) (Figure 2.3) identifies the site as a Smithy – refer to the 'Initial Heritage Assessment' prepared by Mesh Architects which provides further details on the 'Smithy'. Additional buildings are located on the south west boundary of the site. The Dublin and Firhouse Tavern is located to the east. The surrounding general area is depicted with sporadic additional land structures.

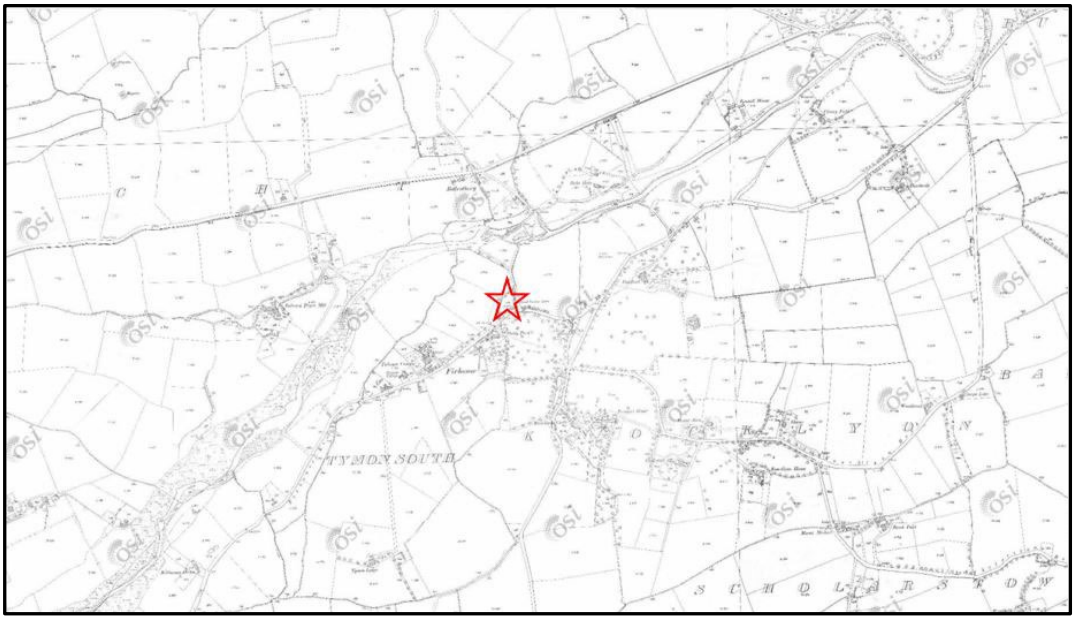

Figure 2.3. Approximate site location indicated by a red star historic 25 inch map (1888-1913) (Source: OSI, 2021)

The 6 Inch Cassini Map (1830s to 1930s) (Figure 2.3) shows the buildings on the north of the site have disappeared when compared with the 1888-1913 map. The surrounding general area is mainly unchanged from the 1888-1913 map.

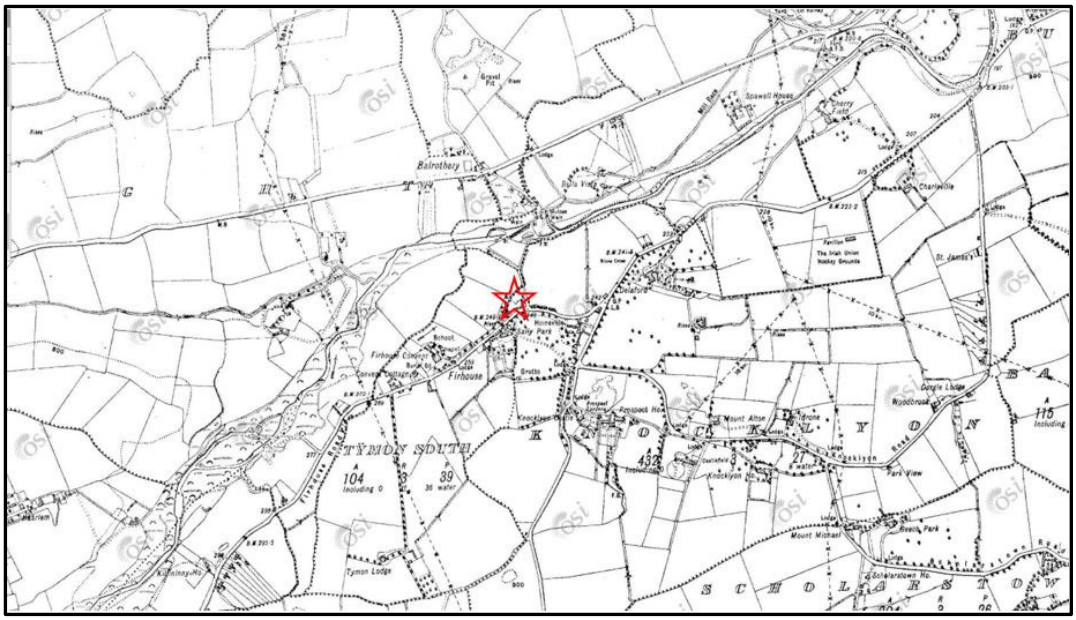

Figure 2.4. Approximate site location indicated by a red star on a 6 inch Cassini map (1830 - 1930). (Source: OSI, 2021)

From a review of the Ordnance Survey Ireland, 1995, 2000 and 2005 aerial images (see figure 2.5, 2.6 and 2.7) shows the site with additional buildings and associated concrete hardstaning. The surrounding general area is depicted with residential additional building structures in all directions.

Figure 2.5. Approximate site location indicated by a red star on the 1995 aerial image (Source: OSI, 2021)

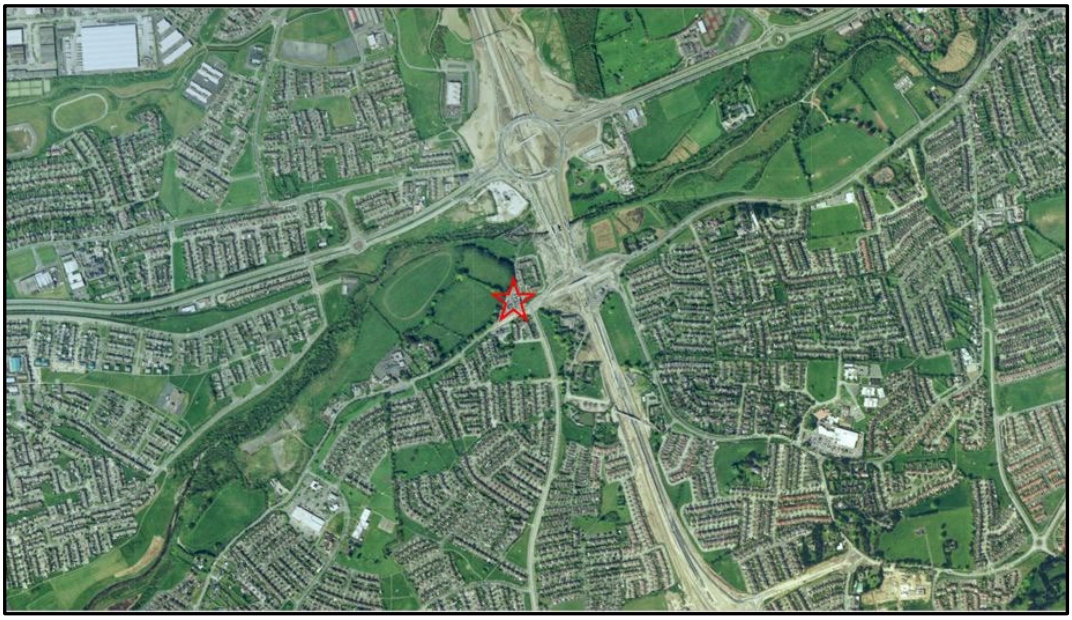

Figure 2.6. Approximate site location indicated by a red star on the 2000 aerial image (Source: OSI, 2021)

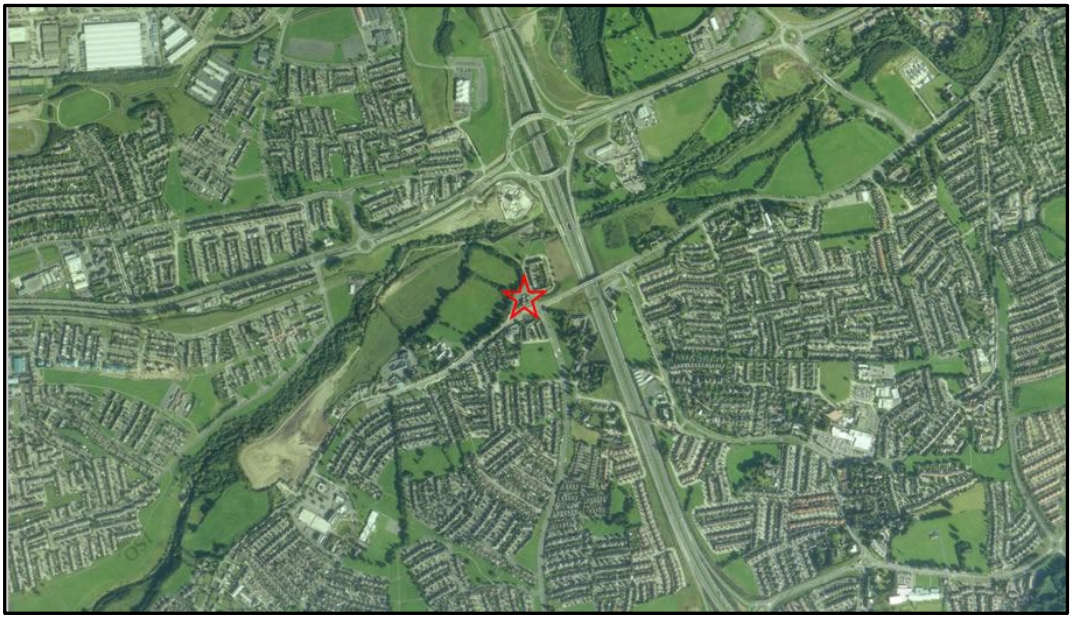

Figure 2.7. Approximate site location indicated by a red star on the 2005 aerial image (Source: OSI, 2021)

The Ordnance Survey Ireland aerial image dated between 2013 to 2018 (Figure 2.8) shows the overall site features similar to how it is today (Figure 1.2).

Figure 2.8. Approximate site location indicated by a red star on the 2013 to 2018 aerial premium map (Source: OSI, 2021)

2.5. Site Physical Setting

Information regarding the site topography, hydrology, geology, hydrogeology and ecology of the area has been obtained from records held by the Geological Survey of Ireland (GSI), Environmental Protection Agency (EPA) Envision online mapping tool, Ordnance Survey of Ireland (OSI), Water Framework Directive Maps and National Parks and Wildlife Service (NPWS) databases.

2.5.1. Topography

The topography of the site is relatively flat.

2.5.2. Area of Geological Interest

GSI online mapping service was consulted regarding areas of geological interest in the area of the site. The nearest area of geological heritage is the Dodder Terraces (site code SD004) which is located beyond the north and west boundary of the site. The site does not lie within the designated area. The Terraces are designated as a County Geological Site due to the "Dodder channel which is formed in an area of glacial till of varying depths, with portions of bedrock outcrop or subcrop along its stretch. The till was deposited during the last Ice Age. The terraces on either side of the channel were formed during deglaciation at the end of the last Ice Age, by meltwater deposition along the edge of the deglacial Dodder River." Refer to Figure 2.9 from the GSI online mapping for further information.

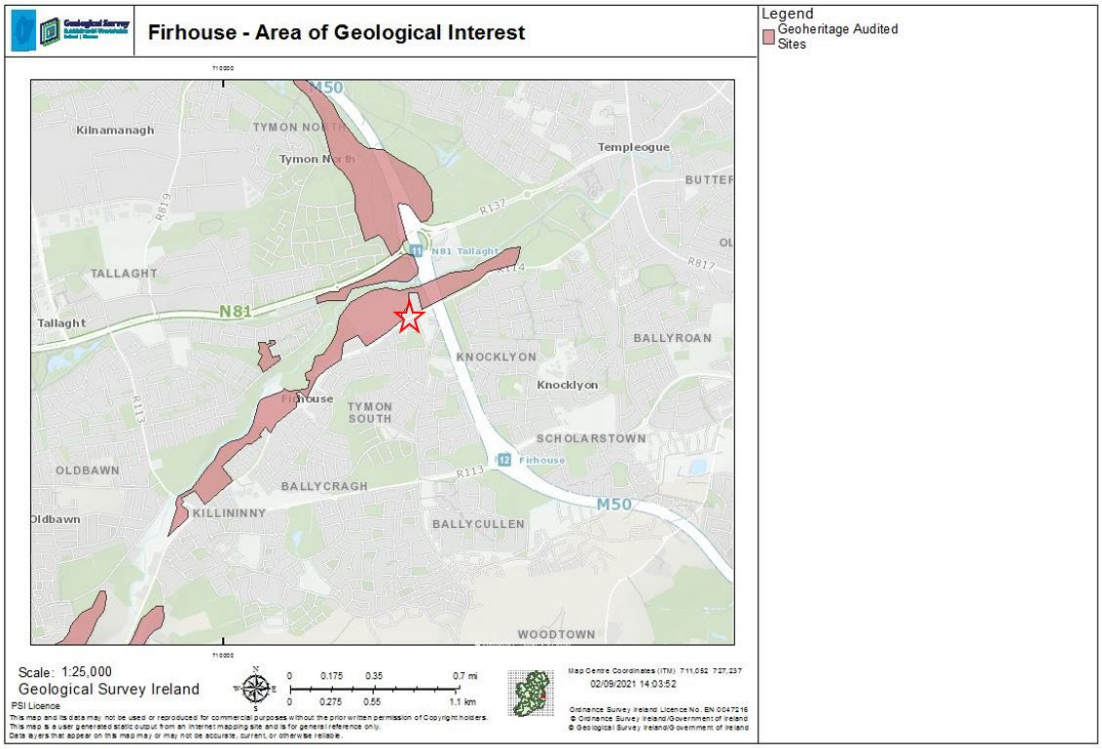

Figure 2.9 Area of Geological Interest (Approximate site location indicated by the red star) (Source: GSI, 2021)

2.5.3. Unconsolidated Geology

The topsoil beneath the site and to the immediately south and east surrounding area is classified as Made Ground. Directly north and west of the site is BminSW - Shallow well drained mineral (Mainly basic) classification. Refer to Figure 2.10 from the GSI online mapping for further information.

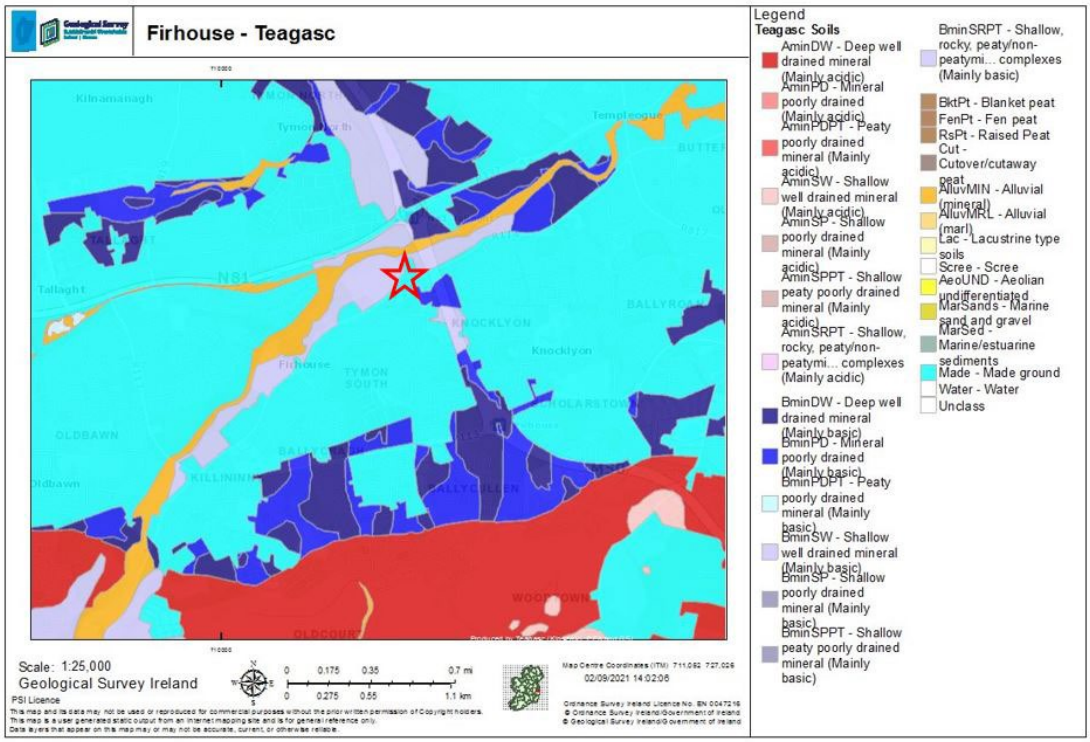

Figure 2.10. Teagasc Topsoils (Approximate site location indicated by the red star) (Source: GSI, 2021)

2.5.4. Unconsolidated Geology

The Quaternary geology of Ireland – Sediments Map is a representation of the surficial geology of Ireland at a scale of 1:50,000. The map shows the sediments mapped within 1 metre of the surface which were laid down during the quaternary, bedrock at or close to the surface water bodies or made ground. Quaternary sediments are categorised according to their genesis. The main types of sediment recognised are tills, (glacio) fluvio/lacustrine deposits, alluvium, lacustrine sediments and peat. Bedrock and karstified bedrock at or close to the surface are also mapped out as separate units. The Quaternary sediments have been described beneath the majority of the site as `Till derived from limestones` and, in a small northern section, as 'Alluvium (gravelly)'. Refer to Figure 2.11.

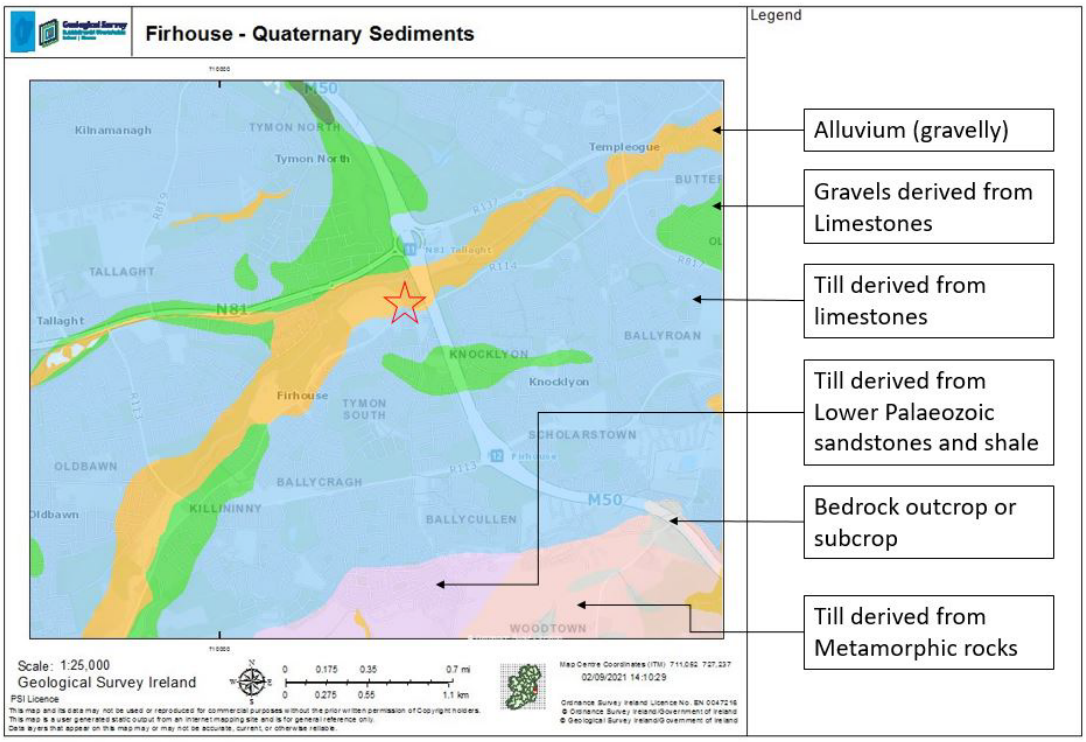

Figure 2.11 Quaternary Sediments (approximate site location indicated by red star) (Source: GSI, 2021)

2.5.5.Geology

The bedrock beneath the site area consists of 'Dark limestone & shale ('calp') from the Lucan formation 'The formation comprises dark-grey to black, fine-grained, occasionally cherty, micritic limestones that weather paler, usually to pale grey. There are rare dark coarser grained calcarenitic limestones, sometimes graded, and interbedded dark-grey calcar' and 'the formation ranges from 300m to 800m in thickness'. (GSI). The local geology mapped by the GSI is illustrated in Figure 2.12.

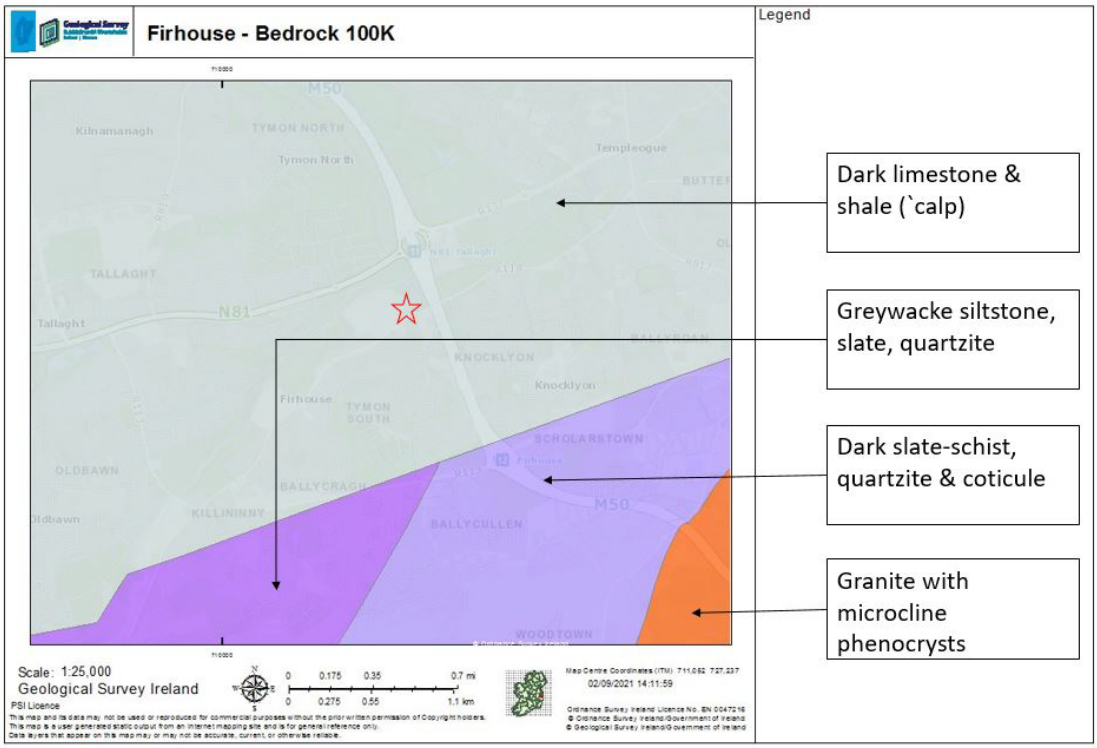

Figure 2.12. Bedrock 100K (Approximate site location indicated by the red star) (Source: GSI, 2021)

2.5.6.Aquifers

The GSI provides a methodology for aquifer classification based on resource value (Regionally Important, Locally Important and Poor) and vulnerability (Extreme, High, Moderate or Low). Resource value refers to the scale and production potential of the aquifer whilst vulnerability refers to the ease with which groundwater may be contaminated by human activities (vulnerability classification primarily based on the permeability and thickness of subsoils).

The site is underlain by a LI – Locally Important Aquifer which covers an area of 1.309km^2. The bedrock is Moderately productive only in local zones. (Refer to Figure 2.13).

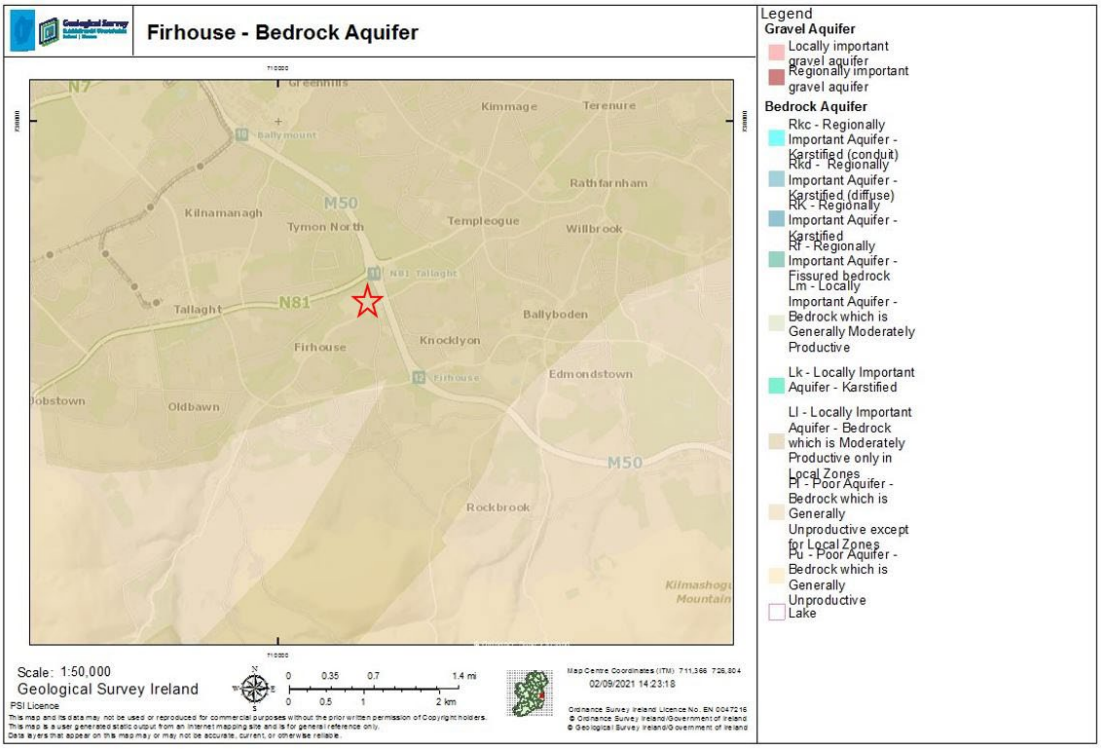

Figure 2.13 Aquifers (Approximate site location indicated by the red star) (Source: GSI, 2021)

2.5.7. Aquifer Vulnerability

The groundwater vulnerability beneath the site is classified High, refer Figure 2.14 (GSI). Vulnerability ratings are related to a function of overburden thickness and permeability which might offer a degree of protection and/or attenuation to the underlying aquifer from surface activities and pollution.

There were no karst features identified in or adjacent to the site.

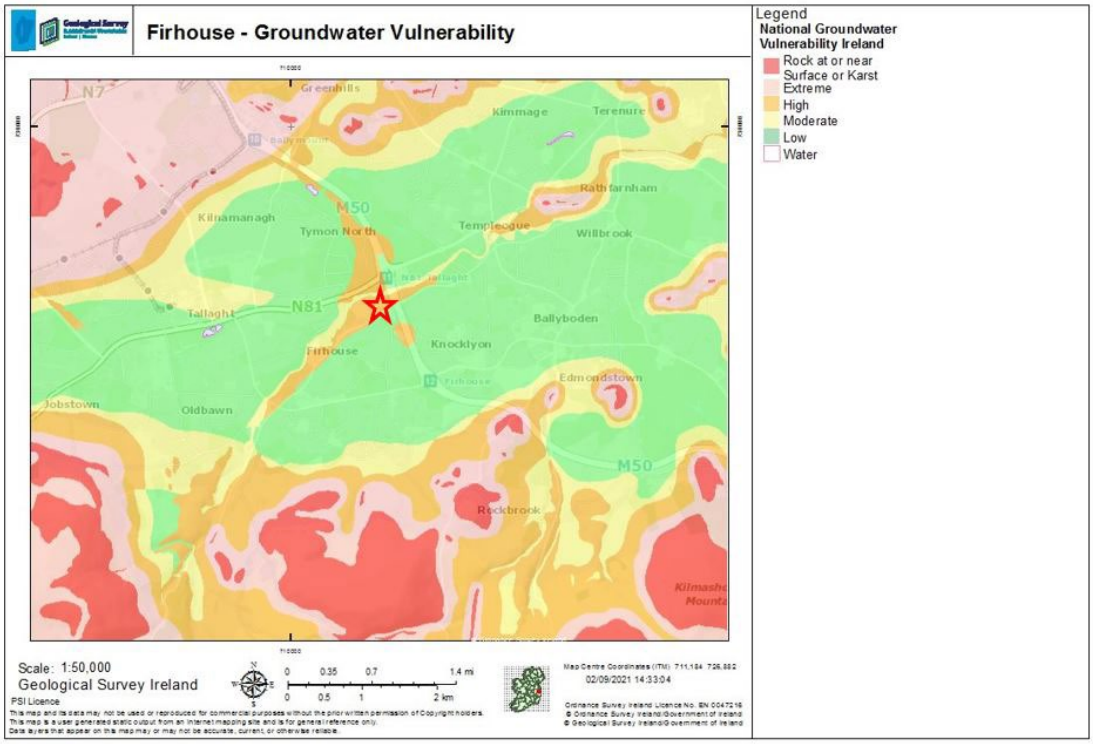

Figure 2.14 Groundwater Vulnerability (Approximate site location indicated by the red star) (Source: GSI, 2021)

2.5.8. Groundwater Status

An assessment carried out under the Water Framework Directive (WFD) 2013-2018 groundwater body (EPA, 2021) has concluded that the groundwater (IE_EA_G_008) within the bedrock aquifer is present as 'Good'. Refer to figure 2.15.

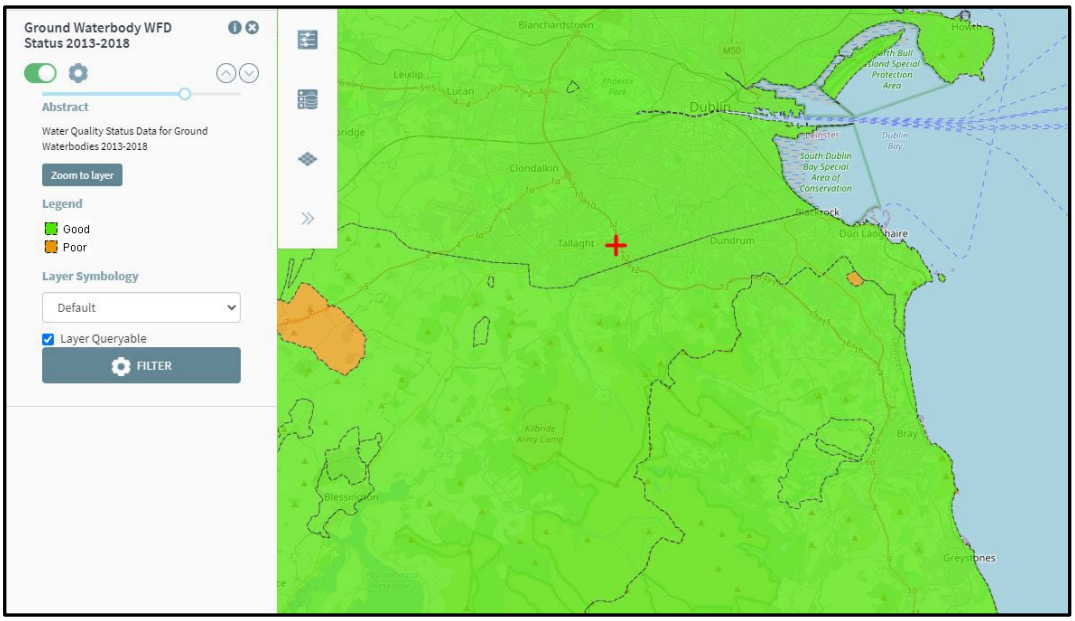

Figure 2.15 WFD Status 2013-2018 (Approximate site location indicated by the red cross) (Source: EPA maps, 2021)

The WFD Risk Scoring System is currently under review for the area. However, land to the south of the site has been identified as 'at risk' (see Figure 2.16).

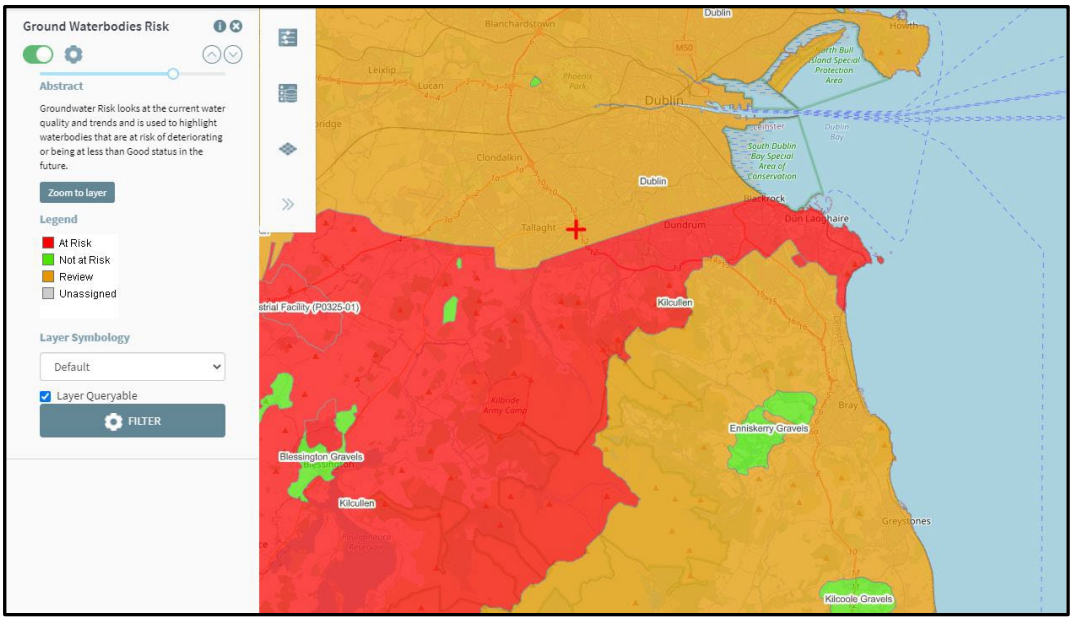

Figure 2.16 WFD Risk Status (Approximate site location indicated by the red cross) (Source: EPA maps, 2021)

2.5.9. Groundwater Recharge

Diffuse recharge generally occurs via rainfall percolating through the subsoil and reaching the aquifer. Recharge is higher in areas where the subsoil is thinner and/or more permeable. The proportion of the effective rainfall that recharges the aquifer is largely determined by the thickness and permeability of the soil and subsoil, and by the slope.

The GSI's groundwater recharge model parameters for the site are summarised in Table 2.2. Figure 2.17 contains a drawing from the GSI indicating the recharge zone. This does not account for leakage to the ground from water supply, storm drains and sewers.

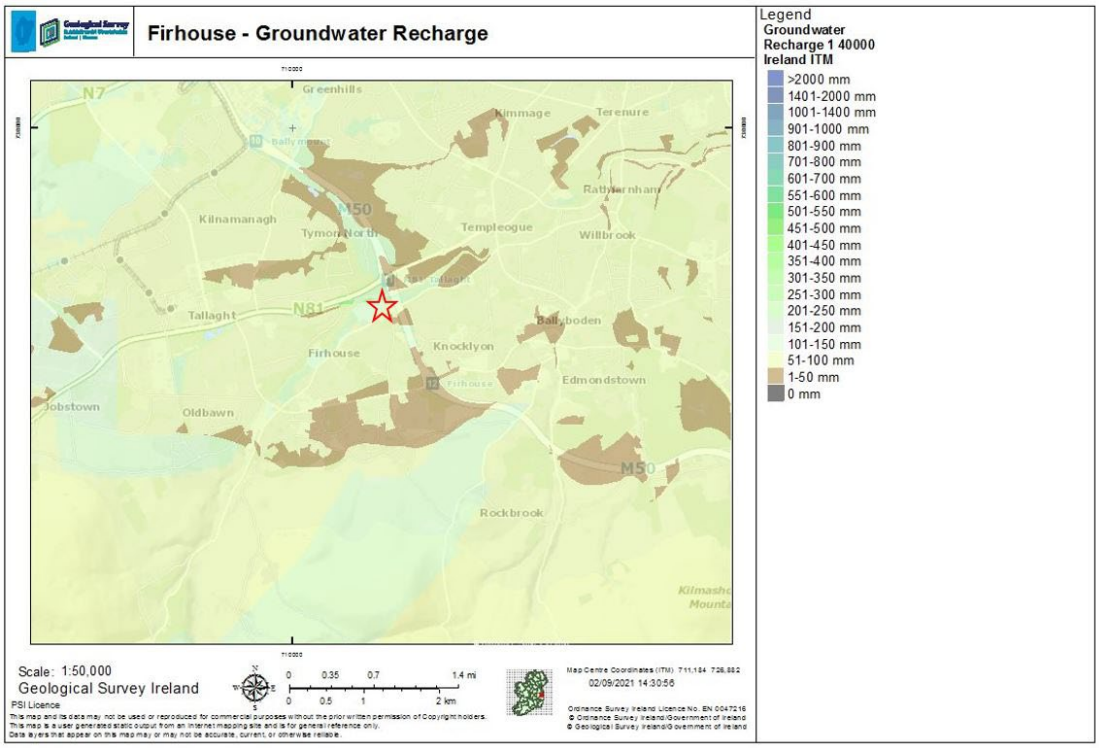

Figure 2.17 Groundwater Recharge (Approximate site location indicated by the red star) (Source: GSI, 2021)

Table 2.2 GSI Groundwater Recharge Parameters

Groundwater Recharge Parameters	
Average Recharge (mm/yr):	91
Hydrogeological Setting Description:	Made ground
Soil Drainage:	MADE
Subsoil Type:	Made
Subsoil Description:	Made ground
Subsoil Permeability:	H
Subsoil Permeability Description:	High
GW Vulnerability:	H
GW Vulnerability Description:	High
Aquifer Category:	LI
Aquifer Category Description:	Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones
Recharge Coefficient (%):	20
Effective Rainfall (mm/yr):	453,600

2.5.10. Wells & Springs

A search of the GSI groundwater well database was conducted to identify registered wells in the surrounding area. There are no boreholes within the site area. The nearest well is a spring located approximately 0.9km to the northeast of the site for the 'Spawell House' that was drilled in December 1899. The second nearest well is a borehole located at 2.05km to the west of the site for 'Safety Kleen Ltd' drilled in November 1998.

The GSI (1999) also provides a framework for the protection of groundwater source zones (e.g. areas of contribution to water supply bores). There are no reported water supply source protection zones (SPZs) within a 11km radius of the site.

Mapped wells and springs in the general vicinity of the site identified by the GSI are illustrated on Figure 2.18.

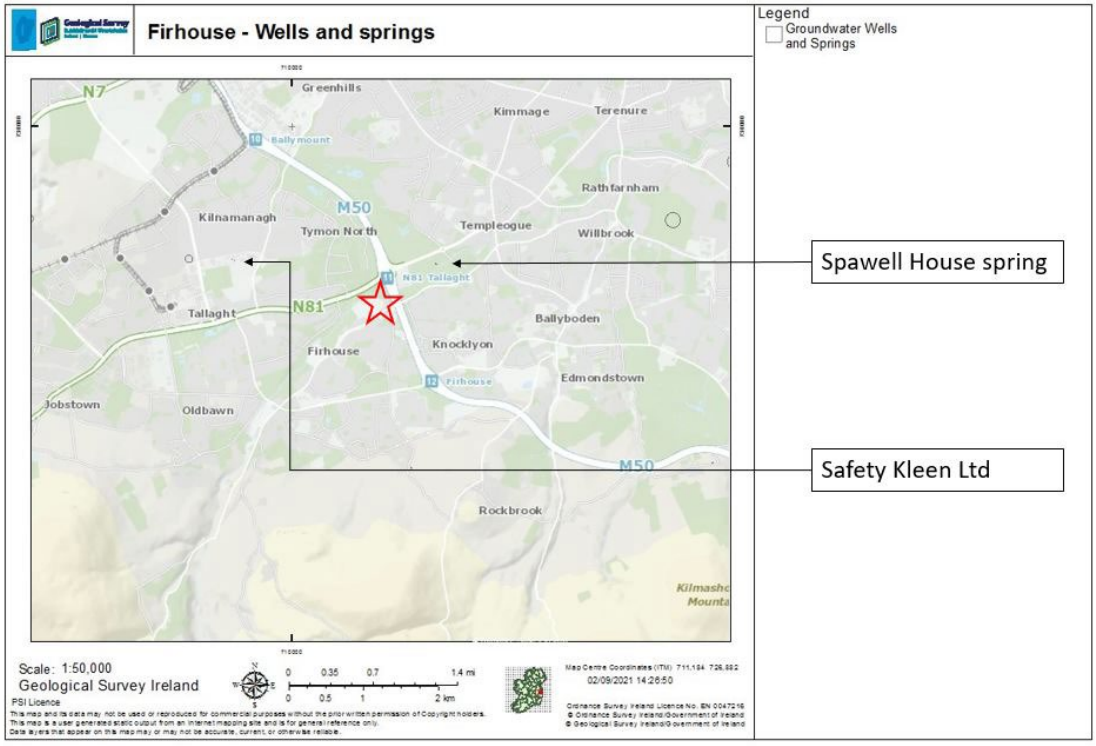

Figure 2.18 Wells and springs (Approximate site location indicated by the red star) (Source: GSI, 2021)

2.5.11. Hydrology

The Dodder River at its closest point is located approximately 0.2km to the north of the site and flows in a northeasterly direction. There are tributaries to the river located approximate 0.2km to the east and another to the west of the site. The status of the Dodder River has been designated as 'Poor, according to the WFD scoring system. Refer to Figure 2.19.

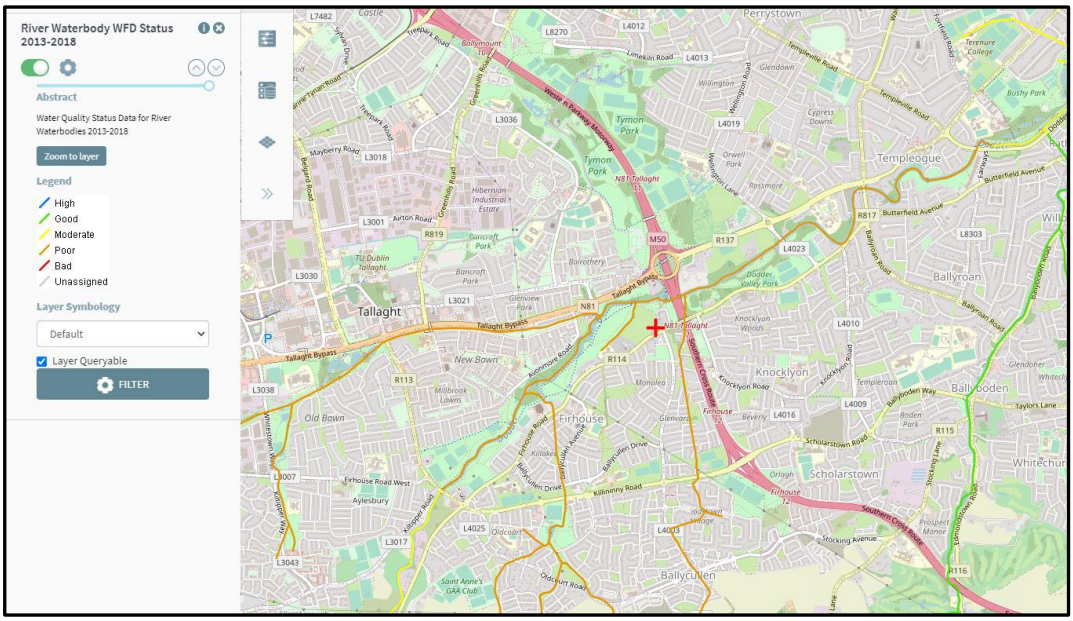

Figure 2.19 River Waterbody Status 2013-2018 (Source: EPA, 2021)

The status of the Dodder River was designated as 'At Risk' under the WFD (EPA, 2013-2018) river waterbodies on the River Risk scoring system. Refer to Figure 2.20.

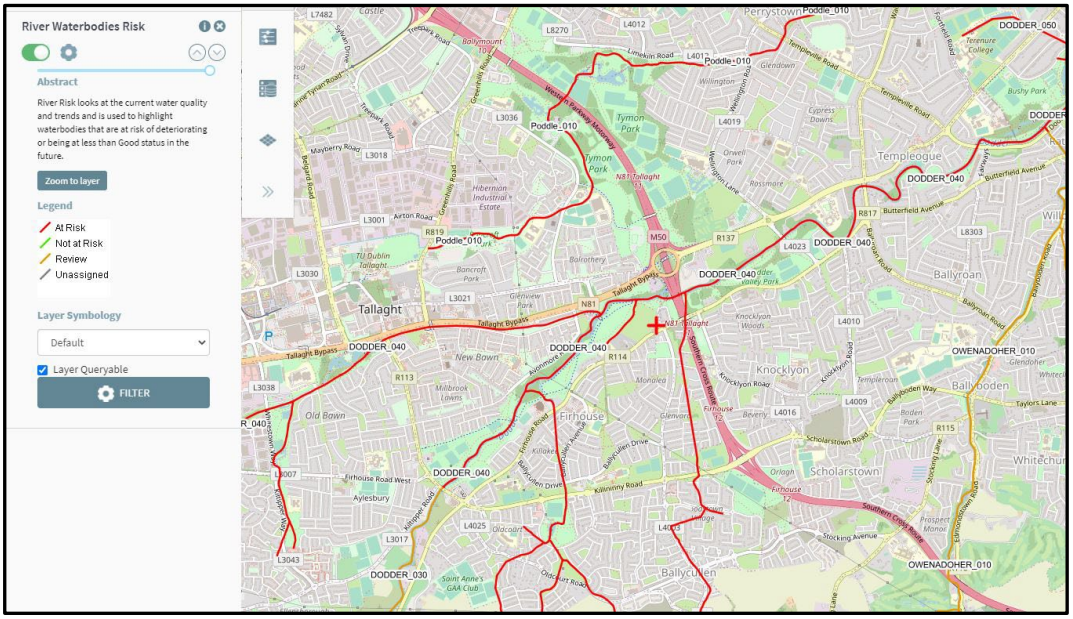

Figure 2.20 WFD Risk score 2013- 2018 (Source: EPA, 2021)

2.5.12. Radon

According to the EPA (now incorporating the Radiological Protection Institute of Ireland) between five and ten percent of the homes in this 10 km^2 grid square are estimated to be above the Reference Level of 200 Bq/m3. This is considered a medium ranking score. Refer to Figure 2.21.

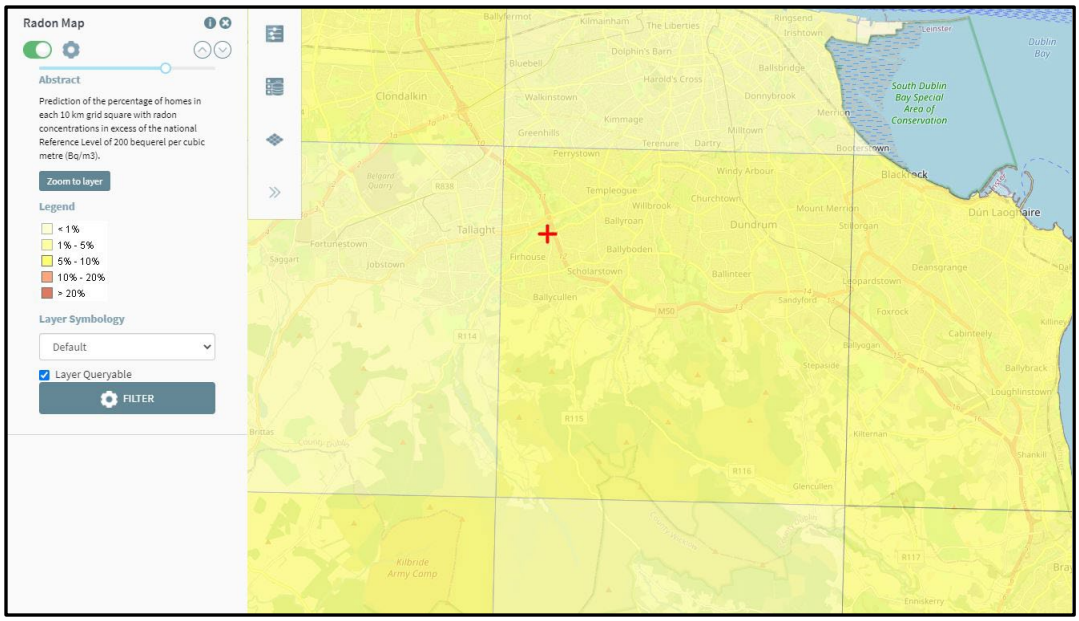

Figure 2.21 Radon Map (Source: EPA, 2021)

2.5.13. Designated Area of Conservation

The nearest European designated site is the Glenasmole Valley Special Area of Conservation (SAC) (Code: 001209) located 4.0km southwest of the site. The second nearest European site is Wicklow Mountains Special Protection Area (SPA) (site code 004040) is 5.8km southwest of the site.

The nearest proposed designated area of conservation is the Dodder Valley Proposed Natural Heritage Area (pNHA), located 0.2km north of the site (refer to figure 2.22). The site is located outside of the pNHA boundaries. The pNHA site code for this feature is 000991.

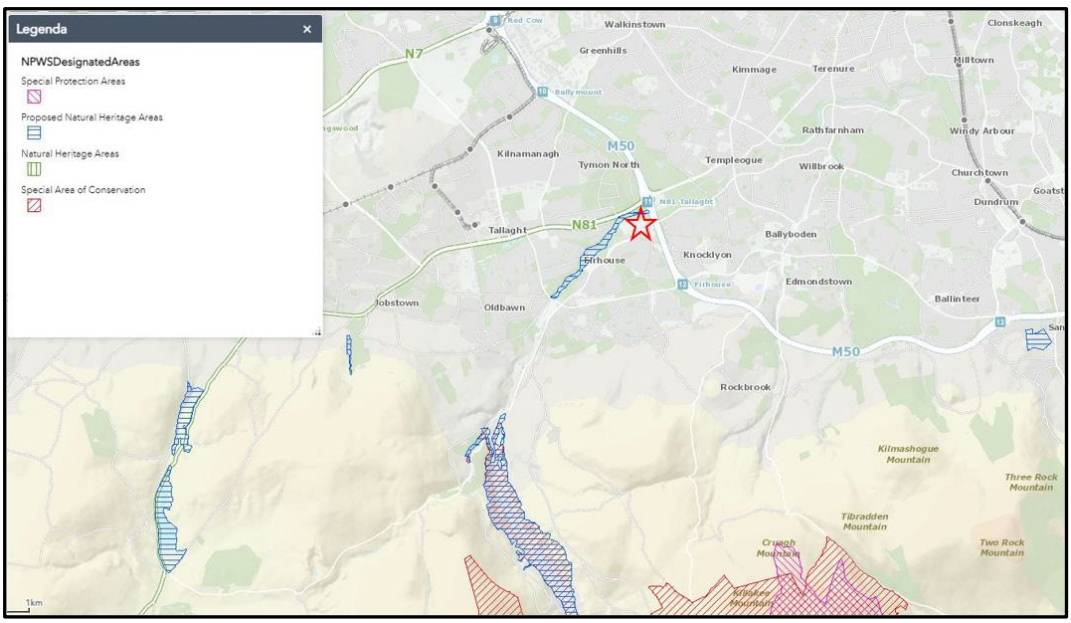

Figure 2.22 NPWS Designated Area (approximate site location indicated by red star)

2.5.14. Summary of the Physical Site Setting

Summary of the site physical setting are outlined in Table 2.3.

Table 2.3 Summary Site Setting

FEATURE	DETAILS & COMMENTS
Topography	The topography of the site is relatively flat.
Geology	**Subsoil:** The subsoil beneath the site and to the immediately south and east is Made Ground Classification. Directly north and west of the site is BminSW - Shallow well drained mineral (Mainly basic) classification.
	Solid Geology: The Quaternary sediments have been described beneath the majority of the site as `Till derived from limestones` and, in a small northern section as 'Alluvium (gravelly)'.
Hydrogeology	**Aquifer Classification:** **LI – Locally Important Aquifer** which covers an area of 1.309km^2. The bedrock which is Moderately productive only in local zones.
	Vulnerability & Recharge: The groundwater vulnerability beneath the site is classified High. The maximum recharge capacity has been modelled at 91 mm/year.
	Groundwater Flow: The regional bedrock groundwater flow direction can be expected to be to the north east.
	Well Search: There are no boreholes within the site area. The nearest well is a spring located aproximately 0.9km to the northeast of the site for the Spawell House. The second nearest well is a borehole located at 2.05km to the west of the site for 'Safety Kleen Ltd' drilled in November 1998. There are no reported water supply source protection zones (SPZs) within a 11km radius of the site.
Hydrology	**Surface Water Courses:** There are no surface watercourses on the site. The Dodder River at its closest point is located approximately 0.2km to the north of the site and flows in a northeasterly direction.

Designated sites	The nearest European designated site is the Glenasmole Valley Special Area of Conservation (SAC) (Code: 001209) located 4.0km southwest of the site. The second nearest European site is Wicklow Mountains Special Protection Area (SPA) (site code 004040) is 5.8km southwest of the site. The nearest proposed designated area of conservation is the Dodder Valley Proposed Natural Heritage Area (pNHA), located 0.2km north of the site (refer to figure 2.22). The pNHA site code for this feature is 000991.

2.6. Site Walkover

The key observations are detailed below.

2.6.1. Infrastructure

The site currently compriseof the existing single and two-storey buildings on the site including the former 'The Firhouse Inn' public house and off-licence, barbers, betting office, cottage and other ancillary structures..

2.6.2. External Infrastructure

A large portion of the external infrastructure comprises of carparking and concrete hardstanding. The site is surrounded by a stone wall to the rear of the site and boundary by the R114 Firhouse Road to the front and Mount Carmel Park to the east.

2.6.3. Oil/Liquid Storage Infrastructure

There are no visible oil storage tanks infrastructure outside of the main buildings on site and none within the yard area.

3. PRELIMINARY CONCEPTUAL SITE MODEL

3.1. Risk Assessment Methodology

Currently there is no specific legislation addressing contaminated land in Ireland and therefore this report has been prepared considering the most relevant guidance published by the Irish Environmental Protection Agency (EPA) and the UK Environment Agency (EA) guidance as referenced in Section 1.6. Both authorities advocate a risk-based assessment when dealing with contaminated land and groundwater issues and this is considered best practice as well as being a requirement under the Environmental Liability Regulations (S.I. 547 of 2008).

A critical element of the risk assessment process is the establishment of a Conceptual Site Model (CSM) for the site. A CSM describes the potential sources of contamination at a site, the migration pathways it may follow and the receptors it could impact. If a complete source-pathway-receptor scenario exists then there is a potential pollutant linkage that needs to be characterised and assessed (via formal risk assessment). All three elements need to be present for a viable risk to exist (e.g. if a source and receptor exist but no pathway is present then there is no pollutant linkage and hence no risk). The CSM is updated and refined as more information becomes available.

3.2. Contamination Sources

Following the Phase I review the areas of concern which are considered as potential pollutant sources are summarised in Table 3.1:

Table 3.1: Potential Areas of Concern

AREA/ ASPECT	DETAILS & COMMENTS	SIZE/ MAGNITUDE	POTENTIAL FUTURE RISK
Made Ground	Any contaminants within made ground	Medium	Low
Previous site use	Any contaminants associated with past site use.	Medium	Low
Present site use	Any contaminants within the material associated with the present site use.	Medium	Low
Offsite contaminant sources	Activities associated with offsite sources.	Medium	Low

NOTE: future risk assumes design/remedial measures are completed prior to development.

3.3. Outline Conceptual Site Model

Based on the preliminary assessment, several possible pollution linkages were identified for the site.

Table 3.2: Preliminary Conceptual Site Model

SOURCE	PATHWAY	RECEPTOR	POTENTIAL POLLUTANT LINKAGE Y/N	RISK
Environmental				
Migration of contamination from offsite properties.	Migration of contaminants from made ground and/or soils	Groundwater in the bedrock aquifer	N	Acceptable Risk
Potential contamination within shallow subsoil materials from historic and current activities.			Y	Potential low risk
Potential contamination within groundwater from site.	Migration of contaminants in the subsoil and bedrock aquifer	Potential surface watercourses via groundwater baseflow.	N	Acceptable Risk
Potential contamination of nearby surface waterbodies.	Surface run-off	Nearby surface water bodies	N	Acceptable Risk
Human Health				
Migration of contamination from adjacent properties..	Vapour migration to indoor and outdoor air.	Onsite Users.	N	Acceptable Risk
Potential contamination within shallow subsoil materials from historic and current activities			Y	Potential low risk
Migration of contamination from adjacent properties	Inhalation/ dermal contact/ ingestion of soils/ dusts.	Onsite Users.	N	Acceptable Risk
Potential contamination within shallow subsoil materials from historic and current activities			Y	Potential low risk
Potential contamination within groundwater	Migration of contaminants into the	Groundwater users.	Y	Potential low risk

	bedrock aquifer.			

Note: Generic risk assessments do not assess risks to construction workers who are managed under the Safety and Welfare at Work Regulations.

Based on the pCSM the environmental and human health risk from the site is negligible to low.

4. CONCLUSIONS

The site is located located at No. 2 Firhouse Road and the former 'The Firhouse Inn', Firhouse Road, Dublin 24. Dublin City. The site currently exists of the existing single and two-storey buildings on the site including the former 'The Firhouse Inn' public house and off-licence, barbers, betting office, cottage and other ancillary structures. The surrounding area is a mixture of residential, recreational, and commercial/retail land use.

External infrastructure comprises of carparking facilities for the commercial units. No visible oil storage tanks were observed.

The proposed development will consist of the demolition of the existing structures and the provision of provision of 2 blocks (Blocks 01 and 02) ranging between 3 and 5 storeys in height, over lower ground floor and basement levels, comprising residential over commercial ground floor uses, all over a basement level.

The environmental assessment identified the follow:

- Based on a review of the available public information the site lies over Made Ground which is over 'Till derived from Limestones' and 'Alluvium' in a small northern section of the site.
- The site lies over a locally important aquifer which is moderatively productive only in local zones that has a high groundwater vulnerability. Flow is expected to the north east towards the River Dodder.
- There were no reported boreholes or wells within the site and no surface water courses albeit the River Dodder is located approximately 0.2km from the northern site boundary.
- The pNHA Dodder Valley Proposed Natural Heritage Area is located 0.2km north of the site; however the closest European designated site is the Glenasmole Valley Special Area of Conservation (SAC) located 4km to the south west of the site.

Based on the pCSM the environmental and human health risk from the site is negligible to low.