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Ground Condition Assessment Report

Templar Place SHD, Balbriggan, Co Dublin

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Ground Condition Assessment Report

Document Control Sheet

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Index

1 Introduction

ORS was engaged by Rhonellen Developments Ltd to provide civil and structural engineering services to support the proposed SHD planning application associated with the Templar Place SHD, Balbriggan, Co. Dublin. This report outlines the ground condition assessment undertaken on the site at planning stage.

The proposed development comprises a Build to Rent (BTR), Strategic Housing Development (SHD) as follows:

Demolition of the existing buildings (former shopping centre and associated structures). Construction of 3 no. apartment blocks (Blocks A - C) ranging in height from 3 to 6 storeys (with Block B over 3 no. lower courtyard floors) providing a total of 101 units (19 no. studios, 41 no. 1-beds, 41 no. 2-beds). Provision of Resident Support Facilities/Resident Services and Amenities, 2 no. retail units, car parking (at ground floor), cycle parking, ESB substation/switch room, plant, bin stores, open space, landscaping, boundary treatments, all associated site works and services provision.

A general outline of the proposed development is provided in Figure 1.1 below.

Figure 1.1 – Proposed Architectural Site Layout

2 Site Location and Description

The site is located centrally within Balbriggan Town and is bound by Quay Street to the northwest and High Street to the East. There is an existing two storey retail building located on the north of the site fronting Quay Street, this was a former Tesco store but has been vacant for some time. There is a single storey building located to the southeast fronting High Street and this is trading as a bicycle store. Currently, vehicle access is provided off High Street to the site.

The total area of the site is circa 0.42 hectares. An approximate outline of the subject site is provided in 2.1 below.

Figure 2.1 – Site Location (Approximate area of the subject site in red)

2.1 Site Topography

A topographical survey was carried out on the site in August 2020. There is a significant change in levels across the site, the street level fronting the site at High Street is approximately 13.6mOD while at Quay Street it is approximately 4.2mOD. This results in a level change of approximately 9.4m across the site.

The design intent is such that the majority of the ground floor of Blocks A, B and C will be set at 4.7mOD and the ground floor carpark will also be set at approximately 4.7mOD. No residential apartment units are proposed at ground floor level, instead this level will contain shared amenity rooms, plant rooms, bin and bike stores. Block A will have 2 retail units at footpath level on Quay Street with finished floor levels of 4.0mOD and 4.55mOD.

Refer to the Traffic Layout drawing number 201_321-ORS-Z0-00-DR-C-700 for existing levels and proposed ground floor levels.

2.2 Ground Conditions

Ground conditions at the site have been reviewed based on a desk study of publicly available information taken from the historical mapping of the site and from the Geological Survey of Ireland (GSI) database. Local investigations were also carried out to determine ground conditions at the site.

Sources informing the desk study include –

- Site walkover
- Geological plans and Geological Survey of Ireland database
- Historical ordnance survey mapping,
- Aerial photographs,
- Any other information.

In the development stage of any building or infrastructure project, the desk study allows a conceptual model of the ground to be developed, which is then progressively refined during successive stages of the project. The aim of the study is to help identify and provisionally quantify the potential risks associated with geotechnical, environmental or contamination hazards on the site.

From a site walkover, it is evident that the site has been largely developed with the majority of the site now paved, making it difficult to assess ground conditions. Around parts of the site perimeter there has been vegetation growth such as along the embankment on the eastern boundary of the site. Ground conditions are generally dry and there are no signs of settlement or subsidence to the existing buildings.

From a review of the GSI database, bedrock in the area is identified as *Andesite, pillow breccia, mudstone, tuff* from the Bedrock Geology 1:100,000 mapping. Overlaying soils are described in the Quaternary Deposits information as *Irish Sea Till derived from Lower Palaeozoic sandstones and shales*. Along and within the northern boundary of the site, a band of *Alluvium* is identified, which generally follows the course of the Bracken River which flows from west to east, immediately north of Quay Street to the north of the site. Recorded borehole locations are identified in the vicinity of the site, with the closest borehole being 130m to the west. Although borehole logs are not

available, information available indicates that the closest borehole was 0-5m deep and did not meet bedrock.

Historical mapping of the site is available through the geohive facility (http://map.geohive.ie/mapviewer.html) and has been reviewed. From the 25-inch mapping of 1888-1913, some development along the boundaries of Quay St and High St can be seen. Some local vegetation is indicated on this mapping. There are no indications of poor or soft ground within the site. Several embankments are identified in the centre of the site, indicating how site levels varied from Quay St to High St. From the 6-inch mapping of 1837-1842 a lower level of development is evident, with much of the site undeveloped.

Aerial photography of the site is available through the geohive facility (http://map.geohive.ie/mapviewer.html) and from "Google Earth" and has been reviewed. Photography from 1995 indicates development on the site which appears to match the current day development, with no changes from this point to the most recent aerial photography dated 2019.

A local investigation was carried out at the north-eastern corner of the site in June 2021. Access limitations given the presence of buildings on site and a significant number of buried services meant the locations of trial holes were restricted to this area. Investigations found a 200mm concrete slab, underlain by made ground to 0.6m below ground level (bgl) which was underlaid by a thin layer of silt to 0.8m bgl and clays to a depth of at least 1.8m bgl. Ground water level was encountered at a depth of 1.7m bgl. Photos from the local investigation are included in Appendix A.

The initial stages of development of the site will include enabling works to clear the existing buildings. At this stage, a more intensive site investigation will be possible which will provide further information on the existing ground conditions.

Based on the desk study and local investigations, ground conditions are generally expected to be reasonable with soils overlaying bedrock expected to be a mixed 'till' type material, currently covered with a thin layer of made ground associated with the existing development of the site.

2.2.1 Building Foundations

Based on the extent of the proposed development, it is anticipated that foundations for the buildings and podium slab areas will be piled. Given the site location within an urban area, a form of augered pile solution would be appropriate as this will mitigate construction noise generated by driven pile solutions. This will also provide sufficient load carrying capacities required for the development and the height of structures proposed.

The lower base slab is likely to be ground bearing given the results of site investigations carried out to date.

Further site investigation works carried out following demolition of the buildings on site will inform the design of these foundations. This design will be carried out by a specialist piling contractor in conjunction with a suitably qualified geotechnical engineer.

2.2.2 Retaining Walls/ Boundaries

Embedded retaining walls will be required around parts of Block B and the podium area to the centre of the site where sufficient space for battering excavations is not available. In some areas, where space is available for forming batters, the site can be excavated initially, with reinforced

concrete retaining walls constructed ahead of infilling between the retaining walls and the site boundary.

There is an existing embankment present along the eastern boundary of the site. Construction works in this area will require specialist geotechnical design to ensure this boundary is stable through all stages of the works including demolition of the existing buildings and construction of piling and retaining walls.

Final construction methodologies and detailed design of piled foundations and temporary and permanent retaining structures will need to be developed following completion of site clearance and follow-on site investigation and engagement of a specialist geotechnical engineer.

Vibration monitoring techniques will need to be employed during construction to ensure that vibrations from piling are within acceptable limits considering neighbouring properties around the perimeter of the site.

3 Conclusion

Ground conditions at the site have been reviewed based on a desk study of publicly available information taken from the historical mapping of the site and from the Geological Survey of Ireland (GSI) database. Local investigations were also carried out on the site in June 2021. Access limitations given the presence of buildings on site and a significant number of buried services meant the location of trial holes were restricted to the northeast of the site.

Based on the desk study and local investigations, ground conditions are generally expected to be reasonable with soils overlaying bedrock expected to be a mixed 'till' type material, currently covered with a thin layer of made ground associated with the existing development of the site.

Given the extent of the proposed development, it is likely that the buildings and podium slab will be supported on piled foundations. Embedded retaining walls will also be required around parts of Block B and the podium area to the centre of the site where sufficient space for battering excavations is not available.

Final construction methodologies and detailed design of piled foundations and temporary and permanent retaining structures will need to be developed following completion of site clearance and follow-on site investigation and engagement of a specialist geotechnical engineer.

Appendix A – Ground Conditions Images

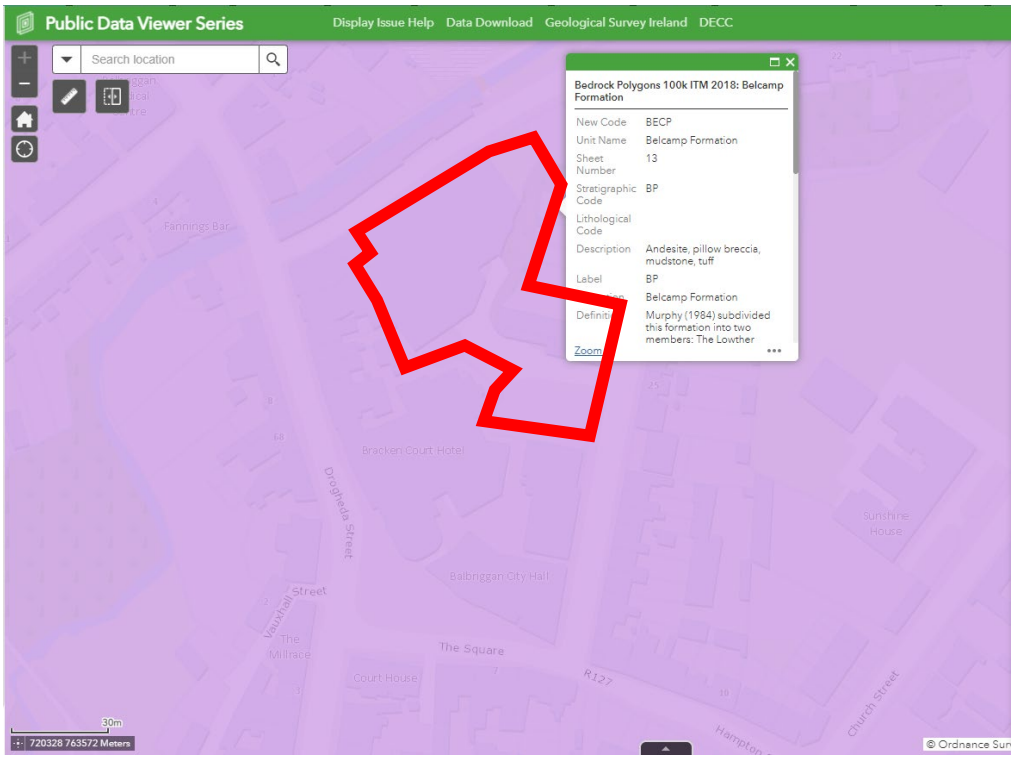

Figure 1 - Bedrock Geology 1:100,000

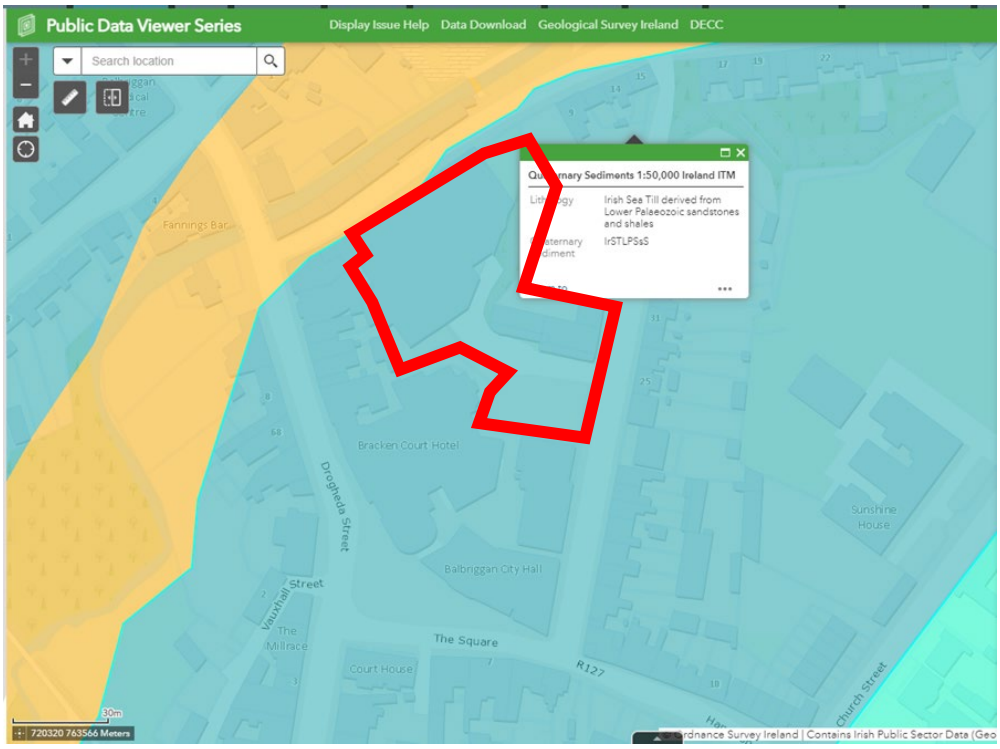

Figure 2 - Quaternary Sediments

Photos 1-4 Local Site Investigation Photos