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Engineering Planning Report

The Hive, Dublin Road, Carrick on Shannon, Co. Leitrim, N41 FD83.

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Engineering Planning Report

Document Control Sheet

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1 Introduction

This report outlines the Civil Engineering deliverables completed for the planning application associated with a proposed development of the to the Hive Building, Carrick on Shannon.

The development will consist of the provision of a new two storey extension to the front of the existing The Hive Building incorporating; alterations to existing reception and stairs, additional work spaces, circulation and new stairs together, alterations to existing elevation, canopy roof over new access, alterations to existing car park, including additional car park spaces, additional cycling spaces and new future overflow car park, alterations to boundary treatment and connections to surface water and systems with all associated site development works.

The Hive Campus is located on the junction of the N4 and the Castlecara Rd general outline of the proposed site is provided in Figure 1.1 below.

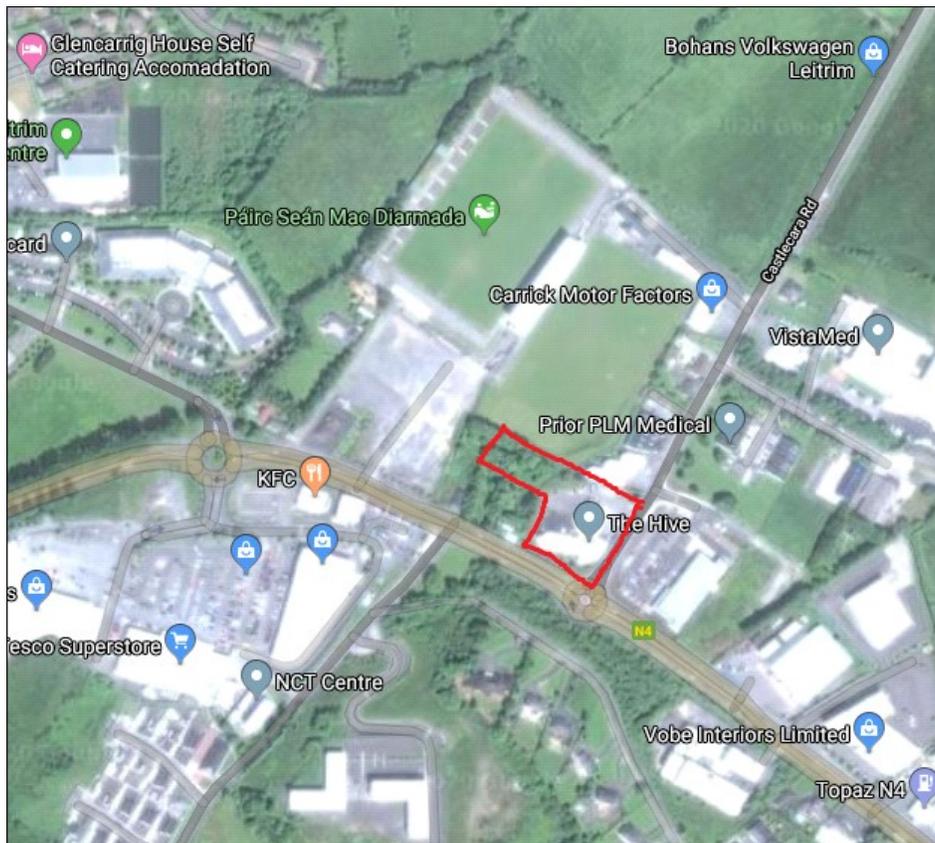


Figure 1.1 –Site Layout Location (Source google maps with annotation by ORS)

2 Proposed Development

2.1 Site Topography & Access

The majority of the site is relatively level with an external level of 46.750mOD to the car park to the North of the existing building. The existing floor level of the building is 46.750mOD and access is facilitated via level access at the front of the building.

The Hive Site is accessed via the Castlecara Rd (L3405). There is pedestrian access via a public footpath.

2.2 Proposed Wastewater Drainage

ORS obtained service maps for the internal water, surface water and wastewater services network in proximity to the site from the Leitrim Enterprise Fund

Existing wastewater drainage is currently serving the building. The proposed extensions to the building will not be providing any additional toilet or canteen facilities. The existing building contains an existing kitchenette at ground floor level and this room will facilitate preparation of tea, coffee and cold foods and will not be used as a commercial kitchen. It is considered that a grease trap will not be required for the proposed works.

As the proposed works provide space for an additional 35 people increase in the number of persons using the existing building. At a daily usage rate of 50 litres per person per day the increase in the design flow will be $(6 \times 50 \text{ litres} \times 35 \text{ people} / 8 \text{ hours} = 0.36 \text{ litres/s})$ utilizing the existing foul water drainage network on site and the existing connection to the public network.

On this basis, it is not deemed necessary to apply for a connection application to Irish Water.

2.3 Proposed Surface Water Drainage

The surface water from the existing roof areas is collected in down pipes and enters the existing internal surface water network in close proximity to the building. As the net impermeable area will not increase as a result of the proposed works it is not deemed necessary to provide additional surface water upgrades in conjunction with this development.

The existing drainage network will need some reconfiguration to accommodate the proposed structure. The proposed drainage is outlined on the ORS drawing 191_240-ORS-Z0-00-DR-C-403.

2.4 Proposed Water Supply

ORS obtained service maps for the internal water, surface water and wastewater services network in proximity to the site from the Health Service Executive (HSE).

Water supply is currently serving the building via an existing watermain on site. The proposed extension to the building will tie into this system for the purposes of water supply. The existing watermain network incorporates two no. fire hydrants positioned on each side of the building and

are within 46m of same as per BS750.

On this basis, it is not deemed necessary to apply for a connection application to Irish Water.

2.5 Structural Considerations

The development will consist of an extension to the existing Hive building. The proposed extension space will be linked back to the existing building, at ground & first floor level. The design intent involves the inclusion of a first floor to the existing open plan building. To facilitate the construction of the proposed first floor, the proposed structural form will consist of a reinforced concrete frame with precast concrete floors with infill masonry walls.

A detailed site investigation report for the ground conditions will be required prior to construction to verify the bearing capacity of the soil strata supporting the proposed steel framing. These fieldworks will comprise of Cable Percussion Boreholes, Dynamic Probes, Trial Pits and CBR tests.

3 Flood Risk Identification

The Office of Public Works (OPW) defines four natural types of flooding, Coastal flooding, Fluvial flooding, Pluvial and Groundwater flooding. Additional potential sources of flooding are the failure or exceedance of capacity of built or man-made infrastructure, such as bridge collapses, from blocked or under-sized drainage systems or other piped networks, or the failure or overtopping of reservoirs or other water-retaining embankments (such as raised canals).

Coastal flooding occurs when sea levels exceed neighbouring land levels, or overcome coastal defences where these exist, or when waves overtop over the coast. Wind speed and direction and low-pressure systems can force water into estuaries and harbours, cause surge effects, and create extreme wave conditions.

Pluvial flooding occurs when the amount of rainfall exceeds the capacity of urban storm water drainage systems or the ground to absorb it. This excess water flows overland, ponding in natural or man-made hollows and low-lying areas or behind obstructions. This occurs as a rapid response to intense rainfall before the flood waters eventually enter a piped or natural drainage system.

Groundwater flooding occurs when the level of water stored in the ground rises as a result of prolonged rainfall, to meet the ground surface and flows out over it, i.e. when the capacity of this underground reservoir is exceeded. Groundwater flooding tends to be very local and results from the interaction of site-specific factors such as local geology and tidal variations. While water level may rise slowly, groundwater flooding can last for extended periods of time. Hence, such flooding may often result in significant damage to property and disruption.

The Office of Public Works (OPW) is producing Flood Risk Management Plans (FRMP), in line with National Flood Policy and the requirements of the EU Floods Directive. Draft FRMP's are currently being produced by the OPW under the Catchment-based Flood Risk Assessment (CFRAM) Studies. The Flood Maps associated with the FRMP's are currently being finalised and will be made available online to view when the Draft Plans are published for consultation.

In reviewing existing information in relation to the flood risk posed to the proposed development site the following sources were consulted;

- OPW Preliminary Flood Risk Assessment (PFRA) maps consulted
- Floodinfo.ie online mapping
- EPA online mapping
- Historical Maps

The data sources reviewed indicate that there will be no adverse impact to the proposed development site.

Figure 3.1 below is an extract from the CFRAMS website showing the flood extent concerning the proposed development site. The maps show that the flood extent of the River Shannon does not extend to the proposed development site and demonstrates that the site lies outside of the 0.1% Fluvial AEP event.

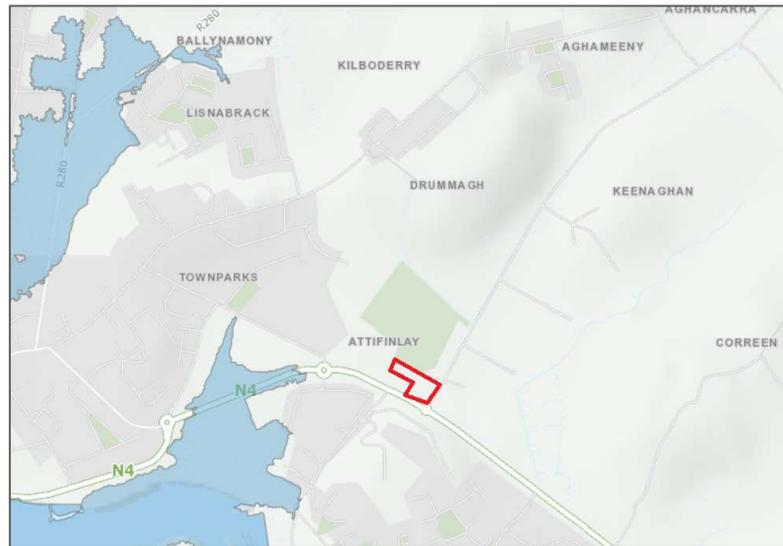


Figure 3.1 – Extract CFRAMS Fluvial Flood Extent Map (Source www.floodinfo.ie with annotation by ORS)

The OPW have published the Preliminary Flood Risk Assessment (PFRA) maps, in the form of maps covering the country. The PFRA is only a preliminary assessment, based on available or readily derivable information. It also states that areas where an on-site inspection is required to investigate the issues more closely, then those inspections will be carried out as part of the CFRAM Studies

A review of PFRAM maps (see figure 3.2 below) indicates no pluvial or coastal flooding on site with the nearest indicative 1% AEP (100-yr) pluvial flooding event located at the junction of the N4 and the Castlecara Rd.

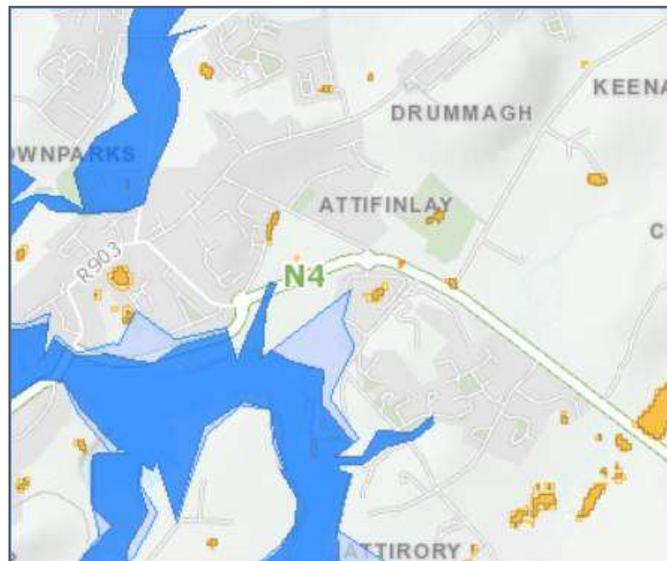


Figure 3.2 – Extract of the PFRA map in the vicinity of the Hive (Source: www.myplan.ie, annotation by ORS) Pluvial flood events shown in orange.

4 Health and Safety

ORS understand their health and safety responsibilities as set out in the Health and Safety at Work (Construction) Regulations 2013.