

Kingswood Truckwash
Flood Risk Assessment

23.08.2022

22077-TNT-XX-XX-RP-C-00001



TENT ENGINEERING

Site Address:

Old Naas Road
Kingswood, Dublin 22

Client:

Bradawl Limited
Sheldon Park Hotel
Kylemore Road, Dublin 12



TENT ENGINEERING

Revision and Review

This report has been prepared for the sole benefit, use and information of the client. The liability of Tent Engineering with respect to the information contained in this report will not extend to any third party.

REVISION(S)

| Rev. | Description | Date |
|------|-------------|------------|
| P01 | 1st issue | 23.08.2022 |
| | | |

AUTHOR(S)

Name

Cristina Peslari
Engineer



Name

Edward Heukers
Co-founder, Director
Structural Engineer



REVIEWER(S)

Name and qualifications

Diarmuid Healy
Co-founder, Director
Structural Engineer



BEng (Hons) MIEI CEng MStructE FStructE

Office Address:

Tent Engineering Ltd.
Studio 1, Cork Street Studios
115 Cork Street, Dublin 8
Dublin, D08EWX2, IE

Contents

| | | | |
|------------------------------|---|-------------------------------|---|
| 1 Executive Summary | 4 | 5 Hydrological Assessment | 8 |
| 2 Introduction | 5 | 5.1 Fluvial Flooding | 8 |
| 2.1 Project Background | 5 | 5.2 Pluvial Flooding | 8 |
| 2.2 Scope of Assessment | 5 | 5.3 Tidal Flooding | 8 |
| 3 Existing Site Details | 6 | 5.4 Canal Flooding | 8 |
| 3.1 History and current use | 6 | 5.5 Groundwater flooding | 9 |
| 3.2 Existing Watercourses | 6 | 5.6 Road Drainage Flooding | 9 |
| 3.3 Existing Networks | 6 | 5.7 Flooding to the site | 9 |
| 3.4 Topography and FFL | 6 | 5.8 Flooding from the site | 9 |
| 4 Site & Flood Risk | 7 | 6 Mitigation | 9 |
| 4.1 Planning and Flood Risk | 7 | 6.1 Fluvial and Tidal Floods | 9 |
| 4.2 Flood Zone Compatibility | 7 | 6.2 Groundwater Floods | 9 |
| 4.3 Justification Test | 7 | 6.3 Surface Water to the site | 9 |
| 4.4 Historic Flood Events | 8 | 6.4 Surface Water from site | 9 |

1 Executive Summary

Tent Engineering is appointed to provide a Flood Risk Assessment for the proposed development sited at Old Naas Road, Kingswood Cross, Dublin 22. The proposed development includes one truck wash to south-western boundary of site provided with water and foul sewer discharge.

The site is bounded on the West face by Naas Road and on the East face by existing "Kingswood Commercial Vehicle Test Centre" building and Old Naas Road which provides access to the site.

The existing site area is made of mostly hardstanding (tarmac). As part of the new proposed scheme, the site area is made of mixed hardstanding (tarmac), landscaped area, permeable paving and tree pits for alleviating the Flood Risk and impact.

According to the OPW flood maps, the site is located within a potential flood zone. Following the site specific informations available on flood maps, there is no low, medium or high flood risk shown on our site.




The OPW flood maps are not showing any past flood events on Naas Road, therefore, this road flooding is of no risk to our proposed development. A drain is to be installed at the east-side boundary as a flood prevention measure.

Therefore, our site is considered to be within Flood Zone C.

The justification test is not needed.

No basement is currently present, nor proposed. The FFL remains equal or raised compared to the existing site level.

Surface water on site will be dealt adequately as per drawing '22077-TNT-XX-XX-DR-C-92002 to ensure no local flooding and significant site run off.

| Fluvial Risk (1% AEP)* | Tidal Risk (0.5% AEP)** | Climate Change Risk*** | Comments |
|---|---|---|--|
|  |  |  | The FFL (equal or higher than existing ground level) is above the level obtained for fluvial flood risk, tidal flood risk and climate change simulation. |

Flood Risk summary table

- * 1% AEP is the 100-year returning period event (1 in 100 chance in any given year)
- ** 0.5% AEP is the 200-year returning period event (1 in 200 chance in any given year)
- *** Potential climate change (increase in rainfall of 20% and sea level rise of 0.5m as recommended by OPW)

2 Introduction

2.1 Project Background

Tent Engineering is appointed to provide a Flood Risk Assessment for the proposed development sited at Old Naas Road, Kingswood Cross, Dublin 22. The proposed development includes one truck wash to south-western boundary of site provided with water and foul sewer discharge.

This report provides a brief assessment of flood risk to the site. The assessment follows Government guidance regarding constructing new developments and flood risk. The report is based on currently available information.

Proposals contained or forming part of this report represent the design intent and may be subject to alteration or adjustment in completing the detailed design for this project. Where such adjustments are undertaken as part of the detailed design and are deemed a material deviation from the intent contained in this document, prior approval shall be obtained from the relevant authority in advance of commencing such works.

Where the proposed works to which this report refers are undertaken more than twelve months following the issue of this report, Tent Engineering shall reserve the right to re-validate the findings and conclusions by undertaking appropriate further investigations at no cost to Tent Engineering.

Site Location - Old Naas Road, Kingswood



2.2 Scope of Assessment

The existing site area is made of mostly hardstanding (tarmac). The planning application site area is approximately 0.64ha of mixed hardstanding (tarmac), landscaped area, permeable paving and tree pits as part of the new proposed scheme.

The Office of Public Works (OPW) flood maps are not showing any past flood events on Naas Road, therefore, this road flooding is of no risk to our proposed development. Therefore, our site is considered to be within Flood Zone C. This indicates that the risk of flooding from rivers and sea is low. The assessment is to be undertaken in accordance with the requirements of the Planning System and Flood Risk Management System.

The assessment will:

- Investigate all potential risks of flooding to the site
- Consider the impact the development may have elsewhere with regards to flooding

The assessment reviews the following:

- OPW flood maps for rivers and sea flooding
- Planning System and Flood Risk Management System information dated November 2009
- National Preliminary Flood Risk Assessment dated 2011
- Strategic Flood Risk Assessment of the Dublin City Development Plan 2016-2022
- Geological Survey Ireland (GSI) online map

3 Existing Site Details

3.1 History and current use

The site is located at Old Naas Road, Kingswood Cross, Dublin 22.

The site currently accommodates an existing single storey building, and 2 fuel islands with generous site area to the front, rear and side of the property.

3.2 Existing Watercourses

The site is not at risk of flooding from rivers or large bodies of water. No existing watercourse has been identified near the site, however there is an existing ditch on east site boundary, along N7 Naas Road.

3.3 Existing Networks

From available information, there is an existing 225mm storm water sewer near the site at the south boundary. A trunk water main has been identified crossing our site entrance road from Old Naas Road crossing to N7 Road.

Foul water pipe was identified along Old Naas Road as well as an 100mm uPVC water main.

The proposed site is relatively flat, as no slope or gradient has been found upon visual inspection. Currently site drainage is facilitated through gullies, directing the surface water to the main storm sewers which is to remain unchanged as part of the new proposed drainage infrastructure. No past flood event on the site has been identified, therefore the existing drainage system is deemed adequate to the current requirements.

From the topographical survey and available drainage network maps, no other existing services have been identified on or below the site.

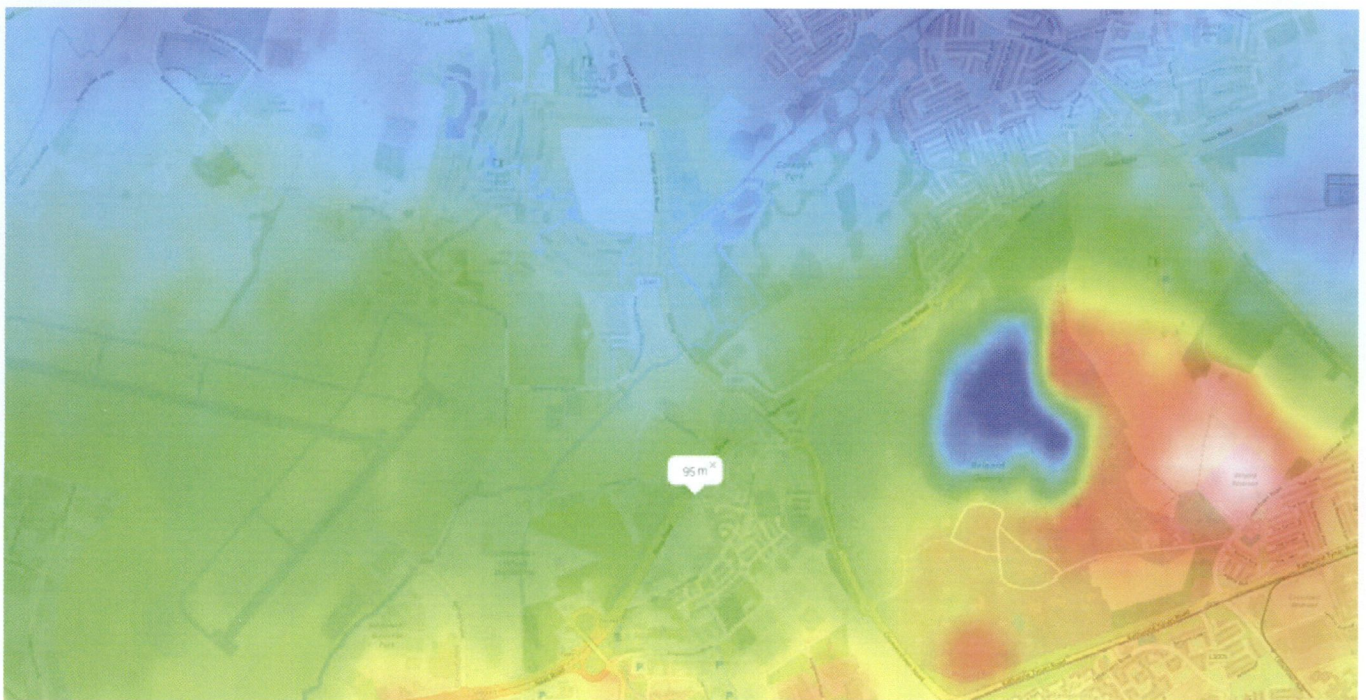
3.4 Topography and FFL

An initial topographical study has been carried out. The existing ground level of our site is similar to the levels found on the main road. According to received drawings of the existing services, the cover of the road on Old Naas Road (east side of development) is approx. +92.00.

The Topographic map below shows the existing soil profile of Kingswood, indicating a mild slope from East (high ground) to West (low ground).

Refer to the Architect layout for more information and proposed floor levels.

Topographic Map



4 Site & Flood Risk

4.1 Planning and Flood Risk

The Planning System and Flood Risk Management System (2009) provides guidance on how flood risk should be assessed during the planning and development process. There are three types of levels of flood zones defined:

- Flood Zone A
The probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding and 0.5% or 1 in 200 for coastal flooding)
- Flood Zone B
The probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 and 0.5% or 1 in 200 for coastal flooding)
- Flood Zone C
The probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood zone C covers all areas of the plan which are not in zones A or B.

| Vulnerability class | Land uses and types of development which include*: |
|---|--|
| Highly vulnerable development (including essential infrastructure) | Garda, ambulance and fire stations and command centres required to be operational during flooding; Hospitals; Emergency access and egress points; Schools; Dwelling houses, student halls of residence and hostels; Residential institutions such as residential care homes, children's homes and social services homes; Caravans and mobile home parks; Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding. |
| Less vulnerable development | Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions; Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans; Land and buildings used for agriculture and forestry; Waste treatment (except landfill and hazardous waste); Mineral working and processing; and Local transport infrastructure. |
| Water-compatible development | Flood control infrastructure; Docks, marinas and wharves; Navigation facilities; Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location; Water-based recreation and tourism (excluding sleeping accommodation); Lifeguard and coastguard stations; Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan). |

*Uses not listed here should be considered on their own merits

Following scrutiny of the OPW flood maps and floodinfo.ie, it has been identified that the existing site lies within an area with potential flood risk.

Following the site specific informations available on flood maps, there is no low, medium or high flood risk shown on our site. The OPW flood maps are not showing any past flood events on Naas Road, therefore, this road flooding is of no risk to our proposed development. Therefore, our site is considered to be within Flood Zone C.

4.2 Flood Zone Compatibility

The proposed development is an industrial type of building, designated for truck wash, but because of the existing fuel islands stored on site, there is a potential significant source of pollution, and is therefore considered to be a 'Highly vulnerable Development'. The site is located within Flood Zone C, which results in the site being appropriate without further mitigations.

4.3 Justification Test

A justification test is not required to be undertaken at this stage.

| | Flood Zone A | Flood Zone B | Flood Zone C |
|--|--------------------|--------------------|--------------|
| Highly vulnerable development (including essential infrastructure) | Justification Test | Justification Test | Appropriate |
| Less vulnerable development | Justification Test | Appropriate | Appropriate |
| Water-compatible development | Appropriate | Appropriate | Appropriate |

5.5 Groundwater flooding

In cases where ground water flooding occurs, it tends to be more persistent than other sources of flooding, typically lasting for weeks or months rather than hours or days. Groundwater flooding does not generally pose a significant risk to life due to the slow rate at which the water level rises; however, it can cause significant risk to property. A site-specific intrusive ground investigation has not yet been carried out at the site. Therefore, site specific groundwater levels are unknown, as well as flow rates.

Reviewing the available information from Geological Survey Ireland, it is anticipated that the site is not at risk of groundwater flooding.

5.6 Road Drainage Flooding

From the available information there are no records of road drainage flooding in the direct vicinity of our proposed site, according to OPW flood maps. This is robustly addressed in our surface water strategy.

The Preliminary Flood Risk Assessment confirms that sewerage flooding is excluded from the study as they are typically localised and hence would generally cause limited damage. Sewer flooding typically arises from blockage or other unpredictable incidents, and so it cannot be readily projected where they would be likely to occur, and hence where significant flood risk due to this source might exist.

Providing Irish Water and Dublin County Council maintain their drainage networks, it is assumed that the site will remain at low risk from public sewer and road drainage and infrastructure failures.

5.7 Flooding to the site

Surface water flooding can be caused when rainwater during extreme rainfall events does not drain away through the normal drainage system or soak into the ground with flooding occurring, principally from manholes and gullies. Surcharging sewers can result in overland flows which if originating at a higher elevation than the development site can pose a flood risk.

Other than the previously mentioned flooding during rare storm events due to open storm water network blockages, there is a low probability of other sources of flooding to the site. This is robustly addressed in our surface water strategy along with the proposed SUDS to help alleviating the Flood Risk and impact.

5.8 Flooding from the site

The design team is responsible for ensuring that the new development does not increase the flood risk elsewhere. The proposed surface water drainage network shall be designed to provide adequate capacity to convey all flows arising from the proposed development so as not to cause damage to buildings, essential services or adjoining developments and services.

This is robustly addressed in our surface water strategy.

6 Mitigation

6.1 Fluvial and Tidal Floods

No additional flood mitigation is required.

6.2 Groundwater Floods

No additional flood mitigation is required.

6.3 Surface Water to the site

No additional flood mitigation is required.

6.4 Surface Water from site

This is robustly addressed in our surface water strategy.

The design team is not to increase the flood risk towards others as a result of the works. The residual risk can be considered low and no additional mitigation is required.

The final design of the drainage networks shall be in accordance with the legislation set by the Office of Public Works, Dublin City Council and Irish Water.